



## Te Ara Paerangi Future Pathways: Green Paper Consultation

Resilience to Nature's Challenges National Science Challenge submission

---

**Directorate Office:**  
GNS Science, Level 1  
1 Fairway Drive, Avalon,  
Lower Hutt 5010

**E:** [resiliencechallenge@gns.cri.nz](mailto:resiliencechallenge@gns.cri.nz)  
**P:** 04-570 1444  
[www.resiliencechallenge.nz](http://www.resiliencechallenge.nz)

---

*Image above: Taranaki maunga, photo by Yoann Laheurte*

---

## BACKGROUND

This submission is made on behalf of the Governance Group, management, and science leadership of the Resilience to Nature's Challenges National Science Challenge.

Resilience to Nature's Challenges - Kia manawaroa Ngā Ākina o Te Ao Tūroa - brings physical and social scientists, economists, mātauranga Māori experts and engineers together with research users to co-create new knowledge and solutions to accelerate Aotearoa New Zealand's resilience to ever-changing natural hazards. The Resilience Challenge represents a critical mass of Aotearoa New Zealand's hazard and resilience research across ten Programmes clustered under two major themes: Multi-hazard Risk Methodologies (MRM) and Resilience Practice Methodologies (RPM). Through MRM we are developing Aotearoa New Zealand's first integrated methodology for quantifying multiple, intersecting and cascading disaster risks, their frequencies and consequences, all incorporating a Te Ao Māori perspective. This relies on underpinning research programmes about earthquakes/tsunami/landslides, coastal inundation/erosion, high-impact weather/wildfire, and volcanoes. The RPM theme builds an overarching framework for resilience science and mātauranga-into-practice and policy, across all scales, industries and communities, including programmes specific to resilience for Māori, urban, rural, and built environments of Aotearoa New Zealand.

## TE TIRITI, MĀTAURANGA MĀORI ME NGĀ WAWATA O TE MĀORI TE TIRITI

### MĀTAURANGA MĀORI AND MĀORI ASPIRATIONS

The Resilience Challenge endorses the submissions of the Rauika Māngai, other Māori organisations and Māori kairangahau, and 'Te Korenga' the submission of the Māori and Tagata o le Moana ECR forum, acknowledging this is the system they will inherit. The Resilience NSC supported the development of the Rauika Māngai's *Guide to Vision Mātauranga*<sup>1</sup>, the work to develop *Te Pūtahitanga: A Tiriti-led science-policy approach for Aotearoa New Zealand*<sup>2</sup>, and emphatically endorses the goal of empowering Māori knowledge, resources and people in the RSI system.

Māori priorities should be determined by Māori, for Māori, and implemented by Māori, within the context of an equal partnership between Tangata Whenua and Tangata Tiriti.

There is much to be learned from the range of successful approaches to enabling, elevating and embedding mātauranga across the NSCs, and the 'experiment' of the last 8 years (and counting) via many of the NSCs moving towards a Te Tiriti-led framework for governance, management and research activity. There is also a range of successful approaches across the NSCs for growing capability and capacity through nurturing early career Māori scientists including providing spaces for Māori researchers to connect, share and support each other as well as providing leadership development opportunities.

---

<sup>1</sup> [Rauika Māngai A Guide to Vision Mātauranga FINAL.pdf \(maramatanga.co.nz\)](#)

<sup>2</sup> [Te Pūtahitanga: A Tiriti-led Science-Policy Approach for Aotearoa New Zealand | Ngā Pae o te Māramatanga \(maramatanga.co.nz\)](#)

## NGĀ WHAKAAROTAU RANGAHAU - RESEARCH PRIORITIES

### Key Points

- Well-designed Te Tiriti-led, multi-institutional, collaborative research platforms have the power to unlock RSI system potential and accelerate research uptake
- Identification and establishment of Priorities should be Tiriti-led and undertaken utilising well-planned participatory engagement processes
- The experiences of the NSCs provide a range of models and experiences to learn from in design and implementation of Priorities
- The scope and complexity of the problems being addressed by Priorities needs to be carefully considered to ensure they are designed appropriately for maximising knowledge exchange and science impact
- Priorities (with the right scale) should play coordination and facilitation roles across the RSI system

The Resilience Challenge endorses the concept of 'Priorities' as a means of addressing national issues, requiring the application of multiple strands of knowledge in innovative ways. The experiences of the National Science Challenges and Centres of Research Excellence (NSCs and COREs) have demonstrated the value and effectiveness of collaborative programmes working in partnership with the users of research science to co-design and deliver portfolios of disciplinary, multi-disciplinary and transdisciplinary research to solve national scale problems.

