From:	no-reply@mbie.govt.nz
To:	Research, Science and Innovation Strategy Secretariat
Subject:	Late submission on draft RSI strategy
Date:	Friday, 15 November 2019 4:27:05 p.m.
Attachments:	Online-submission-form-uploadsdraft-research-science-and-innovation-strategy-submissionsESR-submission-form-research-science-and-innovation-strategy-Final.docx

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

Name
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Name of organisation or institutional affiliation
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Which of the below areas do you feel represents your perspective as a submitter? (Please select all that apply)

If you selected other, please specify here:

Gender

Ethnicity

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)
Research , Government, Professional services

If you selected other, please specify here:

How large is your organisation (in number of full-time-equivalent employees)?
402

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
ESR-submission-form-research-science-and-innovation-strategy-Final.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.

Overview statement for ESR submission on the Draft NZ RSI Strategy

- The Institute for Environment Science and Research (ESR) welcomes the opportunity to comment on the draft New Zealand Research, Science and Innovation (RIS) Strategy (the Strategy).
- We are the Crown Research Institute (CRI) entrusted with using the power of science to tackle critical challenges facing New Zealand in the areas of public health, crime, food safety and water quality.
- As the CRI that deals the mostly directly with people, and the link between human and environmental health, we have looked at the draft strategy through this lens: How will the direction set by the Strategy support the health and wellbeing of people and the environment over the intended horizon.
- We are mindful of New Zealand's commitment to transitioning to a low emission, and climate resilience economy, with the obvious benefits this will bring nationally and globally. This means tackling the urgent challenges such as climate change, antimicrobial resistance, food security, ensuring just transitions and sustainable development.
- We support, and see alignment with our strategic direction and organisational transformation programme, in key elements of the strategy's aspiration, particularly in the following areas:
    - The three pillars of excellence, impact and connectedness.

- Growing investment in science (as a percentage of GDP) and supporting the talent and career development needed to underpin this investment.

- Embedding Kaupapa Māori Research and growing impact with Māori.

- We are confident that ESR's world leading and globally connected science and research capability can play a significant role in supporting New Zealand's research, science an innovation system to respond to current and future critical challenges.

- We are equally confident that ESR's focus on harnessing research and innovation will advance the wellbeing of all New Zealanders by:

    - Advancing and embedding Kaupapa Māori Research in our research and science practice to deliver impact with Māori. Our work through our Vision Mātauranga and Sustainable Seas projects is working *with* Māori to advance *their* aspirations for people and place – giving our work purpose.

    - Being well networked and connected nationally and internationally in our areas of science expertise so that we can bring ideas together to create new knowledge and solve problems. **For example, our work in the Well Kiwis study; Hosting the International Association of Forensic Toxicologists conference in 2023.**

    - Offering trusted and valued research and advice that translates scientific ideas into real world applications. **For example, STRmix and the new next generation software products FASTR and DBLR which are under development.**

    - Encouraging our diverse talent pool to connect with communities to bring insight to relevant science questions and the potential solutions. ESR has connected with Te Pā o Rākaihautū (the school) to develop a long-term sustainable relationship where both the ESR scientists, Te Pā staff, students and the wider Te Pā whānau can learn from each other on both mātauranga Māori and Western science.

- There are several critical areas in the Strategy that need greater focus and development:
    - The Strategy's frontier focus and the impact that this may have on mission-led/ public good research and innovation.

    - The Strategy expresses in high level terms where it sees New Zealand's science system heading, but the key elements of the roadmap to achieve this are not clear.

    - Clarifying the pillar of connectedness and the type of partnerships this may need to be successful.

The Strategy needs to make more space for 'public good' research and the adaption of

international knowledge to New Zealand

- Strategies need an aspirational vision and the draft RSI Strategy undoubtedly provided this with the focus on blue skies science at the 'Frontier'. New Zealand must push to this ambition in areas where it makes sense to do so.

- We are concerned about the unclear and inconsistent way that the Strategy discusses 'public good' RSI as not all the knowledge that New Zealand needs to thrive now and in the future will come from the frontier.

- The overwhelming focus on the frontier will have implications for how New Zealand thinks about, plans and invests in public good and applied science as part of the RSI system, at a time when such investment is critical to addressing the urgent social, environmental and economic challenges facing us.

- Given the focus of discussion around frontier science being on business innovation for economic benefit, the draft Strategy is unclear on the role of research led/ funded by government entities, and how this will support innovative public policy and services.

