

**Bioprotection Aotearoa, a Centre of Research Excellence response to the Ministry of Business, Innovation and Employment Te Ara Paerangi future pathways green paper.**

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**About us.**

Bioprotection Aotearoa is one of the 11 Centres of Research Excellence that is funded by the Tertiary Education Commission. We exist to train the next generation of bioprotection researchers through world-class research that protects the productive and natural landscapes of Aotearoa New Zealand against biological threats and climate change. Our vision is one where we are working towards an Aotearoa New Zealand where communities are empowered with the knowledge to act as kaitiaki of our whenua, supporting healthy and resilient environments where our mokopuna can thrive. Our mission is to educate future bioprotection leaders through collaborating to conduct pioneering, multi-disciplinary research that addresses the environmental challenges Aotearoa New Zealand is facing. We draw on our collective academic strengths from 11 partner institutes to develop new and innovative solutions that protect our productive and natural landscapes from climate change, pathogens, pests and weeds. Our kaupapa is guided by a unique mātauranga Māori and science framework - *Te Taiao-a-rangi* - which supports a holistic, systems-level approach to achieving intergenerational environmental sustainability.

**General comments.**

The research, science and innovation system in Aotearoa New Zealand is long overdue for a review and we welcome the opportunity to give feedback to MBIE. There are long standing issues that influence and underpin a successful and sustainable research sector in Aotearoa New Zealand and the essence that, in part this paper has highlighted and will ideally address. These are:

**Stability** that allows for the growth and development of an integrated and intergenerational approach to the research workforce. This includes financial stability through long term funding including a committed percentage of GDP to reflect this.

**Efficient and nimble structures that reflect the nature of research.** Research and the development of innovative and novel ideas are produced in spaces and systems that allow for creative thinking.

**Inclusion** of a diverse group of researchers that contribute to meaningful outcomes and impacts for the improvement of Aotearoa New Zealand's wellbeing. These researchers also need to feel safe to express themselves and reflect their full identity without persecution.

**Independence** – International and global context. There needs to be a clearer balance between contributing to issues of global significance i.e. climate change; societal cohesion and addressing specific national issues. At present much of the prioritisation occurs around issues only relevant to a

few end users with little obvious and tangible benefit to the well-being of Aotearoa New Zealand. Establishing a global, independent review panel to provide strategic input would help define impact.

**Governance including a treaty-led approach** - We strongly advocate for a review of government leadership and creation of a Ministry dedicated to RS&T as well as Tertiary Education to give it the focus that is needed. A treaty-led approach at the governance level will ensure that Māori have an opportunity to be represented at the highest level, where resource decisions are made.

**Increase in funding that matches or exceeds inflation rates combined with minimising wastage** - there is currently no planned increase in the RS and T budget. We must therefore seek to eliminate wastage within the system through consolidation of administration and overlapping areas.

There are elements of the research sector that do work such as the creation of platforms (Genomics Aotearoa, NSC and TEC funded CoREs) that provide needed infrastructure and enable cross-disciplinary and multi institutional work that is working towards creating impact. The National Science Challenges have had mixed successes and many of us have had both positive and negative experiences. The negative experience has largely come about from institutional capture, which contradicts the underlying philosophy of collaborations across parties to achieve stated NSC missions.

Funds for early and mid-career researchers through the MBIE Whitinga Fellowship, Rutherford Discovery Fellowships and fast start Marsden are an effective mechanism to support our best researchers to have impact. This could be expanded into other contestable funds more readily if: 1. institutions did not insist on full overhead charges on post-doctoral positions, or 2. consider block funding of overheads at the institutional level.

## 1. Ngā whakaarotau rangahau | Research priorities

This section recognises many issues that are valid from our collective experiences. While the NSCs are viewed in a positive directional and transformative change for RS&T, however experience is that these are institutionally captured and the fragmented funding going towards bits and pieces of research are based on individual interests, or a personalised work stream rather than what needs to happen to achieve outcomes and impact. From our perspective and experiences there are a number of big research priorities that deserve a platform independent from institutional capture. This is essential to progress research. Some of the other points raised in this paper can be addressed through consolidation of research providers and stability of the workforce.

Responses to specific questions

### 1. What principles could be used to determine the scope and focus of research priorities?

Suggested principles include: Leadership on issues (e.g. CC and water); Open-mindedness (diversity of perspectives); accountability (to who?) integrity; equity (to encourage diverse participation); science excellence (underpins knowledge creation that leads to wellbeing). Again a clearer balance between contributing to issues of global significance and addressing specific Aotearoa New Zealand

problems. At times the two coincide and we can use A-NZ as a model to shed light on issues of international significance but often A-NZ research can become short-term, parochial studies relevant to a few national end-users.

## 2. What principles should guide a national research priority-setting process and how can the process best give effect to Te Tiriti?