We think the process to identify Priority areas should be separate from central government, Te Tiriti-led, and involve participatory co-design processes that bring together diverse knowledges and perspectives.

We think funding for Priorities should be long-term (preferably at least 8-10 years), to provide alignment to national strategies, certainty for establishing and building teams, and allow for a long-term view of research planning and engagement, investment in relationships and capability, and to ensure effective stewardship of science into policy or commercialisation. Reviews of progress and achievement can be regularly scheduled to enable changes in direction or re-allocation if necessary. Processes can also be established to ensure the barriers to new entrants joining a Priority are mitigated. This could be through targeted funding rounds or resourcing for engagement and coordination, as well as flexibility in contracting. Flexibility in timeframes is particularly relevant when enabling the evolution of tikanga-based relationships and the joint identification with tangata whenua of areas for evolving research investment.

The experiences with the range of NSCs has shown the importance of strong partnerships with Māori, multi-disciplinary, multi-agency approaches, and effective engagement to ensure ongoing alignment with needs, and creation of effective pathways for uptake and implementation of research. Different Priorities will have different scales and breadth of focus, requiring a range of establishment processes, and management and governance arrangements to suit the specific context.

The Resilience NSC has sought to develop a range of projects and programmes within its 'challenge', that address specific questions and progress towards the challenge goal of improved disaster resilience. This has created a 'portfolio' approach, with a mix of mātauranga-based research,

kaupapa Māori research, social and physical science, and engineering research to address a series of 'sub-challenges'.

We have worked to co-design research focus areas with a diversity of users from across a range of sectors. We have sought to coalesce the 'right' team around these 'sub-challenges', provide confirmed funding for 5 years (in Tranche 2), and let the teams manage their programmes and lead the relationship and partnership elements. This decentralised approach has the benefit of closer connections between the research and its users, especially where there is a strong place-based element with the work, such as with our kaupapa Māori projects. The role of the Challenge Directorate is to ensure coordination of effort and draw threads together from across the portfolio and make the necessary linkages with relevant external research, and connect with national level stakeholders in common to each of the programmes.

We think an important design consideration is the extent to which a Priority serves a narrowly-focused science 'mission', or seeks to address a much broader societal 'challenge'. Missions are typically defined by a relatively narrow set of technical objectives and may be addressed successfully within the RSI system. 'Challenges' are usually more complex sets of issues, sometimes 'wicked' in nature due to a range of social, cultural, and structural factors which require uncertain actions beyond the direct influence of RSI inputs. The current NSCs are charged with addressing significant societal challenges (such as national-scale disaster resilience), with ambitious goals which largely exceed the capacity, operating mandate, and science-only resourcing of the NSCs to achieve in total. NSCs have sought to minimise barriers to success and maximise impact through a range of approaches including co-design of research, and co-production of solutions with users based on two-way knowledge exchange. In designing Priorities, consideration should be given to the extent to which a Priority might operate (depending on the domain) more as a 'boundary organisation', bringing together science and policy and users organised (and funded) around a set of shared objectives, rather than sitting exclusively within the RSI system. While linear technology transfer can be successful and creates impacts (with inherent lag time), accelerated and transformative impact is more likely to be achieved through co-designed approaches undertaken in partnership with users and involving two-way exchange. While much of the RSI system describes its collaborative arrangements in this way, the institutional and resource settings do not currently fully enable such sharing of decision-making and resources.

We support the full range of research activity being covered within Priorities. As described above, we recommend exploring the opportunity to fund a wider range of supporting activities to enable more effective uptake and implementation of science outcomes.

We support the proposal that there can be a wider set of research activity related to but outside that funded by a 'Priority', but that Priorities could deliver significant benefits through providing a locus of coordination across a domain or area of research. A coordination function should be adding value across the system (such as creating opportunities, and easing engagement burdens for diverse groups of researchers and users) and would need careful governance to minimise the risk of (or perception of) institutional capture of a Priority/area of research.

Many NSCs (and COREs) have played this type of role to useful effect, utilising their convening and facilitation 'power' to bring groups together and create collaboration and partnership opportunities, especially where there are issues sitting across the boundaries of programmes.

