

Rutherford Discovery Fellow MBIE working group: response to the Te Ara Paerangi Future Pathways Green Paper

Contributors

Alana Alexander (UoO), Khoon Lim (UoO), David Aguirre (MU), Olivia Harrison (UoO), Melinda Webber (UoA), Ágnes Szabó (VUW), Adele Williamson (UoW), Jemma Geoghegan (UoO), Karen Stockin (MU), Jay Marlowe (UoA), Sereana Naepi (UoA), David Hayman (MU), Melanie Ooi (UoW)

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Signed in support

Nathan Kenny (UoO), Mike Price (VUW), Sarah Diermeier (UoO), Michele Bannister (UoC), Adam Hartland (UoW), Jaimie Veale (UoW), Jonathan Tonkin (UC), Calum Chamberlain (VUW), Justin Rustenhoven (UoA), Alice Theadom (AUT)

Context

We thank the MBIE for its reflection on and acknowledgement of some of the shortcomings of the present RSI system and we applaud their commitment to building a better research environment here in Aotearoa New Zealand. We appreciate this opportunity to provide a voice from the current ECR perspective and the chance to help shape the future RSI system which we will participate in.

The following submission is made on behalf of the Rutherford Discovery Fellows MBIE working group; a consortium of Fellows comprising volunteers which was open to all present RDF holders. The content includes a combination of recommendations in response to our participation in the Te Ara Paerangi workshops, together with our reflections on the lived experience of working in the present RSI system in New Zealand. The feedback takes the form of combined suggestions and observations in response to the questions posed in the green paper, consolidating the responses of various working group members.

Several overarching themes came through in response to all questions in the different areas of the Te Ara Paerangi process. These include: an urgent need to address the precarious position of many researchers to ensure a stable and sustainable workforce; a need for cross-disciplinary and cross-cultural engagement throughout the process; the requirement for an evidence-based design in the future system that draws upon the wealth of experience within the research community of Aotearoa- New Zealand.

For context, we have also included a survey of current RDFs undertaken in December 2021, which highlighted the negative impact of partial-funding and job insecurity on researcher

productivity and wellbeing. This is added as an attachment but we request it is not made publicly available.

Key recommendations

NGĀ WHAKAAROTAU RANGAHAU

RESEARCH PRIORITIES

How do we design these priorities? For example, what should be the size, scope and focus of the priorities?

- The setting of research priorities should be inclusive and diverse to facilitate research solutions to societal problems and avoid siloing by discipline. Specific reflections include:
 - There must be support for fundamental research within a new RSI framework as this is important even when addressing applied questions.
 - Not all research fits into a well-defined subject/field and including an open 'other' category is important.
 - Priority setting should allow space for a wide range of disciplines and diverse ways of knowing.
 - Priority setting should feature explicit inclusion of Humanities and Social Sciences 'Words/language/examples/images used in the document matter; they signal what is valued.'
- Priorities must be able to address societal challenges and questions requiring long-term research and maintain flexibility to change priorities when necessary.
- At all levels, the setting of research priorities must be underpinned by a commitment to building research capacity and job security.
- Research priorities should also reflect MBIE's stated commitment to Māori and Pacific communities.

How do we decide what these priorities are? What process should we use for determining these priorities and who should be involved in the decision-making process?

- Decision making on research priorities should be done in partnership with Māori including engagement with whānau, hapū and iwi and should be underpinned by the principles of Te Tiriti o Waitangi. A specific recommendation is use of the Te Waka Hourua model - bringing perspectives together.

- Decision making should consider equity and how to achieve equitable outcomes for all in Aotearoa. This includes actively seeking unheard or silenced voices and appropriate resourcing during decision-making processes so that Māori and Pacific stakeholders can engage in the consultation from start to finish.
- Engagement with ECR researchers is crucial in setting research priorities to develop a forward-facing research strategy. This includes giving independent ECRs a voice in decision-making and ensuring continual engagement of researchers new to New Zealand's RSI system.
- MBIE needs to actively engage in the Pacific 'realm' countries communities in their development and planning of research priorities.

How we operationalise and implement these priorities. We need to determine who will be involved in determining the strategy for each priority, how they will be governed and how the priorities will operate on a day-to-day basis?

- Operationalization and implementation of research priorities should be evidence-based including collecting data on programs, and reflection upon previous funding models (what worked and what didn't). This will help avoid pitfalls of previous initiatives while maintaining the benefit of successful approaches.
- We note there is a critical mass of previous experience with collaborative/competitive research models within Aotearoa's RSI community (from both domestic and international contexts) and MBIE may draw on this to inform decisions.
- Operationalization and implementation should be appropriately resourced, including paid positions for those involved in setting strategy. Supporting knowledge-sharing from the network of researchers in NZ will also be beneficial and facilitate wider participation.
- Operationalization and implementation of any research strategy should include and support career development for current ECRs and researchers who are new to NZ.

