

*E koekoe te tūi,
e ketekete te kākā,
e kūkū te kererū*

Toward the Tertiary Research
Excellence Evaluation (TREE)

The Report
of the PBRF
Review Panel



E koekoe te tūī, e ketekete te kākā, e kūkū te kererū

The tui chatters, the kākā cackles, the kererū coos

The whakataukī that provides the title for this report has been variously translated in English as 'It takes all kinds of people' (Moorfield, 2005) or 'By appreciating all our voices, our different songs, we make good music for the future'.

It conveys the sense that while the tūī, kākā and kereru are all birds, each has its own distinctive sound and they are positively different and significant for their own reasons (Edwards, 2009).

For the panel, this whakataukī aligned well with our recommendations that seek to foster and better recognise the diversity of research excellence.

Published on 31 January 2020 by the PBRF Review Panel, New Zealand

© Crown Copyright



This work is licensed under the Creative Commons Attribution 4.0 International licence. In essence, you are free to: share ie, copy and redistribute the material in any medium or format; adapt ie, remix, transform and build upon the material. You must give appropriate credit, provide a link to the licence and indicate if changes were made.

ISBN: 978-0-473-51276-7 (Online)

Contents

Executive summary	4
Recommendations	8
Our proposed model.....	13
Process	16
Context	19
Opportunities and challenges	26
Our recommendations	60
Adopting a more capacious definition of excellence.....	61
Working toward more equitable assessment outcomes	66
Introducing new funding incentives	72
Adopting more inclusive language	77
Building on our successes	82
Options for change we considered.....	93
Next steps	106
Appendix A: PBRF Review Panel Terms of Reference	107
Appendix B: Principles and objectives.....	115
Appendix C: Informants and submissions	117
Appendix D: Contribution to the Research Environment.....	122
Bibliography	123
Glossary	129

Preface

The research and research-informed teaching in the New Zealand tertiary education system helps to underpin the government's ambition to bring about a productive, sustainable and inclusive future that works for all New Zealanders.

The Performance-Based Research Fund (PBRF) has increased the overall quality and quantity of research in New Zealand, research is more central to tertiary education, we have much more information about research activity and the system is producing more people with excellent research skills than ever before.

At the same time, there are persistent concerns. The fund is believed by some to incur heavy transaction costs, devalue certain types of research, discourage collaboration and draw staff away from teaching and realising their role as critic and conscience of society.

These contrasting views are hardly surprising – the fund creates powerful incentives throughout the tertiary education system. But many submissions and key informants told us that the fundamentals of the PBRF were working well.

The panel was grateful for the generous contributions of the many key informants we met with and the detailed submissions we received. These contributions were vital in shaping how we thought about the issues and possible responses.

It was clear to us that our research funders, ethical frameworks and codes of conduct are increasingly demanding more openness to different research approaches, Tertiary Education Organisations (TEOs) are committed to a more inclusive research workforce, and the research community understands that research excellence can take many forms.

They affirmed for us that we were pushing against 'half-opened' doors with sophisticated and uniquely New Zealand approaches that build on changes in the way research and researchers are supported.

We appreciated greatly the support we received throughout the process, including from the staff of the Ministry of Education, the Ministry of Business, Innovation and Employment (MBIE) and the Tertiary Education Commission (TEC).

Finally, we would like to thank the researchers and research support staff working in the tertiary education system. Your commitment to excellence is clear in the work you do to build the research workforce and push the boundaries of knowledge.

Professor Linda Tuhiwai Smith

Chair, PBRF Review Panel

Members, PBRF Review Panel

Professor Wendy Larner

Dr David Phipps

Dr Ian Town

Associate Professor
Yvonne Underhill-Sem

Associate Professor
Marcus Williams

Independent Support Person

Brenden Mischewski

Executive summary

Over the past 15 years, the PBRF has transformed the way research and research support is undertaken in our TEOs. The fund has contributed to a doubling of the number of staff making a significant contribution to research activity and rewarded previously unrecognised research strengths.

The improvement in measured research quality is encouraging but we should redouble our efforts to put diversity and inclusion at the heart of how we assess research quality.

We can broaden how we think about research excellence and impact, ensure our research workforce better reflects society and make sure that the way we assess excellence reflects our shared values.

To achieve these shifts, we recommend several major changes:

- Introducing a more capacious definition of research excellence supported by a new section of evidence portfolios, Examples of Research Excellence, to replace the Nominated Research Outputs. This section will allow researchers to detail the research they produce, the engagement and impact relating to that research and how they support vibrant, diverse research cultures (see *Adopting a more capacious definition of excellence*).
- Integrating the concept of ‘merit relative to opportunity’ into the assessment framework to replace the current Extraordinary Circumstances provision. This change will align with other efforts to address systematic disparities in assessment outcomes. We also recommend changes to the composition of panels to make them more representative (see *Working toward more equitable assessment outcomes*).
- Increasing the funding weighting for the subject areas of Māori Knowledge and Development and Pacific Research and for Māori and Pacific researchers. This change will create stronger incentives to address the critical undersupply of historically underrepresented groups and better resource research that has been hitherto undervalued, particularly among wānanga (see *Introducing new funding incentives*).
- Renaming the fund, the Tertiary Research Excellence Evaluation or TREE, to better reflect the focus and objectives of the fund. This change will complement other changes designed to anchor the fund in the distinctive cultural heritage of Aotearoa New Zealand (see *Adopting more inclusive language*).
- Retaining most of the elements of the fund’s design recognising that these are working well, but discontinuing the External Research Income measure and the reporting of average quality scores (see *Building on our successes*).

Our 34 recommendations are designed to better recognise the full diversity of research excellence, enable more equitable assessment outcomes and support a more diverse research workforce and research system (see *Recommendations*).

We expect that these changes will increasingly allow researchers to have and see a place for themselves in the fund, building on the strong foundations of the fund’s key design elements.

TABLE 1: COMMENTS ON THE TERMS OF REFERENCE

The following table summarises the views of the panel and our recommendations in relation to the Terms of Reference for the review.

Terms of Reference	Panel comment
<p><i>Revisiting the objectives of the PBRF</i></p> <p>The Review will consider whether the current objectives need to be further modified to ensure the PBRF meets current and future challenges and priorities in the research system and in the research-led teaching environment.</p>	<ul style="list-style-type: none"> › A new objective to promote a more holistic approach to research excellence (recommendation 15) and three new principles to better reflect the distinctive partnership between the Crown and Māori, the growing diversity of New Zealand’s population and the need to address persistent inequalities (recommendations 18 and 19) should be adopted. › To help embed the values underpinning these changes, the panel also recommended a new name for the fund (recommendation 15), and adoption of te reo Māori names for the fund and key aspects of the process (recommendation 16). › The cumulative effect of these changes is set out in <i>Appendix B: Principles and objectives</i>. › The panel was concerned that the publication of average quality scores was not necessarily compatible with the objective of providing robust public information (recommendation 32).
<p><i>Improving research collaboration and engagement with end-users</i></p> <p>The Review will examine the merits of moving from individual-based assessment to a group-based assessment, in terms of boosting collaboration, supporting workforce development and sustainability, reducing compliance costs and measuring the impact of research.</p> <p>If the individual is to be retained as the unit of assessment, the Review will identify options within the PBRF settings to improve collaboration and impact assessment via other PBRF settings.</p>	<ul style="list-style-type: none"> › The panel was not persuaded by the evidence and submissions it received that a change to the unit of assessment would boost collaboration, support workforce development and sustainability, reduce compliance costs or aid in the measurement of impact (recommendation 24). › The panel recognized that the assessment framework has not yet been able to fully recognize and reward research collaboration and engagement with end-users appropriately. › To better recognise collaboration and engagement, particularly with end-users, the panel recommended that a more capacious definition of research excellence should be adopted that encompasses the production of research, engagement and impact relating to that research and support for vibrant, diverse research cultures. (recommendation 1). › A new section, ‘Examples of Research Excellence’, in evidence portfolios should be introduced to allow more scope for researchers to describe research activities that conform to the new more capacious definition of research excellence (recommendation 2). › The subject area weightings should be reviewed because they may no longer be fit for purpose and may impact on workforce development and sustainability (recommendation 14).

Terms of Reference	Panel comment
<p><i>Boosting the impact of tertiary education research</i></p> <p>The Review will examine options for improving the assessment and rewards for research that has a tangible impact for communities, the environment, businesses or government sectors. The Review will provide advice on the costs and benefits of introducing further measures to assess impact into the PBRF.</p>	<ul style="list-style-type: none"> › The panel considered that the more capacious definition of research excellence (recommendation 1) and new 'Examples of Research Excellence' section (recommendation 2) would build on the existing opportunities to describe impact in evidence portfolios. › The TEC should work with key stakeholders to develop suitable exemplars that demonstrate how impact can be presented effectively in evidence portfolios, and address other myths about how the assessment system privileges certain kinds of research, research outlets or disciplines (recommendation 9).
<p><i>Assessing excellent research with lower transaction costs</i></p> <p>The Review will identify options for modifying current PBRF settings to reduce transaction costs for research staff, tertiary organisations and government, including changes to the unit of assessment, changes in the time period(s) for Quality Evaluation, use of new metrics to assess research quality, use of self-assessment and the funding proportions allocated across the current three measures (Quality Evaluation, Research Degree Completions and External Research Income).</p>	<ul style="list-style-type: none"> › Based on feedback and evidence provided, the panel was not persuaded that the transaction costs incurred are undue or excessive, and many of the alternative options mooted would tend to increase transaction costs. › The way research excellence is measured should be simplified, focusing on the assessment of research excellence (the Quality Evaluation) and completion of advanced degrees (the Research Degree Completions measure) (recommendation 20). › External Research Income, which is one of the proxy measures of research quality, should be discontinued progressively between 2024 and 2029, with the weighting of the Quality Evaluation measure increased commensurately (recommendation 21). › The Quality Evaluation measure using peer review assessments of research excellence (recommendation 22) undertaken independently of TEOs (recommendation 23) should be retained. › The Quality Evaluation measure should retain the individual as the unit of assessment (recommendation 24) and continue to be conducted periodically every six years (recommendation 25). › The eligibility criteria for new and emerging researchers should be reviewed so that it is simpler to administer (recommendation 26). › The maximum number of other research outputs should be reduced from 12 to six to reinforce the preference for quality (recommendation 3). › The research contribution section of evidence portfolios should be simplified (recommendation 4) › Open Researcher and Contributor ID identifiers for researchers should be used to link to efforts to improve the quality of research information in New Zealand (recommendation 31).

