# Joint CRI Early and Mid-Career Researcher Green Paper Response

**Presented by the Royal Society Te Apārangi ECR Forum**

This submission is a compilation of the ideas generated by a group of Early and Mid Career Researchers from across the Crown Research Institutes; we refer to the submission from the AgResearch Early Career Group as a partner to this submission. AgResearch's Early Career Group hosted a Wānanga on the 1st of February 2022 addressing questions 9, 14, 15, and 16 from the Green Paper. This Wānanga was attended by 33 AgResearch staff and 18 Early- and Mid-Career Researchers from across six CRIs and the Cawthron Institute. Potential participants were contacted by the Royal Society Te Apārangi Early Career Researchers Forum through the Forum email list, a list of attendees of the 2021 He Pito Mata ECR Wānanga in Wellington, and through word of mouth within the organisations. A draft document was circulated prior to submission, which gained further comments from ECR who did not attend the Wānanga that have also been incorporated. We represent a selection of different disciplines, countries of origin and ethnicities, but we do not claim to speak for all ECRs/MCRs across the CRIs and we support any ECR submissions.

This submission is made up of two sections. The first is a summary including some recommendations for MBIE arising from the Wānanga, which highlight the issues or areas that we as a group think need to be addressed and ways they could be addressed. The second is a list of bullet points, organised into main themes under each of the questions we addressed. These bullet points provide the in-depth background to the recommendations, as they represent the genuine discussion that arose in our break-out groups when posed with each of the questions. We hope you will find the inclusion of these two sections useful.

We want to thank MBIE for facilitating the Green Paper process and all the engagement activities that they have actioned, and will continue to action. We view this as a good opportunity for much-needed change and have optimism about what this may mean for the future of our careers, and the careers of those who come after us.

# SUMMARY AND RECOMMENDATIONS

1. **Collaboration**

Better communication within and between organisations will help to remove competition and encourage collaboration, however transparancy and trust through mutual benefits will be required in this communication to truly breakdown barriers contributed to by competitive funding.

**Cross Institutional Gathering:** To boost the collaboration between organisations we think that facilitated and funded yearly cross institution gatherings would be beneficial. These could include a number of individuals (a percentage proportion) from all the different universities, CRIs, independent research organisations, Wānanga etc, or simply ~20 researchers from each of these institutions. These individuals would be a selection from ECRs through to later stage researchers, and from technician level to senior researchers. These could be hosted in person or online (with breakout discussion/networking options) and could be ~2 day events that allow for the network and relationship building between organisations.

**Seminar Series:** Ongoing weekly across organisation seminar series (online) – short ~20 minute talks to highlight the range of research that is happening, encourage networking and collaboration.

**Grants and Funding that Require within New Zealand Collaboration:** Grants should be actively encouraging or selecting proposals with good collaboration between institutions within New Zealand, this should be weighted to be as valued as international collaboration. Collaboration should also be incentivised/required through funding, perhaps around research priorities e.g. you must work together with xyz to solve this research priority. This will help to incentivise sharing of assets, information and research through requiring collaboration for funding allowing us to make the most of what New Zealand has. Better, easier processes need to be in place to allow between organisation data sharing and simpler contracts for staff collaborating across institutions.

## 2. Funding

We believe that ECRs and MCRs should be involved in the design and implementation of any new funding systems.

**Base Grants:** These should benefit ECRs in the research workforce through creating stable career pathways. A base grant system needs to be agile to adapt quickly in case unforeseen issues arise that end up perpetuating existing issues or create new ones for ECRs. We suggest that they cover costs such as:

- Salaries; buildings and research infrastructure (e.g. bioinformatics platforms, data processing and storage); administration/professional/general staff and research support staff (e.g. staff for autoclaving and waste disposal, glasshouse staff); hubs for iwi and industry relationships; collections of national importance e.g. seed storage banks, plant germplasm, fish species stocks; ongoing monitoring e.g. volcanoes; and research priority related research.

Base grants should allow for a stable source of funding that allows for:

- Funding for ECRs to bridge the gaps before they are able to bring in their own funding sources or between funded projects; provide job stability for people on short-term contracts and prevent hiring freezes in times of uncertainty that can lead to precarious staff losing jobs and large workforce gaps; and use for succession planning to allow for knowledge transfer and training.

Base grants should balance both long-term (>5 year research priorities) and urgent priorities, with a pool of money available for responses to significant unforeseen issues e.g. UK urgency grants (https://www.ukri.org/opportunity/nerc-urgency-funding/). Base grants should cover fundamental, applied and blueskies research across all organisations that are eligible for access to them and actively encourage "risky research" and failure to allow for cutting edge research, alongside the research that is guaranteed.

There need to be clear guidelines about which organisations are eligible for base grants and transparency about how they use the money so it can be audited. Additionally, institutions could be measured on workforce criteria to be eligible for base grant funding including career progression, diversity, support for sickness, disability, parental leave (but allow for these to come into effect over a designated period of time to prevent perverse outcomes).

Ensure base grants don't create an "us and them" issue with research priority work being funded, but commercial work not being covered – so do not fund staff based on the hours they are doing aligned with a research priority.

**Staff Time Allocations:** Staff time is not captured accurately at the moment, if timesheets are required research staff will distribute their hours according to available budgets not the actual work they do to avoid "blowing budgets" and a lot of the dark hours (grant writing, paper writing on finished projects, health and safety, compliance, leadership, professional development and advocacy) are not recognised by organisations however this work is necessary for the success of both individuals and the organisations. Technical and support staff need to be adequately covered in grant applications. It would be much better to have a system where staff are actually able to record the number of hours they are working and what they are working on, allowing for greater understanding of time requirements and allowing for flexibility. This information could be used for future budgeting estimates. We need to have high trust environments, but adequate systems to address identified poor performance. Work could be done to understand and fix flawed budgeting systems.

**Encourage and Incentivise Collaborative Rather than Competitive Funding:** Currently contestable funding is time consuming and expensive, it contributes to an unhelpful competitive culture, and has no guarantee of success with some institutions wasting money in writing unsuccessful bids, or the number of unsuccessful bids vs successful bids making the amount of money won less in value than the cost of the hours spent on the numerous applications. Base grants could be used to fund a range of research at the organisations discretion in a high trust environment, and key work can be done through research priorities. Less uncertain/unreliable/short term funding streams should help to improve workforce stability and job security. There could be some smaller funds available for stakeholder relationship building, like the Catalyst and VM grants perhaps, but not just focused on innovation.

**Overheads:** A breakdown of an organisations overhead costs and what they pay for should be publically available, especially for CRIs as government organisations. There were a lot of concerns about overheads and the lack of transparency about how much overheads were for all organisations and what the overheads paid for, this is feeding bad workplace culture and an increasing distrust in senior management (See Question 15 for details on the range of overheads for different organisations, note the lack of information available for CRIs). Higher overheads in CRIs are limiting the commercial and industry partnerships (including Māori organisations) that are successful. High overheads also contributes to the under estimation of required hours in grants to allow grant applications to remain competitive with other organisations. These factors have put off some researchers from persuing a career at a CRI, as they will have potentially less opportunities and impact in those organisations. PBRF and expensive overheads have increased the proportion of PhD students to Post-Docs. It should be investigated what impact reducing the overhead costs of Post-Docs would have and including an overhead cost for PhD students – this could be a half the cost of other staff, or some variation on that that is designated by MBIE/Government. The complete removal of overheads can cause issues similar to PhD students (e.g. Lack of post-doc overheads at AgResearch - they have a large number of post-docs without clear pathways for them into permanent positions – the problem is just shunted along the pipeline, and they have limited access to benefits e.g. no pay progression, no kiwisaver for international hires, no maternity leave). However, a slight reduction or halving the overhead costs and an introduction of PhD overheads may help to balance out the imbalance, with base grants then supplying money for permanent positions for these staff until they might bring in their own funding.