TE TIRITI, MĀTAURANGA MĀORI ME NGĀ WAWATA O TE MĀORI

TE TIRITI, MĀTAURANGA MĀORI, AND SUPPORTING MĀORI ASPIRATIONS

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

In order for RDFs to continue to engage with the Future Pathways programme, an open invitation for continued development should be maintained.

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

In order to have a research system that empowers mātauranga Māori, it must acknowledge the resourcing required, such as:

1. The infrastructure & time for knowledge development in non-Māori
2. Developing networks for research questions which help Māori
3. Less prioritisation of 'scientific' objectives
4. Dedicated Kaihautū to support a constructive cross-dialogue with Māori entities and community, enabling highly specific-skill researchers to uphold mātauranga Māori

Institutions and research teams should be accountable to the commitments made with respect to vision mātauranga in research proposals in order to secure funding. This could be monitored, for example, by audits of the success or impact of funded research with respect to vision matauranga statements as well as the development of Māori research workforce.

What are your thoughts on regionally based Māori knowledge hubs?

The development of regional Māori knowledge hubs would require appropriate acknowledgement and reimbursement for time and effort.

Alternatively, we might appoint Māori Chief Science Advisors for each area in the Advisory forum responsible for connecting universities, CRIs, iwi, community, and ECRs at the regional hub level. Additionally, there should also be the opportunity for ECRs in each of the advisory areas to wānanga with science advisors to keep them abreast of issues impacting ECRs in the field – in particular, the desire of ECRs to collaborate/partner with hapū/iwi RSI organisations to work alongside mātauranga Māori and kaupapa Māori research approaches.

TE TUKU PŪTEA

FUNDING

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

- Determining what constitutes a core function will require engagement with stakeholders and should be aligned with Māori objectives as determined through Māori representation.
- Core functions should represent an investment in future research in New Zealand and consideration should be given to the development of and investment in long-term academic assets such as databases and collection of long-term datasets (for example climate monitoring).

- We should not just define these needs by longevity (though we agree long term planning is needed) but additionally, by capacity needs and people. For example, we can't always predict what the next global issue may be, but if we don't consider NZ's capacity requirements within core funding, we will leave ourselves vulnerable. Any model should include surge capacity to respond to unforeseen circumstances, e.g. pandemic or natural disasters.
- Fundamental research could have a place in a core-funding model via contestable internal funding as it enables innovation and development of processes.

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?

A base grant model has many potential benefits in ensuring a fit-for-purpose research system in New Zealand that is both resilient and flexible. Without a clearer definition of what could/should be funded through a base grant, it is difficult to give feedback on its design and implementation. Some positive outcomes that we envisage from base-grant funding include:

- Improved security and longevity while also releasing pressure from academics for applying for so many external grants. The rapid and often short term 'change in direction' that is frequently evident in MBIE rounds is an obstacle to continuity, stability and progress. Longer term research goals (at least 5 , ideally 10 years) are needed for solid progress to be made. This also needs to be supported by base funding for the same reasons as already highlighted.
- The use of a base grant for funding for infrastructure (core functions) would be beneficial. This could include future-proofing access to large scale equipment for all researchers, by separating out infrastructure funding from grant funding meaning researchers needing little infrastructure would also benefit.
- The use of base grant funding for fellowships would provide a clearer pathway for New Zealand academics. Such a fellowship should be comprehensive and include mid-late career stages and address the gap after ECR offerings (the James Cook for example, doesn't cover salary). This could be based on overseas models; Australia has the DECRA, Future Fellows, Laureate, and the NHMRC fellowship pathways for example.
- The use of a base grant to replace overheads would improve transparency and direct more external funding received by institutes to go directly towards research. Specific feedback and examples include:
 - Overheads should not be at the current rate - in Australia, overheads are around 20%. In New Zealand, an entire Marsden is needed to fund a single postdoc.
 - Overheads are more expensive than research (>110%), the number of researchers that can be supported has more than halved.
 - Use of overheads lacks transparency: Overheads do not have itemised tracking, while every research activity is carefully tracked. Some universities/faculty take all the overheads.
 - Large grants are mainly funding university infrastructure and management rather than researchers.