- CRIs (and similar research organisations) play an essential role developing the science knowledge and application to ensure the public service is delivering evidence based, excellent, impactful and connected policy and services. Maintaining the RSI system's ability to deliver on this is essential.

- The RSI system will always need a considered, distributed portfolio of science investment across Investigator-led, mission-led and user-led research and the three horizons. The Strategy as drafted does not present this.

The Strategy is directional but doesn't provide the roadmap

- The draft Strategy provides limited practical insight into how its vision will be achieved.

- We have heard from the Ministry of Business, Innovation and Employment at several forums during the consultation period that the limited number of clear actions in the draft strategy, for example, 'Towards an extended 'Vision Mātauranga', is to ensure that the finer details of 'what' that will look like and 'how' that will be achieved will be co-developed with partners and the RSI sector. We see this work as critical to the successful implementation of the Strategy and we look forward to actively engaging with MBIE on this basis.

Connectedness and innovation

- ESR considers that the pillar of connectedness needs to be carefully considered. The Strategy should recognise that the science and research is innately connected: within fields of science, organisations, globally, nationally and across disciplines. This

has always been the case.

- CRIs, universities and other organisations actively collaborate to build, disseminate and apply scientific knowledge.

- CRIs must be doing leading edge, relevant science for public good and for broader application (in part to fund further public good research). It is true that connected science, now and in the years ahead, will require a broader understanding and application of connectedness.

- The future of science delivery, like other areas of service and policy delivery, will be an enhancement of the team/ consortium approach to science where the collaboration is not just in/ across science disciplines but truly multi-disciplinary, ie customer insight, science discipline; project management; communications etc.

- That is an end-to-end process that determines the problem/ pain/ question that there may be a science opportunity to impact on and then delivers the research, application, communication and learning. We need to build this broader capability and capacity alongside that of our science.

- By taking these kinds of approaches, science will instinctively be delivered in the right place, at the right time, and the system will build the right capability to deliver relevant, trusted, impactful science over time.

- We are developing ESR's commercialisation strategy to build a 'Science to Impact' programme reflecting a shift in focus from outputs (data, knowledge, and skills), to commercial outcomes (solving a customer problem) which have impact (change to the customer, economy, society or environment).

- The Strategy could be strengthened to reflect these elements of connectedness and the impact they have on the research and innovation.

- The Strategy also outlines that MBIE plans to take a regulatory systems approach to policies that govern ownership, use and licensing of intellectual property by research organisations with the aim of ensuring transparent, predictable, common IP arrangements that maximise the potential social value from publicly funded research. As a CRI, conducting publicly research as well as generating commercial revenue through science products and services, we would like to stay close this work to provide expert input and advice.

Talent

- We need a talented, sustainable RSI workforce. We need to ensure we have combined focus on growing our distinctive domestic capability (particularly indigenous knowledge and talent) alongside attracting the very best international skill in the areas of science that we excel in. The Strategy seems to focus on the attraction of talent to the detriment of greater effort to grow domestic capacity and

capability.

- Focusing on our unique value propositions as a nation and in our critical areas of science will implicitly attract the best international talent.

Other areas that the Strategy does not look to answer but questions are raised about include:

- Static SSIF funding and the impact this has on CRIs ability to adapt, grow and deliver maximum good. The Strategy does not explicitly deal with funding but for the Strategy and RSI system to be successful this cannot be ignored.

- National Infrastructure: We strongly support the provision of a sustainable future for national infrastructure such as Collections, Databases and eResearch infrastructure. These are all services designed for public good. Collective ownership and benefit needs to be adequately provided for.

  The Strategy should focus on upgrading and updating existing R&I infrastructure. Much existing infrastructure is old, not fit for purpose and cannot be presented to overseas talent as appealing and state of the art.

ESR looks forward to working closely with MBIE on the implementation of New Zealand's Research Science and Innovation Strategy to ensure that research and innovation is harnessed to advance the wellbeing of all New Zealanders into the future.

Q1.

As far as ESR is concerned RS&I can make the greatest contribution to achieving a clean green carbon-neutral NZ by investing in research across the environmental sector. NZ has an international image of a clean and healthy environment that is not matched in reality. Research to understand environmental contamination, its impact on human health and wellbeing and ways to mitigate and remediate this is critical if we are to achieve this goal.

Q2.

The RS&I system can make significant contributions to all of the government priorities as outlined. While the transition to a clean green carbon-neutral NZ is an obvious priority for RS&I others are equally important, including closer partnerships with Māori, healthier safer more connected communities, thriving and sustainable regions. ESR's key outcome areas align well with all these priorities and our science and research help to achieve them.