Terms of Reference	Panel comment
<p><i>Sustainable and diverse workforce with investigator-led research capability</i></p> <p>The Review will examine the effectiveness of the PBRF on the development of highly-skilled and diverse research workforce for New Zealand in the context of the changing nature of work and workplaces. This will include consideration of whether any adjustments to PBRF settings are required to support a sustainable mix of gender, ethnicity and ages across the tertiary research workforce.</p> <p>The Review will also consider whether the PBRF creates any incentives or disincentives within TEOs given the changing nature of work and the continued evolution of new types of working arrangements, ways of working and workforce development.</p>	<ul style="list-style-type: none"> › The research workforce does not reflect the diversity in New Zealand society. The PBRF is not the sole cause and may not be a significant factor, but there are opportunities to use the way we recognize and reward research excellence to contribute to a research workforce that better reflects New Zealand's population. › The provision in the assessment framework relating to exceptional circumstances should be reviewed to ensure that it recognizes meaningful impacts in a sensitive way and incorporates the concept of 'merit relative to opportunity' (recommendation 5). › There should be a more proactive approach to shaping the composition of peer review panels to ensure diversity of perspectives (recommendation 6), continued training for panel members (recommendation 7) and increased investment in the training of researchers and research managers (recommendation 8). › Higher funding weightings should apply to the funded evidence portfolios of Māori and Pacific researchers, particularly new and emerging researchers (recommendation 10) and the subject area weightings of Māori Knowledge and Development (recommendation 11) and Pacific Research (recommendation 12). › The targeted investment in the capability of wānanga in engage with the fund should be continued (recommendation 27). › As there is a need to maintain the significant collective research capability in the vocational education sector, a funding guarantee for the new national provider of vocational education should apply (recommendation 13) and the transition arrangements as part of the reform of vocational education should consider researcher support and capability (recommendation 28). › The TEC should commission an ongoing programme of research and evaluation relating to the conduct and effects of the fund (recommendation 29) and to improve the quality of information about the research workforce (recommendation 30). › The level of funding allocated through the fund needs to increase considerably to maintain strong financial incentives to ensure that the required investment in the research workforce occurs (recommendation 32). › The approach of co-designing the fund with a group that reflects the diversity of research workforce needs to continue (recommendation 34).

Recommendations

The recommendations of the panel are set out below.

Adopting a more capacious definition of research excellence

The assessment framework should adopt a more capacious definition of research excellence that encompasses the production of research, engagement and impact relating to that research and support for vibrant, diverse research cultures. Rather than simplistic categorisation of research as basic or applied, or traditional or non-traditional, we need to draw out the richest examples of research excellence, focusing on research outputs of the highest quality and the most important research contributions.

1. A more capacious definition of excellence should be adopted to create new opportunities for excellent research to be recognised, encompassing the production of research, engagement and impact relating to that research and support for vibrant, diverse research cultures.
2. The nominated research output section should be replaced with a new section 'Examples of Research Excellence', which can be used to present up to four examples of research of how these outputs exemplify research excellence including scholarly and non-scholarly (broadly defined) impacts.
3. The number of 'Other Examples of Research Excellence' should be reduced from twelve to six to further indicate a preference for the quality of research outputs over quantity.
4. The research contribution component of evidence portfolios should be refocused on the best examples of those activities that contribute to the sustainability and vitality of the research system.

Working toward more equitable assessment outcomes

We should be more ambitious in recognising the particular circumstances of individuals, particularly where differences are systemic, ensuring panel members are more representative and addressing misconceptions about the assessment framework.

5. The exceptional circumstances provision should be reviewed in consultation with the sector with a view to:
 - a. normalising the very great diversity of career trajectories of academic staff so that there are no particular parts of the human experience that are categorised as 'exceptional' or 'special'.
 - b. introducing a 'merit relative to opportunity' concept when panels assess the quantity of research to promote equity, diversity and inclusion.
 - c. limiting the number of people who have access to sensitive or confidential information relating to individuals, such as through some assessment at the TEO level or a tightly constrained group of peer review panel members.

6. The TEC should take a more proactive role in identifying candidates for the peer review panels to ensure that members better reflect the current and growing epistemological and demographic diversity of the research workforce including ensuring gender parity, significant representation of Māori and Pacific researchers and a broad representation of researchers and other experts across career stages and organizational context in each panel.
7. The TEC should continue to build on the successful programme of training for peer review panel members, particularly strengthening the capacity of panels to take account of the diversity of research excellence and the application of the 'merit relative to opportunity' approach.
8. The TEC should invest in a comprehensive programme of training for researchers and research managers, using a panel of suitably experienced people, to improve understanding and address myths about the assessment framework.
9. The TEC should develop exemplars of evidence portfolios that demonstrate how the assessment framework enables researchers to describe impact, collaboration and engagement with end-users effectively as part of wider work to improve understanding, address myths and explain the new more capacious definition of excellence.

Introducing new funding incentives

Changes to the funding system will support work underway to address the critical undersupply of Māori and Pacific researchers, shift resources toward the Māori Knowledge and Development and Pacific Research subject areas, and better support excellent research across the system including among the staff of wānanga and the new national provider of vocational education.

10. The design of the fund should reinforce the efforts to address the underrepresentation of Māori and Pacific researchers in the research workforce by assigning an additional funding weighting to evidence portfolios submitted by staff who identify as New Zealand Māori or with a Pacific ethnicity of:
 - a. '2' for all evidence portfolios that meet the standard for a funded Quality Category, and
 - b. '4' for evidence portfolios assigned a 'C(NE)' Quality Category.
11. The design of the fund should reinforce the efforts to strengthen research based on kaupapa Māori and mātauranga Māori by applying the subject-area weighting of '2.5' to the Māori Knowledge and Development subject area.
12. The design of the fund should reinforce the efforts to strengthen research based on Pacific-based research methodologies and methods, or that involve Pacific-centred subject matter, or that impact on Pacific peoples by applying the subject-area weighting of '2.5' to the Pacific Research subject area.
13. The share of funding allocated through the Quality Evaluation measure to the new national provider of vocational education should be fixed at the proportion allocated through the 2018 Quality Evaluation to Institutes of Technology and Polytechnics until 2030 unless the level of research quality measured through the 2024 Quality Evaluation indicates a higher share is warranted.

14. The subject-area weightings that apply to the fund should be reviewed because they may not accurately reflect either the costs of undertaking certain types of research or the incentives required to give effect to the new more capacious definition of research excellence.

Adopting more inclusive language

We should find a new language to talk about the fund, its principles and objectives and how research excellence is understood. Te reo Māori names will connect with the excellent work underway across the sector to anchor research in the distinctive cultural heritage of Aotearoa New Zealand.

15. A new objective for the fund should be added; which is 'To ensure a flourishing and inclusive system for developing and sustaining research excellence in New Zealand'.
16. The TEC should seek the guidance on appropriate te reo Māori names for the fund as a whole and key elements of the process including evidence portfolios and their components that better reflect the distinctive kaupapa that informs the ethical and professional expectations of researchers in Aotearoa New Zealand.
17. The fund should be renamed as the Tertiary Research Excellence Evaluation or TREE, to better reflect the focus of the fund and the greater emphasis that should be placed on diversity and inclusiveness.
18. Three new principles for the fund should be added:
 - a. 'Partnership: The fund should reflect the bicultural nature of New Zealand and the special role and status of the Treaty of Waitangi (Te Tiriti o Waitangi)', to reflect the significance of the partnership that underpins the relationship between Crown and iwi.
 - b. 'Inclusiveness: The fund should encourage and recognise the full diversity of epistemologies, knowledges and methodologies to reflect New Zealand's people', to reflect diversity in society and our commitment to a capacious definition of research excellence.
 - c. 'Equity: Different approaches and resources are needed to ensure that the measurement of research excellence leads to equitable outcomes', to underline the vital importance of addressing persistent, embedded and inherited inequities and their negative effects on the capacity of women, Māori and Pacific peoples among other groups to participate in the research, science and innovation system.
19. The existing principle of 'Cultural inclusiveness' should be removed as it will be superseded by the changes set out in recommendation 18.

