Science System Review (SSR): Phase Two
Submission from Universities New Zealand – Te Pōkai Tara
Due by 5pm, Friday 4th April 2025

This submission is from Universities New Zealand – Te Pōkai Tara (UNZ[1]) – the peak body for New Zealand's eight universities. The submission has been developed through UNZ's Research and Vice-Chancellors' Committees and university research offices.

This submission answers the questions posed by the Science System Advisory Group (SSAG, Appendix 1) by listing the key high-level points and potential solutions under each of the relevant SSAG headings. Most of these key messages have been formally communicated to government agencies via public submissions and reflect our current collective view. We have also chosen to answer the questions under relevant themes as there are related considerations we'd like the SSAG to consider.

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Executive summary

There are four broad areas/themes relevant to the phase two question set that the university sector wishes to bring to the SSAG's attention. These themes are the future needs of our research system's workforce, infrastructure, funding and internationalisation.

Thematic responses

1. Future research workforce needs

We anticipate the need to build expertise in areas such as AI, green energy, gene technology and defence to grow. However, we caution against only focussing on these subject areas at the expense of all other areas like the humanities and social sciences. A university "is characterised by a wide diversity of teaching and research" (S268 d(ii)A of the Education and Training Act (2020) [2] in recognition of the fact that advancement across the breadth of disciplines is important for a healthy, growing and changing society. It is therefore important that all research disciplines are recognised and supported by government so that universities can continue to provide research-led teaching and to produce skilled graduates across all areas and provide research skills that will be needed for future priority areas. The return on investment in research that governments of all political alignments value, depends on the arts, humanities and social sciences (HASS). These disciplines include researchers who are a key source of creativity and innovation. The expertise they bring contributes greatly to important and economically valuable sectors such as the entertainment industries, business, tourism, recreation, marketing and entrepreneurship. The recent funding cuts to these areas sends a clear but misinformed message that these research fields are not valuable. As a result, we risk

[1] Universities New Zealand is the operating name of the New Zealand Vice-Chancellors' Committee, a body established under Part 19 of the Education Act 1989. It has statutory responsibilities for university quality assurance, the approval and accreditation of university academic programmes, entrance to universities, and scholarships. It also represents the interests of the universities on a wide range of other matters, such as education and research policies.
[2] Education and Training Act 2020 No 38 (as at 01 October 2024), Public Act – New Zealand Legislation

losing talented researchers from New Zealand and making the recruitment of researchers and students in these fields very difficult.

Just as there is a scale for the point on the pathway to uptake for a new technology (the Technology Readiness Level, or TRL) so there can also be a parallel scale for society's readiness to adopt novel technology (a 'Societal Readiness Scale'). The focus on advanced technologies shines a light on the need to understand society's readiness for the innovations that will follow.

Mechanisms to ensure evidence is translated into policy, industry, and made available for the public to understand and consume is of great importance. To do this, we need to invest in mechanisms such as knowledge translation capability that make research findings more accessible. This will serve to develop the country's capacity to effectively apply research findings (from New Zealand and elsewhere) and will ultimately transform New Zealand into a 'knowledge economy'. To this end, New Zealand's future research system should ensure that publicly funded research findings are accessible to all.[3,4]

Furthermore, there is also an onus on government agencies, private companies and other users of research to have sufficient understanding of the research and skills to do the translation themselves. Across all disciplines there are opportunities with increased investment and suitable policy settings to increase universities' contribution to economic development and transformation through research translation, entrepreneurship, and innovation. This concept has been formally recognised in several other jurisdictions.[5] The German Fraunhofer model[6] provides an excellent template for effective translational research, aspects of which could be emulated by any future New Zealand research system.

Additionally, and critically, we need to address the skills retention in New Zealand in the face of record migration of skilled New Zealanders (particularly young adults[7]) pursuing higher paid jobs and better lifestyles elsewhere. To retain research talent specifically, New Zealand needs to create an environment in which research careers thrive. This requires a stable, more generous, inflation-adjusted research (and university) funding environment, a reduction in systemic inefficiencies (addressed below) and improved career pathway mechanisms to build and retain capability (including the reintroduction of the postgraduate student allowance etc[8]). The market for academics is truly global and New Zealand struggles to compete with international academic salaries. Academic salaries here have historically been much lower than Australia, Canada and the UK. The solution to this is also simply one of funding.

The current funding system is not designed to fund capability but rather to fund individual projects or programmes for a finite period. This results in workforce precarity, particularly for the early career research workforce who are employed on short and medium-term contracts that end if government funding is not renewed or extended. Balance can be achieved through a base fund for capability and discretionary funding for projects or programmes overseen and evaluated by an independent research council.

Finally, it is critical we continue to support international postgraduate students to come to New Zealand. We need to make it easier for them and their families to navigate our systems. This is especially timely for New Zealand given recent shifts in the policies in the UK, Canada and Australia to limit international student numbers. International students are not only key to the diversification and cultural richness of our student cohort, but they are also an important pipeline of future research talent that keep our universities globally connected and relevant.

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[3] This is publicly supported by all eight universities: Open Access Statement.pdf (universitiesnz.ac.nz)
[4] Open Access Statement.pdf
[5] Breznitz, S. M. (2014) The Fountain of Knowledge: The Role of Universities in Economic Development 1st ed. Stanford University Press. https://doi.org/10.2307/j.ctvqsdqxm.
[6] https://www.fraunhofer.de/en.html
[7] Net migration falls in 2024 | Stats NZ
[8] Briefing for the Incoming Research Science and Innovation Minister November 2023.pdf

2. Research infrastructure

This is a critical aspect of our research system and is, therefore, a dedicated focus of this submission and of our submissions to previous governments. New Zealand needs dedicated government investment to support a national research infrastructure strategy (as in the UK, Canada and Australia[9]). Good examples of where research infrastructure is shared among multiple institutions but accessed by all relevant researchers include the Australian National Nanofabrication Facility and the Microscopy Australia consortium. Currently the full-cost funding model does not support infrastructure being used fully, nor does it support purchasing large capital items[10] nor does it adequately resource the capability to maintain the infrastructure.

