#84

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Page 2: Section 1: submitter contact information

Q1

Name

Jochen Schmidt

Privacy - 9(2)(a)

Q3 **Yes**

Can MBIE publish your name and contact information with your submission?Confidentiality notice: Responding “no” to this question does not guarantee that we will not release the name and contact information your provided, if any, as we may be required to do so by law. It does mean that we will contact you if we are considering releasing submitter contact information that you have asked that we keep in confidence, and we will take your request for confidentiality into account when making a decision on whether to release it.

Q4 **Yes**

Can MBIE contact you in relation to your submission?

Page 3: Section 2: Submitter information

Q5 **Individual**

Are you submitting as an individual or on behalf of an organisation?

Page 4: Section 2: Submitter information - individual

Q6 **Yes**

Are you a researcher or scientist?

Privacy - 9(2)(a)

Page 5: Section 2: Submitter information - individual

Q11

What is your iwi affiliation?

Respondent skipped this question

Page 6: Section 2: Submitter information - individual

Q12

If you wish, please specify to which Pacific ethnicity you identify

Respondent skipped this question

Page 7: Section 2: Submitter information - individual

Q13

What type of organisation do you work for?

Crown Research Institute or Callaghan Innovation

Q14

Is it a Māori-led organisation?

No

Q15

Which disciplines are most relevant to your work?

Agricultural, veterinary and food sciences,

Biological sciences,

Earth sciences,

Environmental sciences,

Information and computing sciences

Q16

What best describes the use of Mātauranga Māori (Māori knowledge) in your work?

There is some Mātauranga Māori, but it is not the main science knowledge

Page 8: Section 2: Submitter information - organisation

Q17

Organisation name

Respondent skipped this question

Q18

Organisation type

Respondent skipped this question

Q19

Is it a Māori-led organisation?

Respondent skipped this question

Q20

Where is the headquarters of the organisation?

Respondent skipped this question

Q21

What best describes the use of Mātauranga Māori (Māori knowledge) in your organisation?

Respondent skipped this question

Page 9: Section 3: Research Priorities

Q22

Priorities design: What principles could be used to determine the scope and focus of research Priorities?(See page 27 of the Green Paper for additional information related to this question)

“Priorities” means at its core (1) defining the scope for individual 'entities' ('research areas') and (2) ranking those.

As noted in section 1.2.2, scope (1) can be of different types. At a national level scope for different 'entities' naturally needs to be at a high level and should align with existing and other scope definitions, e.g. the SCPs of the CRIs. This 'categorisation of research areas' should be reflected in all other system components e.g. institutional and research funding definitions.

There is also an opportunity for ensuring that NZ's R&D landscape aligns with and complements the international R&D landscape. NZ is a small country and needs to focus to be effective, so there is an opportunity of what is done in NZ and what not (because it is more effectively done somewhere else in the world, e.g. fusion research).

Q23

Priority-setting process: What principles should guide a national research Priority-setting process, and how can the process best give effect to Te Tiriti?(See pages 28-29 of the Green Paper for additional information related to this question)

I believe a key step would be to develop a 'NZ Research Strategy' that defines key areas and ranks those.

This strategy should also consider and include core research areas as proposed in Section 3 - Funding.

The ranking should be based on a "multi-dimensional approach" considering various factors incl. essential / critical areas, importance in int'l context, national priorities, etc.

Q24

Operationalising Priorities: How should the strategy for each national research Priority be set and how do we operationalise them?(See pages 30-33 of the Green Paper for additional information related to this question)

I am not sure a research priority needs to be fully operationalised as a project / programme as exemplified by NSCs. In my mind NSCs have been only moderately successful in leading a research area.

I would propose that a 'NZ Research Strategy' should be implemented by providing a 'backbone' that is (required to be) embedded / adopted in all other parts of the funding system, e.g. institutions, funding structures, infrastructures etc.

Proposed actions:

- Develop a "NZ research strategy" that defines and ranks key research areas incl. core functions (and that is reviewed regularly).
- Implement systems to ensure the "NZ research strategy" is embedded / adopted in all other parts of the research system as a 'backbone'.