Building on our successes

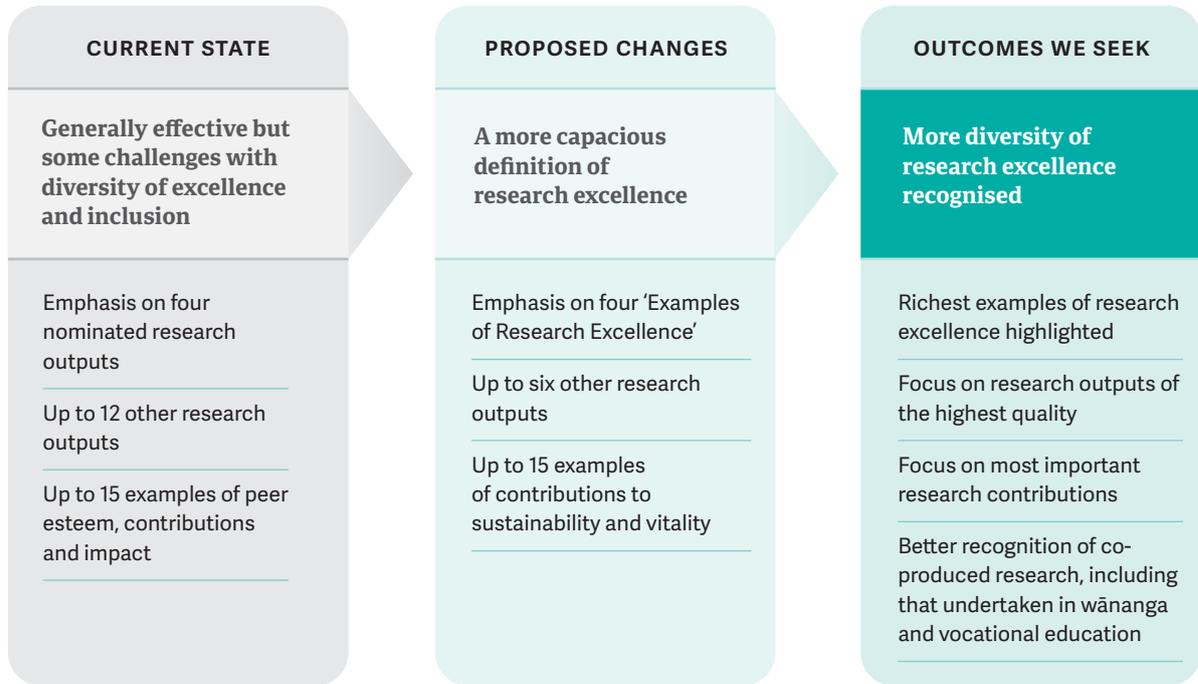
The key design elements of the fund and the Quality Evaluation, in particular, are working well. We recommend some changes to focus the fund on recognising and rewarding research excellence and research workforce development, refine some aspects of the fund's design and deepen our collective understanding of the effects of the fund.

20. The Quality Evaluation and Research Degree Completions measures should be retained as they provide a comprehensive measure of the distribution of research excellence and the completion of research degrees.
21. The External Research Income measure should be discontinued as it is input-focused, skewed by investment decisions of government and business, is unduly concentrated and duplicates existing incentives. Funding allocated through this measure would be reduced progressively to zero between 2024 and 2029 and the share associated with the Quality Evaluation measure increased commensurately.
22. Peer assessment should be retained as the primary mechanism whereby research excellence is assessed given the weight of international evidence supporting such models and the contribution that this model makes to the objectives of the fund.
23. Peer assessment should be undertaken independently of TEOs, given the potential for self-review to impact negatively on the collegiality that is vital for research.
24. The individual should be retained as the unit of assessment in the absence of any compelling evidence that different assessment models would result in any of the claimed benefits or a more accurate measurement of research quality.
25. The period of six years between Quality Evaluations should be retained to a) allow for timely adjustments in funding for TEOs based on the measured change in research excellence, and b) give government timely information on the overall change in measured research excellence.
26. The provision for new and emerging researchers should be retained; however the eligibility and assessment criteria should be reviewed and simplified.
27. The panel endorses the investment in the capability of wānanga and ongoing support to engage with the fund.
28. The Reform of Vocational Education and the transitional support for the new national provider of vocational education and training should make appropriate provisions for researcher support and research capability and development.
29. The TEC should, in conjunction with stakeholders, commission an ongoing programme of research and evaluation to ensure that the moderators for future Quality Evaluations and review processes have access to analysis about systemic biases in assessment outcomes and the results and effects of the fund.
30. The TEC should, in conjunction with stakeholders, take steps to improve the quality of publicly-available information about the research workforce.
31. The TEC should explore the adoption of the Open Researcher and Contributor ID as the unique identifier for PBRF-eligible staff and opportunities for better integration with the New Zealand Research Information System.

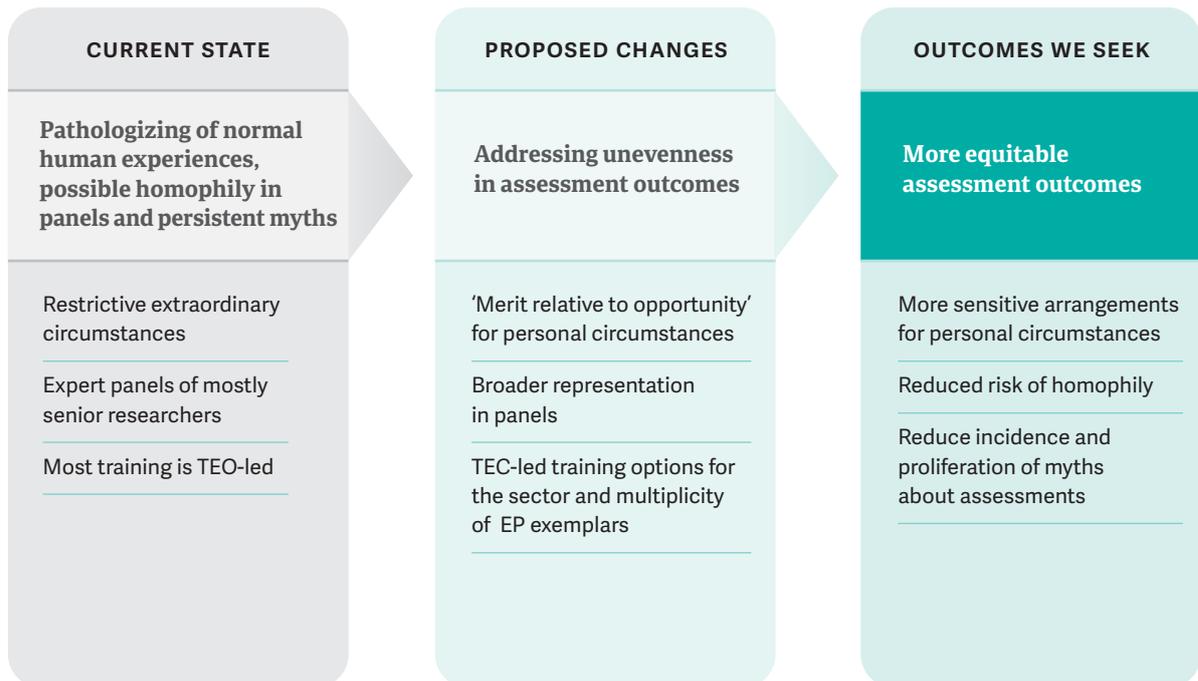
32. The value of the fund should increase by at least \$100m per annum as an uplift with annual adjustments thereafter to maintain the rates of real funding on a per capita basis through the Quality Evaluation and Research Degree Completions measures.
33. The TEC should retain the focus on the increase in the total number of funded Quality Categories when reporting the results of the Quality Evaluation, and discontinue the average quality score metrics.
34. A Sector Reference Group should be established to advise on the implementation of the changes to the fund agreed by government and this group should include significant representation of Māori and Pacific researchers and a broad representation of researchers across career stages and organizational context.

Our proposed model

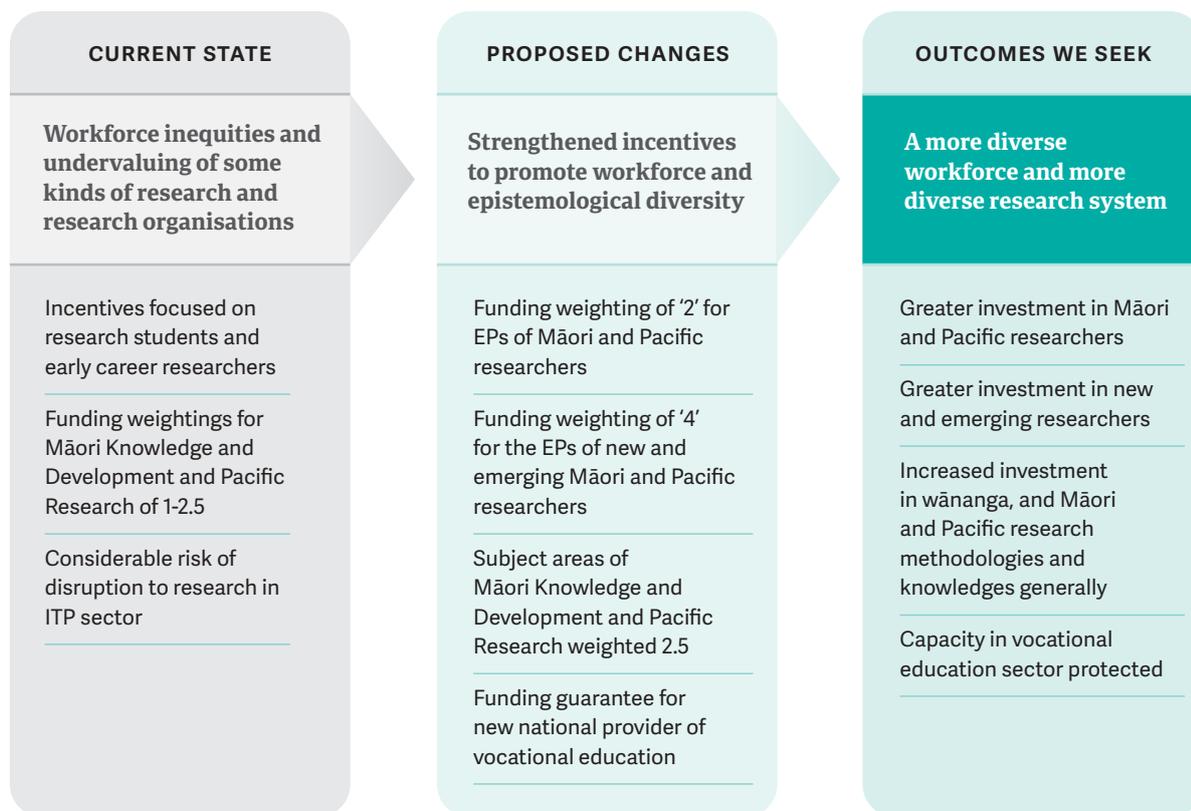
Adopting a more capacious definition of research excellence