Q3.

Early engagement with Māori has been lacking. There is a need to increase this partnership to accelerate progress towards the government priorities the RS&I system needs to support science requirements across the full research spectrum.

The drive for 'frontier science', 'discovery science' and 'Horizon 3' might undervalue the need for science in the 'mission-led' space. This is a critical component of the RS&I system providing end-users with the science to solve their problems. Many of the government

priorities will require science in the public good space and there needs to be more appropriate recognition of its importance in the strategy.

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.

Q4.

'Frontier innovation' is a novel concept but the investment needs to be appropriate. Concentration of effort at the leading edge requires concomitant support that can then apply and develop the new ideas to become 'productive'. This appears to be apportioned to industry/ministry investment but there is a danger this important aspect of the science system gets forgotten. Without investment in this area the new ideas languish as proven ideas. While industry is able to pick and choose what is best for itself there is a gap in supporting the science for public good. Are ministries or public sector agencies that require research and development provided with sufficient funding to ensure they can resource the science they need? Is there adequate coordination across the science sector to ensure all stages of science implementation are supported? If the RS&I system is to achieve the social and environmental impact it desires the then support of science for the public sector is imperative.

Public good science is a gap in the strategy and needs to be addressed.

Q5.

Is this question asking 'are there global problems only NZ can solve' or 'are there global problems NZ can help solve'? There are areas where NZ has specific world class expertise and these are related to global problems. Our expertise in the health science, agricultural science, food science are all well-known and they are part of the global science system attempting to solve global problems in these area.

Q6.

ESR is committed to delivering world-class knowledge and research to ensure Aotearoa New Zealand maximises its return on its investment in research, science and technology. ESR aims to build on this research and science with Māori to really drive and deliver on Kaupapa Māori Research and knowledge that belongs to Māori as an opportunity to innovate and work to deliver on outcomes and outputs that deliver impact with and for whanau, hapu, iwi and roopu Māori.

This includes research and science with and from Indigenous peoples that is about caring for the environment – which is inclusive of the land, water, sea and people and is exclusively the domain of Māori (WAI262).

The opportunity for western science to learn from the intersections of both knowledge systems will create the opportunity for Aotearoa New Zealand to become world leaders across a number of research and science sectors. This includes the environmental, marine, human health, water and biosecurity spaces – as this informs sustainable economic development.

Q7:

New Zealand has a relatively small population, which enables researchers to investigate community level effects at a high proportion of the population. For example, ESR has access to >80% of NZ communities wastewater. Our illicit drugs in wastewater research programme is providing important community-level intelligence to the Police, Customs and the Ministry of Health. Expanding this programme to investigating community biomarkers for human health and wellbeing could provide significant wide-ranging intelligence for many public policy initiatives.

Much of this intelligence can be extrapolated to other jurisdictions. The same principle could apply to other areas of science. Our public health information system is sufficient detailed and documented to allow investigation of interventions that can be monitored and scaled up quickly and effectively. Our regulatory system should be agile and enable new technologies and procedures to be assessed effectively and implemented timely and safely.

Q8:

While there are a number of issues which are especially important for NZ the significant RS&I challenges that are unique to NZ probably lie in health associated with Māori and Pacific Island (PI) peoples. Reducing Māori disparities across the health, education and justice sector has been front and centre for New Zealand policy for the last 10 years and the gaps are only increasing. Funding new and innovative ways to increase Māori success is a unique opportunity for RS&I in Aotearoa New Zealand. Our proximity to the Pacific Islands and the ability to look at Climate Change related problems may also be unique to NZ. The example provided in the document (methane production in dairy cattle) is a global problem being addressed in a number of countries and is not unique to NZ.

Q9:

Innovating in the public sector requires an acceptance of risk which is present in the private

sector as the rewards are more tangible. The rewards from public good innovation may not be as motivating despite their value. The appetite for risk will determine the speed at which the innovation is implemented. Resource is also limiting as there is a constant and competing demand within the public sector. The private sector can draw upon resource from a range of investors or entrepreneurs willing to promote an idea for gain. Funds within the public sector are harder to source. The need to look long-term within the public sector also presents a challenge with the short political cycle influencing decisions on priorities.

Typically scientists working in the public sector are motivated by public good and not commercial gain. This can lead to cultural challenges and problems motivating staff to develop commercial opportunities.

Innovation in the public sector also requires implementation of a bias in a system that is monocultured. Doing things differently requires different people who think differently from what's already in place.

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.

Q10.

