Submission to the SSAG

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ROYAL SOCIETY TE APĀRANGI
EARLY CAREER RESEARCHERS

Who we are

Royal Society Te Apārangi's Early Career Researcher (ECR) Forum represents Aotearoa NZ's ECR community and celebrates their achievements and contributions in the fields of physical, biological, and social sciences, as well as the humanities. The Forum is dedicated to engaging Aotearoa NZ ECRs on issues important to them and fostering a collaborative, communicative, and respected community under the auspices of Royal Society Te Apārangi.

Why ECRs matter to Aotearoa NZ's science system

Supporting early career researchers is crucial for the economic development of a country as it fosters innovation and drives technological advancements. ECRs bring fresh perspectives and cutting-edge ideas that can transform industries and create new market opportunities. By investing in our potential, a country can enhance its competitiveness in the global economy. Furthermore, nurturing early career researchers helps in building a robust knowledge economy, attracting international collaborations and investments. This not only leads to job creation but also strengthens the country's capacity to solve complex challenges, thereby securing a prosperous future.

Question set 1 – The Science, Innovation and Technology System.

1. What future should be envisaged for a publicly supported science, innovation and technology systems?

A thriving and productive science, innovation and technology system requires investment in ECRs and sustainable research career pathways. ECRs are critical to designing new technologies and approaches and gathering data to address societal issues. A thriving science system will provide job security and clear career pipelines that attract high performing ECRs and support them to advance into leadership roles to mentor future generations of researchers. Investing in ECRs and sustainable research pathways is an investment into Aotearoa NZ's future.

Increased investment in science, innovation and technology is required to enable Aotearoa NZ's economy to grow and its people and environment to thrive in a changing world. Aotearoa NZ's investment in research and development as a proportion of GDP remains significantly lower than comparable nations[1], reducing our ability to respond to emerging challenges and opportunities and compete in global markets.

2. What are the opportunities, challenges and barriers that need to be addressed to build a more thriving research, science, innovation, and technology system that delivers positive sustainable growth and prosperity for New Zealand?

ECRs in the RSI sector in Aotearoa NZ continue to face a few interconnected challenges. ECR contracts do not reflect the reality of living in Aotearoa NZ and simultaneously further embed inequity in the system; this makes working within the research sector undesirable

[1] https://www.science.org/content/article/new-zealand-scraps-science-reform-plan-prompting-fears-budgetcuts#:~:text=In%202022%2C%20New%20Zealand%20spent,by%20similar%20economically%20developed%20nations.

long term for many ECRs. If institutions are to better support the capabilities and skills of ECRs, there need to be stable career pathways for ECRs that includes longitudinal planning for leadership and career development opportunities, including for those in precarious work. Given the high skill levels of the research sector, pay needs to accurately reflect living in some of the most expensive cities in the OECD. Ethnic, gender and disability pay gaps need to be addressed.

There also remains significant disciplinary and institutional barriers for ECRs when attempting to be a part of larger research projects. Even though ECRs are encouraged to take on more leadership and administrative roles, within these projects, there remains a lack of well-developed mentorship pathways to enable these roles.

Ensuring stability for ECRs includes flexibility to stay within organisations and in specific locations even as the research priorities change. ECRs are often younger and continuous short-term contracts are disruptive to their lives, families, and connections with communities. Some ECRs have strong connections with certain locations, for instance as their iwi is located there, and forcing ECRs to continue to move to "where the work is" is detrimental to their wellbeing, research relationships, and consequently their ability to deliver impactful research.

For a more detailed insight please see the report "Elephant In The Room: Precarious Work In New Zealand Universities" about precarious work in the tertiary education sector.[2]

3. What principles should underpin the design of a science, innovation, and technology system for New Zealand, given its demographic composition and distinctive cultural makeup, its geographical position, and its social, environmental and economic futures?

We believe the following principles should underpin any future design of the science, innovation and technology system which wants to support ECRs.

Flexibility
An important consideration is how existing staff, and ECRs especially, can move between priorities as their careers develop. This could include a mix of longer-term research priorities to address foundational issues; moderate length programmes that further specify and advance workstreams on the priorities; and shorter, smaller 'blue skies' project areas that are responsive to emerging priorities. This would give ECRs a range of opportunities to contribute their novel ideas whilst still early in their careers and develop their leadership capability through smaller projects that contribute to larger priorities.

Inclusion
We support the involvement of ECRs (both in precarious and stable employment) in all aspects of operationalising and implementing the research priorities, alongside the range of actors involved in carrying out each priority (e.g. technicians, established researchers,

[2]https://auckland.figshare.com/articles/report/Elephant_In_The_Room_Precarious_Work_In_New_Zealand_Universities/19243626/2

community groups). This involvement of ECRs must be more than tokenistic, empowering them to make a meaningful contribution to priority definition.