## OPERATION OF PRIORITIES

### Key Points

- The operation of Priorities should be Tiriti-led
- The successful operation and delivery of Priorities will be highly dependent on system governance that can reduce the barriers to cross institutional collaboration
- There is an opportunity to build on the culture of highly collaborative research seeded by the NSCs and COREs
- Establishment processes (including realistic timeframes) need to be carefully considered and emphasise building trusted relationships across the system
- Creation of research and project groups needs to emphasise team fit and willingness to contribute to collective efforts focused on shared (cross-institutional) objectives
- Research leaders in Priorities have a key role as system connectors and 'navigators'
- Successful operation will be highly dependent on design features across other elements of the RSI system (mātauranga and Māori aspirations, core funding, institutions, workforce, infrastructure, etc.)
- Future arrangements need to ensure continuity of relationships from earlier funding mechanisms (eg NSCs)
- Consideration should be given to arrangements that close the 'implementation gap', such as through 'boundary organisation' models and knowledge exchange hubs
- Operational arrangements should build on the lessons from the NSCs to improve affordability and research accessibility for users

The evolving (and varied) NSC models provides a useful menu of approaches for how Priorities can be identified, prioritised, managed and governed. Priorities should reflect needs identified in relevant strategies (eg National Disaster Resilience Strategy) but should be developed independently from central government to prevent potential agency or sector capture.

The Resilience Challenge experience in priority setting and operation set-up is that several stages can be involved, and these stages require resourcing and organisation that needs to be built into an establishment phase.

Relationships across the RSI system, with Māori, and with users and partners are central to enabling the right engagement for both priority-setting, strategy development, and establishing the right cross disciplinary and mixed researcher/users teams that may be required to deliver a Priority. It may be necessary for an initial stage to be the establishment of relationships and linkages prior to strategy development. There may be existing capability in the system naturally aligned to a Priority, or a champion group may need to be stood-up to lead establishment processes. This champion or group needs to have the trust of all participants in the process.

The establishment process needs to be carefully facilitated to ensure that all participants bring their ideas and capabilities and apply them, not as a vehicle for funding their pet projects and issues. This requires an environment of high-trust, because contributors may not be assured of receiving research funding out of the process. This speaks to the importance of the base/core funding arrangements to create the right conditions overall in the RSI system to incentivise collaboration rather than viewing a Priority (as perhaps NSC were initially viewed) as just 'another funding source',

rather than as a mechanisms to create opportunities. It is important that the Priorities are widely understood for their collaborative culture, and Te Tiriti- and mission- or 'challenge'-led focus.

The focus in operationalising a Priority needs to be on creating the right conditions and processes to bring groups of willing participants together coalesced around a shared vision associated with a long-term, strategic goal. The NSCs (and COREs and in many cases SSIF platforms) have broadly seeded this culture which should be leveraged for operationalising Priorities.

In the natural hazard/disaster resilience area the other issue to consider in operationalising Priorities is the implementation gap. Setting aside the issue of lag time between research and its application, the resilience area is dominantly public-good, with a focus on behaviour change, and policy and practice changes rather than commercial opportunities. The agencies, iwi/hapū and businesses we work with are not resourced to undertake translation and wider implementation of research outputs.

We think that where the mission of a Priority seeks to address outcomes beyond the RSI system, that there is an explicit mandate for partnering (and power and resource sharing) with those with the accountability or influence to achieve change (eg a government agency with lead responsibilities through a strategy or programme, or an iwi/hapū in a particular rohe).

Whatever mechanism(s)/arrangements are established for managing Priorities it is critical that their design considers how to ensure the continued stewardship of relationships and knowledge (and its exchange) arising from the prior ten years of NSCs.

#### Role of research leaders in the Priorities

We endorse the need to carefully consider the important role of research science leaders in development of future arrangements of Priorities. Selection of the right team and collaborative leadership has been critical to successful operation of the Resilience NSC. Successful collaborative research requires Programme leaders to be leaders in their discipline/specialty, well connected with research users, collaborative across their discipline, as well as strategic 'connectors' and 'navigators' across the wider RSI and (ideally) policy worlds. Research leadership also needs to be reflective of diversity in the community and have the capabilities to engage effectively in Te Ao Māori.

Research Programme leaders in the Resilience NSC have contributed to strategy development, as well as leading development of research plans to implement the strategy. They are responsible for establishing multi-disciplinary and multi-institutional teams, growing research leadership capability, and managing relationships with co-development partners. We have also sought to grow diversity in research leadership through providing pathways for Māori and early career researchers. We have also sought to reduce the 'double-shift' burden<sup>3</sup> on our Māori researchers through additional capacity to support non- Māori researchers to build their capability to engage in Te Ao Māori.

