SCIENCE SYSTEM ADVISORY GROUP PHASE 1 SUBMISSION

Tēnā koutou
My name is Professor David Baxter, Director of the Ageing Well National Science Challenge, and I am making a submission on behalf of the Ageing Well National Science Challenge.

Question 1: What future should be envisaged for a publicly supported science, innovation and technology system?

Ageing Well National Science Challenge envisages in 30 years, a Science, Innovation and Technology system:

- *That has delivered on a set of national research priorities which should be defined now, and cover the long-term issues/opportunities that are likely to remain as priorities for the 30 years from now.*
- *Where Māori are equal partners with the Crown in further system design and priority determination.*
- *That is funded by R&D public expenditure beyond historic rates and at median OECD rates or better*
- *That builds on the National Science Challenges outcomes, as they were defined through broad public engagement and extensive industry and academic expertise.*
- *That ensures a truly representative approach, incorporating substantive and well-resourced contributions from the diverse communities across Aotearoa New Zealand.*

Question 2: What are the opportunities, challenges and barriers that need to be addressed to build a more thriving research, science, innovation, and technology system that delivers positive sustainable growth and prosperity for New Zealand?

There is an opportunity inherent in the fact that the best outcomes for Aotearoa NZ will occur when - as stated in the Rauika Māngai submission to the Te Ara Paerangi Future Pathways Green Paper in March 2022 – "communities determine the research agenda". The past ten years is evidence of the value, and growth of community-led research – making space for communities to both define the research questions so that they are meaningful and of priority to the community itself, and for communities to participate as an equal partner in all phases of the research, thereby growing Aotearoa's research workforce and capacity, beyond what has previously been conceptualised as the research community (i.e. universities, CRIs etc). Research-enabled communities can be empowered to proactively contribute to the national research endeavour, rather than be simple 'users' of research. Inherent in this is a move towards knowledge exchange, rather than a uni-directional, power-based knowledge transfer.

Another opportunity is that Māori researchers are global leaders within the international Indigenous research sector. An associated barrier with this opportunity is that Māori roles and leadership in the research sector are often deflated or devalued; te ao Māori and mātauranga Māori need to be privileged to counteract biases, and to contribute to a reconceptualisation of what we mean by 'growth' and 'prosperity' (i.e. beyond simplistic economic metrics).

Other general barriers in the current research, science, innovation and technology system are siloed approaches to the research agenda, and a lack of a clear pathway, resourcing and training for graduate researchers and early career researchers.

Question 3: What principles should underpin the design of a science, innovation, and technology system for New Zealand, given its demographic composition and distinctive cultural makeup, its geographical position, and its social, environmental and economic futures?

Through its 10 years' experience of commissioning impactful research, and working alongside research teams with shared desire to be efficient and engage internally and externally with integrity, mana and manaakitanga, Ageing Well National Science Challenge sees the following as key design principles:

Te Tiriti-based design
Ageing Well National Science Challenge sees this principle being applied at three levels:

At sector/legislative level - Key content and processes will need to be embedded into the new science sector (Crown) to work in Tiriti partnership: for example, new sections written in Parliamentary Acts for leaders to use as levers for implementation. Included within this aspect of Te Tiriti-based design, should be the privileging of Mātauranga Māori including Māori determination of mātauranga IP for whānau, hapū, and iwi, and sovereignty over all Māori data, rather than being 'siloed', e.g. into a limited funding stream.

At institution, research centre and project design level - Leadership (governance and management) at institutions and in research centres/teams, needs to align to the cultural changes previously articulated in Te Ara Paerangi; cultural competencies are essential for us to realise our collective potential. The Ageing Well National Science Challenge has demonstrated, particularly through its many kaupapa Māori research programmes, that being Te Tiriti led - with due attention to Māori focus and values, Mātauranga Māori, and community priorities – has the ability to deliver successful and enduring outcomes.

At workforce level - Recognition of the unique skills, experience, and servicers and cultural double time, that Māori provide within the science system. Māori should receive appropriate remuneration for the unique skills, experience, and services they provide (as stated in the Rauika Māngai submission to the Te Ara Paerangi Green Paper in 2022). Cultural competency in research training is also vital - research training starting at graduate research skills level should include training on Te Tiriti so that future scientists will understand the role and obligations that they will have to implement the principles and articles of Te Tiriti. This would include cultural competency and safety training.