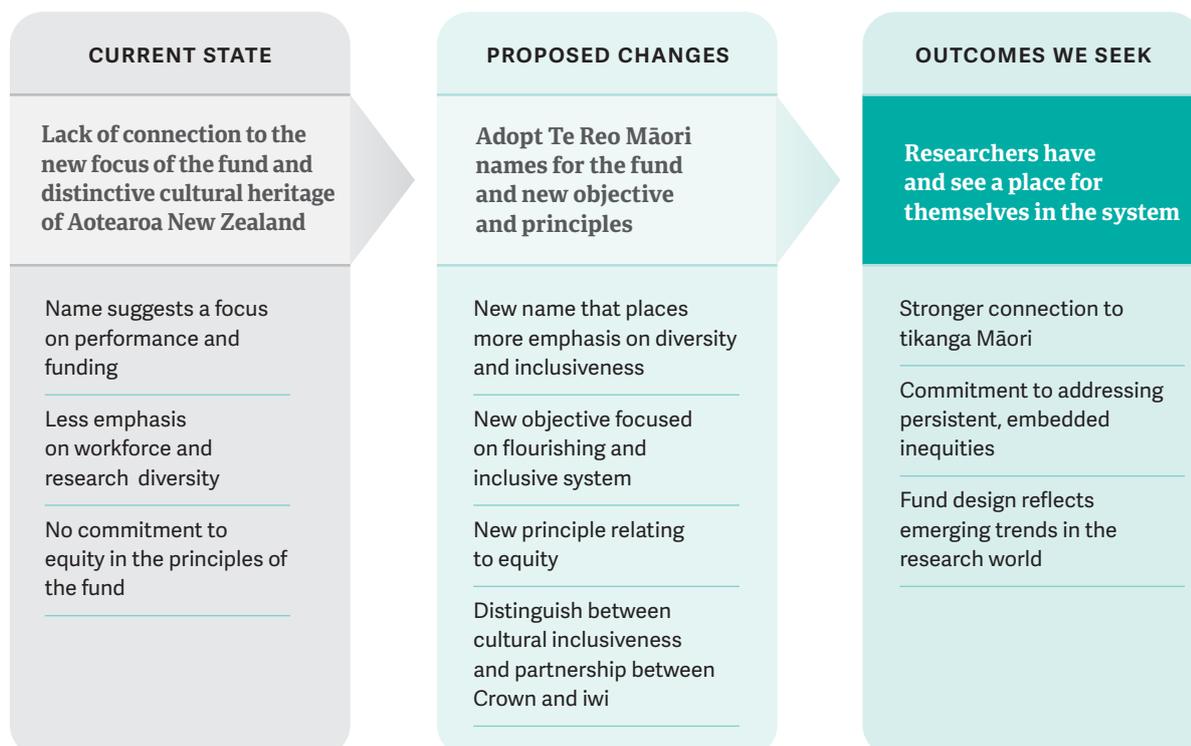
Working toward more equitable assessment outcomes



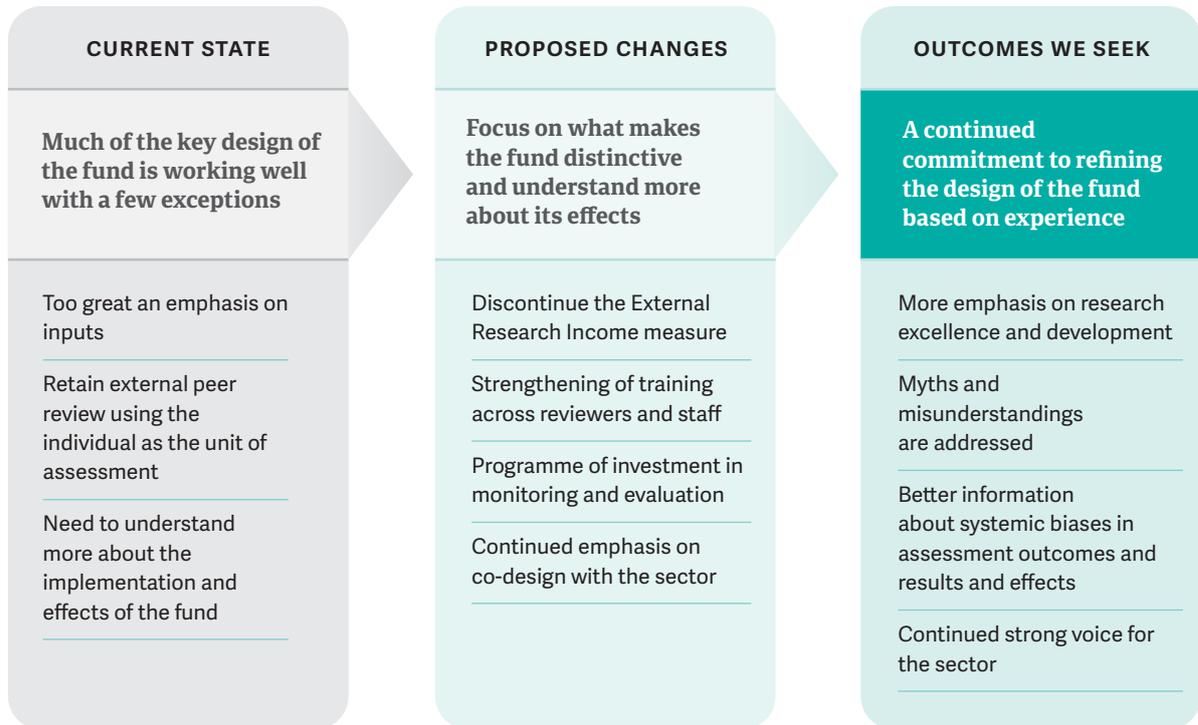
Introducing new funding incentives



Adopting more inclusive language



Building on our success



Process

This report presents the results of the deliberations of the PBRF Review Panel.

In reaching the conclusions set out in this report, the panel:

- met five times over nine full days between July 2019 and January 2020,
- interviewed 60 key informants generally organised into groups based on common characteristics and engaged with representatives of the major tertiary education sub-sectors,
- undertook a public submissions process which attracted 51 written submissions from a range of individuals and organisations,
- received four additional presentations and reports from people with expertise in interpreting the data generated by the fund and its operation and implementation,
- met with officials of the Ministry of Education, MBIE and TEC, and
- met with the Associate Minister of Education, Hon. Jenny Salesa, three times to update her on the panel's progress.

Meetings

The meetings of the panel were all held in Wellington with generally all panel members attending in person. The panel was assisted by an independent support person.

Key informants

The panel recognised the importance of engaging with as broad a group of key informants as possible. We met with 60 key informants organised into panels including groupings based on their level of experience such as senior and early career researchers, disciplines such as creative arts researchers, demographic characteristics such as Māori and Pacific researchers and their role in the research, science and innovation system. We also met with researchers who offered insights into the experience of women working in the research sector.

We met with people who gave us insights into the experience of managing research at TEOs, including the groups of research leaders from the university sector, institutes of technology and polytechnics and private training establishments. The chair also met separately with the Chief Executives and/or people in research leadership roles in the wānanga sector. We met with the Tertiary Education Union and researchers that they nominated to speak with us. In light of the significance of the fund for universities, we also met with the Vice-Chancellors and Universities New Zealand.

Officials from the Ministry of Education, MBIE and the TEC attended the panel's meetings. These staff offered valuable insights into the design and implementation of the PBRF and its role in the wider research, science and innovation system.

A full list of the key informants that we met with is presented in **Table 7** as part of *Appendix C: Informants and submissions*.

Submissions

The panel sought public submissions with the support of the Ministry of Education. An online template with a set of questions to help guide submitters was published on the Ministry of Education's website. Submissions were open during September and October 2019.

The panel received 51 submissions from TEOs, research organisations, peak bodies and individual researchers or groups of researchers. More than half (51%) of the submissions were made by researchers, either as individuals or groups. Submissions by TEOs including all of the universities accounted for 35% of the total number made. Research organisations and peak bodies, including Universities New Zealand, accounted for the balance.

The panel collectively read all the submissions we received, and we also considered a summary of the submissions prepared by the staff of the Ministry of Education.

No panel members were involved in the preparation of submissions by the institutions that they were employed by.

A full list of the organisations that made submissions is presented in **Table 9** as part of *Appendix C: Informants and submissions*.

Supporting papers

The panel considered a series of papers relating to each of the sections of the Terms of Reference. These papers prepared by the Ministry of Education informed how we approached our deliberations.

The panel also received a briefing relating to the impact of the assessment framework on the results assigned to the evidence portfolios of women researchers and several presentations on the process and results of the 2018 Quality Evaluation from TEC staff.

The panel also reviewed the large and growing research literature relating to the design, implementation and effects of the fund and other relative research and analysis (see *Bibliography*).

Reaching our decisions

The panel's decisions were informed by our understanding of the design of the fund (see *Context*), the way those design elements interact with the sector (see *Opportunities and challenges*) and the valuable input from key informants and the many thoughtful submissions we received.

In reaching these decisions, we were guided by the recognition that the fund:

- is only a part of the research, science and innovation funding system and is not the sole lever for all of the goals that government, research organisations, communities and business have for the research system. Nonetheless we sought opportunities to connect the fund to other government initiatives particularly the investment system outlined in the draft Research, Science and Innovation Strategy, and the MBIE position paper, “The Impact of Research”, which were released during our deliberations.
- offers a valuable development opportunity for research. TEOs should see the process as providing useful external validation and feedback on their efforts to enhance research excellence and demonstrate accountability, rather than simply being a compliance exercise undertaken solely for the purpose of allocating funding.
- can always be improved but has several elements that are working well for many stakeholders and participants. We saw opportunities to encourage and build on emergent practices that had the potential to deliver better outcomes while retaining well-established and successful aspects of the design of the fund.
- has several powerful incentives, but it can take time for institutions and individuals to respond to changes. We recognised a need to maintain a sense of humility in the changes we expect in the short-term, but longer-term be much more ambitious about what is possible.