- Base grants could incentivise collaboration and strategic direction by providing enhanced funding (e.g. as Max Planck system in Germany).
- When it comes to selection of what is 'core', we lack the guidance of a national research council, which for so many other nations (AUS/UK/CAN/US/etc) is central to how such RDI decision making occurs – is this a better way to get objective views on what the priorities should be?
- Base grants could include provisions for enhancing the international connection of New Zealand research institutes, e.g. via Funded short-term exchanges with New Zealand return (similar to the Marie-Curie Postdoctoral Fellowships, funded by the European Union and/or Fulbright exchanges with the USA). We note this might suit researchers with family connections and strong community-based research programs in New Zealand, in particular Māori, better than the current overseas postdoc/PhD model.
- Some potential drawbacks of base grants were also noted, for example while agreement was clear on the need for base funding, concerns were raised on how such base funding would be administered (especially within universities). Any base grant would require clear guidelines of what this will be used for; Examples of research support raised within the workshops included 'keeping the lights on and square meterage of office space' which may not align with the intentions of the funding agency.
- In some circumstances base funding towards established institutes may not be appropriate for the intended activities such as genuine authentic engagement with iwi to support co-designed research. In such cases funding may be better to go to iwi directly rather than filter through universities (due to the concern that all but a fraction would end up in central overheads) or towards supporting establishment of new research entities.
- There needs to be a balance between positive competition (which allows proliferation of the best ideas via contestable rounds) vs the obvious drawbacks of negative competition (which can see the lowest cut not best team undertaking the mahi). There is still a place for contestable funding in future frameworks but this relies on a transparent evaluation process. Other models e.g. a lottery system can be explored; almost all of the top 30% which gets presented to MBIE is research excellence, even though only 10% is funded. Research committees are themselves only human and not without personal/institutional bias.

NGĀ HINONGA

INSTITUTIONS

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

- Developing collaborative, adaptive and agile research institutions to serve our current and future needs requires adequate funding and job stability, as researchers are constantly looking to fund their salaries on short-term contracts or part-time FTEs.

- There must be an increased ability for collaborative work and encouragement of joint research proposals. Researchers have different strengths (i.e. lab work vs. engagement strategies vs. grant writing) and the current 'individual genius model' means people aren't able to work to their strengths and get the best out of each other, instead of everyone being expected to do everything.
- Collaboration, adaptiveness and agility are constrained by the full overhead funding model. It is impossible to fund more than two collaborators and even less so if we are supporting post-docs/ECRs with greater FTE contributions.
- The design of a future system can draw on international models (especially with the EU) that positively incentivise research with demonstrated clear collaboration. Such models go a stage further to link funding to inter-institutional/ international connection.
- Embedding researchers (CRI in TEO or TEO in CRI) is a great idea but care must be taken to not dilute the critical mass of either group. Similarly, forming super-institutions could widen the gap between the haves and have nots at an institutional level, which will only hurt the research culture and outputs of the wider research community

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

Specific recommendations for institutional design to better support capability, skills and development include:

- Supporting early career researchers on base grants by providing incentives for senior colleagues to take the time and effort to supervise postdocs (i.e. provide a very small overhead-free FTE reimbursement etc.).
- Recognising 'unpaid' obligations. For example, recognise the role of mentorship in institutional resilience and capacity building. Recognise the time and commitment required to build relationships with iwi and community groups/organisations. This is critically important to the "public good" mission of the sector.
- Remove institutional overheads on Post-docs/ECRs to allow more of these positions to be funded. See Australia (with no overheads), where ECRs are better compensated and have considerably more research funds available. Note, however, that research is casualised in Australia so further exploration is needed to make sure we are not moving towards something worse.
- Consider retention of New Zealand researchers in the system when making appointments to continuing positions. Options include explicitly stating that NZ citizens and permanent residents will be made first offers of appointments (as done in the Canadian system). This should be balanced against overly-strict requirements; for example, NZ-based PhD students cannot count their PhD time towards their visa applications.

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

- Separate Funds and Coordination

- Split long-term, ongoing maintenance and replacement of large capital items, and smaller one-off applications for other necessary purchases.
- Coordinate at University level, with surpluses given back and a priority system for those who have required less (per department size) more recently.
- Avoid duplication of management infrastructure
 - Have a publicly accessible list of capital equipment available and a portal where the process for using such equipment is clearly outlined.
 - Have a national audit of CRI and TEO infrastructure to inform matters of duplication, consolidation and diversification of facilities.

How do we design Te Tiriti enabled institutions?