**More ECR Funding Opportunities:** There should be more opportunities for ECRs to be included in, apply for and gain funding, this could include measures such as:

- ECRs should be factored into grant applications, with funded Post-Docs and/or Honours/Masters/PhDs. Overheads could be reduced by ~half to allow for the roles to be formed but also prevent these avenues being preferentially used for completing work without downstream career opportunities.
- Researchers without PhDs should be eligible and supported in leading grant applications.
- There need to be more ECR specific funding mechanisms, such as continue the Whitinga Fellowships. This model of funding a person not a project, and a ballot system is great at boosting diversity and removing ingrained bias and favouritism – this system should be rolled out to more funding systems.
- Ability for New Zealand-based international ECR/MCR to apply for grants so we don't lose New Zealand specific knowledge and experience that they have gained in their time working here.
- Change grants to allow for when the PhD is successful/conferred – not just graduation to prevent unnecessary periods of unemployment.
- Require feedback to be provided to applicants on all grants (brief is OK) to allow for improvement and aid transparency.
- Go to contacts for funding – either a service hub, or an individual in each organisation to provide advice and guidance, especially to ECR/MCR who are new to the funding system.
- International mobility is often considered desirable by hiring and funding committees, yet support for this for ECRs in New Zealand is very limited. Returning to the country after an extended period work or studying abroad presents challenges in terms of (re)establishing a local network and thereby finding employment, and there are few targeted funding opportunities for ECRs based in New Zealand to engage international mobility with guaranteed employment on return. International examples of such targetted "mobility" funds include the Global Postdoctoral Fellowships from the Marie Skłodowska-Curie Actions, the PRIME funding by the German Academic Exchange Service (DAAD), the International Postdoc Grant from the Swedish Research Council. Such targeted funding schemes tend to offer support for local or international ECRs to complete a period of work in other countries, build networks abroad, and have the stability of a guaranteed work period on return to the funding country.

### 3. Organisations

**Co-location and/or Merging Alone Will Not Fix the Issues:** We believe that forced co-locations alone will not fix all of the issues highlighted in the Green Paper, especially in regards to collaboration. There are multiple examples in New Zealand of co-location without good collaboration between the organisations (e.g. Palmerston North with Massey University, Manaaki Whenua Landcare Research, Plant and Food Research, AgResearch and a number of smaller start-ups and IRO). At the Wānanga there was limited discussion of the potential benefits of merging some or all of the CRIs, as many researchers appeared resistant, however subsequent points have been raised that are important to include here to present both the potential benefits and concerns.

**Potential Benefits:** If done well, a merger could allow:

- The better use of funding across a single or fewer organisations, including the reduction in the duplication of expenses for things such as corporate

structures/functions (a single CEO salary, rather than seven), software licencing, journal access fees, etc.
- The removal of the high costs currently associated with cross-CRI collaborations (e.g. staff hours negotiating sub-contracts and IP agreements, policies limiting sub-contracts to a maximum percentage of work, purchasing rights to data from another CRI, etc.), which currently can limit or prevent collaboration between CRIs.
- Easy data sharing across organisations, with a single data storage platform across all organisations.
- A single entry point for collaboration, commercial and industry work and interactions iwi/Māori entities.
- A greater critical mass of researchers within a field and prevent the duplication of related fields that are currently split across CRIs, which would increase research quality and provide access to a wider diversity of skills that would help to ensure the right people are included in a given project.
- A reduction the duplication of building space, research facilities and infrequently-used equipment where they occur in the same towns.
- A shared NZ CRI brand (e.g. Research New Zealand), that could improve name recognition both domestically and internationally, attracting better talent and international research collaborations, similar to how some international research organisations already operate (e.g. the French National Centre for Scientific Research, Research Institutes of Sweden, CSIRO, the National Research Council Canada).

**Concerns:**

- Royalty streams being consumed by a single large organisation and repurposed away from their original function, e.g. kiwifruit royalties feeding back into kiwifruit research, which would not be in the best interest of the related industries.
- Regional facilities/organisations must be kept to ensure local regional connections and relationships are maintained, and continue to provide access to immovable research assets e.g. experimental farms or orchards, and for researchers have sufficient space to do their research. Additionally, we must prevent forced relocation of staff to maintain personal and community wellbeing.
- Ensure a merger does not bring in more middle-management, thus increasing overheads even further and creating more barriers in between researchers and senior leadership, further increasing the depersonalisation of CRIs.
- Merging could lose some of the good aspects of culture present at some of the CRIs, alternatively it could help to correct some of the culture issues present at other CRIs – dependent entirely on who manages the merger and runs the new organisation(s). Values aligned with the 'Culture Change' section below would be extremely important to ensure management have the best interests of staff at heart.
- Moving or combining existing organisations would cause a lot of disruption to both research progress and personnel, whilst potentially costing a lot of money without any guaranteed benefits. Reducing the duplication of building space and research facilities could lead to more large open plan offices which research has found is not compatible with most working styles of researchers, and could waste perfectly good existing research facilities. When building new required research facilities connection should be factored in, but to move existing organisations may cause unnecessary issues and costs.
- A lot of equipment is already at capacity, and for some equipment having to travel into other labs or facilities to use them can be extremely disruptive to work.

- Mergers can confuse overseas collaborations when there are existing well established with the current CRIs.

**Atlernative Solution:** Facilitated and managed collaboration events, joint schools between universities and research institutes, shared staff across organisations (secondments, collaboration) without labourious and costly contracting. Maintaining smaller organisations make it easier to connect and for ECR to have leadership opportunities. Look to international research systems to guide any changes, we could have overarching research councils that act as contact points for researchers and guide some decisions about funding allocation (UK, Canada, Australia – see Question 16).

**Regional Hubs:** Contact points in each regional area could act as connections between different research groups in the area without mergers/co-location and could act as a single entry point for interacting with local iwi and industry. However, these could add problems and extra costs if not implemented well – they need to be connected and collaborative, not just co-located. These hubs could provide built-in support for people to work with the institution: students, interns, professional development, iwi partners. Additionally, they could have an understanding of the local assets to allow for the management of sharing of resources.

**Clear Management Structures:** Currently CRIs are operating in a quasi-business model, but with huge management burden. Is this the worst of both worlds? Would we benefit from clear company structures laid (number of management per x number of staff) with the agility to change this if flaws are established? There should also be transparancy and communication, as addressed in the Culture Change section of the recommendations. Awareness needs to exist of 'friends bringing in friends' which can perpetuate negative management culture, and feedback mechanisms need to exist for staff to report this to the board of each CRI. Staff could also be involved in board structure and appointments to ensure they are representative of the company as a whole.

**Who Are We? What do We Do? What Do We Have?:** Within the MBIE process of determining the future of research in New Zealand we think it would be beneficial to conduct a review of the what institutions are working on, the expertise they have (including professional/support/general staff), their current workforce, and key assets that they have. Many organisations will at least have details of their key assets, and other aspects of this data may already exist. We acknowledge that there may be increasing levels of overlap between the CRIs and this can lead to unhelpful doubling up of resources and competition rather than collaboration. It is important to note some resources/assets are being used at full capacity, so details on usage need to be recorded too. It is important to review the work of the CRIs to address overlap, redundancy, gaps by doing a full evaluation of what the CRIs are working on, then compiling a searchable database which would allow for easily identifying others working in similar areas, boosting collaboration. This data will be useful for determining who has the capacity to do work on the research priorities, or even the research priorities that are selected. It will allow for strategic planning that can be fed into future hiring, and also incentivised and supported training in universities, or through internships or traineeships.

