



Te Ara Paerangi - Future Pathways submission from *Food Transitions 2050*

Preamble

This submission is made on behalf of the Food Transitions 2050 partnership and Joint Postgraduate School. Food Transitions 2050 is a strategic partnership initiative between five research organisations located in the Canterbury region: AgResearch, Manaaki Whenua, Plant & Food Research, Lincoln University and the University of Canterbury. We are following a high trust/low transaction cost partnership model, based on our collective interests in working together more closely.

Food Transitions 2050 conducts research to support the transition of our regional, national and international food systems to a future, more sustainable, state. At the heart of Food Transitions 2050 is a Joint Postgraduate School - a virtual community of practice of PhD students and their supervisory teams conducting research in a set of PhD projects linked by the overarching Food Transitions theme. These students also engage in a 'PhD Plus' programme, which provides opportunities for 'soft-skills' training, including bicultural competence and confidence, and internship and other training opportunities to ensure that students emerge from their doctorates being 'work ready'.

We therefore provide this submission to share our experiences of moving in many of the directions articulated in the Green Paper. To this end, we aim to illustrate how this model may form a component of any future solutions. Below we only address questions that relate to our experiences within the Food Transitions 2050 partnership.

Please feel free to get in touch if you have any further questions regarding our submission.

Ngā mihi,

Prof. Jason M. Tylianakis FRSNZ
Director, Food Transitions 2050
New Zealand

email: Privacy - 9(2)(a)

Ph: Privacy - 9(2)(a)

<https://www.foodtransitions2050.ac.nz/>

Section 3: Research Priorities

Question Title

17. Operationalising Priorities: How should the strategy for each national research Priority be set and how do we operationalise them?

Given acknowledgement within the Green Paper that there is greater demand for research funding than there is funding available, efficiency in delivery and conversion to research is essential. In establishing priorities, there is the potential to waste significant money on governance, or to even create new entities in competition with existing ones, thereby exacerbating issues of competition raised in the Green Paper. Therefore, in operationalising any priorities, we would recommend making use of existing organisational governance structures and funding the collaboration and research directly. The Food Transitions 2050 partnership has demonstrated that such a low transaction cost model can be made possible by leveraging the strong existing management and governance structures within our partner organisations rather than generating additional layers of governance.

Section 4: Te Tiriti, mātauranga Māori, and Māori aspirations

Question Title

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

Clearly, the research system needs to create opportunities for research by Māori, for Māori, within culturally appropriate structures. In addition, growing capability of Māori researchers requires education and training structures where students and early-career researchers are mentored by senior Māori researchers, and supported in navigating the 'cultural tax' that is typically placed on Māori researchers, including students. Finally, to create a research system that supports and enables mātauranga Māori, it is necessary that all researchers are sufficiently culturally competent and confident to provide a safe space for mātauranga to thrive. Within the Food Transitions 2050 Joint Postgraduate School, we have implemented these priorities by:

- Ensuring that projects involving mātauranga Māori and whakaaro Māori are led by Māori researchers and, where necessary, have oversight from a kahui.*
- Ring-fencing funding for projects led by mana whenua rūnanga, focusing on their priority areas relating to food transitions.*
- Ensuring that Māori students have a Māori researcher in their supervisory team to provide support and cultural safety.*
- Growing bicultural competence and confidence through specific Te Tiriti training for all students in our cohorts.*

Section 5: Funding

Question Title

21. Core Functions: How should we decide what constitutes a core function, and how do we fund them?

A primary core function of our RSI system is to maintain and generate capability, particularly of researchers who can work collaboratively across disciplines to solve national and global problems. System shocks such as the COVID-19 pandemic, PSA in kiwifruit or the Canterbury earthquakes

provide examples of the urgency with which a national science-based response may be required. Our resilience in the face of such shocks depends critically on existing national capability and collaborative networks, including in areas that may not have been considered priorities prior to the shock occurring.

Growing such capability requires researchers to be trained outside of siloes of discipline or organisation, and to understand who in the wider science system holds expertise in complementary fields. In Food Transitions 2050 we have actively embraced this style of training, by growing students in cohorts that span disciplines from lab sciences to the humanities, which provides frequent opportunity for peer learning across disciplines. Our doctoral students are supervised by teams from both universities and CRIs, such that they understand the critical roles that each type of institution plays in our research system and also have a view of the wider available capability outside of their discipline.

Question Title

22. Establishing a base grant and base grant design: Do you think a base grant funding model will improve stability and resilience for research organisations?

Yes, a base grant model would improve stability and resilience, along with the ability of research providers to retain capability across a range of disciplines. In addition, consistency of overhead funding would allow organisations to plan a consistent pathway for capability development (including into postdoctoral). Consistency of base funding would also reduce competition and facilitate collaborative (cross-disciplinary) research and contribution to capability development.

Within Food Transitions 2050, our partner organisations are collaborating to enhance the capability development pipeline. However, in the absence of specific funding, this crucial contribution to the national RSI system must be subsidised by other income streams.

Section 6: Institutions

Question Title

24. Institution design: How do we design collaborative, adaptive and agile research institutions that will serve current and future needs?

A key argument articulated in the Green paper is that:

“Fewer, larger, more resilient organisations could result in greater connectivity and inter-disciplinary research, more co-ordinated investment in research infrastructure creating hubs of capability across multiple sectors.”