Core principles are diversity and inclusion: Science excellence is fostered by having all minds and the best minds working creatively together.

A greater emphasis on Te Taiao, through conservation and restoration of our unique taonga species, ecosystems, landscapes and natural resources. Much of research to date has swayed far too much towards productive sectors and economic bottom line which has led to a collapse of many ecosystems that sustain us economically as well as community health and wellbeing.

Te Tiriti is best served by an RS&T system that is underpinned by: Manaakitanga; Kaitiakitanga; Kotahitanga and Whanaungatanga. This is a culture that needs to be fostered throughout the system top down and bottom up - rather than just words on a page.

## 3. How should the strategy for each research priority be set and how do we operationalise them?

The National Science Challenges were an attempt to operationalise research priorities in mission-led research that was collectively decided by consultation with the A-NZ public. There are other platforms such as CoREs (TEC funded) which also operationalise identified priorities but with a training and education focus (workforce), such as biodiversity and conservation, biosecurity, climate change etc. There are many benefits in having these platforms as a way to operationalise national research priorities. However issues arise when there is institutional capture instead of having the best and most appropriate skill set which also speaks to diversity and inclusivity. All things considered multi-disciplinary platforms formed around key national research priorities appear to work the best.

Ultimately research excellence in its entirety (including mātauranga and Te Ao Māori representation) should be at the forefront of decision making and thus a stronger representation of excellent researchers at various stages of their careers should be at the table rather than administrators or institutional representatives.

## 2. Te Tiriti, Mātauranga Māori me ngā wawata o te Māori te Tiriti, Mātauranga Māori and Māori aspirations

Research with and for Māori must translate into tangible impacts for Māori. Research that purports to work with Maori must prove how it adds value to Māori communities. In our CoRE we have risen to the challenge of being treaty responsive by having co-governance and Kāhui Maori leadership to ensure that mātauranga and Māori oriented research gets a space that is exclusively led by Māori and for Māori. It is also essential that Māori review the outcomes of mātauranga based research and funding.

### Responses to specific questions

#### 4. How would you like to be engaged throughout the Future Pathways programme?

Māori need to be consulted before key decisions are made as well as who will be the members invited onto the Te Ara Paerangi reference group. However it needs to be recognised and addressed that there currently is a shortfall in capacity and capability. Thus, all these new initiatives will likely put increased pressure on the same set of people who currently are contacted at the last minute to advise on mātauranga and Māori focused research at the expense of their own career growth.

#### 5. What are your thoughts on how to enable and protect mātauranga Māori in the research system?

Enabling and protecting Mātauranga Māori is what we are doing in Bioprotection Aotearoa CoRE. This is achieved through purposely ring fenced funds and projects for Maori and Pasifika that are managed by Maori and Pasifika researchers. Specifically mātauranga Māori is only carried out by and for Maori. We want to also emphasise the ongoing issues around IP/ownership of mātauranga. For example, when working certain institutes, there is a bullish approach to 'owning' everything – which stops any opportunity to work with Māori as it reiterates the Māori perception of a commercial grab by these entities. This has happened to our Māori researchers and their communities twice in the last few months. This has resulted in terminating the contract to find alternatives because of the institutions' inability to understand the impact of their 'commercial' approach.

#### 6. What are your thoughts on regionally based Māori knowledge hubs?

This makes sense. Research platforms that have identified their work of importance to Māori communities should be strengthening connections with regionally based Māori knowledge hubs so that work remains relevant and likely to have outcomes and impacts for the community.

### 3. Te tuku pūtea | Funding

Overall, the contestable funding system of MBIE, Marsden, HEC are, in theory, fit for purpose. The problem lies with increased platforms that far outstrip any increases in funding and that these funds need to be longer in their term. Research is an iterative process that needs time to build upon knowledge created.

The paper outlines the issues with the current system that we have experienced and we concur with these observations.

- Linking funding to Priorities and development of priorities that have broader benefits than a small group of end users.
- Reducing problems of unproductive competition can be partly solved through the consolidation of research providers.
- Ensuring research organisations can adapt to changing priorities (providing a stable workforce of researchers with reduced administration and governance loads. Also removal

of business models that require overheads for our early career researchers - this has serious negative impacts for growing our early career researchers and workforce)

- Properly funding research that is important (whoever makes these decisions, these must be made with a long-term view, highlighting covid response as a good example).

Responses to specific questions

#### 7. How should we determine what constitutes a core function and how do we fund them?

Core functions should represent the fundamental areas needed to be a healthy and thriving nation with a long-term outlook. These should include funding long term monitoring programmes, maintenance of national collections (and supporting taxonomic expertise) so we can better predict trends that will impact upon several areas including food sovereignty, land productivity, carbon budgets, water quantity and quality, biodiversity, education, health, security and social cohesion. Funding core functions should not be part of the contestable landscape, but sufficient checks and balances (i.e. independent international reviews) need to be in place to avoid institutional capture and non-delivery.