Connections are a vital aspect of any RS&I system. The stronger the connections the better the information flow and the faster the innovation. Connections can always be improved no matter how well we think we are doing. Whether it is a key challenge depends on the expectations from having the connections. What is key for the NZ is identifying which parts of the system are not as well connected as they should be and how this should be addressed. The document provides information on academic connectedness, regarding this as on par with other SAE countries based on joint publications. ESR certainly has good international connections with over 55% of our annual publications being co-authored with international researchers. The document suggests that the connection gap is between researchers and 'users' and provides metrics around this. The metrics appear to relate to the NZ innovation ecosystem as a whole and how it performs. Driving the connectedness throughout this system is important if NZ is to fully extract the value of its science and innovation. We endorse the desire to increase NZ connectedness. The NZ CRI model is centred on 'connectedness' especially between the researchers and business, albeit within certain sectors, co-developing innovative solutions for industry problems. Fostering and increasing connectedness to business is central to this model. The challenge will be how to achieve the stronger connections in a meaningful way across the system without promoting perverse behaviours.

The aim to increase investment in RS&I to 2% of GDP by 2027 is laudable but the timeframe is slow. The information provided in the document indicates other countries especially the SAE are already investing at this level if not higher. While understanding the need to be fiscally prudent it really is a question of can we afford ***not*** to increase our spending on RS&I in a more timely fashion.

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.

Q11.

The definition of excellence is appropriate. It is trying to cover a wide range of situations from academic to business and necessarily has to be broad.

Q12.

Diversity can only be achieved by providing equitable access to opportunities across the science system. If we desire a diverse workforce in the RS&I system then actions that promote this must happen from the ground up (education and training) and top down (appointments, leadership and recognition). People need role models, we need to see ourselves in the successful models of achievement whether it be gender, race, ability etc. Achieving diversity within the system requires active and persistent support as this can only be realised through long-term stable funding of the research institutions employing the staff.

Q13.

The definition of excellence, 'pursuit of the best things possible,' has to be seen in a global context otherwise it doesn't make sense. If it isn't global then the definition would need to be altered to indicate acceptance of second best. This is not something NZ should aspire to.

Q14.

What is the definition of 'stronger'? We assume the intention is that the connections are more meaningful as represented through increased collaborative publications, research applications, research funding, staff exchanges; working with recognised leaders in research fields; extensive networks with researchers across the field. Any activity that promotes meaningful connections will be stronger and therefore lead to better research and bigger impacts.

Guiding Policy – Impact

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

Please type your submission below.

Q15. A very difficult question to answer and one that is being addressed currently through the CRI iPEN group. The MBIE document outlining thoughts on the impact of science and its evaluation is welcomed and provides a good basis to begin discussions on measuring impact. ESR will continue to work with the iPEN group and MBIE to ensure we can demonstrate the impacts of the science we do.

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.

Q16.

All connections across the system could be improved.

Q17.

Connections require resource. If resource is scarce then fewer connections can be made and maintained. Competition for resource will reduce the effort in creating connections. Internationally, the desire to work with NZ researchers will depend on the subject area, the standing of the NZ researcher, and access to unique resource and available funding. There will be no pull if the subject area does not have potential outside NZ (i.e. global appeal) and no push if the resource to do this is limited.

Q18.

Follow international best practice for the innovation ecosystem.

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.

Q19

Stable career pathways require institutional stability and research funding opportunities. Providing these attributes will help support researcher careers.

Growing our own people, especially Māori and Pacific, is essential to ensure young people that live and stay in Aotearoa New Zealand and call it "home" have opportunities to participate at all levels of the research, science, technology and innovation sector. This means supporting initiatives like the Puhoro STEM Academy.

The Puhoro Academy works with Māori high school students to ensure they are on an STEM academic pathway and mentors them into tertiary STEM pathways. A recent cost benefit analysis by ESR for the Puhoro Academy demonstrates that early investment for Māori into STEM pathways increases the individual earning potential for these student 9 times more when compared to 7 times of other degrees.

Increasing the number of Māori into research and science means that organisations have access to people who come equipped with knowledge of their culture and their environment – as well as the western science academy.

Q20

By providing resource to attack global problems that then support the development of a researcher's career.

Bring people with unique skills and experiences is also about ensuring the people recognise and acknowledge the Crowns Tiriti o Waitangi commitments in the first place.

Reourcing local problems appropriately, will help at global level. Supporting local researchers and scientists is also important to attract world class people to Aotearoa New Zealand

Q21

Resourcing at national level that supports the growth and development of early career researchers and scientists;

Exchange programmes at all levels, community, local, national, international that support the growth and development of the individual *with* their family and community will be needed to grow Aotearoa New Zealand's capability and capacity to help solve global problems at a local level.