Mission, and community-led research
Mission-led research provides an opportunity for the democratisation of science and innovation with some power and decision making going to communities. Communities will benefit most if their questions are answered. Many National Science Challenges have shown the success of mission-led research, and also how the science sector can be Tiriti responsive. There are multiple models of how mission-led research with Māori can be done successfully.

An important sub-design principle here, are mechanisms to harness the significant focus, energy, current capability and potential for further research workforce and infrastructure development, that resides within the community sector. Building and sustaining connections takes time and involves interactions beyond immediate research activities. Research capability development in communities is part of an authentic relationship and is part of ensuring benefits are returned to communities. These components are important for scaling up impact, which was an important objective for Te Ara Paerangi Policy Direction 1.2. Different research activities require different models of resourcing and the traditional paradigm of providing for costs of the core research team and the institution does not reflect the reality of working with communities.

Support for enduring relationships beyond project lifespans and project-specific funding, particularly for Māori communities
Mātauranga Māori and kaupapa Māori research methods require deep, trusted, and enduring relationships with communities. These relationships need to be supported beyond the lifespan of research projects. The new system needs to build in support mechanisms to allow relationships to flourish when funding is scarce.

A diverse research and science workforce in Aotearoa NZ, that mirrors society
Currently there are very few researchers who are, for example, Māori, Pacific, LGBTQ, refugee, or living with disabilities.

A system that attracts, retains and develops an excellent and diverse workforce at all career stages, with a particular focus on increasing support for early and mid-career researchers
This is to ensure career sustainability and drive efficiency through enduring research development and relationships.

Question 4: What is the role of public research organisations such as Crown Research Institutes (CRIs) in the New Zealand context?

No response.

Question 5: Does New Zealand need an advanced technology organisation doing applied and developmental research? If so, how would it be structured, governed, and organised? How would the private sector be engaged?

We are unsure whether such an organisation is needed or not, but if it is to be created, then Tiriti partnership needs to be embedded into the organisation's governance and management structures, by writing this into any Act that mandates the formation of this organisation, with the implementation of this including, for example, selecting Māori co-chairs and members from Māori leaders across sectors.

Question 6: Does New Zealand have appropriate mechanisms to develop the innovation pipeline, attract global partners and funding?

There need to be further mechanisms and support structures put in place, to realise the large opportunity Aotearoa has: i.e. to highlight and facilitate knowledge exchange for indigenous communities internationally, focused and/or conducted research, in which Aotearoa is a world leader.

Question 7: What is an optimal structure for managing mission-led and contestable research?

To achieve maximum benefit for the community with equitable outcomes, and therefore a return on investment, any such structure should be co-governed, co-led, and community-oriented.

Some important and specific areas in which such a structure might be implemented/operate are:

- *To manage and fund research involving the study of or the application of mātauranga Māori, it is essential that Māori leadership should be visible in science sector organisations at all levels, including governance and management, and organisational changes in MBIE – and other agencies - may be required for this.*

- *Regional hubs will help whānau, hapū, and iwi engage and shape investment decisions into Māori research priorities, and it will be important to consider inter-regional engagement to amplify outcomes for national Māori benefit. A national Māori Science Authority would provide a national level organisation to interact with the Crown and regional knowledge hubs.*

- *An independent Crown body of Pacific researchers to design and maintain a definition and framework for 'Pacific research' and 'Pacific research excellence'.*

Question 8: How should the government's own research needs be identified and addressed? How should such research be quality assured?

If research is mission-led, responding to community-determined national research priorities, then outcomes would inherently address the government's research needs. In regard to quality assurance, we think the mission-led research reporting principles that have been applied successfully in Ageing Well and other National Science Challenges – nurtured and enduring relationships, high trust, willingness to identify early and discuss issues that may arise, and impact-focused reporting metrics – would be helpful.

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Thank you for the opportunity to make a Phase 1 submission to inform the interim report on the science, innovation and technology system.

Ngā mihi nui

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