From:	no-reply@mbie.govt.nz
To:	Research, Science and Innovation Strategy Secretariat
Subject:	Draft Research, Science and Innovation Strategy submission
Date:	Sunday, 10 November 2019 2:17:38 p.m.
Attachments:	Online-submission-form-uploadsdraft-research-science-and-innovation-strategy-submissionssubmission-form-research-science-and-innovation-strategy_PB.docx

Submission on Draft Research, Science and Innovation Strategy recevied:

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

Name
Dr Peter Buchanan

Name of organisation or institutional affiliation
I am an employee of a CRI but choose to submit as an individual. Views are my own and do not reflect the views of my employer.

Role within organisation
Science Team Leader

Email address (in case we would like to follow up with you further about your submission)
buchananpandr@gmail.com

Which of the below areas do you feel represents your perspective as a submitter? (Please select all that apply)
Researcher, Provide services to users of research

If you selected other, please specify here:

Gender
Male

Ethnicity
Epsom

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)

If you selected other, please specify here:

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

Please indicate if you would like some or all of the information you provide in your submission kept in confidence, and if so which information.

Please upload your submission document here
submission-form-research-science-and-innovation-strategy_PB.docx - Download File

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Research, Science and Innovation Strategy

Submission form

The Government is developing a Research, Science and Innovation (RSI) Strategy to set out our vision for RSI in New Zealand and its role in delivering a productive, sustainable, and inclusive future.

We are keen to hear the views of New Zealanders on the draft Strategy so that we can get a better understanding of what our country needs from RSI. We also are looking for feedback on how we can take action to ensure New Zealand's RSI system is optimised for success. These views will inform the direction of Government investment in RSI and the research and innovation areas for us to focus on as a country, as well as help us understand the challenges we need to overcome.

We encourage anyone with an interest to make a written submission.

How to have a say

We have included a number of questions in the draft RSI Strategy document to highlight issues on which we would like further input. We encourage you to use these questions as a guide when submitting your feedback.

This document provides a template for you to provide your answers. Please upload the completed document using our online submission page.

You do not have to fill out every section – we welcome submissions on some or all of the questions.

The closing date for submissions is 10 November 2019.

After the consultation period finishes, we will analyse the submissions received and incorporate the feedback in the final version of the strategy.

Confidentiality

Please note: All information you provide to MBIE in your submission could be subject to release under the Official Information Act. This includes personal details such as your name or email address, as well as your responses to the questions. MBIE generally releases the information it holds from consultation when requested, and will sometimes publish it by making it available on the MBIE website.

If you do not want some or all the information you provide as part of this consultation to be made public, please let us know when you upload your submission. This does not guarantee that we will not release this information as we may be required to by law. It does mean that we will contact you if we are considering releasing information that you have asked that we keep in confidence, and we will take your reasons for seeking confidentiality into account when making a decision on whether to release it.

If you do not specify that you would prefer that information you provide is kept in confidence, your submission will be made public. While we will do our best to let you know that we plan to publish your submission before we do so, we cannot guarantee that we will be able to do this.

Contribution of Research, Science and Innovation

This strategy is about New Zealand's Research, Science and Innovation (RSI) at a high-level. Its aim is to identify challenges and opportunities that will have the broadest impact on our research and innovation activities. For this reason, it mentions few specific areas or sectors of research and innovation. For this draft version of the Strategy, we are keen to hear from researchers, innovators, businesses, and providers of public services on what the RSI system could be doing to accelerate progress on Government's priorities.

Question 1: Where can the RSI system make the greatest contribution towards the transition to a clean, green, carbon-neutral New Zealand?

Question 2: Where else do you see it making a major contribution?

Question 3: What else could else the RSI system be doing to accelerate the progress towards the Government's priorities*?

* see list of the Government's twelve prioritiesincluded in Part 1 of the draft Strategy.

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Question 3.

I am concerned that this draft Strategy assumes that the current funding systems are fit for purpose to meet the Government's 12 priorities, as stated on p.1:

> "Much of our work over the past five years has focused on ensuring our funding systems are fit-for-purpose and work well together to support the full range of research, science and innovation activity."

I consider that this ignores statistics of the inadequate success rate for funding proposals, and the consequent wasted tax payer funding as hundreds of CRI and university scientists prepare complex bidding documents destined to go no-where. Funding agencies have responsibility to minimise this wastage in the ways that they design their bidding structures.

In a nation's RSI Strategy, I contend that there is a responsibility for the Government's RSI funding agency to also meet best practice and to minimise wastage of scientists' time and intellect. Improvements in formulation of funding structures will also reduce stress levels of science employees. The old adage that "No bid is ever wasted" is at times merely a convenient sop voiced by (non-bidding) managers.

