

From: no-reply@mbie.govt.nz
To: [Research, Science and Innovation Strategy Secretariat](#)
Subject: Late submission on draft RSI strategy
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Attachments: [Online-submission-form-uploadsdraft-research-science-and-innovation-strategy-submissionsPFR-feedback-on-RSI-strategy-2019.pdf](#)

Are you making your submission as an individual, or on behalf of an organisation?

Organisation

Name

Name of organisation or institutional affiliation

Plant & Food Research

Role within organisation

Email address (in case we would like to follow up with you further about your submission)

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Gender

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Name of organisation on whose behalf you are submitting, if different to the organisation named above

In which sector does your organisation operate: (Please select all that apply)

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How large is your organisation (in number of full-time-equivalent employees)?

900+

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15 November 2019

SUBMISSION ON RS&I STRATEGY

This submission is made by Plant & Food Research, Rangahau Ahumāra Kai, a Crown Research Institute.

Summary

We agree with many of the strands and emphasis in the new strategy, including the following:

- Broadening New Zealand's science strategy to focus on innovation
- Focusing at the global 'frontier'
- Focusing on areas where New Zealand has a unique need, opportunity or advantage. We propose that **Open Ocean Aquaculture** is an area of opportunity and advantage where New Zealand can lead; **Biosecurity** is an area where New Zealand faces a unique challenge and has a specific need
- Introducing 'Connections' as a third pillar to the RS&I strategy
- The emphasis on developing, attracting and supporting new talent
- The commitment towards an extended Vision Mātauranga

We also have a few points of concern, including:

- Insufficient support of applied research and 'behind the frontier innovation', leading to erosion of capability and connections between end users and researchers
- We support the intent of the 5 Action areas but are concerned that some may have unintended consequences that may inhibit innovation

We thank MBIE for the opportunity to provide this feedback. We believe further consultation to develop the Actions is needed. We are very experienced in many of the Action areas and would welcome the opportunity to work with MBIE on the further development of Actions.

Introduction

Plant & Food Research has a strong belief that science can make the world a better place. We know that for science to create positive change it needs to get out of the lab and into the world. We have nearly 1,000 staff who work closely with partners in the horticultural and seafood

industries to create the world's most sustainable food systems – that includes economic, environmental and social sustainability.

Over 60% of our science is funded by these industry partners and applied to create change. In addition, 25% of our effort is on future focused basic research in a small number of areas that will position New Zealand as a global leader in the long term.

Plant & Food Research are delighted to have the opportunity to provide input in the draft RS&I strategy. The refreshed strategy is a very timely development of the NSSI, given the current Government's commitment to increase R&D spend to 2% of GDP and the other strategy development work that is going on in associated areas of Government.

Submission

We agree with many of the new strands and emphasis in the new strategy. We strongly support the broadening of New Zealand's science strategy to focus on innovation – the utilisation and implementation of an idea.

1. Focus on innovation

We support an increased focus on the innovation part of the ecosystem with a desire to increase Government investment in scale-up and not just start-up. We support the aspiration to achieve R&D investment of 2% of GDP.

2. Focus on the frontier

We agree with the need to focus New Zealand's limited government RS&I resources where a research position at the global cutting edge (the frontier) can be maintained. We note that SSIF has been moved to support research further back in the pipeline towards more fundamental research. We believe by focusing on more transformational, additive opportunities for New Zealand, SSIF-supported research has the potential to create greater benefit. New Zealand must leverage off existing strengths as well as developing some new ones, but must not use simplistic measures of scholarly impact such as paper citations to assess those strengths.

3. Lack of mechanisms to support applied research and behind the frontier innovation

We are pleased that the strategy states that applied research can 'extend the global knowledge frontier as much as basic research'. Applied research attracts more private sector investment, creates stronger connections between researchers, end users and Māori, and is more likely to have impact in the short to medium term compared to fundamental research. However, the research investment system landscape now lacks mechanisms to bridge the gap between fundamental research and the applied research that users are expected to invest in, with Government contribution weighted either to the more fundamental end or to the transfer end. This is especially true for CRIs, with SSIF being moved towards fundamental research and the loss of the MBIE Partnership Scheme, potentially leaving gaps in research pipelines. MBIE Endeavour has also moved to the fundamental end and has become so competitive that it cannot be relied on to support and carry research concepts through the pipeline to impact.