Context

This section of the report sets out how the PBRF operates and considers various matters that the design and implementation of the fund influences and in turn should take account of.

Contributing to wellbeing

The government is committed to a productive, sustainable and inclusive future that works for all New Zealanders (Robertson, 2019). Realising that goal involves some big challenges such as transitioning to a zero-carbon economy by 2050, ensuring that everyone has a warm, dry home and making New Zealand the best place in the world to be a child (MBIE, 2019).

The concept of sustainable intergenerational wellbeing underpins the government's ambitions (New Zealand Treasury, 2018). The growth, distribution and sustainability of financial, human, natural and social capital is necessary to deliver on this wellbeing (NZ Government, 2019). The promotion of social cohesion, inclusion and diversity is at the heart of efforts to share New Zealand's prosperity (Ardern, 2018).

The research and education delivered by our tertiary education system plays a crucial role in developing and sustaining these 'capitals'. Education and training help people live enriched lives and lead to lifelong benefits in terms of health, wealth and life satisfaction. It also brings public benefits, including a stronger civic society, the advancement of knowledge, preservation of cultural heritage and the development of a skilled workforce (NZPC, 2017).

Research, science and innovation create new knowledge, generate ideas and technologies and create capabilities, products and services that make a difference to people, the environment and the economy (MBIE, 2019). The system also has a role to play in capturing the best ideas and talent by promoting an inclusive and diverse workforce and environment (MBIE, 2019).

The place of the PBRF

The PBRF has multiple objectives (see *Revisiting objectives*). The primary objectives of the fund are to increase the quality of research, support teaching and learning, maintain and lift the competitive rankings of TEOs and provide robust public information. The fund is also intended to support the development of the future research workforce, support research that provides benefits to New Zealand and supports technology and knowledge transfer.

The multitude of objectives belies a more straightforward purpose. The funding enables staff in participating TEOs to undertake those activities needed to demonstrate that degree-level and higher teaching is delivered by people undertaking research, and partly offsets the costs of supervising and supporting postgraduate research students, primarily at the Masters and Doctoral level.

Research workforce development is more important for the PBRF than other investments. The fund supports TEOs to develop the national research infrastructure and the skills people need to contribute to the research workforce and to the knowledge economy more generally. It differs from most other research, science and innovation investments which tend to fund specific research programmes or projects, or are focused on different parts of the pathways to research careers, such as postdoctoral or early career researchers. Additionally, the other investments by government in tertiary education are focused on undergraduate (or other lower level) education and training.

Similarly, the way TEOs use the PBRF is not constrained by government objectives, specific research foci or discipline areas, other than the broad incentives at play (see *How the PBRF operates*). TEOs are autonomous institutions which decide how best to allocate the funding they receive to ensure that internal resourcing supports both institutional and individual research efforts and have no direct obligation to justify the way they spend funding received from PBRF.

A mixed model assessment

The PBRF involves assessing the research performance of TEOs and allocating funding accordingly. The fund uses a mixed model of assessment. Most of the funding (55%) is allocated on the basis of peer review assessment of the research outputs and research contributions of individual staff, the Quality Evaluation measure.

The balance of funding is allocated on the basis of proxy measures: the Research Degree Completions measure which rewards TEOs based on the number of graduates of research degrees (25%) and the External Research Income measure which rewards research income (20%) attracted by each TEO.

The Quality Evaluation measure involves the periodic (six-yearly) review of evidence portfolios submitted by TEOs on behalf of their staff. These evidence portfolios are assessed by thirteen peer review panels comprising senior researchers from New Zealand and overseas. Each portfolio is assigned a 'Quality Category' which denotes differences in measured research quality based on evidence from the preceding six years. Funding is weighted on the basis of the employment commitment of staff to the relevant TEO, that is their full-time equivalent (FTE) status.

“

“(there is) something about the simplicity of the thing, the signals, that is valuable”

KEY INFORMANT, UNIVERSITY MANAGER

Information on the relative performance of TEOs is published following each of the six-yearly Quality Evaluations and funding adjusted accordingly. The performance of TEOs in terms of the other two measures are updated annually, and a rolling average used to smooth changes over time.

Funding allocations are based on the number of evidence portfolios that met the standard for funding, the number of completions of research degrees and the amount of research income each TEO attracts. Weightings are applied to the Quality Evaluation and Research Degree Completions measures to reflect relative quality, workforce development priorities and the estimated cost of research and research-led teaching in different subject areas.

For example, the highest-funded Quality Category, an 'A', in the highest 'cost' subject area attracts 12.5 times the funding as the lowest in each category. Similarly, completions associated with Māori and Pacific learners attract twice the funding of other completions.

Changes in the design

There has been a considerable investment by researchers and TEOs in refining and improving the assessment framework over the past seventeen years. The system is, in large part, co-designed with the sector with experts from the sector leading in the original design and the reviews that followed each Quality Evaluation.

The tentative design of the PBRF mooted in 2002 aimed to deliver a high-quality assessment with low transaction costs and little impact on individual researchers. The high-quality assessment would be achieved by peer review panels assessing up to four research outputs submitted by individual researchers.

The low compliance costs would be achieved by avoiding the complexities of selecting groups for assessment and limiting the assessable material to research outputs only. The limited impact on researchers would result from withholding the assessment results of individuals from researchers and TEOs (Boston, 2019).

Peer review assessment was chosen because it provided the most credible means of assessing quality, would offer a complete view of research excellence including research outputs, peer esteem and contributions to the research environment and offered a means to favour quality over quantity of research outputs (MoE, 2002).

An unanticipated issue was that the Privacy Act 1993 meant that any information held about individuals, including scores assigned through the Quality Evaluation, would be available to them. Principles around transparency of funding decisions also necessitated the sharing of results with TEOs.

The perceived desirability of reducing information asymmetries between TEOs and students, business and research funders meant that comprehensive public reporting of the results was pursued. Two proxy measures of research quality were also introduced to augment the results of the peer review (MoE, 2002).

The design of the PBRF has been relatively stable since the detailed design work, in line with international experience that changes to such systems tended to be evolutionary (Kolarz, et al., 2019).

Operational policy reviews followed each of the 2003, 2006 and 2012 Quality Evaluations involving extensive engagement with the sector (for example, (TEC, 2019g). These reviews were informed by the results of a process evaluation (WebResearch, 2004), an independent evaluation (Adams, 2008), and a policy review in 2013 (EAP, 2013).

There has been emerging research exploring the impacts and functioning of the PBRF considering issues such as the suitability of other proxy measures of research quality (Smith, 2008), the design of the reporting framework (Buckle & Creedy, 2017), workplace culture (Middleton, 2005), (Ruth, et al., 2018), (Narayan, 2019), staffing (Buckle & Creedy, 2018), analysis of funding outcomes (Smart, 2019), and research quality (Smart & Engler, 2013), (Harland & Wald, 2017) and research concentrations (Buckle & Creedy, 2019).

There has also been an effort to improve the accessibility of performance information through online tools covering researcher demographics (TEC, 2019c), dissemination of research (TEC, 2019h), collaborations (TEC, 2019k) and co-authorship (TEC, 2019i), as well as ongoing efforts to encourage re-use of PBRF data for research purposes.

Key changes that have been made since the original design was mooted included:

- an assessment pathway for new and emerging researchers (2006),
- establishment of professional and applied expert advisory panels (2012 only),
- a broadening of the definition of research (2006, 2012 and 2018),
- explicit reference to the advancement of mātauranga Māori in the objectives of the PBRF (2012),
- changes to the reporting framework (2012 and 2018) including the introduction of commentaries on the relationship between measured research quality and researcher demographics (2018),
- a progressive circumscribing of the provisions to take account of issues that might impact on the productivity of staff (2012 and 2018),
- a reduction of the maximum length of many text fields in evidence portfolios (2012) and the number of items that may be included in evidence portfolios (2018),
- discontinuing of specialist advisors to panels and more explicit provisions to capture information about research impact (2018),
- the establishment of Pacific research panel (2018), and
- adjustments to the proportion of funding allocated on the basis of the Quality Evaluation and Research Degree Completions measures (2018).

The most salient trends are toward a broadening of the types of evidence of research excellence that might be submitted and moves to create a simpler model of evaluation, and a greater awareness and recognition of diversity in terms of the workforce and research methods.

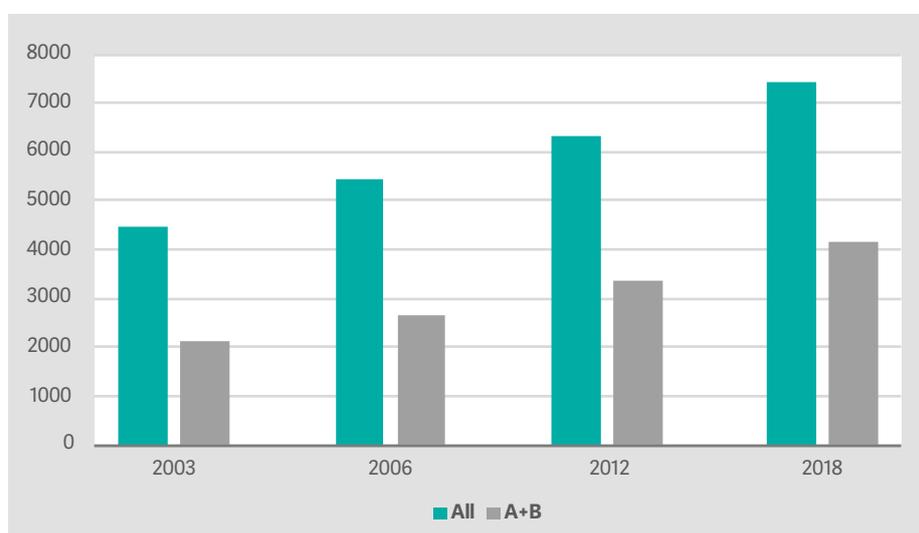
Results of the PBRF

The PBRF has contributed to an increase in measured research quality, the number of completions of research degrees and the amount of research income from external sources.