- Enable Partnership with resourcing
 - Resource time commitments: The current funding model expects partnerships leading to institutional pressure for staff to engage while not allowing for the time required for genuine relationship building. This becomes tokenistic and insulting for mana whenua partners.
 - Resource education to enable relationships between Research management, support staff, mana whenua, and tangata whenua.
- Ensure respect
 - Often feedback is completely inappropriate and focused towards exploiting Māori partnerships and relationships in order to get funding. Funding and rewarding genuine long-term partnerships and Māori led research is critical.
 - Mātauranga Māori and/or Te Tiriti as presented in most RSI documents is often treated as “knowledge to be exploited” for the benefit of, or affirmation of, western science. For example, many organisations consider that they give effect to Te Tiriti obligations through activities such as the integration of mātauranga Māori perspectives, or the inclusion of hapū/iwi and Māori communities – *without thinking about what learning/benefits are occurring for the other Te Tiriti partner*. In what ways might MBIE compel organisations/research teams to take a less paternalistic approach their Te Tiriti obligations – focusing less on what needs to be done ‘for Maori’, and more on what non-Māori staff need to learn ‘from Maori’, and what work needs to be led ‘by Maori’ (as an intensive learning opportunity for the non-Māori collaborators)?

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?

- Timeline management and recognition of Workload
 - Collaboration between research institutions and other organisations seems to be hamstrung by the very different timelines used in each setting.
 - A cultural issue within institutions where engagement with end users is encouraged but not recognised in workload models of promotion criteria meaning that little effort is invested in knowledge exchange. Support can and

should be multifaceted - this is something perhaps that needs to be stressed as a 'must' rather than 'nice to have'.

- Over-reporting
 - “In NZ, the system tries to make you report a lot. You write a lot to get the grants, then you write a lot (plus with evidence tracking) for progress reports, and then you write even more on implementation pathways. The time I spend on managing the documentation related to research funding exceeds the time spent on making connections (connections and research sometimes don't produce any tangible output - and those don't get recognised).”
- Prioritise and resource knowledge transfer: Knowledge transfer (apart from publications and patenting) requires more time than we budget for, and is hard to quantify or provide evidence. This can sometimes lead to it going down on the list of priorities for the project.
- Using Higher Education as a tool toward impact generation:
 - A fantastic place to exchange ideas - create university papers that provide proposals (or similar) for something like government institutions.
 - The timelines imposed on semesters would naturally constrain projects, and there could be a system of reward where there could be placement opportunities available for staff/students or government employees to cross into the other institution for a set period or project.

TE HUNGA MAHI RANGAHAU

WORKFORCE

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

- The design of research priorities must include a focus on the ways in which partial funding negatively affects the research workforce. Specifically, institutions currently fail to cover funding shortfalls, in turn placing greater pressure on researchers and heightens their reliance on grants. The resultant precarity for researchers leads to significant discomfort, stress, burnout, and imposter syndrome in the workplace, negatively affecting research outcomes. Moreover, partial funding disproportionately impacts small departments which cannot feasibly host partially-funded researchers.
- Additionally, attention must be drawn to the Māori workforce, who currently comprise between 0.3%-7.8% of CRI researchers. Possible support mechanisms for growing and developing the Māori workforce include the creation of long-term secondary school outreach programmes to encourage Māori students into research and science, alongside paid internships or mentoring from ECRs which address socio-cultural barriers to existing programmes alongside the development of critical tuakana-teina relationships for the future workforce. These initiatives might similarly be extended to Pasifika students.

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

Base grants would contribute to institution-wide workforce stability through significantly reducing the stress of the research workforce (especially ECRs) as well as creating more opportunities for researchers' career development and progression, lessening reliance on low success rate external funding. These contribute to better retention of researchers and a more stable, effective workforce.

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

New funding mechanisms that focus on workforce outcomes must enable different strengths. The current system requires skills in research, teaching, and community engagement, but most people have strengths in different areas. By funding projects rather than people or teams, as the current system does, people are forced to contribute to all of these aspects which results in burnout. Instead, incentivising and funding teams of people, therefore, enables more efficient collaboration towards achieving a common goal.

TE HANGANGA RANGAHAU

RESEARCH INFRASTRUCTURE

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

- Equity of access is vital. Implementation of a cross-institutional governance board would achieve this through removing the requirement to belong to or have personal relationships with those belonging to a host institution in order to access its infrastructure.
- Long-term funding must be allocated for critical infrastructure, in recognition of the fact that research requirements are ever-changing and growing.
 - Specifically, data and collections should be an area of focus. Long-term funding supports data and collections beyond political and research life cycles, enabling long-term permissions and reuse. It also supports stability for the currently underfunded and under promoted workforce in this area.
 - Moreover, collections of taonga should be held in Aotearoa, not overseas.
- Incentives should be developed to support industry collaboration with government, research, and academic institutions to manage, use, and maintain research infrastructure. Possible frameworks for doing so can be sourced from the UK and US.