Integration & Collaboration

We support increased opportunities for ECRs to move between, and work across, different research institutions in Aotearoa NZ, including universities, wānanga, CRIs, iwi, organisations, public and private sectors, industry, and Te Pūkenga. We support an inter-connected research sector that decreases unproductive competition between institutions. This includes an integrated research sector that prompts transdisciplinary training and practice, to support ECRs to form connections between disciplines and strengthen their relationships to institutions and communities beyond the research sector.

Diversity

ECRs also represent a more diverse workforce than previous generations. This warrants a rethinking of institutional work culture to value a host of issues which are vital for a thriving workforce. This culture should reflect components of equity, inclusiveness, and justice. In practice this would mean:

- Supporting Te tiriti partnerships
- Pursuing collaborative and transdisciplinary research co-managed with communities
- Nurturing long term investments in research relationships which extend beyond Aotearoa NZ
- Making space for a diversity of knowledge systems
- Advocating for responsible data sharing and data sovereignty
- Producing science which is more accessible and understood by a wide cross section of the public.

Question set 2 – Public Research Organisations.

4. What is the role of public research organisations such as Crown Research Institutes (CRIs) in the New Zealand context?

Public research organisations (PROs) are crucial as centres of expertise and capability in key areas of research and economic development for Aotearoa NZ and in leading mission-led science to benefit Aotearoa NZ's future. PROs are also leading employers of ECRs and sites where ECRs develop their skills and capabilities. PROs could better enable investment into ECRs at the institutional level by assigning a portion of core funding to ECR development and innovation. This type of funding would encourage fresh thinking and provide a foundation for innovative research aligned to the government's key priorities. It would also mean less ECR time is spent on applying for contestable funding, increasing their productivity. With support, ECRs can be an important avenue through which to encourage knowledge exchange and impact generation.

As mentioned, there is a need to develop an integrated research sector where ECRs can move between, and work across, different science and technology institutions in Aotearoa NZ, including PROs, tertiary education organisations, and industry entities. Currently, some collaboration between PROs and tertiary organisations occurs, however there are barriers such as the need for external funding to cover supervision of postgraduate positions, making it increasingly difficult for PROs to offer this. One solution could be to increase opportunities

for researchers in PROs to hold academic positions (e.g. properly compensated joint/adjunct positions). Having strong ties to tertiary organisations, including through internships, improves opportunities for collaboration and knowledge exchange and gives students opportunities to learn from the applied research undertaken by PROs. Pathways into PROs are not often obvious to new graduates or young academics, so increasing awareness of these pathways is necessary. Improved connectivity and greater mobility of ECRs across organisations will support the whole science, innovation, and technology system to flourish.

Question set 4 – Contestable Research

7. What is an optimal structure for managing mission-led and contestable research?

Both mission-led and contestable research funding are invaluable lifelines for ECRs and essential for developing a sustainable science system. We offer these recommendations regarding the optimal structure and management of these funding sources:

Long-term and reliable funding sources for ECRs and ECR-specific research funding
Mission-led funding has been particularly important for employing ECRs given their long-term visions and funding structures. Contestable funding is also very important. However current contestable funding structures are very competitive and only award funding to few researchers, including few ECRs. Thus, moving forward it will be important to continue investing in mission-led funding and thinking more strategically about how to fund more ECRs with contestable funds. This might look like contestable funds specifically designed for ECRs, or designing contestable funding structures that fund many as opposed to a chosen few. This funding needs to prioritise all disciplines.

Proven governance systems
There was a lot of investment in mission-led National Science Challenges, which each developed their own governance structures. This means there is a large dataset available of what works and does not work when it comes to managing and using research funds. We advocate for learning from the best practices from these different groups. We particularly advocate engaging with ECRs who do a lot of the foundational research in research projects to see what best supported their development as researchers.

Māori and Pasifika develop their own research strategies
Māori and Pasifika researchers are the best placed to answer questions about developing research strategies and priorities for Māori and Pasifika research. The government will need to invest in meaningful consultation with Māori and Pasifika researchers to develop these strategies and priorities. Māori and Pasifika ECRs need to be included in these consultations. Since these consultations will take a long time and a lot of investment, we recommend drawing on the findings from previous consultations, including Te Ara Paerangi.

ECRs are a versatile workforce, having expertise in foundational and applied research (including commercial and industry focused), both areas of which we believe should be factored into the research priorities. There is a desire among ECRs for the impact of the research priorities to be clear when they are being conceptualised. We support research priorities being inclusive of ECR development such as ensuring that funded priority areas incorporate opportunities for ECR development through networking, stable careers, and mentorship.