It is worth acknowledging that much successful research activity is often enabled through the coordination efforts of research leaders to piece together components of related funding sources (Endeavour, NSC, SSIF etc.) to enable longer-lived or larger scale programmes. This coordination can also serve to simplify engagement for stakeholders in a highly fragmented funding system, and make research more accessible. Well-designed Priorities should negate the need for research leaders to 'defragment' the funding system in this way.

---

<sup>3</sup> [He aronga takirua: Cultural double-shift of Māori scientists - Jarrod Haar, William John Martin, 2021 \(sagepub.com\)](https://doi.org/10.1080/13602011.2021.1988888)

## TE TUKU PŪTEA - FUNDING

The Resilience Challenge supports the need to consider baseline institutional funding to ensure counter-productive competition is minimised, collaboration and partnership across the sector is enabled, and that critical research functions and 'core' enabling infrastructures is maintained. The last decade has also demonstrated the incredible resourcefulness of the science system to respond to major events and crises such as earthquakes, tsunami, floods, and pandemics. In most cases there was no existing funding to enable this activity, with work supported only by a combination of limited new money or re-prioritised contracts. On top of these discrete events are the long-term cumulative effects of weather hazards that are being amplified by sea level rise and climate change. The Resilience Challenge is unique among NSCs in having an expectation stipulated in the National Civil Defence Emergency Management Plan to play a role in post-event science response coordination. We are currently not resourced to plan for or undertake that function and are currently awaiting guidance from MBIE. Future arrangements and the operation of Priorities need to explicitly consider the role of the Priority in responding to national emergencies.

We think clarity on base funding will improve system stability and enable more innovation and opportunity-seeking, and development of deeper partnerships across the system and with users. This may be particularly relevant for stewarding deeper and more meaningful and long-lasting partnerships with Māori, and reducing the risk of relationships ending when project funding ends.

Similarly, core funding/baseline funding should enable the continued stewardship of new knowledge following the end of any Priority.

## INSTITUTIONS

If the goal is better collaboration across the RSI system, and deeper partnerships with Māori and others, then institutions need to be incentivised to collaborate, through shared objectives and careful design of Priorities.

## KNOWLEDGE EXCHANGE AND RESEARCH IMPACT

The NSC experiences (and those of other collaborative research programmes) can helpfully inform future arrangements to ensure effective knowledge exchange and research impact, and improve accessibility of research for users. As noted elsewhere in this submission, co-development modes of partnership and collaboration (as established in design of the NSCs) provide a range of models for how research science can be undertaken that is 'useful, useable, and used'.

Part of the experience from the NSCs has been the opportunity to test and trial processes to connect new science with innovation, commercialisation, and policy development processes. Lessons from the NSCs will be essential for informing good-practice in maximising research impact from Priorities.

## WORKFORCE

It is important that design of Priorities carefully considers issues of workforce development, particularly the pakaru pipeline for growing Māori research capacity<sup>4</sup>. We endorse the statement in the Rauika Māngai submission that “The ‘system’ will be designed to empower the diversity of Māori science and rangahau driving the research direction in all places – academia, wānanga, research institutes, whānau, hapū, iwi, pan-tribal, and Māori organisations”. Priorities, especially those operating over an extended period, will necessarily have interests in ensuring diversity and capability development of the workforce, and succession planning and opportunities for early and mid-career researchers. A science sector working in Tiriti partnership will give Māori tino rangatiratanga.

The Resilience NSC supports the need for easier movement between institutions in Aotearoa New Zealand, to allow for alternative career development pathways for all in the RSI system. This could be enabled through the base grant to collaborating parties/institutions, with contractual requirements through the Priorities programme for its utilisation in support of those researchers participating in the Priority.

Allied to this is a need to promote a wider view of ‘excellence’, that accounts for a wider range of contributions, cultural context, and impact that researchers make, especially for those shouldering the additional load of community engagement, leadership and cultural ‘double-shifts’<sup>5</sup>. This wider consideration is essential to reduce barriers to continued participation, enable workforce progression, and development of a more diverse and equitable RSI workforce.

---

<sup>4</sup> <https://ojs.victoria.ac.nz/nzaroe/article/view/6338/5497>

<sup>5</sup> [He aronga takirua: Cultural double-shift of Māori scientists - Jarrod Haar, William John Martin, 2021 \(sagepub.com\)](#)