One of the big challenges for people when trying to advance their careers in organisations is the *added* workload of opportunity. This is something that needs investment. For example, we free people up for a day – but the work still piles up.

This is even more apparent in Māori and volunteer communities or groups etc.

Q22

The initiatives proposed look appropriate, however more needs to be done to ensure Māori, as Tiriti Partners are included, and community voices are heard. More detail on the proposed actions that will achieve the outcomes described would be welcome. To attract talented young researchers requires access to long term funding, institutional stability, well trained students to support the research and a national science strategy that clearly details the priorities and actions to ensure NZ science creates national and international impact.

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.

Q30.

Innovation for public good has multiple facets which differ from innovation for business. The nature of the public good innovation must have social, environmental or health benefits that can be harnessed by society in a fair and equitable way. Business innovation, developing new products, processes or services, has a single motive which guides how the innovation is taken up and implemented. The financial gain to business will determine the success or failure of implementation. This motive is not evident with the public sector although there can be significant financial gains for society. Whilst profit will drive continued investment in business innovation, public good innovation requires broad social license and support. Innovation for public good requires a culture within public institutions that allows risk and failure to occur. Leaders in these institutions must acknowledge and accept risk as part of being innovative and there must be government acceptance that innovation is a risky business. Resource must be provided to support implementation and flexibility to allow an iterative approach. Rewards for success must be available to encourage innovation. The RS&I system can support innovation for public good by investing more in the health, environmental and social impact priorities. These areas are less likely to attract investment from business and are dependent on public funding as they move from the idea generation and testing to impact.

Q31.

Health and environment should be areas of focus for public good. These areas are of significance for Māori and this should be addressed in the development of initiatives. Research around data science, genomics, sensor technologies in these areas will provide opportunities for improving the environment and health of NZ. The social license to apply innovation in these areas needs to be addressed. The multi-agency nature of the public good areas described signals the need for better alignment of individual priorities to help achieve the desired innovation.

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.

We are supportive of the area of focus in health technologies as ESR provides essential science and research to the health sector and innovation in this area is a priority for our SSIF platform, Human and Environmental Health. Other focus areas could include the effects of climate change on health, the environment and communities, and mitigation.

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.

The approach taken in the document reflects MBIEs lack of engagement with whanau, hapu, iwi and roopu Māori. ESRs He Putaiao He Tangata team would welcome the opportunity to discuss each of the questions in depth.

ESR is committed to delivering world-class knowledge and research to ensure Aotearoa New Zealand maximises its return on its investment in research, science and technology. He Tangata He Putaiao aims to build research and science with Māori to really drive and deliver on outcomes and outputs that deliver impact with, to and for whanau, hapu, iwi and roopu Māori.

Q34

No – your proposed extension of Vision Mātauranga does not account for what Māori are asking for and wanting to do. It is still about MBIEs priorities and aspirations.

MBIE need to actually talk with Māori in order to hear and understand what Māori aspirations and are and devolving resource for Māori to do for Māori, "not about us, without us".

Q35

Early engagement, from the womb to the tomb and investing in Māori initiatives, people and communities to ensure that Aotearoa New Zealand grows its own.

Q36

This would mean MBIE has an understanding of its obligations as a Tiriti partner, and currently this is not evidenced in the document. Collaborating and investing in Māori

whanau, hapu and iwi and roopu Māori will need to occur before access is granted to Māori communities and their knowledge systems.

Q37

As above.

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.

Q38

The question really is 'is there a coordinated, dynamic network of research across the horizons of research and innovation' If there was then the current structures etc would encourage this, if not then no it doesn't. ESR believes the system is not as coordinated nor dynamic as it could be. There are a wide range of agencies and organisations with different drivers and incentives involved in the RS&I ecosystem. A coordinated approach across the system is required and the RS&I strategy should be a key part of this approach.

Q39

The CRI model supports dynamic connected leading edge research that delivers impact for NZ. The model reflects the needs of NZ to deliver innovation in critical sectors vital for the prosperity of the country. The close connections between the CRIs and their sector partners, whether government or business, ensures that the science being done aligns with needs. Connectedness is a key feature of the CRI model, whether nationally or internationally. The bibliometric indicators show the CRIs performing well in their fields of expertise and having significant partnerships with other researchers. The CRI model requires a stable funding base otherwise the need for revenue drives non-collaborative behaviours.

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.