**Unified Systems Across Organisations:** Data processing and storage should be unified, preventing all organisations from reinventing their own platforms and allowing for easy sharing of data. The current strategies could be identified through a review of the CRIs, we believe the CRIs are already working together in discussing data platforms – make the most of this by incentivising this work and a shared platform.

**Salaries:** Salaries should comparable across all sectors and there should be a cap (that factors in inflation) on how much upper management (e.g. vice chancellors at universities, and CEOs, other senior management) can earn so a disproportionate amount of money does not go into their salaries. You may end up with people in these roles who are in it for the greater good rather than an astronomically high pay cheque. Pay all staff at least living wage (factoring in yearly changes in inflation). Currently there are large differences in salaries and benefits available at each CRI, and CRI staff appear to be paid less on average than university based staff with the same experience level. Ensure staff are assessed for performance and paid accordingly, reassess and correct the pay of existing staff, and bring new staff in at the appropriate salaries.

4. **Career Pathways**

**Stable Career Pathways:** We need to develop multiple pathways for people to enter into stable, permanent roles within the research sector which are flexible based on an individuals changing needs. Part of this will require a Culture Change where staff happiness is highly valued (see Recommendation 6), and also the incentivisation of organisations ensuring stable positions and the mental wellness of staff through an organisations access to funding. To address systemic diversity issues job security will be a requirement, minorities are hardest hit by the high costs of study and contract gaps between positions. There is a hope that more stable funding would allow for an extra capacity in the workforce, to be able to respond quickly to the research priorities and their changing needs. Extra capacity would also help to ensure workloads are reasonable.

**Awareness of All Career Opportunities:** The range of different career pathways needs to be be highlighted throughout school, university and within research organisations (See Appendix One: *Draft* Integrated Research Sector of the Royal Society Te Apārangi Early Career Researcher Forum submission), so students and staff are aware of the range of jobs available from research within a universities, government, CRIs, IROs and industry. This could be done by having:

- More guest teaching positions for government, CRI, IRO and industry researchers within high schools and universities across a range of subject areas. This needs to be recognised with staff time and funding.
- More joint schools and joint positions, honours, masters and students hosted in a range of organisations (with appropriate time and financial compensation for the staff involved in training these students). This will allow the universities to provide training aligned with what the CRIs, IROs, and industry require.

**Diverse Pathways into the Research Sector:** To improve diversity and inclusivity in research we need to ensure there are a range of ways to enter into the research sector in addition to the classical university pathway. This could be achieved by:

- Have studentships, internships, apprenticeships/traineeships after high school, graduate programmes in a range of careers available through partnerships with government (see Olivia Truax's submission with a proposal for post-doctoral fellowships in central government), CRIs, IROs, and industry, especially with future workforce planning in mind so we are training students for the roles we will have available, rather than relying on hiring staff from overseas.

We need to improve the value of non-PhD pathways, the non-academic workforce (e.g. purely technical) is hugely important to the functioning of many organisations. However, we need to ensure clear pathways of progression for these staff, e.g. from technician to senior technician, so people are recognised for their developing skills.

**Improved PhD Training Programmes:** PhDs need to be an education training pathway for students, training individuals for the range of jobs that should be available to them. They should not be seen as cheap labour, or the only role that can be afforded with grant funding. We need to train students for a diverse range of career pathways through programmes that integrate training that is additional to the core research e.g. public engagement, policy, similar to what is occuring at some overseas Universities e.g. University of Adelaide, Australia (https://www.adelaide.edu.au/graduatecentre/career-development - CaRST system and free access to Massive Open Online Courses (MOOCs)).

**Research Priorities Aligned Projects:** Like with existing grants and National Science Challenges, PhD and post-doctoral roles could be aligned with research priorities. For PhD programmes this must be designed in a way that allows flexibility in the milestones and objectives to allow for creativity, learning and the ability to explore what comes up through the research process. These roles will require adequate support and mentoring by more senior staff, this will also need to be factored into budgets.

**Movement Between Organisations:** There needs to be pathways that allow for secondments to other organisations for periods of time without compromising an individuals return to their original job or a similar role within their original organisation, and without loosing the benefits that you have gained working at one CRI. It is currently costly, time consuming and hard to employ people across CRIs to do specific tasks, could this be made easier through secondments, collaboration or subcontracting and would allow for cross-CRI skill sharing. In addition, we could have half/half post-docs between organisations, however there would have to be a limit on how much individuals are split between projects and organisations, so they aren't stretched too far to make ends meet.

5. **Training (on the job)**

There should be an overarching training programme across all organisations that provide all staff (not just researchers) with training in healthy communication, unconscious bias, relationship building, Te Tiriti, Te Ao Māori and engagement, agile thinking and leadership that prioritises the importance of collaboration and empowering others. There needs to be support with financial assistance and time allocation for professional development opportunities (both internal and external to the organisation) and on the job learning, both intra and interdisciplinary, for staff across all levels. This will allow for agility to move into new roles or project areas within organisations as needs change, or as individuals interests develop. Many ECRs are being trained to be agile, but this needs to be rolled out to all staff as an understanding that agility is valued but recognises individual's unique skill sets. We think it is also worth noting that we think it is important to collaborate externally for specific needs that won't be required long term in the workforce, e.g. very specific engineering jobs, as we don't want the changing priorities to lead to rolling redundancies, or training of staff into roles that will only be temporary and may lead to precarity.

6. **Culture change**

Our organisations need to focus on their staff in addition to research outcomes and impact, as happy supported staff work better and contribute to a better society. Culture change can come from both bottom up and top down approaches, with an overall focus on good mental health, clear and transparent communication within organisations, and high trust between staff and management.

**Permanent Positions and Staff Satisfaction as a Priority:** There should always be a goal within organisations, right from the top, to get as many people into permanent positions as soon as possible. There are ways organisations get around rules currently meant to ensure job security, e.g. offering 11 month contracts to avoid overheads or bigger contractual processes, setting unachieveable goals for achieving permanent roles, requiring institutional approval of a research area so large grants could be brought in but there is still no job security. Unequal power relations trap people, there can be violations of New Zealand labour laws and people are less likely to report issues or speak up as they risk being blacklisted in a small research sector. There should be a pathway for whistle blowing without repercussions. Without job security we will continue to loose highly trained individuals as they look for stable careers - ECRs can't wait forever for CRIs to make up their minds and it is not good for mental health and job continuity to be continually hired on short term roles. There needs to be a culture change to have the mental health of staff at the forefront of decisions (especially minorities and ECRs). This could be achieved by:

- **Base Grants:** The ability for organisations to create new positions without having guaranteed three year funding (financial conservatism), potentially through base grants.
- **Funding:** Grants and funding that require long-term employment, with feed-back mechanisms to ensure this is happening.
- **Better Leadership:** Leaders who are focused on people development, enabling the success of others and who will give ECRs leadership opportunities.
- **Feed-back Systems:** The government needs to require organisations to have feed-back systems to management (staff happiness, satisfaction and support), and there must be accountability to make adjustments based on this feedback (e.g. they won't recieve funding or will be penalised if they cannot provide evidence of changes).
- **Legislation Changes:** Changes in legislation may be required that promotes this culture shift and holds organisations accountable for collaboration across organisations – this could include financial and outcomes accountability as methods of incentivisation.
- **Exit Surveys:** Exit surveys should be mandatory, with an anonymous option available, to ensure organisations are capturing information on why staff are leaving, and have a responsibility to fix those issues e.g. bullying staff reprimanded or removed, rather than individuals leaving to get away from them.
- **Mandatory Data Recording:** To address systemic diversity and inclusivity issues organisations must capture diversity metrics such as ethnicity, gender, prior training, country of origin (etc.) data on all staff so organisations that are under-performing in representing the diversity of New Zealand can be easily identified, and reasons for this investigated. Make recording of outcomes and careers manadatory so there is data on career pathways (figure out what works well, what doesn't, and what needs to change).