The difference between applied research, as above, and innovation behind the frontier (using existing knowledge to improve the way we do things) is not at all clear in the strategy.

However, both areas seem to be left to other portfolios or end users to support and there is a significant gap their ability to do so.

There is also little support for research for local and central Government agencies and Māori groups, particularly in public good areas such as climate change, land-use, water quality, biosecurity where applied research is needed to translate existing knowledge to local conditions.

For the mechanisms that do exist for applied research, such as MPI's SFF Futures, SMEs, emerging sectors, Māori, local or central government either lack the resources to meet co-funding requirements or are not eligible.

Sufficiently resourced mechanisms such as Envirolink; a new VM+ fund; significant department funds; and re-establishing the MBIE Partnership Scheme would be potential solutions.

There is likely to be a significant disruption of research pipelines and erosion of private sector investment, research capability and connections between researchers, end users and Māori until effective mechanisms for supporting applied research are implemented.

4. *SSIF platforms decline in purchasing power*

SSIF is a main mechanism for CRIs to support Government strategy. The purchasing power of SSIF has declined around 25-28% over the last 7 years. The new SSIF platforms, such as recent investments in Genomics and data, are welcomed but have been modest additions to the ability to protect and develop capabilities and support a strategy. We would welcome an increase in SSIF to restore the purchasing power.

5. *Areas of Focus*

We agree with the four areas proposed where New Zealand should focus strategic innovation activity to innovate towards the frontier:

- Solving problems that nobody else in the world has solved
- Capitalising on new opportunities where nobody else is yet successful
- Making the most of our unique opportunities, such as our unique geology, biodiversity, and our heritage of Mātauranga Māori
- Investigating areas where New Zealand is the only country likely to do so, such as questions arising from our unique population and greenhouse gas profile

We also agree with the related list of categories proposed for choosing areas of focus:

- Where we can genuinely expect that New Zealand has, or will be able to build, a sustainable competitive advantage on the world stage. These may include:
 - opportunities for shifting from volume to value
 - areas complementary to existing strengths or other opportunities
 - areas with no obvious global leader where New Zealand has a head start
 - where New Zealand has an inherent advantage based on our unique heritage or resources
- Where New Zealand faces a unique challenge or has a specific need.

It is not clear if these criteria are intended to be used in the selection of new SSIF investments. Much greater transparency is needed regarding identifying new areas for SSIF investment.

We welcome the invitation to provide suggestions for areas of focus. Through our Growing Futures strategy, we have undertaken our own analysis to identify areas that build on strengths and have the potential to be real winners for New Zealand. **Open Ocean Aquaculture** is one of the areas where we believe New Zealand can develop a globally-leading position. This will require a national effort with a national team of collaborators across providers and users within New Zealand and also internationally, significant scale up investment, and the ability to leverage New Zealand's regulatory environment.

We also consider that New Zealand has a unique challenge/specific need to protect our biological heritage through a world leading biosecurity system. The role of RS&I in **biosecurity** has been well articulated in the Biosecurity 2025 strategy but it is hard to see how RS&I investment to support that initiative will be supported.

6. *Adding Connections to Excellence and Impact as a third pillar*

We support the introduction of the new pillar on Connections to remove friction in knowledge exchange throughout the RS&I 'system'.

We agree that New Zealand would benefit from stronger connections between providers and with end users in New Zealand and, especially, internationally. International connectivity in particular needs significantly more support.

Research is a global pursuit, with best teams often being a mix of international researchers, and end users are increasingly seeking providers/partners offshore for some of their research needs. New Zealand research organisations have an important role to play in connecting end users with international research capability, often in three way interactions.

We support the intent to develop deep integration with neighbouring research and innovation systems, particularly with Australia. We acknowledge previous efforts to link researchers from small R&D intensive countries including Singapore, but the underlying strategy needs clarification.

Connectivity is currently supported more at the researcher to researcher level (e.g. through the Catalyst fund). These connections are often lost when researchers move on.

Connections are needed at multiple points including through institute to institute or Government to Government connections. Plant & Food Research uses its own resources to maintain strategic connections with research institutes, for example in Australia, China and Europe. However, there is a lack of a national connection strategy and funds to support the development and maintenance of strategic connections for the benefit of New Zealand.

Connectivity with other actors in the system, such as regulators, Government departments, start-ups, multi-nationals, SMEs, NGOs are also very important but lack Government support.

