The Deep South Challenge: Changing with Our Climate Submission to *Te Ara Paerangi Future Pathways Green Paper (March 2022)*

Overview

This submission is based on the Deep South Challenge: Changing with our Climate experience of funding and delivering expert climate modelling and adaptation research and science. This submission sits alongside the submission by the *Vision Mātauranga Engagement Team, Deep South Challenge: Changing with our Climate* to *Te Ara Paerangi Future Pathways green paper*. We have not commented on other views on the science structure in Aotearoa NZ.

At the onset of the Deep South Challenge, we developed a clear vision, mission, objectives, and research strategy. A large amount of research is needed to prepare Aotearoa for the climate change that is locked in, as well as those impacts which are still uncertain. We invested resource in developing relationships across research institutions, with a strong focus on encouraging interdisciplinary and inter-institution project teams, to reduce silos and competition and increase collaboration for the public good. We also established a standalone engagement research programme, a move which triggered innovation in engagement approaches across the National Science Challenges. It was important for us to prioritise research (and be clear on what research not to prioritise) given the limited sum of funding in the Challenge.

It took around two years for the Challenge to do this initial work. Currently, two years before the Challenge ends, we are about to finish distributing funds to give enough time for new research projects to be completed and results communicated or engaged with. Important areas such as climate adaptation (and mitigation) need continuity of funding that does not change the funding arrangements and/or institutions every 5 to 10 years.

Nevertheless, the smaller time horizon for the Challenge has encouraged innovation and collaboration in both research and methods for commissioning research.

We found the separation of funding from delivery of research was important. Independent National Science Challenges can assess which organisations can deliver the research required to achieve respective missions. Governance by an independent board also allows for objective investment across appropriate institutions. Contracting with clear deliverables and milestones has meant that we have had good oversight of spending public funding.

We agree that there is “persistent uncertainty about the value of investments” and a recent effort to understand where climate change research funding was being directed (via investment landscape mapping) made it clear that many research institutions and government departments do not keep this information. Furthermore, of the funding information we were able to collate, only $22m of

$329m from 2010 to present was invested in projects by Māori, for Māori, quantifying the lack of equity in this aspect of the science system.

Future Crown research funding should not be viewed in a piecemeal way. Other funding, such as the Performance Based Research Fund should also be considered when looking at the future RSI system.

Responses to questions

Below we have responded to specific questions in the Te Ara Paerangi Future Pathways green paper that are particularly relevant to the Deep South National Science Challenge. Note that questions 4-6 are responded to in more depth and with more specific context in the accompanying Vision Mātauranga Engagement Team submission.

Question 1:

What principles could be used to determine the scope and focus of national research Priorities?

- The priorities need to maintain a focus on useful, usable (and ultimately "used") research. There needs to be a clear picture of what the body of research is (to reduce duplication and encourage innovation), what it is achieving and how it can be used. Priority areas need to develop central information hubs that offer guidance and information, in different ways according to the differing needs of the audience. In the climate space, outputs of stakeholder-relevant research are often not easily accessible and we have heard from many of our stakeholders that they do not know where to go to access information to adapt to climate change.
- Climate change is a great example where core research can become commercially valuable in a very short time. We strongly support standard open access requirements for data and outputs from all publicly-funded research. This also requires clear separation between core research and commercial services within research institutions, and data provision to be explicitly resourced.
- Research priorities need to focus on both problems and opportunities. This requires having decision makers who are as familiar with the problems (social, cultural, economic, political as well as scientific) as well as the opportunities. The priorities of unrepresented groups in decision-making structures are easily overlooked or underfunded. Our landscape mapping work has shown that climate change physical science is typically funded for 50% longer and for twice as much money compared with social science. Wicked problems such as climate change are social, cultural and economic issues as much as physical ones, and we need to resource our research response appropriately.
- Climate change as a research challenge is present in all areas of society in Aotearoa. Principles must recognise that silo-ing research into 'topic' areas can create perverse outcomes. Conversely, understanding wicked problems in their 'holistic' context will enable traction and create better outcomes.
- The research community in New Zealand is very small (especially in some areas); as they often cannot be avoided, conflicts of interest need to be dealt with transparently.
- We discourage any new priorities that are developed from reinventing the wheel. For example, using the principles above could be used to pick the (five?) most important UN Sustainable Development Goals to the future functioning of Aotearoa. These high-level goals

can bring integrity and focus to research. The NSCs have provided a good template for mission-driven research and our learnings about good process as well as barriers should feed into the new structure of priority development.

Questions 4-6:

Substantive responses to these questions are covered in the accompanying Vision Mātauranga Engagement Team, Deep South Challenge: Changing with our Climate submission.

Question 10:

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

- Equity targets in all areas of the workforce from governance to early career researchers (for tangata whenua primarily, and also for women, BIPOC, LGBTIQ+ people, and people with disabilities) will deliver better outcomes.
- Diversity in the workforce could be supported and encouraged with more opportunities for flexible working and regular reviews of the workforce and pay gaps by institutions.
- Skills outside of research areas such as awareness and communication skills would help with the research being communicated to end users and knowledge exchange in general.
- Engagement and science communications specialists should be embedded into projects that have stakeholder value; overall, this capability could be enhanced and valued more in the science system.

Question 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?

- Every National Science Challenge has prioritised and pioneered different structures and methods for 'knowledge exchange' and 'impact generation. These lessons need to be synthesised, and this can't be done by Directors, Managers or researchers alone. It must involve engagement practitioners and stakeholders.
- We support the continuation of knowledge broker/exchange roles so that relationships can be maintained across projects and through time, as a prerequisite for effective knowledge exchange and co-creation.
- Stakeholder engagement needs to ensure that stakeholder time and energy is valued as much as researcher time and energy. For projects that strive for co-creation, engagement must be funded prior to research questions being developed, and power sharing and responsibilities decided up front. The Challenge has pioneered various methods for co-development, with successes as well as disappointment. True co-development is labour intensive but leads to research questions that will answer real-world questions, enabling better integration of stakeholders with the research and more buy-in to research outputs.