The number of staff whose evidence portfolios met the standard for a funded Quality Category increased considerably between 2003 and 2018. The number of funded quality categories increased from 4,461.51 in 2003 to 7,408.40 in 2018, an increase of 66.1%. Each Quality Evaluation since 2003 has seen an increase of roughly 1,000 staff whose evidence portfolios met that standard.

The growth in the highest-ranked portfolios – those assigned an ‘A’ or ‘B’ Quality Category – was even more striking, up from 2,141.53 to 4,148.70 over the period, an increase of 93.7% (adapted from (TEC, 2019a) (see Figure 1).

FIGURE 1: CHANGE IN THE NUMBER OF (FTE-WEIGHTED) FUNDED QUALITY CATEGORIES, 2003 TO 2018



Source: (TEC, 2019a)

The number of completions of research degrees is higher – increasing from 1,730 in 2003 to 4,117 in 2017. Similarly, research income increased from \$194.5 million to \$515.1 million over the same period (TEC, 2004), (TEC, 2017).

Analysis of the changes in measured research quality suggested that there was a statistically significant increase in the average quality of research between 2003 and 2012 (Smart & Engler, 2013).

The limited international research into the results of performance-based funding systems indicates that the increased research quality and production in New Zealand is consistent with the experience overseas (Arnold, et al., 2018).

Investment allocations

The government currently invests \$315.0 million per annum in the PBRF, up from \$131.8 million in 2004. The increase in measured research quality gave successive governments the confidence to invest in research and research-led teaching (Cullen, 2006) (Joyce, 2013).

Almost all of this funding is allocated to the university sector, although their share reduced slightly between 2003 and 2018 from 98.2% to 96.6% (TEC, 2019a). This reduction is largely due to changes in the mix of TEOs participating in the PBRF rather than any relative reduction in the measured research quality of universities (TEC, 2013), (TEC, 2019j), (Smart, 2019). The fund has been only modestly redistributive, the share of research top-ups (the former basis on which research and research-led teaching was funded) attracted by the universities in 2003 was 94% (Smart, 2019).

It is the second-largest source of funding for the tertiary education system, albeit one that is dwarfed by funding for tertiary tuition and training (\$2.55 billion in the same year) (TEC, 2019m). Funding allocated through the PBRF tripled in nominal terms and doubled in real terms between 2000 and 2019 (Smart, 2019), in sharp contrast to the main public subsidy for teaching and learning (MoE, 2018).

The PBRF is also the single largest source of funding in the research, science and innovation system. Yet it accounts for only a little more than one-fifth (22.0%) of the government's direct investment in this area. If investment in research and development and the accompanying tax credits are included, the PBRF accounts for only 7.8% of the total (MBIE, 2019).

Reporting

The reporting framework for the PBRF currently involves:

- a public report of the results of each Quality Evaluation (TEC, 2019f) with a variety of interactive reporting tools, which tends to attract some sector, media and public comment.
- reporting of detailed funding tables including allocations by subject area by TEO, the number of completions of research degrees including the ethnicity and subject areas of graduates and amount of research income by TEO (TEC, 2018).
- the provision of detailed results from the Quality Evaluation measure to participating TEOs for the purpose of transparency about funding outcomes, and, in line with the Privacy Act, the ability of individuals to access information held about them.

Key shifts in the way information about the PBRF is reported include changes to the way the rankings of TEOs are calculated, the discontinuing of rankings of subject-areas at the level of TEOs or nominated academic unit of TEOs, the greater use of online data visualisation tools to enable self-service analysis by stakeholders and the availability of considerably more detailed information about Research Degree Completions.

The use of Quality Evaluation results by TEO is governed by a protocol set out in the PBRF Guidelines that aims to tightly restrict access to these results. The protocol recommends that TEOs do not use the results as the basis for salary determinations, recruitment decisions or performance appraisals (TEC, 2016a).

Individuals themselves are under no restrictions about the uses to which they put the information they receive. Such information normally comprises some scoring information, including the final Quality Category and may include information about key assessment events (cross-referrals or transfer of evidence portfolios) (TEC, 2016a).

Opportunities and challenges

This section of the report discusses several matters that are relevant to the design and implementation of the PBRF. These include:

- the financial incentives of the fund are weakening (see *The incentives of the fund remain strong, but we see risks emerging*)
- women, Māori and Pacific people are underrepresented in the workforce (see *A research workforce that does not reflect New Zealand society*)
- the systematic biases in assessment outcomes (see *Individual circumstances should matter more*)
- the cost/benefit analysis that TEOs apply to participation in the fund (see *Transaction costs do not appear to be excessive and Smaller TEOs see non-financial benefits from participation*)
- persistent issues with the way the fund assesses the research produced by the staff of wānanga (see *Wānanga do not have a clear place in the PBRF*)
- the ongoing debate about whether to assess research quality on the basis of individuals or groups (see *Thinking about the unit of assessment*)
- concerns about whether the assessment framework disadvantages certain kinds of research (see *Research excellence is diverse*)
- the balance between peer review and metrics (see *How best to assess excellence*)
- the impact of the fund on individuals (see *Looking after our people*).

Each of these matters is discussed below, incorporating some of the key themes from our discussions with key informants and the submissions we received.

The incentives remain strong, but we see risks emerging

- › The panel heard through submissions and from key informants that the PBRF creates strong incentives but that the funding incentives have weakened over time.

The PBRF operates through reputational, professional and financial incentives. Universities, in particular, are highly sensitive to reputational factors because they are associated with their capacity to attract high-quality staff and students and the influence they can project. Reputational effects are thought to have a stronger effect on organisational behaviour than the funding incentives (Jonkers & Zacharewicz, 2016).

Professional incentives are strongly felt by many staff with the Quality Category assigned to ‘their’ evidence portfolio taken as validation of the fulfilment of aspects of their academic roles.

“

“The funding is understood as a sinking lid, which tends to weaken the incentives. Funding is visibly reduced”

KEY INFORMANT, CREATIVE ARTS RESEARCHER

Financial incentives result from the allocation of a large, and relatively fast-growing, pool of funding. Funding is allocated on a ‘zero-sum’ basis – increases in performance relative to other TEOs attracts more funding to the ‘better performing’ TEO at the expense of its peers. Success in the PBRF should, in theory, result in increased scope for better performing TEOs to invest in the capacity needed to generate ever-greater performance.

The broad-based and relatively open nature of the fund means that even the smallest TEOs have the opportunity to see a direct link between a focus on research excellence and financial rewards.

The cumulative effects of these incentives appear to have been significant over time. The number of staff whose evidence portfolios met the standard for a funded Quality Category, the number of students graduating with research degrees and the amount of research income from external sources are all much higher than in 2003 (see *Context*).

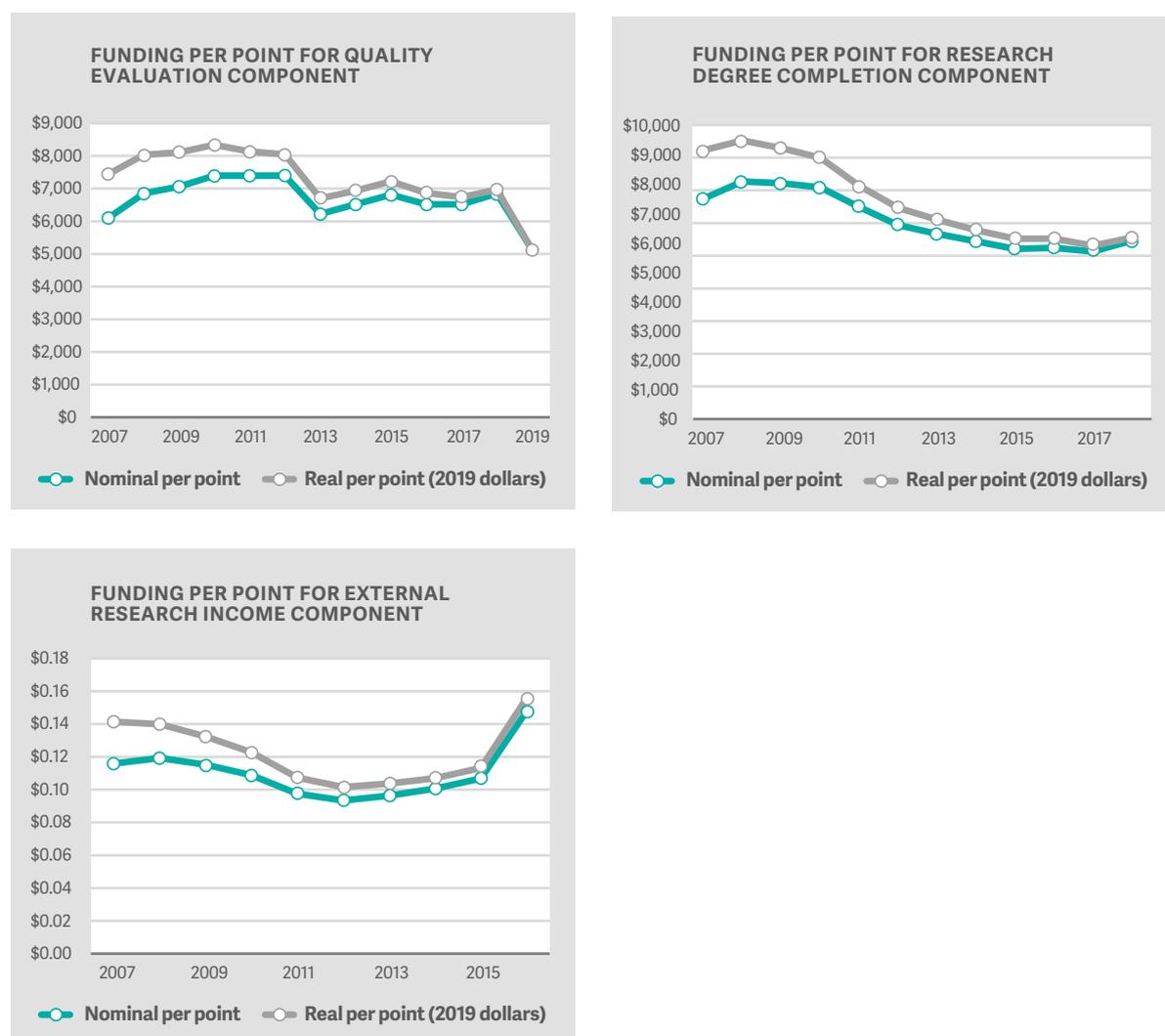
› The funding incentive is weakening

Analysis by the Ministry of Education indicated that the large increases in funding had not kept pace with the increase in measured research quality (see Figure 2).

