(McGuinness Institute, 2012: 23)

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Science Embraced

Government-funded Science under the Microscope

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Table 3: Four Eras of Government-funded Science in New Zealand, 1865–2012

Note: The stated purpose, strategy and execution of government-funded science for Eras 1–4 is largely a summary of the findings contained within the Institute's Report 9a: *A History of Government-funded Science 1865–2009* (SFI, 2009a) and Report 9b: *A History of Government-funded Science 2009–2011* (SFI, 2011a).

		Era 1: 1865 – 1926	Era 2: 1926 – 1989	Era 3: 1989 – 2010	Era 4: 2010 – 2012
Purpose	**Mission, Values and Vision**	**Mission:** Early government-funded science focused on understanding and taking resources from a new land mass.[17] A system was developed to respond to problems and commercial imperatives in the primary industries (such as agriculture) (SFI, 2009a: 14).	**Mission:** Government-funded science aimed to support scientific research through one dominant institution: the Department of Scientific Industrial Research (DSIR) (SFI, 2009a: 20).	**Mission:** Government-funded science aimed to create a market for scientific research. Science and technology were linked to economic growth. **Values:** Science was seen as a commercial enterprise. There was debate over the degree to which government should influence the shape of research (SFI, 2009a: 20–25).	**Mission:** Government-funded science aims to create 'benefit for New Zealand' (MSI, 2011a: 6). **Values:** The MSI's *Statement of Intent: 2011–2014* notes that in 2011 'there will be a focus on actively shaping a culture that supports MSI to be a high-performing agency' and that 'there will be a project defining the values for MSI and the integration of these across the organisation. These will form the baseline of our expectations of behaviour and standards and will be rolled out across the organisation' (MSI, 2011a: 27). **Vision:** 'High-performing science and innovation systems improving New Zealanders' wealth and wellbeing' (MSI, 2011a: 6).
Strategy	**Strategic Intent**	Organised research capability had not been a priority in a new, developing nation but attitudes started to change as successive governments realised the importance of research and science to the economic and social growth of the colony (SFI, 2009a: 15).	Transforming DSIR from administrator to provider, with increased investment in scientific research and an emerging commercial imperative for science.[18]	RS&T to 'grow an inclusive, innovative economy for the benefit of all'. (MoRST, 2000: 5)	'Establishing a single entity that can act as the Government's lead agency on the science system and contribute to the oversight of New Zealand's innovation system.' Further, one of the initiatives for 2011 was the 'development of a clear organisational strategy for MSI' (MSI, 2011a 16, 26).

17 The New Zealand Geological Survey was formed in a move to identify and control mineral assets such as gold and coal (Nathan, 2007). The Survey also took control of the Colonial Laboratory and Museum, which worked until 1892 to identify and describe New Zealand's natural assets (Galbreath, 1998).

18 The primary function of the DSIR changed significantly during this period. In 1926, the Scien[illegible] and Industrial Research Act 1926 stated that the functions of the DSIR were maintenance, administration and the provision of advice. The Scientific and Industrial Research Act 1974 repealed the 1926 Act and stated that the pri[illegible] function of the DSIR was to 'initiate, plan and implement research calculated to promote the national interest of New Zealand' (SFI, 2009a: 19).

		Era 1: 1865 – 1926	Era 2: 1926 – 1989	Era 3: 1989 – 2010	Era 4: 2010 – 2012
	Drivers	*Government-funded science focused on:* • Problem-solving for commercial gains. • Steady coalescing and gradual organisation. • A gradual increase in research capability (SFI, 2009a: 15).	*Government-funded science focused on:* • Forming New Zealand's own institutions and conducting its own research, as Britain was requiring of the Dominions (SFI, 2009a: 16). • The war effort (in the early stages of the era). World War II acted as a significant driver of technical expansion (SFI, 2009a: 18). • The wider economic environment (in the later stages of the era). The economic downturn of the 1970s forced some commercialisation of science (SFI, 2009a: 20).	*The 2007 MoRST strategy had four main areas of focus:* • Providing greater clarity and coherence about the overall direction and development of RS&T in New Zealand; • Engaging New Zealanders with science and technology; • Improving business performance through research and development; and • Creating a world-class science system for New Zealand (MoRST, 2007a).[19]	*Government-funded science will focus on:* • Improving international linkages • Improving the innovation system • Ensuring processes are cost-effective, and • Developing partnerships (MSI, 2011c: 8, 10, 25).
	Enablers	**The institutional framework** Gradual organisation of an institutional framework: • In 1865, the New Zealand Geological Survey and Colonial Museum were established. • In 1867, the New Zealand Institute was established (the forerunner of the Royal Society of New Zealand). Creation of the first university: • In 1870, the University of New Zealand was created. **Funding** Ad hoc and sporadic funding (SFI, 2009a: 14).	**The institutional framework** One dominant institution developed: • The British Department of Scientific and Industrial Research (DSIR) model was imported and over time the DSIR transformed from the role of administrator to also taking on the role of research provider (SFI, 2009a: 16–19). The University of New Zealand split into six separate institutions: • The University of New Zealand, the sole tertiary institution up until 1962, was split and was replaced by six separate universities (SFI, 2011d: 3). **Funding** User-pays policy. However, as the DSIR grew, the need for an increase in funding became apparent (SFI, 2009a: 19). **Infrastructure** A lack of physical and technical infrastructure to back up scientific enterprise became apparent (SFI, 2009a: 20).	**The institutional framework** The tri-institutional framework: • In 1989, the DSIR was split so that policy, purchase and provision were overseen by independent bodies – MoRST, FRST and CRIs, respectively. • In 1992, ten CRIs were established. Creation of two new universities: • Lincoln University (1990) and Auckland University of Technology (2000) were established. **Funding** A shift in the funding ideology, from following Britain to using more global economic concepts, resulting in a competitive funding model (SFI, 2009a: 25). **Regulatory frameworks** The 'Arbuckle Report' of 1988, for the Science and Technology Advisory Committee (STAC), was instrumental in creating a new regulatory framework. This new framework focused on three key pieces of legislation: the State Owned Enterprises Act 1986, the State Sector Act 1988, and the Public Finance Act 1989 (SFI, 2009a: 21–22).	**The institutional framework** The bi-institutional framework: • Merger of MoRST and FRST into MSI, with two funding boards, one for science and one for innovation, recombining policy and purchase functionality. Review of CRIs: • The CRI Taskforce recommended a number of changes to the governance and funding of CRIs; however, no change to the number of CRIs was recommended. **Key enablers** • People • Infrastructure • International connections (MoRST, 2010a: 39). **Funding** A combination of competitive and core funding.

19 MoRST's 2007–2010 strategy (MoRST, 2007a) has been used as an example of government-fu science's main priorities within this era.

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