



# Te Ara Paerangi Future Pathways

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A Better Start E Tipu e Rea National  
Science Challenge submission

National  
**SCIENCE**  
Challenges

A BETTER  
START

E Tipu e Rea

## Introduction

There will be many excellent submissions made from large organisations, including universities. Our submission aims to complement these other more broadly encompassing submissions by taking a more focused approach relevant to National Science Challenges (NSCs), and child health and wellbeing research.

There are many strengths to the NSC model that deserve further consideration in looking at research funding and delivery models.

The NSCs are New Zealand's first 'mission-led' approach to research and we now can see what that means in practice for outcomes for tamariki and whānau. Traditionally, Western research is science-led in which excellent science is conducted and ultimately published. However, often the translation of the research findings to policies or practices to enhance the wellbeing of our tamariki does not occur. A major reason for this is that traditional science-led research is fragmented with a lack of opportunity to follow the pathway of sequential research projects that progress from discovery and testing to implementation. Given our low funding rates based per capita or GDP, competition is intense and cohesive research leading to successful implementation and measured benefit unlikely.

The NSC mission-led approach requires considerable time and investment to build relationships with stakeholders and communities to co-create research that will make a difference to our communities. NSCs have championed new ways of early community engagement for co-development of research projects, including ongoing resourcing to maintain these relationships. There is much to learn from this for future collaborative research planning.

NSC collaboration crosses competitive boundaries of research institutions to build "best NZ teams". There has also been success in developing co-funded (cross-Challenge, with government departments and NGOs) projects and initiatives.

NSCs, as they moved to greater partnership models, are forging more authentic approaches to Vision Mātauranga and valuing and implementing Mātauranga Māori methodologies. They undertake early engagement with Māori leaders, support Rauika Māngai and Māori researchers, have extensive co-leadership of projects, and implement co-researcher status with Māori organisations. NSC leadership structures have evolved considerably since initiation, with many implementing full Māori leadership or co-leadership at many levels as proactive examples of the sector moving to a Tiriti-led system.

Similarly, NSC leadership structures have ensured that the interests of Pasifika researchers, communities, end-users and other relevant NZ sectors influence research priorities, as well as facilitating stakeholder network engagement. Pasifika peoples have been present in leadership roles across different strategic levels since the start of the NSCs.



# Responses to Future Pathways questions

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

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

### (i) A clear vision and mission

It would be helpful if a clearer vision and mission were articulated. There are components of both included in descriptive text in the Green Paper. A clearly articulated vision and mission should be able to steer the expectation of priorities, research delivery and implementation to improve outcomes for Aotearoa, our people and their prosperity.

### (ii) An integrated approach

Research funding has generally been driven from a bottom-up approach with researchers' application quality (measured within specific paradigms and frameworks) driving successful funding, irrespective of priorities. This tends to lead to fragmented study findings that are not cohesive across studies (despite multiple overlaps) and therefore less likely to lead to positive change.

A carefully considered approach is needed that combines a top-down approach (the needs, aspirations and expectations of government, iwi partners, providers, industry, communities and the general public) with a bottom-up approach (researcher-led). The latter needs to recognise that we have a limited pool of researchers in a small country who do not necessarily comprehensively cover all possible priorities [see (iv) international relations below]. Resourcing needs to recognise not just the study findings, but the relationship to other research and implementation, enabling researchers to share findings across studies. The Integrated Data Infrastructure (IDI) is one initiative that recognises the value of cross-learnings. Conversely, we should not abandon areas of world leading research in New Zealand that may have more global than local significance to fit a priority framework.