Funding for the highest-ranked evidence portfolio in the most expensive subject area fell from \$100,000 in 2012 to \$64,000 in 2019. Similarly, the funding attracted by a Research Degree Completion is much lower – a doctoral completion in the most expensive subject area was ‘worth’ \$67,000 in 2007 and \$46,000 in 2019. Conversely, the additional premium associated with success in the External Research Income measure increased slightly from almost 12 per cent to almost 16 per cent (Smart, 2019).

Analysis prepared for the panel indicated that the fund should be around \$100m larger to generate the same price signal as in 2012.

FIGURE 2: CHANGES IN PBRF FUNDING PER POINT OVER TIME



Source: (Smart, 2019)

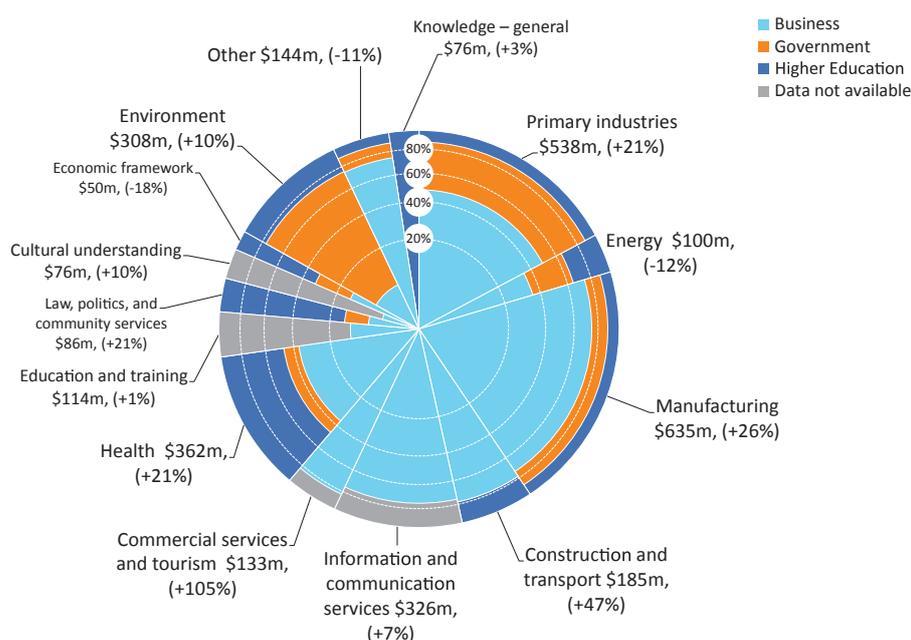
› The External Research Income measure is skewed

The External Research Income measure is a proxy measure of research quality. It assumes that external funders will be discerning in where they invest scarce resources and so acts as a proxy for quality and peer or stakeholder esteem (MoE, 2002).

The panel considered External Research Income to be the least valuable of the current measures of research quality for six reasons, which are that:

- External Research Income differs from the other measures because it measures an input (funding) into research, rather than the outputs or outcomes that arise from research.
- the measure tends to be a stronger indicator of where government and business prefers to invest research funding, rather than the intrinsic quality of research at given TEOs. It will, therefore, tend to favour research related to manufacturing, primary industries, health and information and communication services which account for the majority of research and development expenditure (see Figure 3).
- two TEOs accounted for 56.9% of all eligible External Research Income in the 2017, a share that largely unchanged since the beginning of the decade. This pattern is largely due to the presence of large, high-quality medical and health faculties at those institutions.
- the circumstances that provided some of the impetus for the measure, a perceived need to create strong incentives for the pursuit of external research funding, appear to have been fulfilled. The level of eligible research income increased between 2002 and 2018 by 264.8%, from \$194.5m to \$515.1m (TEC, 2004), (TEC, 2018).

FIGURE 3: EXPENDITURE ON R&D BY PURPOSE OF RESEARCH AND SECTOR OF EXPENDITURE, 2016



Source: (MBIE, 2018)

- the measure is not particularly sensitive to the principles of excellence, impact and connections (set out in (MBIE, 2019)). The measure arguably tells us little about the wider diversity of excellence we seek to encourage, the 'line of sight' to impact that should be demonstrated, and the kinds of connections that our system needs to foster.
- there are considerable existing incentives for researchers to pursue contestable research funding suggesting that the measure might be duplicative. Staff can also make reference to external grants in their evidence portfolios giving an alternative avenue to have their success in this regard recognised.

There may, therefore, be a case to reconsider the balance between the three measures or indeed, the continued use of the External Research Income measure.



› Our take

We heard concerns about the way the incentives for the PBRF are structured and the material support that individual researchers receive. Key informants and submitters noted that the mechanisms that underpin the reputational and financial incentives are not working as well as they might. These concerns included:

- the publication of average quality scores was not a useful way to communicate differences in research excellence.
- the funding allocated through the PBRF is welcome but should keep pace with both increases in measured research quality and the aspirations for the research quality and capability in the tertiary education system.
- the premium associated with each dollar of External Research Income is higher now than in 2007, even as the rewards of the Quality Evaluation and Research Degree Completions measure have fallen.

We explore how we might address these issues in the section '*Building on our successes*'.

A research workforce that does not reflect our society

- › The panel heard through submissions and from key informants that the PBRF could play a stronger role in shaping the composition of the research workforce
-

Taking steps to ensure that the research workforce better reflects wider society is associated with several benefits including better results (Nielsen, et al., 2017) and greater impact (Freeman & Huang, 2014) from research.

The research workforce does not reflect the diversity of New Zealand society. Surveys of the research workforce show that women, Māori and Pacific people are underrepresented both in the wider research, science and innovation system (Sommer, 2010) and among those who participate in the Quality Evaluation (TEC, 2019e).

“

“The most important component... must be to act with urgency to improve the diversity of the people in RSI in New Zealand”

MBIE, 2019

There is mixed evidence about the change in the diversity of the workforce. The results of the Quality Evaluation suggest that the number of women, Māori and Pacific staff are growing (see Table 2), although some have argued that the practical effects have been less than transformational, particularly in terms of Māori and Pacific academics (McAllister, et al., 2019), (Naepi, 2019).

It is indisputable that the proportion of the workforce who identify as female, Māori or Pacific remains below their share of the national population (see Table 3). If each of these groups were represented in the pool of staff whose evidence portfolios were assigned a funded Quality Category, there would be an additional 600 female staff, almost 750 more Māori staff and around 450 more Pacific staff.

TABLE 2: CHANGE IN FTE-WEIGHTED STAFF BY SELECTED DEMOGRAPHIC CHARACTERISTICS, 2003 TO 2018 QUALITY EVALUATION

Group/Quality Evaluation	2003	2006	2012	2018	Change (%)
All	4,462	5,449	6,313	7,408	66%
Female	1,298	1,836	2,450	3,178	145%
Māori	122	186	234	357	193%
Pacific	14	34	82	104	655%

Source: Adapted from published data visualization on researcher demographics (TEC, 2019c).

Note: Staff whose evidence portfolios were assigned a funded Quality Category only meaning that the baseline and growth in the workforce may be understated. Staff may, of course, identify as female and one or more ethnicity.

Only one ethnicity reported per staff member. Use of FTE-weighted data will understate the actual number of individuals involved. Change in the mix of participating TEOs will influence the results provided.

Ethnicity data based on staffing census data for eligibility purposes, and may not accurately reflect the identit(ies) of the relevant individuals.

TABLE 3: CHANGES IN SHARE OF ALL STAFF, 2003 TO 2018 QUALITY EVALUATION

Group/Quality Evaluation	2003 (%)	2006 (%)	2012 (%)	2018 (%)	Share of national population (2013)
Female	29.1%	33.7%	38.8%	42.9%	51.0%
Māori	2.7%	3.4%	3.7%	4.8%	14.9%
Pacific	0.3%	0.6%	1.3%	1.4%	7.4%

Source: PBRF data adapted from published data visualization on researcher demographics (TEC, 2019c). Census 2013 data from (StatsNZ, 2014).

Notes: Please refer to Table 2

The pool from which the future research workforce may be drawn is small. There are few Māori and Pacific people with such qualifications – at the 2013 census, there were just 669 Māori and 177 Pacific people with doctorates (StatsNZ, 2019). Progress in increasing the number of people with these skills has been slow – there were just 45 doctoral completions by Māori and 25 by Pacific in 2016 (MoE, 2017).

Based on current rates of change in the workforce measured through the PBRF and forecast population data to 2050, it appears that Māori may account for a share of the research workforce commensurate with their share of the national population around 2096, and Pacific around 2150.