**Rewarding Staff Based on Good Culture:** If people fear for their career development, ego, or reputation – they will always try to keep things for themselves. Humility and values in line with the greater good should be encouraged among researchers. Previously researchers and management have rewarded people for their research or commercial successes alone, with no note on if these are achieved through standing on others and not giving credit to all of those involved in achieving that success, which perpetuates a harmful workplace culture. Behavioural changes and how people are rewarded with funding, promotion etc, needs to change. People should not be promoted on research, commercial or financial successes alone, their interpersonal skills (humility, collaboration, and development of others) should be

factored in (as judged by those both below and above them) – especially when the movements are into leadership roles. Training should be provided for those without good interpersonal skills.

7. **Publications/Impact/Performance**

**Reclassification of Success:** There needs to be a reassessment of what success looks like in the research sector. Historically there is a heavy bias towards journal articles, this needs to change as it doesn't reflect the diversity of research outcomes, especially in the applied research space where client reports, industry magazine articles, public talks, and grower talks can be more impactful and are the focus. This needs to be recorded in CVs and funding panels should all have training for understanding CVs from a range of different disciplines and institutions (e.g. must understand publications are not the only measure of research excellence), and weigh the impact of researchers accordingly. Ensure that panels have at least two represenatives for each area of research the proposals they are addressing cover, to ensure that conflicts of interest do not disadvantage smaller research fields.

**Reclassification of Impact:** We need to develop better impact measures as we don't have a system to measure altruistic behaviours and outreach, and they are currently undervalued and are often unfunded extracurriculars that researchers do in addition to their standard research roles.

8. **Māori and Māori Engagement**

We did not specifically cover any Māori questions within the Green Paper, but we have included the points that were raised in our discussions and we have received as feedback. We support all ECR Māori and Pacifika submissions.

**Funding for Authentic Relationship Building:** Authentic relationships between researchers, organisations and Māori entities take a long time to build and for trust to grow. There is currently limited to no funding for building and maintaining long term relationships, and relationships are instead built around temporary funding sources that may or may not be successful. These can also be damaged or compromised by within organisations delays e.g. in preparing contracts and with data sharing. Base grant funding could provide support for relationship building as we should value this work and not expect people to work/engage for free and rather see it as an investment in the future. We need to pay for kaumatua who come to work with us.

**Research and Support:** There should be an emphasis placed on the co-design of research objectives and projects with iwi/hapū. There needs to be better support within the research sector with specific training and support mechanisms (e.g. regional and national hubs (embedded or stand-alone?), training on Te Tiriti and Te Ao Māori). We should have a long-term goal of honouring Te Tiriti and plan a pathway of how to get there. Requiring immediate change without the infrastructure, support, understanding, staff capability/capacity and strong relationships may continue to drive harmful, tokenistic behaviours from researchers and organisations. Throughout their development there needs to be a high level of communication about the research and also how the relationship building is progressing, allowing adaptability and agile modifications. Alongside this, Māori groups need to be properly acknowledged and invested in for their time, experience, Mātauranga and expertise. Many members of these groups take time from their day jobs to provide consultation and services for CRI projects and are often expected to provide answers and manaakitanga with

little to no monetary compensation. Appropriately compensating Māori will build more capability and capacity to be able to meaningfully co-design research.

9. **Research priorities**

We believe that ECRs and MCRs should play a role in determining and implementing the research priorities to address both long term and short term work of importance to New Zealand. We need a workforce capacity assessment in national research priorities to ensure a mixture of students, ECR, MCR and senior researchers and then plan to build capacity so that the priority can be sustained and adapted over the longer term.

# BULLET POINTS FROM WĀNANGA

**NGĀ WHAKAAROTAU RANGAHAU**
**RESEARCH PRIORITIES**

1. **What principles could be used to determine the scope and focus of research priorities?**

- Priorities should focus on big ideas, and big problems through longer term funding (more than 5 years)
- Priorities should be designed to be cross organisational, cross disciplinary
- Co-leadership and co-design are key principles for priority development
- Mātauranga Māori must be well incorporated into the design and implementation of research priorities

2. **What principles should guide a national research priority-setting process and how can the process best give effect to Te Tiriti?**

- The Pathways to the Future document put out by the CRIs suggested a quadruple helix model (Industry, Government, Māori and Research stakeholders) but it is not entirely clear how each group was defined or would be represented.
    - Additionally it suggests an inappropriate equal weighting of groups; the Māori component should be overarching and include a form of longer term guardianship. There needs to be a lot of attention given to defining who will play this role, and how it will be managed e.g. Māori – iwi? Rohe? Are you engaging with them all?
    - Can we ensure that an ECR voice is present in a system like this? And that ECR representation includes a range of levels, from high school students to post-doctorates
    - We also need to clearly define who the end-users are - for example, is this everyday people or industries?

- What MBIE can do to make sure you're getting opinions from a wide range of parties:
    - Talk to the institutions and ask them what their priorities are – MBIE could hold large gatherings (in person or online) with a range of individuals from the organisations (not just the CEOs and upper management).
    - Engage with high school students and graduate students to see what they identify as the big issues, as they will inherit the world that we are creating

- Create a coordinated and authentic path to engaging with the 'hard to engage' (isolated communities, marginalised socioeconomic groups, disadvantaged etc) and develop an ongoing strategy to ensure that the research priorities will deliver beneficial outcomes for all those who will be affected by them
- There should not be a single Māori group that leads engagement and that people feed information into, as that format is not suitable, and would not allow for good representation across iwi/hapū
- Make it easy for contributions and comments to be collected, and ensure that people are aware of the priority setting process – e.g. via a public seminar series, advertising campaigns, roadshows
- Ensure there is adequate support and funding for consultation.

**NGĀ HINONGA**
**INSTITUTIONS**

**9. How do we design collaborative, adaptive and agile research institutions that will serve our current and future needs?**

ECRs are a good option for taking on entrenched competition as we are new to the research sector and often adaptable. Most ECRs value the importance of collaboration, leading through boosting others up, and want to do research that will be beneficial to people in a changing world.

**Merging may not fix the issues:**

- There is a global trend towards fewer, larger organisations but we need to question whether this will result in the desired outcomes, or actually just be disruptive without addressing the issues it is intended to resolve
  - Smaller organisations can mean easier connections between staff, more chances for leadership opportunities, and space for organisations and staff to look after staff wellbeing
  - The identities of the existing CRIs are important
  - In larger organisations often 'satellite' groups are often formed which ends up leading to the very divisions you were hoping to reduce through creating larger organisations
  - We need to keep regional presences, close to our communities and with access to the resources present in each location e.g. growing regions for different crops, industry groups, iwi
  - A key question for the ministry is what is the balance between small enough to be connected, while large enough to provide economies of scale?
  - Sometimes you end up with more middle management and administration in larger organisations which contributes to overheads and can take away from the research
  - It might be better to lay out clear company structures (e.g. numbers of management staff required per x number of people, with agility to change this if flaws are seen in the system but needing to justify this at a board level). At the moment support staff are often given competitive salaries to ensure they are attracted to the organisations, given many other career opportunities available to them. However, research staff are often niche, doing work for the passion of it, and have few other options of employment so they can be paid less. It creates an "us and them" divide within organisations and bitterness of research staff believing that more support staff are hired than necessary, while

they are struggling to get the technical support that they need. This could possibly be improved by increased transparency and communication around company strategy, and smaller forums in which staff can interact with upper management. This should be complemented by clear communication of how valuable support staff are to organisations.
    - There needs to be a high level of trust in upper management for staff to believe they are acting in the best interests of the organisation and its people.