Of the 12 priorities, the above comments relate to:

3. Deliver responsible governance with a broader measure of success

9. Deliver transparent, transformative and compassionate government

12. Create an international reputation we can be proud of

One innovation that Aotearoa's science funding agency should actively pursue is to adopt a REAL-WORLD funding structure, by which multi-year funding is cognisant of the inevitable reality of rising costs. Just as MBIE's costs increase each year, so too do costs of scientist time (wage growth) and other operational costs. In other words, inflation adjustment is a

long-overdue need for our science funding allocation process to embrace.

Inflation adjustment of funding cannot be achieved without increased Government allocation to RSI. The Government is committed to increased science funding to 2% - although this will only bring us to an average in the OECD, far below countries such as Singapore and Scandinavian countries that we aspire to match in performance. I recommend that MBIE strengthen its case to its Ministers to aspire beyond the 2% current target, and to hasten achievement of a globally credible level of science funding for the broad benefit of Aotearoa NZ.

Researching and innovating towards the frontier

Question 4:	Do you agree that the RSI Strategy should be focused on innovation at the "frontier" (creating new knowledge) rather than behind the frontier (using existing knowledge to improve the ways we do things)?
Question 5:	In which research and innovation areas does New Zealand have an ability to solve problems that nobody else in the world has solved? Why?
Question 6:	In which areas does New Zealand have a unique opportunity to become a world leader? Why?
Question 7:	What do you consider to be the unique opportunities or advantages available to the RSI system in New Zealand?
Question 8:	What RSI challenges are unique to New Zealand, that New Zealand is the only country likely to address?
Question 9:	What are the challenges of innovating in the public sector? How do they differ from those in the private sector?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Questions 4, 7, and 8.

I support the statement on p. 17: "The most valuable innovation is systematic, continuous, and occurs across multiple domains" – but with application likely beyond that intended.

The science of Systematics is a valuable and essential area of research to document the biodiversity of Aotearoa NZ. While not traditionally seen as innovation, this fundamental area of science uses cutting edge technology, and establishes evidence-based foundational knowledge on which NZ's biosecurity, primary industries, and conservation action is based.

An increased and sustainable level of funding for Systematics is long-awaited, to provide the kind of basic knowledge of NZ's biodiversity and environmental parameters – as advocated strongly by Simon Upton in his PCE report: "Focusing Aotearoa New Zealand's environmental reporting system".

Included in this PCE report is acknowledgement that the outcome of the Review of Databases & Collections is unknown. I suggest that this is unknown because the review has received low priority and support from the organisation (MBIE) that commissioned it. And meantime, historic funding for systematics research is being simply rolled over – ignoring the need for additional funds, and ignoring impacts of inflation and wage growth. The recent retirement of a nationally leading systematist in my organisation led to non-replacement – and this has been a repeated scenario over recent years.

Simon Upton at the establishment of the CRIs anticipated the need to designate Nationally Significant Collections and Databases, and created a pool of ring-fenced long-term Backbone Funding for such underpinning research. MBIE has dismantled this important funding structure, opening such designated funding up to science managers to manipulate as they see fit for their own organisation, rather than for the good of Aotearoa NZ.

Aotearoa NZ is internationally responsible to document and conserve our biodiversity, so much of which is endemic, unique, but also UNKNOWN.

The public perception (as fed by Government and most media) is that NZ's biodiversity is well known and largely well protected. Science funding agencies need to be much more astute and aware of the reality. For all but the large organisms (plants, birds, reptiles), over 50% of our expected biodiversity is yet to be recorded.

Knowledge of our invertebrates and our fungi are two main areas with such major gaps in understanding. They are also areas of prime relevance to keeping our borders secure of unwanted organisms – that in itself requires us to know whether an newly recorded species is introduced or native. Documentation of species is also necessary for their conservation, contrary to the superficial view that conserving selected remnant habitats automatically conserves all of NZ's biota.

Our unrecorded biodiversity is both a challenge (Q.8) and a unique opportunity (Q.7) for which this country needs to adequately address – by increased resources to support increased and long-term research effort.

Our key challenge – Connectivity

Question 10: Do you agree that a key challenge for the RSI system is enabling stronger connections? Why or why not?

Please type your submission below.

Guiding Policy – Excellence

Question 11:	Do you agree with the definition of excellence presented here as the best thing possible in its context? Why or why not?
Question 12:	How can we achieve diversity within our research workforce? What are the current barriers preventing a diverse range of talent from thriving in the RSI system?
Question 13:	Do you agree that excellence must be seen in a global context, and draw from the best technology, people, and ideas internationally? Why or why not?
Question 14:	Do you agree that excellence is strengthened by stronger connections?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Guiding Policy – Impact

Question 15: How can we improve the way we measure the impact of research?

Please type your submission below.