#### 8. Do you think a base grant funding model will improve stability and resilience for organisations? How should we go about designing and implementing such a funding model?

Yes, although the current providers themselves need reviewing and refreshing to ensure that they are fit for purpose to deliver core functions. Funding research platforms that are formed around core functions/research priorities would be the bulk of the funding, with a percentage for contestable including funding ECRs to ensure that fresh ideas are included and our workforce is a sustainable and diverse career pipeline.

### 4. Ngā hinonga | Institutions

#### 9. How do we design collaborative, adaptive and agile research institutions that will serve our current and future needs?

This cannot be designed. This must come in the form of a culture change. As researchers, we find that institutions are rigid and obsessed with administration to the point that this impedes research, is a budget burden and thus, progresses toward delivery of outcomes. As a TEC funded CoRE we work with both CRI and University partners. Universities have a clear role and mandate in training the next generation of researchers as well as the generation of new and novel ideas. CRIs have traditionally employed graduates and provided the implementation of the research. While there are exceptions to that, generally this is how we have mapped our research. It is timely to consider whether our institutions are the adaptive and agile research providers that will serve our current and future needs. Relationships between researchers are what is key to carrying out successful research more than the existence of Institutions. Thus, there needs to be fewer institutions that will lead to

reduced administration and the associated costs. These institutions need to be more user friendly and service provider oriented than what they currently are.

#### 10. How can institutions be designed to better support capability, skills and workforce development?

The majority of the focus of institutions should be supporting their staff to do the work. People are their most valuable assets. Unfortunately, this does not seem to be the case for many institutions. The current business models mean that most research is under budgeted because of huge overheads. We need to invest more in our ECRs and to do this, institutions should not be charging crippling overheads that range from 115% to 135%. This makes employing ECRs near impossible on tight research budgets and creates a bottleneck where institutions use funding for PhD scholarships (generally no overheads) rather than postdoctoral positions - where do the PhD's that are trained go?

#### 11. How should we make decisions on large property and capital investments under a more coordinated approach?

This should be aligned with core functions and should include the maintenance of long term sites and trials such as establishing a network of long-term monitoring sites like the US LTER programme or EU Environmental network and link to national collections. Any sites that are of national importance for gathering long term information are often reliant on a particular institute to continue funding and thus are vulnerable when funding is tight. More central funding approach needed.

#### 12. How do we design Te Tiriti enabled institutions?

Te Tiriti partnership should be at the governance level. Leadership in this area is key to achieving Te Tiriti partnerships and linked to regional Māori hubs where needed. We have achieved this in Bioprotection Aotearoa, with 50% of our board being Māori membership and a Kāhui Maori supporting Māori researchers and outcomes for Māori. This represents true partnership and helps support outcomes for Māori as well as providing safeguards for data sovereignty.

#### 13. How do we better support knowledge exchange and impact generation? What should be the role of research institutions in transferring knowledge into operational environments and technologies?

There needs to be a better communication channel between research providers and beneficiaries of the outputs, outcomes and impacts. Often important research goes unnoticed due to a lack of connectivity between providers and users. There needs to be a dedicated mechanism to ensure that research is communicated and transferred to those who can benefit from the work. For example NSF grants have a specific section on outreach. We need dedicated science outreach people embedded within institutions whose job it is to understand what we do and communicate Science outcomes quickly and effectively to policy makers, local stakeholders, even school curriculum developers. Also, and critically, Covid has taught us how crucial it is to communicate science in a way that is accessible for people who are not scientists.

## 5. Te hunga mahi rangahau | Research workforce

### 14. How should we include workforce considerations in the design of research Priorities?

Research priorities must have long-term funding commitment that allows for the development and retention of staff – think of a career pipeline approach. Research priorities should be more connected to our education system so that we are developing researchers from their early years.

### 15. What impact would a base grant have on the research workforce?

A base grant would provide some stability and allow work to progress in those identified prioritised areas. There should be a capped amount of funds that go towards administration and governance to ensure that the bulk of the funding goes towards research and researchers. A reduction in overheads paid to the institutions should be a priority. We currently have an excess of administration and governance

### 16. How do we design new funding mechanisms that strongly focus on workforce outcomes?

The removal of overheads from Post doctoral fellowships and ECRs. This would create more opportunities for ECR which are currently lacking. Reduction in overheads for research staff – this allows for more staff time to be funded. Minimum FTE to be increased.

## 6. Te hanganga rangahau | Research infrastructure

### 17. How do we support sustainable, efficient and enabling investment in research infrastructure?

These should be aligned or championed by research priorities and/or research platforms and centrally funded so that the burden does not fall upon an institute and that institutional capture is avoided.