3. Funding: mechanisms, quantum and operational considerations

We do not think that rationalising the funding mechanisms will address the real problems in New Zealand's research system.

Below we explain where rationalising in the system can occur, without compromising current funding mechanisms. There does need to be some granularity in funding mechanisms to preserve the purpose of each fund and to ensure there are no unintentional gaps in investment. An effective alternative is to establish a body to oversee funding mechanisms. We have previously advocated for the establishment of an independent research council,[11] which would, amongst many other things, ensure the needs of all parts of the system (including government) are considered in an objective way while being sufficiently agile to address emerging research priorities and research workforce needs. Under the guidance of such a body, current agencies could be better coordinated. Similarly, national research infrastructure could be overseen by this body to ensure fair, equitable and easy access to infrastructure for the whole research system.

There are substantial operational inefficiencies in the public administration of research funding. For example, there is no coordination in the timing of investment rounds. This creates resourcing issues for the research sector as they manage peak workloads at certain times of the year, complicated by the fact that every funding organisation runs their own application portal. There are other administrative barriers to research in New Zealand which could easily be addressed if they were prioritised. For instance, the Department of Conservation research application processing times are unhelpfully long (refer to UNZ's DOC submission here).

Therefore, the current administrative burden for all research organisations could be improved by:

- ensuring that budgeting, submission, and assessment processes associated with contestable or directly commissioned research align across all major New Zealand research funding mechanisms/funders.
- providing a single comprehensive coordinated information site that captures all the major research funding opportunities in New Zealand (like the UKRI website), and which ensures the timing of funding rounds are spread more evenly throughout the calendar year.[12]
- removing barriers to research such as providing institutional permits to undertake research on the DOC estate (refer to UNZ's DOC submission here) and compliance/regulatory burdens on infrastructure like laboratories by Worksafe.

In principle, we support the following features for future research funding mechanisms:

[9] National Research Infrastructure - Department of Education, Australian Government
[10] UNZ Submission SSR Phase One.pdf
[11] UNZ Submission SSR Phase One.pdf
[12] UNZ Submission SSR Phase One.pdf

- peer assessment of applications utilising experts in the relevant field to ensure that only rigorous and impactful research gets funded.
- prioritisation of excellence is critical to the future of New Zealand's research system.
- variety of selection processes: this allows for government to use negotiation and balloting where appropriate (discussed below).
- be at arm's length from the government of the day to enable research priorities to extend beyond political cycles.
- high-risk, high-reward research is not excluded from government investment.
- investment in matauranga Māori is a core feature of our research ecosystem. Universities New Zealand's Te Kāhui Amokura will be submitting to the SSAG on this as a part of this question round.
- contestability: we strongly support a healthy degree of competition to drive excellence in research. However, an overly competitive system has a negative impact on the workforce. An overly competitive granting system is often reported as a significant frustration by academics.[13] It also generates a considerable flight risk. Having higher success rates for funding will be attractive to both domestic and international researchers. To alleviate this, we suggest two-stage application mechanisms are applied more consistently (including being reinstated to MBIE's Smart Ideas Fund) and of course, increasing research funding.

Investment in research should also be considered temporally. Where the government's need for specific evidence (mission-led) is short-term, research could be negotiated and commissioned directly from specific research groups or put out to tender with transparent and clear requirements. To foster discovery which by nature takes time, Government should invest in 'blue skies' (researcher-led) research. This will balance the specific needs of New Zealand while also ensuring our research system is globally competitive.

Our previous experience of 'roadmaps' is that they merely reflect a wish list for the research system except in limited cases where they are led by a sector with a mature understanding of current and future research needs (for example the International Technology Roadmap for Semiconductors). They tend to be poorly implemented, or subject to interference by New Zealand's short electoral cycle. Stability of funding is a key contributor to building research capacity and momentum. New Zealand's research investment strategy should have a long-term horizon (15 years plus) with short, medium and long-term funding opportunities, be non-partisan and funded appropriately to achieve the desired outcomes. The future research system should be based on principles of excellence, adaptability to both economic and societal change (without the instability associated with economic volatility), diversity, inclusion, transparency, and effective national approaches to investment.[14]

4. Globalisation of New Zealand's research system

Research is an international endeavour. We encourage the SSAG to consider ways in which our research system can more effectively participate in international research programmes and access (or continue to access) international research funds (e.g., Fontagro and Horizon Europe). Currently, New Zealand research organisations bear many of the costs of pursuing international funding as these funds are not typically fully costed. Solutions to this can include increasing universities bulk funding or changing the research costing model.[15] Participation in international research programmes means we build capability through exposure to offshore research talent, leverage investment and infrastructure, and ultimately achieve greater research impact.

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[13] Career support for researchers: Understanding needs and developing best practice approach (2012) A Toss Gascoigne and Associates, commissioned by the Department of Industry, Innovation, Science, Research and Tertiary Education, Australian Government.

[14] UNZ submission on Te Ara Paerangi - Future Pathways Green Paper.pdf (universitiesnz.ac.nz)

[15] UNZ Submission SSR Phase One.pdf