Guiding Policy – Connections

Question 16:	Where do you think weak connections currently exist, and what are the barriers to connections at present?
Question 17:	What actions will stimulate more connectivity between parts of the RSI system?
Question 18:	How could we improve connections between people within the RSI system and people outside it, including users of innovation, and international experts, business communities, and markets?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Actions – Making New Zealand a Magnet for Talent

Question 19:	How can we better nurture and grow emerging researchers within New Zealand and offer stable career pathways to retain young talent in New Zealand?
Question 20:	How could we attract people with unique skills and experience from overseas to New Zealand?
Question 21:	What changes could be made to support career stability for researchers in New Zealand? What would be the advantages and disadvantages of these approaches?
Question 22:	Do you agree with the initiatives proposed in the Strategy to support and attract talented researchers and innovators? Are any changes needed for these initiatives to be successful? Are there any other initiatives needed to achieve these objectives?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Question 21. Concerning the science of systematics, see comments under Q. 4,7,8. Career structure for young systematists firstly needs to be created – by funding increasing to enable retiring systematists to be replaced, and also by increased opportunity for NZ-trained students in systematics to receive post doctoral positions, rather than be lost overseas. Current perceptions of lack of Government support for systematics research (including the stalled review of Databases and Collections) acts as a disincentive to students to train as systematists – while over 50% of NZ's expected biodiversity remains unrecorded.

Actions – Connecting Research and Innovation

Question 23:	What elements will initiatives to strengthen connections between participants in the RSI system need to be successful?
Question 24:	What elements will initiatives to strengthen connections between participants in the RSI system and users of innovation need to be successful?
Question 25:	What elements will initiatives to strengthen connections between participants in the RSI system and international experts, business communities, and markets need to be successful?
Question 26:	Are there any themes, in addition to those proposed in the Strategy (research commercialisation and international connections), that we need to take into consideration?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Actions – Start-up

Question 27:	How can we better support the growth of start-ups?
Question 28:	Do the initiatives proposed in the draft Strategy to support growth of start-ups need to be changed? Are there any other initiatives needed to support start-ups?
Question 29:	What additional barriers, including regulatory barriers, exist that prevent start-ups and other businesses from conducting research and innovation?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Actions – Innovating for the public good

Question 30:	How can we better support innovation for the public good?
Question 31:	What public-good opportunities should our initiatives in this area be focused on?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Question 30,31. See comments above in relation to the public good science of systematics, to document the 'missing' biodiversity of NZ.

Actions – Scale up

Question 32: What is the best way to build scale in focused areas?

Question 33: Do the initiatives proposed in the Strategy to build scale in focused areas need to be changed? Are there any other initiatives needed to build scale?

Note: see following page to comment on possible areas of focus

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Scale up – Choosing our areas of focus

For this draft iteration of the strategy, **we seek input on the selection of possible areas of focus**. We will consider establishing around five focus areas, but, depending on the eventual selection, are likely to introduce them over time, rather than immediately. In addition to the criteria set out in the Strategy document, we invite stakeholders to consider the following factors in their suggestions –

- The ambition of this strategy to focus efforts in the RSI portfolio at the global frontier of knowledge and innovation.
- Ways in which the RSI system can accelerate progress on the government's goals.
- The focus areas already determined by *From the Knowledge Wave to the Digital Age*.
- Work already underway where we are already seeking to build depth and scale in the RSI system.

The following areas could be a useful start, and are highlighted in *From the Knowledge Wave to the Digital Age:*

- **Aerospace**, including both autonomous vehicles and our growing space industry.
- **Renewable energy**, building on recent investments in the Advanced Energy Technology Platform.
- **Health technologies** to improve delivery of health services and explore opportunities in digital data-driven social and health research.

We invite comment on these suggestions and welcome input on other possible focus areas.

Please type your submission below.

Actions – Towards an Extended Vision Mātauranga

This section of the draft Strategy signals our intention to consult and collaborate further with Māori stakeholders to co-design our responses and initiatives. From that perspective, we consider the signals in the draft Strategy to be a start, rather than a set of final decisions. Nonetheless, we are keen on initial feedback in the following areas.

Question 34: Does our suggested approach to extending Vision Mātauranga focus in the right five areas? If not, where should it focus?

Question 35: How can we ensure the RSI system is open to the best Māori thinkers and researchers?

Question 36: How can we ensure that Māori knowledge, culture, and worldviews are integrated throughout our RSI system?

Question 37: How can we strengthen connections between the RSI system and Māori businesses and enterprises?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Actions – Building Firm Foundations

Question 38:	Do the current structures, funding, and policies encourage public research organisations to form a coordinated, dynamic network of research across the horizons of research and innovation? What changes might be made?
Question 39:	Is the CRI operating model appropriately designed to support dynamic, connected institutions and leading edge research? What changes might be made?
Question 40:	What additional research and innovation infrastructure is necessary to achieve the goals of this Strategy? What opportunities are there to share infrastructure across institutions or with international partners?
Question 41:	What elements will initiatives in this area need to be successful?

Please type your submission below. If applicable, please indicate the question(s) to which you are responding.

Actions – General

Question 42: How should the Government prioritise the areas of action, and the initiatives proposed under each area?

Please type your submission below.

General

Question 43:	Do you have any other comments on the Strategy which have not yet been addressed?

Please type your submission below.