### (iii) Translating research priorities into meaningful outcomes

There is too much focus on researcher-led priorities. This aspect of research is essential, but it is only the beginning of a journey and means little in isolation. The pathway from priorities to research delivery and crucially to translation into policy, practice and positive change must be considered. In the Western academic tradition, research success is measured by completion, presentation, publication and personal promotion, but not in the change to the lives of New Zealanders. Researchers and research organisations are inexperienced at delivering a strategy that turns research outcomes into meaningful change (implementation science). Rarely is implementation and evaluation funded, and research that works alongside implementation (as is the case with many NSCs) is under-valued and under-resourced. A strategy of implementation and evaluation of research funding into meaningful change is required and will need more consideration and appropriate resourcing than the relatively straightforward process of establishing priorities. Funding for this might be best placed at the institutional or virtual entity level so that when serendipitous discovery occurs, it can be recognised and moved into an impact pathway.

(iv) International relationships

Aotearoa is a small country with a small research budget. We live in the age of clever communication and should more effectively connect with governments and other external funding organisations and industries to consider integrating our research plans in the USA, UK, China, Europe etc. We will not have depth of research expertise across all areas that may become research priorities.

(v) Inclusion of Māori

This should occur from the beginning. All too often Māori are consulted midway through new government initiatives. That is not what a partnership is about. Iwi leaders, Māori research groups/organisations, Māori providers and communities all need to be involved in meaningful and sustainable ways. Also, having this engagement process at the outset lends itself well to highlighting relevant and priority areas of focus for Māori and identifying appropriate leadership.

Our Challenge has developed a set of core Te Tiriti principles that the Challenge will apply to its research and activities. These include:

- That Te Tiriti o Waitangi is Aotearoa's partnership agreement between Tangata Whenua (Māori) and Tangata Tiriti (people who are non-Māori and live in Aotearoa under the korowai of Te Tiriti o Waitangi)
- That it will implement, to the fullest extent possible, the Articles and Principles of Te Tiriti through its role, scope and function
- That it accepts the validity of, and will support or do everything in its power to support, Māori aspirations for mana motuhake (autonomy) and tino rangatiratanga (authority)
- That it will prioritise investments and strategies linked to equity of access, experience (quality) and outcome for Māori as a key strategic priority
- That it will work in partnership with Māori (inclusive of iwi, hapū and whānau) in accord with Te Tiriti
- That it will be an advocate of kaupapa and Mātauranga Māori
- That it will protect and honour te reo me ona tikanga
- That it celebrates racial inclusion and will actively stand up against and support activities that reject all forms of racism, bias and any and all associated negative behaviours that may accrue from these beliefs, as they are unfair and unjust
- That its activities will address needs and levels of disadvantage
- That it will create and maintain policies and research funding guidelines that are pro-equity
- That it holds accountability for effectively governing this position statement and is open to be held accountable in a fair and just way, based on evidence.

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

The key question here is who creates the priorities and establishes a framework that will enable research delivery, implementation and measurement of effect and who do these priorities serve? Research in New Zealand is a critically important area for investment with diverse groups interested

in the outcomes from such investment, including government ministries, agencies and advisors and iwi, through to industry and providers and, importantly, communities and the public.

There needs to be a body such as a research and innovation council that is responsible for (i) consulting on and establishing priorities and, crucially, (ii) pathways that enable implementation and evaluation of meaningful change. Such a council needs to have wide representation, political independence, and autonomy from the Government to avoid simply becoming an extension of government plans. Investment in time and resource will be required to ensure extensive and regular communication with invested groups.

In considering shorter term priorities, it will be important to encapsulate government and ministry priorities that are currently being operationalised. At present, there are 21 NSCs and Centres of Research Excellence, yet only one of these entities has a focus on our tamariki – A Better Start NSC. Child wellbeing is important to the Government as reflected in the Government’s Child and Youth Wellbeing Strategy, launched in August 2019. Whilst this strategy is implementation-focused, science has an important role to play in providing evidence for initiatives implemented and in the scientific assessment of effect.

It will be paramount to understand the magnitude and extent of benefits of initiatives to guide government focus and funding. A Better Start National Science Challenge addresses many of the focus areas of several domains within the Child and Youth Wellbeing Strategy. We believe that an important ongoing priority will be a focus on pregnancy and the first 1000 days of life for tamariki and whanau, and altering subsequent life trajectories.