Page 10: Section 4: Te Tiriti, mātauranga Māori, and Māori aspirations

Q25

Engagement: How should we engage with Māori and Treaty Partners?(See page 38 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q26

Mātauranga Māori: What are your thoughts on how to enable and protect mātauranga Māori in the research system? (See pages 38-39 of the Green Paper for additional information related to this question)

I believe one key challenge in integrating Maori with the science system is that science is by tradition 'compartmentalising', 'specialising', while Maori philosophy in general is holistic. Typically (to western science tradition) research approaches / projects are domain specific and it is hard to 'find' relevant Maori stakeholders to work with. A conundrum that is not easy to solve.

Q27

Regionally based Māori knowledge hubs: What are your thoughts on regionally based Māori knowledge hubs?(See page 39 of the Green Paper for additional information related to this question)

I would suggest that a "NZ research strategy" could guide / support the developments / implementation of "Maori knowledge centres/hubs" in key areas (as opposed the proposed regional approach). For example, if Water Quality is one highly ranked research area in the "NZ research strategy", a Maori Water Quality knowledge Hub could be supported.
I note that these "hubs" would provide integration with the wider (regional) Maori communities and knowledgebase.
I note that NIWA has demonstrated this model successfully through Maori experts aligned with NIWA's three key research areas.

Proposed actions
- Implement / support Maori knowledge hubs related to / aligned with high priority research areas within the proposed "NZ research strategy".

Page 11: Section 5: Funding

Q28

Core Functions: How should we decide what constitutes a core function, and how do we fund them?(See pages 44-46 of the Green Paper for additional information related to this question)

Lack of stability of funding system is noted and is proposed to provide government funding for (1) core / essential research functions, and (2) base ('keeping lights on') functions.

Core functions should be aligned with and derived from a proposed "NZ Research Strategy". Core functions should include (1) essential research areas and (2) core infrastructures (required to support priority research), infrastructure would include sensing systems, labs, databases, collections etc.

Q29 **Yes**

Establishing a base grant and base grant design: Do you think a base grant funding model will improve stability and resilience for research organisations?(See pages 46-49 of the Green Paper for additional information related to this question)

Q30

Establishing a base grant and base grant design: How should we go about designing and implementing such a funding model?(See pages 46-49 of the Green Paper for additional information related to this question)

I think a base fund would support more organisational stability.

From a pure research funding perspective it would be preferable to have a base grant as this would mean for a research project only the actual cost arising for the research (no OH) would need to be funded - meaning that '$1M' would 'give more research activity'.

I see challenges in developing and equitable system for defining and allocating base grants across various organisations. Probably a change like this would need to go hand in hand with changes to institutions (section 4).

I would suggest base grant should only cover 'lights on activities', moving it into research areas can lead to a 'lolly scramble' for base fund.

Page 12: Section 6: Institutions

Q31

Institution design: How do we design collaborative, adaptive and agile research institutions that will serve current and future needs?(See pages 57-58 of the Green Paper for additional information related to this question)

The 'company model' of CRIs is criticised. I would agree the company structure and the operational model mandated through the CRI act does not encourage collaboration but encourages an inward focus in terms of financial and science success and related marketing communications. I would go so far that this not only applies to CRIs but almost all other entities of NZ science system, including NSCs. NSCs have created their own marketing / communications department to strengthen their profile. In short the whole science sector is to some degree focuses on making "my entity look good" to increase chances of future funding.
Some of the measures that are put in place to make the system more collaborative, e.g. KPIs on collaboration, are really only band aids.
I believe a different operational model would need to be baked into the foundations of new research entities, these should emphasise the core goal of any science entity (organisation, programme, project, etc) as contribution to NZ sustainability and growths by being part and supporting others.

It is proposed to centralise into fewer organisations. I would caution this approach, as larger structures can / will generally create barriers to agility / innovation. Possibly a mixed model need to be sought out that includes large / stable organisations for more ongoing / essential research (-> NZ research priorities!), and smaller entities that are more agile, with the ability for staff to move seamlessly between them (-> addressing noted workforce challenges).

Q32

Role of institutions in workforce development: How can institutions be designed to better support capability, skill and workforce development?(See page 58 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q33

Better coordinated property and capital investment: How should we make decisions on large property and capital investments under a more coordinated approach?(See pages 58-59 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q34

Institution design and Te Tiriti: How do we design Tiriti-enabled institutions? (See page 59 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q35

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?(See pages 60-63 of the Green Paper for additional information related to this question)

In my opinion a key success factor for impact is co-innovation in a collaborative framework. In the 'real world' problems often arise and need to be dealt with immediately, whereas the current research system is slow to respond. I would argue following on from above that small 'innovation hubs' that put 'doers' in virtual teams bringing together scientists and stakeholders could be a formula to empower better impact. Key would be quick access to funding setup and seamless moving of scientist from pure science into these hubs.