**Alternative Opinion on Mergers:**

- Merging organisations does not necessarily mean merging all regional facilities and, therefore, losing local connections as the submission currently implies. Nor does it require increasing overall management numbers. These are certainly possible outcomes if mis-managed, but it is entirely possible to merge without doing so.
- I also challenge the idea that there is much positive sense of identity within most CRIs.
- NZ is simply not large enough and does not have enough funding to support so many separate research organisations. Merging would help:
    - Resolve significant duplication of expenses (e.g. corporate structures/functions, software licencing, journal access fees, etc.),
    - Remove the obscene costs involved in managing cross-CRI collaboration and cooperation (e.g. the endless time wasted negotiating sub-contracts and IP agreements, policies limiting sub-contracts to a maximum percentage of work, purchasing rights to data from another CRI, etc.). How often have projects not happened or spent considerable amounts because another CRI held data we needed?
    - Allow for greater critical mass of researchers within a field. For example, while there are several dozen social researchers scattered among the various CRIs, no single CRI can afford to maintain the range of social research skills/fields and the system makes it challenging to collaborate, so social researchers frequently function outside their area of expertise. We are forced to act as "jacks of all trades", reducing research quality. Having access to a wider diversity of skills would help ensure the right people are included for a given project.
    - And, yes, reduce duplication of building space, research facilities and infrequently-used equipment where they occur in the same towns
    - It is harder for such small organisations to make a name for themselves globally as individuals. By combining efforts under a shared NZ CRI brand (e.g. Research New Zealand, Rotorua research station), we could greatly improve name recognition, attracting better talent and international research collaborations. This would be similar to how several countries' or state's universities (e.g. UC Davis, UCLA and UC Berkeley within the University of California umbrella system) and research organisations (e.g. the French National Centre for Scientific Research, Research Institutes of Sweden, CSIRO, the National Research Council Canada, etc.) already operate.
- There are right ways and wrong ways to restructure and doing so without changing culture, changing individual incentives, or addressing other underlying issues to result in a better system. But restructuring the right way can bring real, tangible improvements. Personally, I would strongly support a merger.

**Regional hubs:**

- Could act as horizontal connections between different science entities operating in the same region.
- Could facilitate relationship building with iwi, and enable iwi to prioritise their research interactions
- However, regional hubs could just add problems and extra costs without any benefits if they are not implemented effectively. They need to be well connected and collaborative – not just co-located.
- Co-location will not fix competition and communication issues – this needs to be incentivised, potentially through funding (you must work together with xyz to solve this research priority)
    - There are lots of examples of co-location e.g. Plant and Food Research, AgResearch, Maanaki Whenua Landcare research and Massey University in Palmerston North, and also Cawthron and Plant and Food Research in Nelson. But there is often little flow and communication between these organisations. However, you do have instances of it working well – for example, where there are joint schools between research organisations and the universities, as well as having staff from the CRIs etc being involved in guest lecturing at the universities. Joint seminar series and/or conferences can also be beneficial.
- Hubs could enable improved cross-sector access to immovable research assets e.g. experimental farms, large equipment.

**Review of institutions:**

- After this system-wide review (the Green Paper), we need to review our institutions' structure and functions in fine detail (e.g. expertise, equipment, workforce). We need to know more about our own institutions (the previous CRI review may not have captured 'us' properly), so that we know what we are capable of doing. This data is needed for strategic planning purposes (e.g. setting of research priorities)
- We acknowledge that there may be increasing levels of overlap between the CRIs and this can lead to unhelpful doubling up of resources and competition rather than collaboration. It is important to review the work of the CRIs to address overlap, redundancy, gaps by doing a full evaluation of what the CRIs are working on, then compiling a searchable database which would allow for easily identifying others working in similar areas
- We could also review data management and storage, and other platforms that could be shared between organisations rather than us all inventing our own systems (e.g. bioinformatics, data science). While the topics these systems are applied to can vary, a lot of the underlying principles are the same and having seven different systems that do not work together is not sustainable in the long term
- It would be beneficial to have an understanding of the support staff in each organisation, so they are able to be put in contact to work on projects that are of shared interest across organisations, and perhaps share resources (e.g. good facilitators are worth their weight in gold, having a network of facilitators or the ability to tap into other organisations for facilitation training could be very beneficial).

**Culture shift:**

- There needs to be a culture shift in CRIs that promotes collaboration among staff and with other organisations. This culture shift needs to take place at the top down, as

participation in networking and collaborative initiatives needs to be valued by organisations

- We need leaders who are focused on people development
- There needs to be better understanding within organisations of what people are working on in both the professional service/support staff and the research staff to help prevent an "us and them" mentality continuing – this could be done through internal stories on what people are working on, event days
- Research associates and technicians are often in the lab or doing practical research and are not always allowed or encouraged to engage in relationship building, collaboration or professional development. There may also be a reluctance of these staff to engage in these activities as it takes time away from the practical work that they need to do and that work will just be delayed. There needs to be an appreciation across the organisation about how important and valued professional development and relationship building is for all staff
- Need for ECR relationship building between people in co-located organisations
- Changes in legislation may also be required to promote this culture shift by holding organisations accountable for collaboration across organisations – this could include financial and outcomes accountability as methods of incentivisation
- Funding systems should encourage collaboration rather than competition, and promote within-New Zealand collaboration as well as overseas collaboration; MBIE endeavour as an example of an incentive to collaborate
- Funding and evaluation systems could also incentivise sharing of assets, information and research through requiring collaboration and making the most of what NZ has
- Better communication within and between organisations will help to remove competition – transparency will be required
- If people fear for their career development, identity, or reputation then they will always try to keep things for themselves – so we need both behavioural changes and also changes in how people are rewarded with funding, promotion etc
- We need to train people in collaborative skills, leadership etc, while recognising that not everyone can be a team leader; we need to prepare researchers for a range of career pathways
- Humility should be encouraged among researchers. Current systems reward people for their scientific successes as individuals – sometimes these are achieved through standing on others and not giving credit to all of those involved in achieving that success. We have encouraged ego and competition, and people are encouraged to get to a position where they no longer look to others for their feedback and input. While these tendencies are changing, but we could help the researchers who exhibit these unhelpful behaviours through courses and rewarding people based on personal behaviours that align with humility, collaboration and building others up.

**Increased cross institutional communication could be facilitated through:**

- Cross institutional yearly gatherings to share research and network, including a mixture of ECRs, mid-career researchers and later stage researchers from different universities, CRIs, private sector organisations, etc. These could be online or in person.
- Grants that encourage and support collaboration between New Zealand based institutions, not just overseas collaboration.

**Revise funding panels:**

- Have a mixture of funding systems that allow for longer term projects, but also blue skies research
- Ensure all funding bodies are well set up in understanding the mixture of CVs that they may receive, including CRIs CVs that may include reports as outputs instead of publications
- Ensure funding panels have at least two representatives from across research areas, currently there are some fields such as Plant Biology where you will only have a single representative who may then have a conflict of interest and will not be able to contribute to discussions about that project thus limiting the research that is successful in those areas.