Setting priorities in a broader, consultative fashion will not be easy, but it is an essential beginning of a strategy to deliver meaningful change. There is so much research that has been funded and undertaken that has not made any difference to Māori, Pasifika and to communities that experience challenges. The delivery of research in priority areas and subsequent translation and implementation of the findings into the real world is critical, otherwise priorities are meaningless. Much more thought is required here to accelerate the knowledge translation into real world scenarios, so there is greater research impact. Otherwise, there is a major risk that activities are disconnected, uncoordinated and ineffective.

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

NSC representatives should be consulted throughout this process. NSCs offer a different lens to individual research-based institutions. They have greater reach and depth across research areas working across multiple institutions including universities, CRIs, smaller research groups and consumer organisations.

NSCs are mission-led with a heavy emphasis on working with stakeholders and communities to deliver research and outcomes that make a difference to New Zealanders. They are more than just excellent science. They have embodied Vision Mātauranga, with Māori co-governance, co-leadership and with inclusion across all research teams. Co-design with Pasifika communities, Māori and inclusion of Mātauranga Māori methods and Pasifika approaches typically feature across research projects.



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

A Better Start endorses the aspirations outlined in the Rauika Māngai submission. Vision Mātauranga espouses research by Māori with Māori for Aotearoa. The NSCs have progressively evolved governance and operational models closer to true partnership with Māori. This includes strong Māori representation at all levels from governance and leadership through to research teams and project leadership, which also includes co-governance and co-leadership. Such an approach and further evolution could be used by other components of the science sector.

To empower Mātauranga Māori in the research system, a Tiriti-based approach that includes tino rangatiratanga is vital. There should be opportunities for Māori-led research and for Māori and Pākehā to undertake research in partnership.

However, the governance and management of Mātauranga needs to be Māori-led at all levels of the science sector from policy to implementation. Mātauranga may be produced in research partnerships between Māori and non-Māori. Co-designing research between academic researchers (both Māori and non-Māori), Māori service providers and Māori communities is one form of partnership. Some of the lessons we have learned are that co-design can place a burden on Māori communities and, if done poorly, can leave a legacy of distrust and disappointment.

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

The concept of Māori knowledge hubs has merit. However, this concept needs to be firmly rooted in tikanga Māori and reflect Te Ao Māori ways of working. Rauika Māngai is a successful example of a Māori knowledge hub supported by NSCs, working closely with NSCs and their Māori researchers. It is a very effective way of linking Māori researchers across NSCs and across the country. Any steps in this direction need to be guided by Māori aspirations and not replicate structures that constrain or impose Western models.

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

A system-level approach to research funding should underpin core funding models. This takes into account the upstream facilitators to research excellence (education and training), infrastructure and collaboration and community (including Māori) involvement in priority setting. It also considers the downstream components including implementation and evaluation, which feeds back into the cycle. This has the potential to create a research-oriented 'virtuous cycle' which can rapidly improve outcomes in priority areas.

## 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?

The Green Paper focuses on block funding to address institutional support and overheads. There are clearly merits in using block funding to address institutional support rather than directly levering this cost on to research grants. There is more to block funding that includes: a nimble approach to supporting early career development, early exploratory research, research equipment support, research governance and community engagement and facilitating research implementation.

Consideration of block funding to inter-institutional or virtual entities and Māori structure would also enable a lot of what is missing in terms of supporting early and mid-career researchers, maintaining the workforce and moving research to implementation science and policy development.

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

We need to also consider virtual models beyond the conventional brick and mortar institutions. Virtual entities such as NSCs and CoREs are complimentary to institutions and create an opportunity to pull together cluster of researchers across institutions and disciplines working together on research projects. Inevitably this increases depth of expertise beyond that in a single institution. Consideration needs to be given to independent 'institutions', particularly community and Māori-led.