We do not believe that growing organisational size will drive connectivity per se. It is common for components of large organisations to have little knowledge of what each other is doing, so amalgamation of institutions would not likely solve problems of fragmentation in the RSI system. Conversely, even without changes to organisational size or structure, greater connectivity and inter-disciplinarity is possible when researchers within organisations unite around a shared mission.

Food Transitions 2050 is a hub of both capability and capability generation, focused around a theme of food sustainability. Our partner universities and CRIs bring complementary expertise and industry linkages to form a natural symbiosis. CRIs need a continual input of capability, and it is logical for them to engage in the development of this capability such that it meets their needs and generates

graduates that are 'work ready' to thrive in their environment. Conversely, universities train graduates, but have an interest in their future success within their chosen profession. Our partner organisations have each chosen to collaborate on the Food Transitions 2050 initiative because it is in everybody's interests and because each partner benefits from access to the capability of others. This has not required any organisational restructuring or expensive new governance structures. All the resources are instead directed at the task of generating capability that can thrive in a collaborative and cross-disciplinary environment.

We therefore believe that identifying such common interests is the path towards greater connectivity in the RSI system.

Question Title

25. Role of institutions in workforce development: How can institutions be designed to better support capability, skill and workforce development?

We perceive the design of institutions to be less of an issue than the way in which funding is structured. CRIs do not have funding specifically associated with capability pipelines, such that support of such pipelines with SSIF forces a trade-off between existing versus future research and staff development, which in turn places a constraint on the ability of CRIs to grow capability in areas of need. In practice, MBIE Endeavour Programmes are currently the most reliable revenue source to support post-doctoral fellows. However, the nature of this funding is that capability development is serendipitous, rather than strategic for the post-doctoral generation.

In contrast to CRIs, universities are funded for student completion, but time limits on this completion make it more difficult to add tailored workforce development (e.g. internships or on-the-job training) to a research degree, because it must either be carried out concurrently with the research or funded by a separate funding source.

Therefore, capability development could be enhanced by directly supporting engagement between universities and CRIs, and by providing support for additional work-readiness training or internships.

Question Title

28. Knowledge exchange: 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?

Significant knowledge is generated during postgraduate study, but currently there is no mechanism for this knowledge to be frequently exchanged, except through publication. Embedding students within their chosen industry would provide a mechanism for achieving this transfer. Within Food Transitions 2050 we are attempting to use internships to support this knowledge exchange to operational environments, however funding such exchanges is currently difficult. Nevertheless, our joint supervision model connects students into a CRI throughout their doctoral studies, ensuring bi-directional knowledge exchange between universities and CRIs.

Section 7: Research workforce

Question Title

29. Workforce and research Priorities: How should we include workforce considerations in the design of national research Priorities?

We see two primary elements to including workforce considerations in national research priorities. First, capability must be maintained in priority areas. This can be achieved through a base grant to cover researcher FTE, and through investment in developing future capability in priority areas. Second, a capability base outside of priority areas is needed to allow resilience and rapid responses to emerging priorities. Moreover, innovation draws upon diversity of ideas and tools, even those from unrelated disciplines, so developing capability across broad disciplines and ensuring that researchers are comfortable communicating and collaborating across disciplines, provides the greatest prospect of future innovation. This ability to work across disciplines and organisations is part of ensuring that capability is ready to work on pressing national or global problems.

Within the broader theme of food sustainability, we have researchers in Food Transitions 2050 that span social and natural sciences and engineering, working on topics from protein biochemistry to food governance. This diversity of disciplines, and ensuring their regular interaction with one another, has been our approach to growing a future workforce in the priority area of Food Transitions.

Question Title

30. Base grant and workforce: What impact would a base grant have on the research workforce?

Base grant funding would both assist with retention of existing workforce and provide research providers with the ability to, in the long-term, shape the development of their future workforce (through partnerships with universities). As noted in the Green Paper, our current system does not have a strong focus on funding mechanisms that explicitly support workforce development; rather workforce retention and development are shaped by short-term funding, which will tend to focus capability around areas of existing strength and immediate need, rather than develop a broad interdisciplinary future workforce capable of solving problems that may not yet exist. In contrast, base grant funding could facilitate the development of capability across a range of disciplines, which is difficult to do under competitive funding models or potentially even with research priorities if their focus is narrow. The pandemic, and resulting instant demand for expertise in public health, virology and network modelling, has emphasised the need to retain capability across a range of fundamental research areas.

Funding targeted at workforce development could fund learning opportunities such as internships in Industries and CRIs (the latter are not covered by current Callaghan Innovation grants), or other experiences to help make graduates more 'work ready'. Such opportunities are difficult to fund under existing TEC funding models, but would help with the wider dissemination of research findings across organisations.

Question Title

31. Better designed funding mechanisms: How do we design new funding mechanisms that strongly focus on workforce outcomes?

The Joint Postgraduate School model of Food Transitions 2050 is cost-effective, collaborative, and focuses specifically on future-workforce outcomes. This model could be combined with research priorities, focusing on generation of inter-disciplinary, work-ready capability alongside research to directly address the priority areas. Funding mechanisms that promote capability building and workforce preparedness (e.g. through internships or additional learning experiences beyond the current research degree) in a collaborative framework could thus achieve multiple goals.