**Feedback mechanisms to management:**

- There needs to be a structure in place that allows staff to provide feedback on management, and accountability to make adjustments based on this feedback (e.g. through board meetings with representatives from across all staffing areas)
    - At the moment some CRIs run staff satisfaction surveys; it would be good to ensure that they all run them, but there also needs to be accountability to improve issues mentioned in these surveys
    - Happiness, satisfaction and feeling as if they are being listened to is really important for staff, and especially minorities and ECRs, who often feel powerless to influence companies
    - For example: One of the CRIs has staff satisfaction surveys have shown decreasing happiness of staff and decreasing trust in upper management since new leadership a few years ago. Some of the right things are being said but there have been no actionable changes. Since the Covid-19 pandemic, the power to hire new staff has been taken away from General Managers who often have a very good feel for the needs of their staff, and has been moved up the line to senior management who are often out of touch with the system and how research works. There are lots of support staff being hired, but the budgeting system/accounting for the time of science staff is flawed which prevents the hiring of new technical staff.
    - A surplus of technical support is needed for labs to run smoothly and to allow for the agility to respond to urgent changes/changing needs. If everyone is already overburdened there is only burnout and no quick responses to new and changing problems, which will be required in the new system going forward.

**Budgeting systems:**

- As mentioned above, the budgeting systems within a lot of the organisations are currently not working well.
- The hours allocated to work on particular projects and recorded by staff on timesheets typically just reflects project budgets, rather than the time staff actually put into projects. Timekeeping thus becomes focussed on ‘not blowing budgets’ rather than the work projects require to be successful
- Research support staff e.g. glasshouse technicians, lab technicians (autoclave and dishwashing etc) should be funded via overheads rather than specific groups/projects, as that inevitably contributes to the blowing of budgets
- It would be much better to have a system where staff record the number of hours they actually work on projects – this information could then inform future budgeting

- There are also ‘dark hours’ (e.g. paper writing, grant writing, health and safety, mentoring, collaborating), which aren’t factored into the budgeted hours but are very important to research outcomes.

**Agility:**

- Agility of the workforce is very important in responding to unforeseen events but also in adapting to changing needs. ECRs are/can be trained to be agile, but how can the system be agile?
- There needs to be flexible funding for CRI responses to significant issues (e.g. Covid) – e.g. UK Urgency Grants.

**Engagement and communication with the public:**

- Need for transparent communication of research funding to NZ public
- Institutions should undertake better public engagement – public good research, press releases, promotion of outcomes, benefits

**10. How can institutions be designed or incentivised to better support capability, skills and workforce development?**

**Better training is needed for researchers and management:**

- Courses on communication, relationship building and leadership that prioritise the importance of collaboration
- Training that encourages and fosters collaboration and agility, such as group skills, leadership, collaboration.
    - This could be achieved through universities and organisations (even high schools) providing training in these areas, with regular refresher courses
    - Training should prepare students for careers beyond academia. Currently,university students are primarily trained for academia unless they partner up with a CRI through summer studentships or co-led Masters/PhD projects
    - Training should include a balance of new and old ideas, specialist and generalist knowledge, and ongoing learning.
- Moreover, we need to realise that our research context and needs will change and that we therefore need to invest in continuous re-learning. Time, funding, and encouragement will be required to do this.

**Staff sharing/subcontracting:**

- It is currently hard to employ people from another CRI to do a task, so either this could be made easier or completed through collaboration?
- Lots of subcontracting done across organisations - is this collaboration? When is subcontracting part of collaboration vs competition?
- Cawthron has issues, Riddit have issues with subcontracting – places provided by universities etc
- Hard to employ people across CRIs – subcontracting – how to manage cross CRI skill sharing
- Half/half post-docs (limit on how much people are split though)

**Salaries:**

- There is a view that there is an over-supply of management/support staff and that they are being paid astronomical salaries (e.g. CEOs earning close to $700k) while there is no ability to hire new technicians who would earn $50k without having to present a massive case that takes forever to justify
- There should be some kind of cap (that factors in inflation) on the salaries of CEOs and upper management, as well as the number of roles to be filled as they greatly increase the overhead costs and increase distrust in management.

Factoring ECRs into grants (this is a workforce funding mechanism, and is included in the general funding summary/recommendations)

- Grant amounts (need at least a PhD, at least ½ post-doc, at least a post-doc depending on amount)

**11. How should we make decisions on large property and capital investments under a more coordinated approach?**

**Review of assets:**

- It would be good to review larger assets that are available in organisations. In some instances equipment is fully at capacity for usage, and in some cases it is not. Review may allow for the sharing of resources in certain areas, but there should not be forced pooling of resources – often the locations are strategic and assets are well used
- It would be good to share some instruments (e.g. expensive, infrequent use) across institutions more so that we don't have to duplicate purchases – this would be especially beneficial for small institutions. However in other instances (e.g. high usage within an organisation) it makes sense to have separate instruments
- It would not be advisable to end up with only one organisation providing instrument services, when a range of research projects need training and use of those instruments – this can lead to a science services and research divide
- Science services are often pigeonholed and unable to do any of their own research.

**Commercial associations and Royalty Streams:**

- What about institutions that work heavily with commercial companies and have research funded from royalty streams? If there was a merger would this income be provided to a new organisation and not used as originally intended? E.g. kiwifruit royalties are invested into researching kiwifruit, which has allowed for an agile industry able to quickly respond to new threats, such as Psa.

**TE HUNGA MAHI RANGAHAU**
**WORKFORCE**

**14. How should we include workforce considerations in the design of research Priorities?**

**PhD students and university training:**

- There is currently a big question around what the purpose of a PhD currently is – is it an educational pathway training students for future roles, or is it cheap labour?
- The PBRF system has unintentionally made this issue worse as PhDs are cheap labour to boost academic and university rankings, while not enough effort is being put into training and supporting PhD students

- PhD training needs to be broadened to include a wider range of skills and knowledge. Examples exist in Canada and Australia (University of Adelaide) where PhD programmes integrate in training that is additional to the core research, including public engagement training, etc. This would help to train PhD students for a diverse range of careers
- Some fields are over-saturated with PhD students, without adequate job opportunities – or students are not made aware of the diverse pathways they could take post-PhD
    - Whilst other areas are sorely lacking in trained PhD students and we are forced to source employees from overseas
    - This suggests that we are not training our PhD students with the skills required to address CRI research priorities
    - This disconnect leads to some PhD students leaving research as they are not trained for the opportunities available, which is a loss of highly skilled workers
- University incentives need to be realigned with what the CRIs, industry and private sector require
- There are opportunities for more PhDs to be co-supervised/co-designed between universities and CRIs or industry
- PhD and postdoctoral roles could be created to respond to research priorities:
    - There are examples of this working well and poorly, so we need to make sure it is executed as a training system not as a cheap source of labour to achieve the research priority goals
    - We have had reports that within the National Science Challenges there are some systems that have ended up being run by PhDs and that PhD study ends up being focused around NSC milestones & priorities
    - This is compared to some experiences of MBIE Endeavour projects which allowed for more flexible learning for PhDs, that still responded to research priorities and institutional needs but allowed for student-led adaptation
    - PhD studies that are aligned with milestones can create issues as it can shift the focus away from research and learning as a creative endeavour.