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

Urgent attention needs to be paid to support for early career researchers including non-postgraduate researcher staff. This can be achieved at several levels:

- (i) Through direct government funding into research and innovation workforce development
- (ii) As a requirement of block funding to institutions and virtual research entities such as NSCs
- (iii) Training programmes designed for research staff including research assistants, research nurses, technical staff, and field workers
- (iv) Prioritising Māori workforce development at all levels (academic through to field workers).

Whilst there are many PhD scholarships offered by universities (subsidised by government funding) and research funding organisations, there a paucity of early career funded positions. Early research career opportunities are few, and poorly funded with a lack of security even in the short term. Currently universities, research organisations and research funding bodies lack dedicated substantive funding specifically for early research career development and beyond.

For early career researchers it is hard to forge a research career in such an environment. For bright capable science graduates and post-graduates a research career in Aotearoa in the current climate is an unattractive career option.

Furthermore, our brightest graduates are more likely to be lured to early career research positions in the USA, UK, Australia or Europe which have long term prospects up front. A Better Start Director, Professor Wayne Cutfield, has lost two of his brightest PhD graduates to long term well-supported positions in the UK. They will likely never return.

There are also skill shortages in research staff and limited opportunities for any formal training in the areas mentioned above [point iii].

### **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?**

NSCs are the strongest model currently with a mission-led approach that requires translation from research fundings into implementation of policy and practice by working with government agencies, stakeholders and communities. Much can be learnt from their experience and approaches.

There needs to be dedicated funding that invests in knowledge transfer (implementation) and ultimately meaningful change. This can either be added into projects or additional discreet funding through NSCs (where it is practiced), funding bodies or possibly institutions.

At present, implementation science is a weakness of our research delivery framework in Aotearoa. Until we can improve this, excellent research will continue to make no difference to the lives of New Zealanders.

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

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

There are far too few Māori researchers and even fewer Pasifika researchers in Aotearoa. Currently Māori and Pasifika researchers are stretched thinly across many research teams that seek the opportunity to work with them. Equity is one of the highest priorities in mission-led research – equity in research planning and design, equity in research delivery and, most importantly, equity in outcomes. Māori, Pasifika and less affluent families suffer the greatest inequity in health, wellbeing and prosperity. Thus, it is essential that Māori researchers are actively engaged in research that involves their communities and priorities. Furthermore, our Te Tiriti obligations require greater involvement and leadership of research by Māori. Similarly, it is essential Pasifika researchers are actively engaged in research that involves their communities and priorities.

A new and comprehensive strategy is required to grow Māori and Pasifika research and should include:

- (i) Re-evaluate the accepted wisdom that tertiary education is required to conduct high quality research. Interesting and inquiring “hands on” science needs to be introduced in years 9 and 10 and possibly earlier. There is progressive attrition of Māori and Pasifika students undertaking STEM subjects across the NCEA years. Inevitably, these students are unlikely to pursue science or technology degrees. This may involve a greater emphasis on research methodology in secondary education, and an emphasis on non-Western research methodologies, which will be consistent with Vision Mātūranga.
- (ii) Long-term investment to attract Māori and Pasifika learners to tertiary education and interest in research career pathways by attracting Māori and Pasifika secondary school students into science and research. There are many PhD scholarships available for Māori and Pasifika students that are not taken up for a variety of different reasons, including students attracted to other opportunities.



- (iii) The currency in measuring researchers is a PhD. Universities are highly motivated to attract students into PhD programmes as they receive TEC funding for PhD students and they are one of the indices of research training success. A broader view of the research workforce is needed. There are those with science and technology degrees (Bachelor degrees) and those without that have an important role to play as research assistants, research nurses, technicians and field workers, and researchers in fields currently not considered by traditional Western research. Training and career pathways in a range of “non-academic” roles are needed. Offering training internships to enhance career development pathways for non-academic roles may remove financial burdens, and time-bound barriers and could aid in increasing NZ’s science workforce, particularly for Māori and Pasifika peoples.

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**MARCH 2022**

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