7. *Innovation and intellectual property*

IP protection and commercialisation are very important to achieving positive social and environmental impact through public good research. Commercial models that utilise IP protection can be directly applied to deliver social and environmental endeavours as well as economic benefit. The boundaries between economic and environmental and social good are increasingly becoming blurred. The strategy document does not recognise this and seems to view IP commercialisation as either for economic or social or environmental outcomes.

It is not clear what is meant by taking ‘a regulatory systems approach to policies that govern ownership, use, and licensing of intellectual property by research organisations with the aim of ensuring common IP arrangements that maximise the potential social value’ (p32). We support the objective of maximising benefit to New Zealand society. However, managing IP to maximise societal value is complex. Common IP arrangements may have far reaching unintended consequences that inhibit innovation and limit the potential return of value to society. IP arrangements are best managed on a case-by-case basis aligned with the principle of maximising societal value but with flexibility in how that is achieved. We would welcome the opportunity to discuss this issue further and co-design potential Actions with MBIE.

8. *Talent*

The aspirational growth target to achieve R&D investment of 2% of GDP will require significantly more researchers and even greater numbers of research-savvy business people. The talent marketplace is international and many other jurisdictions are also after talent to support their innovation ecosystems. We strongly support the emphasis on developing, attracting and supporting the best new talent. We support more long-term funding to support research careers and attract researchers into the system. There are significant gaps in the current talent pipeline and the strategy needs more specific Actions to address these, including ways to support postdoc and early career researchers. New Zealand needs to develop domestic talent, especially Māori, as well as a system that is visible and attractive to overseas researchers. Researchers internationally often compare success rates across funding tools. The low success rates of our competitive funds (MBIE Endeavour, Marsden) is unattractive to overseas talent.

9. *Vision Mātauranga (VM)*

We support the commitment towards an extended Vision Mātauranga and the high level outcomes set out in the strategy. New Zealand is still building the necessary VM capacity and capability, but at the same time needs to support the use of Mātauranga Māori alongside other knowledge systems.

Co-innovation is rightly recognised as being essential in building the extended vision. We strongly support that MBIE undertake meaningful and intentional consultation and engagement with diverse Māori groups with existing and potential interest in RS&I opportunities throughout the next development stages of the strategy.

Some general comments on extending ‘Vision Mātauranga’:

- New Zealand needs to move towards a ‘by Māori’ rather than just ‘for Māori’ framework with the right co-innovation process.
- The new focus areas of the strategy are more aligned with economic development outcomes. We recommend explicit inclusion of environmental, social and cultural benefits alongside economic benefits.
- We need to encourage diverse approaches to building Māori participation in traditional RSI pathways as well as valuing Mātauranga Māori capabilities that exist outside traditional science and research pathways.
- We suggest the strategy strengthens its reference to the unique value proposition the Māori economy and treaty partnership presents in building national and international connections.

- Māori are diverse and their interests vary according to their needs, mandate, capability and capacity. The strategy needs to reflect diverse approaches to working with different Māori groups and interest.

10. *R&D Savvy industries*

The strategy talks strongly to the research supply side but not the industry demand side for R&D. Barriers to creating impact from economically focused research often lie on the business side. Many of our firms are small and know little about how to use R&D to grow their businesses. The Actions to connect research and innovation do not address this need. R&D tax incentives are intended to boost business willingness to invest in R&D but we have had no indication from business that they intend to increase their investment. Other, more proactive mechanisms may be required to build R&D savvy across New Zealand commerce.

11. *Language and definitions*

The use of language needs to be more consistent across Government strategies and terms better defined. This is especially true for the RS&I strategy and the impact paper that have emerged at the same time.

There will need to be a consistent view of what working at the frontier is, otherwise everyone will think they work at the frontier! The research horizons of New Ideas: Emerging Ideas: Leveraging Proven Ideas was never well defined and has been retained in Draft.

Organisations resorted to using the Frascati research type definitions which were better defined and cross-coding these to the MBIE horizons.

12. *Impact*

We were pleased to see the release of the Impact paper alongside the RS&I strategy.

Impact is important for us and remains central to everything we do. Alignment between the RS&I strategy, the understanding of Impact and other related strategies will be very important. Plant & Food Research appreciated the opportunity to work with MBIE on Impact through the iPEN group and hope that the collaboration will continue.