**Job security and workforce capacity:**

- Without good job security we will continue to lose people from the research workforce as they look for more stable careers
- We need to be able to create new positions without having a guaranteed three years of funding (financial conservatism). ECRs can't wait for ever for CRIs to make up their minds and it is not good for mental health, financial security, or research continuity to be continually hired on short term roles
- We need extra capacity in the workforce, to be able to respond quickly to the research priorities and their changing needs. Extra capacity would also help to ensure workloads are reasonable
- We need workforce capacity assessment for the national research priorities – review the mix of students, ECRs, mid-career and senior researchers. This would inform the development of a plan to build capacity so that the priority can be sustained long term.

**On-the-job movement and adaptability:**

- Development of skills and competencies in interdisciplinary research would enables mobility across research priorities

- support is needed to develop research skills as they are needed in response to mission/community driven research
- Interdisciplinary teams contain skills and competencies that allow for agility.

**Flexibility between organisations:**

- There are opportunities to develop clearer career paths within and across institutions
- Importance of flexibility to enable people to move within workforce, thus freeing up research skills and competencies to be applied where they will be most beneficial
- There are opportunities to learn from the recent NSCs: they can be cliquey, making it difficult for emerging and other researchers to 'break in' to these fields, thus reducing flexibility.

**Non PhD pathways:**

- There also needs to be clear career paths for a non-academic workforce (e.g. purely technical staff etc), as they are very important to CRIs
- We need to ensure those pathways are strong and attractive for people to work in
    - We could have apprenticeships straight out of high school that specifically train people up for the roles needing filled
- There need to be clear pathways of progression for technical staff (technicians and research associates). Some organisations like AgResearch do not appear to have any room for progression, whereas others like PFR have a progression from Technician/Research Associated to senior RA/senior technologist.

**Changing needs over time:**

- Funding in National research priorities needs to provide continuity for different types of research, e.g. if the CRIs build up genomics research workforce and then priorities change – what happens to the workforce until it comes back into favour?
- When investing in people it will be best to maintain the existing workforce, and bring in new people to allows for that workforce to adapt over time to changing needs
- It may be best to collaborate externally for specific needs that won't be required long term in the workforce, e.g. very specific engineering jobs, as we don't want the changing priorities to lead to rolling redundancies.

**Communication and collaboration:**

- Communication between research priorities is essential, especially with priorities of key interest to Māori as they can be not well connected
- Effective collaboration needs a workforce trained in group work, collaboration, facilitation etc.

**Overseas researchers:**

- We have a number of researchers who either come to study within New Zealand and want to stay, or come after study to take up job opportunities in New Zealand. However there is a lack of career pathways for international PhD & Postdocs, due to ineligibility for funding
- This is especially an issue for researchers who have focused a large chunk of time on building New Zealand specific knowledge and training; we then lose that knowledge through not providing pathways to employment.

**Postdoctoral opportunities in New Zealand:**

- There are a lack of postdoctoral opportunities in NZ, for both domestic and international PhD students
- The reason for this lack of postdocs appears to be that the overheads for these roles are the same as for a full scientist, which means that it is more economic to hire a PhD student instead
- The tradeoff between PhD students and postdocs does not factor in the experience level that postdocs bring to an organisation: they are able to help train staff, they are highly engaged with practical research, and are well trained so tend to be efficient
- AgResearch is an organisation that provides an example of having a high number of PhDs and postdocs, due to lower overheads for these individuals. However, they do not increase their pay at all during their time on staff and there is limited access to benefits (maternity leave, kiwisaver etc)
    - There are also similar job security issues after these postdocs finish as there are not enough positions of permanent employment for them to move into
    - They are planning on implementing a similar system to PFR where they are treated as science staff, which will give the postdocs additional benefits and pay increases, but we predict there will also be a reduction in the number of postdocs employed.

**15. What impact would a base grant have on the research workforce?**

There was a general feeling of positivity about base grants and how it could potentially be beneficial for ECRs in the research workforce, but participants were also nervous about getting it right and have a lot of questions. There could be a lot of unforeseen issues if the base grant is not administered well, and it could perpetuate existing issues or create new ones for ECRs.

**What are the base grants covering?**

- "Base grant" is not clearly defined here
- We suggest that they cover research salaries, buildings and research infrastructure (e.g. bioinformatics, data processing and storage), administration (generally what is present on overheads), and also collections of national importance (e.g. seed storage banks, plant germplasm, fish species etc)
- Base grants should fund tasks outside of wider research projects (e.g. critical research service such as monitoring, data, computer clusters that should be funded)
- Will base grants be tied to research priorities and only available for staff working on those (either full or part time)?
- With issues such as Covid or financial crises, ECRs - especially those in precarious roles - are hit worse. Stable funding, or base grants could allow for bridging gaps in ECR funding before they are able to bring in their own money (stop cut backs in hiring and short term contract cycles).

**How will they be administered?**

- Will the base grants be allocated based on staff time spent on the research priorities?
    - When calculating the hours staff are spending on base grants, how will this be achieved? A flat rate for projects or will staff be required to keep timesheets?

    - If we tie base funding to research priorities, this will require complex time accounting – will it be paid as a yearly lump sum, in advance, or on a regular basis?
    - Often timesheet systems end up being flawed as staff will just fill them out according to what money is available, not the work that they are actually doing (to avoid blowing smaller budgets by accurately recording their work).

**Overheads:**

- Overheads are a significant concern for ECRs at CRIs, being 2x or more than researchers at universities. Will the government simply pay these higher overheads?
- For a lot of commercial and industry partners (including Māori organisations) the CRI overheads are very high compared to Universities, which can prevent collaborations or contracts being successful. It puts CRI ECRs at a disadvantage as they have less access to opportunities, and are charged out for more for the same work they would do at a university
    - This put off some researchers from pursuing careers at CRIs
- Can the base grant help reduce overhead costs to make CRIs more competitive or improve their efficiency?
- Overheads are hidden or undisclosed for all CRIs
    - There needs to be clarity as to what they cover, honesty about if they are used as they should be, and transparency for all
- There is some concern about what the overheads are covering – overheads of NZ CRIs are very high by international standards. For example:
    - Universities $1 of salary to $1.10-1.25 overheads (will be getting revenue from student fees, but also government funding)
        - University of Auckland: 1.15
        - University of Waikato: 1.10
        - Massey University: 1.17
        - Victoria University: 1.21
        - University of Canterbury: 1.25
        - University of Otago: not publically available
    - Cf business overheads 0.5-1.5.
    - Cf CRI overheads – not disclosed but >2?
        - CRIs – At least 2.2 at one CRI and known to be higher at others
- Currently CRIs are operating in a quasi-business model, but with a huge management burden (similar to government departments). Is this the worst of both worlds? We can't hire research staff, but have a huge number of managers
- There is a perception that in CRIs there are less corporate support staff than in universities, leading research staff to do a lot more e.g. compliance.

**Career stability and capability development:**

- Specific problems:
    - Lack of opportunities results in ECRs & technical staff dropping out of system
    - Hits minorities hardest – some people will be unable to follow these career paths
    - High debt from undertaking lengthy study with poorly funded PhD stipends vs career precarity

    - Currently there are issues where employers are breaching labour laws but ECRs feel they can't say anything without risking losing the limited work they have access to
- We need to maintain space for ECRs but if the base grant only covers principal investigators then ECRs may be replaced with students, as they are cheaper – continuing the issues brought in by high overheads on postdocs etc
- Use base grant money for succession planning, at the moment there is little resources/money available for future planning, which can lead to people only being replaced upon retirement. It's really important to allow for overlap between incoming and outgoing staff to have knowledge transfer and training
- We could measure institutions against workforce criteria to be eligible for base grant funding:
    - Career progression
    - Diversity
    - Support for sickness, disability, parental leave
    - BUT also perverse outcomes? metrics vs real life
- Base grant could act to provide stability for organisations and researchers during difficult times (e.g. Covid, financial crises)
    - Help to bridge gaps in funding between projects
    - Prevent management from cutting people or hiring to make ends meet which results in big gaps in workforce and continuity issues
    - This tends to have high impact on more precarious groups (e.g. universities cutting technician roles for students)
- We need to be mindful that often organisations will have ways of getting around government enforced structures to ensure job security or that increase the costs of hiring people:
    - For example, employing people on 11 month contracts, so things that apply to one year contracts do not apply, set unachievable goals for permanent positions, allow employers to have overall approval of research areas, so someone can bring in a massive grant but still have no job security.