A third 'layer' in a redesigned institutional system could include entities focused on commercialisation of products and services (that are generated out of the research and innovation system).

Proposed actions:

- To develop (as part of “NZ Research Strategy”?) redesigned foundational documents that describe what behaviour we expect from any entity in the system, esp. increased sharing, contribution, collaboration. From a 'making myself look good' philosophy to 'work with others / support others to help NZ grow'.

- Design a 'multi-sized', 'multi-layered' institutional model that supports elements like the following:
  - ongoing essential research (that can maybe happen in large organisations)
  - small 'innovation hubs' (that can be quickly created and 'killed') that should be closely aligned with (and co funded by) stakeholders, especially Maori, and Industry to ensure impact.
  - Entities focused on Commercialisation of developments arising from the research and innovation 'layers'
  - Note: Need to carefully design that to avoid competition behaviour / silos.

- Note: This changed institutional model would need to align with changed funding model.

Page 13: Section 7: Research workforce

Q36

Workforce and research Priorities: How should we include workforce considerations in the design of national research Priorities?(See pages 69-70 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q37

Base grant and workforce: What impact would a base grant have on the research workforce?(See pages 70-71 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q38

Better designed funding mechanisms: How do we design new funding mechanisms that strongly focus on workforce outcomes? (See page 72 of the Green Paper for additional information related to this question)

Respondent skipped this question

Page 14: Section 8: Research infrastructure

Q39

Funding research infrastructure: How do we support sustainable, efficient and enabling investment in research infrastructure?(See pages 77-78 of the Green Paper for additional information related to this question)

Is NZ investment in national infrastructure really small? More evidence / review required!
I think it definitely is dispersed, uncoordinated and not easily evident / reportable.
-> Would be useful to do a high level / 'back of envelope' review assessment of current key infrastructure items (NESI, labs, collections) and their funding maybe over last 5 years or so to get a status quo of our current infrastructure.

Purely from an accounting / overview perspective it makes sense to setup a 'structure' to support national infrastructure: knowing what we have and managing it consistently.

I note that many national research infrastructures will need to be integrated with global systems / infrastructures, e.g. calibration facilities and data infrastructures such as Global Earth Observation System GEOS, World Meteorological Organisation WMO and many others. I observe (in my role as National Focal Point for the World Meteorological Organisation Global Climate Observing System) that New Zealand's contribution to global systems is quite 'ad hoc' and not supported in a systemic and visible way, there is an opportunity of a NZ Research Infrastructure to be much better integrated with international systems and demonstrating much better New Zealand's global contributions (e.g. Lauder - Atmosphere).

How can a 'national infrastructure system look like'? Practically, I think there are opportunities in
- physical centralisation for physical assets, esp. collection, laboratories that require purpose build facilities
- 'virtual centralisation' of IT / data infrastructure (as future is 'decentralised' = cloud anyway), meaning using consistent systems, software etc.
- However needs to be kept in mind that centralisation comes with / can create barriers and 'overheads'.

I believe a future National Research Infrastructure needs:
- Most importantly create a consistent and national vision and mission that is followed across the sector;
- More involvement from central government is desirable to ensure esp. direction and ongoing financial support e.g. for entities that are at risk from institutional priorities, and in areas of general priority setting;
- To be a partnership approach between central government and relevant expert agencies (acting curators) and external stakeholders (e.g. users, contributors);
- Be based on a thin governance approach allowing agility on the ground;

I would suggest that NZ learns from and aligns with the Australian NCRIS system for national research infrastructure - possibly creates 'a sister system' that operates in tandem with? There are lots of learnings (not re-inventing the wheel), especially related to governance and priority settings. I note that NIWA and MWLR have existing NCRIS relationships.
There are benefits from NZ aligning with Australia: Distance, Culture, Indigenous population aspects.

Proposed actions:
- Review / stocktake current NZ research infrastructure.
- Engage with NCRIS to define what a NZ system should look like.
- Based on above develop a co-governance system, esp. including a strategy and mission/ vision paper.