**Strengthening of relationships through stable funding:**

- We lose opportunities to collaborate with communities, iwi, because of being too expensive.
- Will a base grant allow us to properly pay kaumatua who come to work with us?
    - This would allow for better and more authentic collaboration.
    - There should be space within base grants to fund relationship building, we should not expect people to do this work/engage for free – it should be seen as an investment for the future.

**Who will qualify for the base grants?**

- Important to review which organisations qualify for base grants to make sure limited resources go around, and reduce duplication of support staff etc.
- We don't want a base grant to limit staffing even further because of inadequacy of funding.

**Which staff are covered by base grants?**

- Will this money be allocated only for work on specific research priorities?

    - What about the support/professional staff who provide infrastructure and support for the priorities, but who are not doing the research themselves?
- For funding bids, would it mean that we could include staff whom are fully funded - currently they would be excluded e.g. technicians, giving them better recognition, as technical staff often lose out – it will be highly dependent on their supervisor or PI if they are appropriately recognised.

**16. How do we design new funding mechanisms that strongly focus on workforce outcomes?**

It is important to include ECR voices in the design process of new funding systems – we don't want to end up recreating PBRF for the CRI system.

At the moment it is hard to know what funding is available. It would be valuable to have a specialised staff member in all organisations with direct links to funding bodies, and with knowledge of funding in the system, OR a team that provides such services across all CRIs.

Competitive funding applications are hugely time consuming (sometimes with no benefit – costing organisations hundreds of thousands of dollars):

- e.g. some CRIs have found that the time/money spent on applying for MBIE funding is more than the value of the grants won
- Applying for funding should consume less time
- What would happen if we stopped contestable funding?
    - We have high trust in science, here in Aotearoa. Contestable funding could aid maintaining this trust?
    - One of the basic issues with contestable funding and workforce is that students/staff are supported briefly and then have to find something else. Piecing grants together to make a job.
- Some core funding should be allocated for career development, e.g. time to write up papers, and not just commercialisation work
- Could have some smaller funds for stakeholder relationship building – the Catalyst and VM grants perhaps, but not just focused on innovation.

**Design principles for funding:**

- Change grants to align with when the PhD is successful/conferred, rather than graduation. There can be massive delays in graduation for a number of reasons which should not hold people back
- Funding for building and maintaining stakeholder relationships and Te Tiriti partnership
- Stability of funding, so there is more time spent on science than writing grant applications, and administration/reporting
- Available to all researchers, not just those with PhDs (many funding systems are currently limited, which forces people to either get PhDs, miss out on funding opportunities, or miss out on leadership roles)
- Built-in support for people to work with the institution: students, interns, professional development, iwi partners
- Build in ECR specific funding mechanisms – continue the Whitinga Fellowships

- Good to have internal support for grant applications and reporting, and developing new ideas – especially for ECRs. But it needs to be supportive, not an administrative burden
- Blind funding applications for some grants? To allow for better diversity, and less rewarding people who have been successful before
- Transparency about processes – always provide feedback on applications
- Reduce or limit the proportion of grant funding that can be spent on overheads.

**Co-design of research objectives and projects with iwi/hapū:**

- The current pace of the MBIE funding system does not allow for meaningful relationships with Māori – major flaw
- Base grant can help to support relationship building
- Who funds the community partners to engage? Need for funding mechanisms to support community partner engagement in research & relationship building.

**Agility:**

- People are very specialised – it takes a lot of time to retrain to shift priorities
- Researchers need opportunities for ongoing training throughout their careers.

**Workforce outcomes and accountability:**

- Addressing inequality: Some people can't afford to study, to get more diversity in the workforce, give them jobs! Paid traineeships – train people for the jobs we have available.
- Possible metrics:
    - Structure of workforce
        - Diversity
        - Māori & Pacific
        - Skill sets/capability
    - Precarity & career pathways
    - Job satisfaction
    - Provision of ongoing training.

**Overseas examples:**

- Research councils focused on topics that administer funding (multiple types of grants)
- Australia
    - CSIRO had big topical groups, which it occasionally disbanded, making people redundant and resulting in a loss of talent. Shifts in priorities could have been ok if they were not linked directly to institutions such that people lost their jobs
- UK
    - Big research councils – biology, natural environment
    - Different rounds of grants
    - Recently put them all together under one umbrella
    - CRI-like organisations who can apply for the funding
- Canada
    - Large research councils – social science, biological and chemistry etc, that give funding for PhD, post-docs and grants = better clarity and equity.

**Measures of success – individuals:**

- What counts on a CV? Do all outputs get equal weighting - assessment appears to be heavily biased towards journal articles
- What is the measure of success? If it is 'impact', how do we measure that?
    - Less reliance on the number of journal articles as it doesn't reflect the diversity of research outcomes
        - Applied science – hard to get recognised in the academic space
        - Impact measures that are not just published papers could include client reports, industry magazine articles, public talks, grower talks, etc.
    - Better impact measures
        - Many people, especially indigenous people, are not just there for own status/career, but for impact/benefit for the people
        - We do not have a system to measure altruistic behaviours and their impact.

**Measures of success – organisations:**

- Exit interviews should be compulsory, but anonymous options available so they don't impact on people's careers
- Make recording of outcomes and careers mandatory
- Compulsory tracking of workforce diversity (workforce mirrors demographics of NZ)
- Track the number of postdoc grants, postdocs in the system
- Outcomes of non-research staff in CRIs e.g. Relationship building – stakeholder engagement
- Feedback on relationships e.g. Student to supervisor, RAs to higher etc
- Keep track of domestic hires from overseas (returning New Zealanders and internationals)
    - Ensure we are not always sourcing talent from overseas, they provide a lot of value but we should not be relying on them – as we have found with Covid, can cause issues.

**Diverse career opportunities:**

- Ability to employ interns or create secondments, not just students.
- Be able to pay people what they're worth; provide professional development outside their usual jobs (eg teachers)
- Different ways into the pipeline, e.g. trainee programmes
- Are we training NZers to take research roles or relying on international talent? We need to achieve a balance between internationals, returnees, and national
- Career mobility or diversity of researcher backgrounds (more integrated and accessible research system)
- Supporting the proposal by Olivia Traux for Post-PhD positions in government.

**Fundamental vs applied research:**

- Where should the balance sit in terms of research we want to do/are passionate about/blue skies vs applied and priority research?

- There should be funding available for both blue skies projects and priority projects – and that funding needs to be available to researchers across institutions
    - Example from Plant & Food – there is some funding for blue skies research that is costed differently to other research
- Blue skies research should not only be available to university researchers; note that blue skies research also feeds into applied outcomes and the identification of future priorities
- We have models of different funding systems for different types of research, which are available to researchers in different institution types. E.g. Marsden for blue skies research, National Science Challenges for directed/priority research.

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