› The reasons for these disparities are complex

Some reasons cited include lower participation and poorer outcomes throughout the educational system (Bishop, et al., 2009), (Marriott, 2015) including in advanced degrees (Wensvoort, 2011) and during academic employment (Naepi, et al., 2019), structural and overt discrimination in academic environments (James, Alex; Chisnall, Rose; Plank, Michael, 2019), (Kidman, et al., 2015), (Sutherland & Hall, 2017), (Patterson, 2018), (Kidman & Chu, 2019) and a lack of systematic action by TEOs (McAllister, et al., 2019), (Naepi, 2019).

We also heard from key informants that the process of transitioning from study into the academic workforce was complex, and there were many competing opportunities.

“

“Pacific researchers are scattered here and there in the world... the challenge is how they flow through as a common river”

KEY INFORMANT, PACIFIC RESEARCHER

Implicit and unconscious biases influence who is employed in the research workforce and what research is undertaken, funded and recognised. These biases have been demonstrated in terms of the peer review of funding applications (Tamblyn, et al., 2018), (Ginther, et al., 2011) and within nearly every indicator of scientific merit including publications and citations (Caplar, et al., 2017), (Budden, et al., 2008), academic appointments (Brower, et al., 2017) and granting of science prizes (AWIS, 2011).

The PBRF is identified as a factor in the lack of diversity in the workforce. Reasons include discrimination against interdisciplinary, long-term and community-validated research, an incompatibility with tikanga Māori (Roa, et al., 2009), (Cole, 2019), structural issues with the way research is produced and assessed more broadly (Smith, et al., 2016), and a view that it engenders a sense of isolation (Crimms, 2018), (Asirvatham & Humphries, 2019).

› Our take

We heard many perspectives about the way the design and, particularly, the implementation of the PBRF shapes the academic workforce. These perspectives include the views that:

- the focus on research excellence has supported an expansion in the number of researchers and greater diversity in the kinds of research pursued.
- the system actively works against the goal of a more diverse workforce and exhibits a degree of systematic discrimination.

We explore how we might address these issues in the sections ‘Working toward more equitable assessment outcomes’ and ‘Introducing new funding incentives’.

Individual circumstances should matter more

- › The panel heard through submissions and from key informants that the assessment framework for the Quality Evaluation could be strengthened

It is axiomatic that the Quality Evaluation should result in different assessment outcomes for individual evidence portfolios. Each portfolio is intended to be a summative (albeit truncated and partial) view of the research output and contribution to research more generally of individuals.

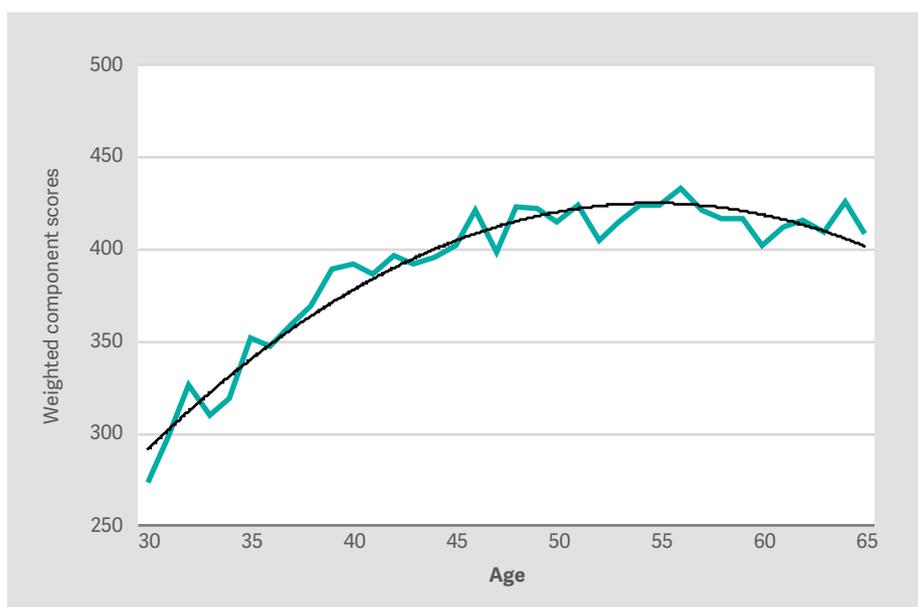
Considerable effort is put into ensuring, however, that peer review panels apply the assessment standards in a reasonably consistent way. Training both in-person and online is augmented by mock assessment exercises which reveal a high degree of consistency both across panels and over time, extensive analysis of assessment results and participation by moderators in significant proportions of panel meetings (TEC, 2019b).

What is equally clear is that some groups experience different outcomes. The greatest variation occurs by age, reflecting the career progression of academic staff, but other factors are at play.

Gender, ethnicity, employment status, circumstances outside of the control of individuals, the composition of the panels and the nature of the research pursued by staff have been cited as issues by researchers (James, et al., 2019), moderators (TEC, 2019b) and submitters. The sustained emphasis on research by universities and particular communities of researchers will also influence the results (TEC, 2013).

The relationship between the age of researchers and higher quality categories is well-known (TEC, 2019j), reflecting the progression of academic careers. **Figure 4** shows the relationship between age and component scoring for the 2018 Quality Evaluation.

FIGURE 4: AGE AND WEIGHTED COMPONENT SCORE, 2018 QUALITY EVALUATION



Source: (TEC, 2019d).

Note: Polynomial trendline shown. Average of weighted component scores for all evidence portfolios of staff of a given age. Component scores provide a useful, albeit incomplete, proxy for assessment outcomes. Panels are not bound by particular component scoring results in assigning Quality Categories.

Differences are also apparent in terms of other demographic characteristics. The evidence portfolios of male non-Māori, non-Pacific staff were the most likely to attract an 'A' or 'B' Quality Category in 2018. Those of female non-Māori, non-Pacific staff were around one-quarter less likely.

The greatest difference is associated with Pacific female staff whose portfolios were one-third (65%) less likely. The group with the greatest relative likelihood were Māori female staff for whom the likelihood was 93% (see Table 4).

TABLE 4: LIKELIHOOD OF AN EVIDENCE PORTFOLIO ATTRACTING A FUNDED QUALITY CATEGORY BY DEMOGRAPHIC CHARACTERISTICS OF STAFF, 2018 QUALITY EVALUATION

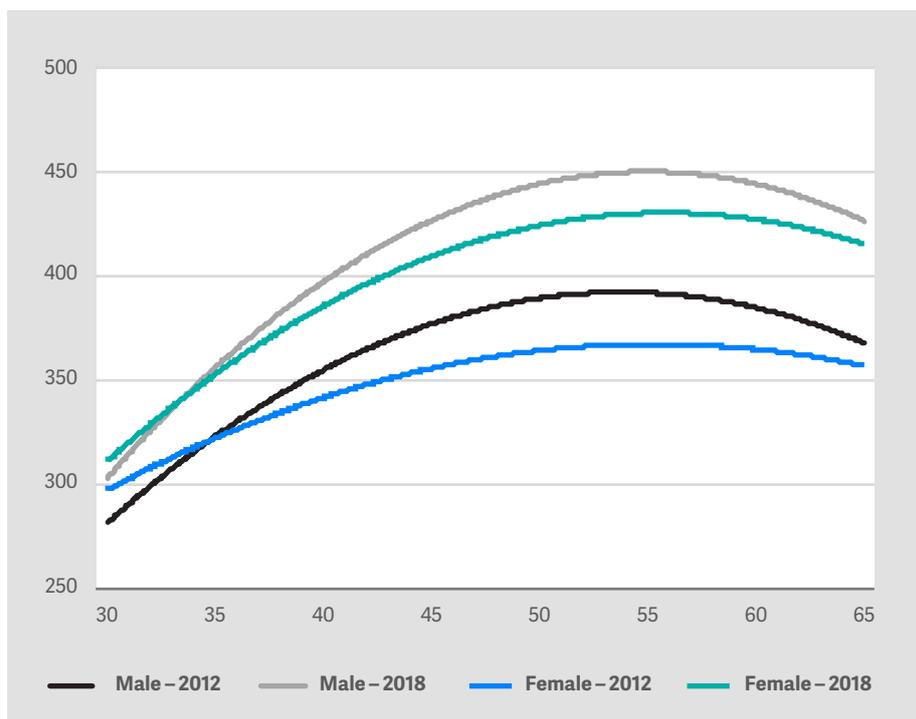
QE Year	Gender	Ethnicity	Odds of 'A' and 'B' Quality Category
2018	All	All	90%
2018	Male	Non-Māori, non-Pacific	100%
2018	Female	Non-Māori, non-Pacific	76%
2018	Male	Pacific	88%
2018	Female	Pacific	65%
2018	Male	Māori	85%
2018	Female	Māori	93%
2018	Male	All	99%
2018	Female	All	77%

Source: Adapted from published data visualization on researcher demographics (TEC, 2019c).

Note: Staff whose evidence portfolios were assigned a funded Quality Category only. Only one ethnicity reported per staff member. Use of FTE-weighted data will understate the actual number of individuals involved.

Analysis of the weighted component scores assigned to the evidence portfolios of female staff for the 2012 Quality Evaluation showed marked differences compared to those of male staff (James, et al., 2019). Extending this analysis to include the results of the 2018 Quality Evaluation indicates that this pattern is persistent over time (see Figure 5).

FIGURE 5: AVERAGE WEIGHTED COMPONENT SCORES BY AGE AND GENDER, 2012 AND 2018 QUALITY EVALUATION



Source: (TEC, 2019d).

Note: Polynomial trendlines are shown. Average of weighted component scores for all evidence portfolios of staff of a given age. Component scores provide a useful, albeit incomplete, proxy for assessment outcomes. Panels are not bound by particular component scoring results in assigning Quality Categories. Methodological differences mean that these results are not directly comparable to those produced by other researchers (such as (James, et al., 2019)).

The difference between the weighted component scores assigned to the evidence portfolios of male and female staff remained similar between the 2012 and 2018 Quality Evaluation (see Table 5). This stability is both a reflection of the persistence of the difference in assessment outcomes and the consistent calibration of assessment standards over time. All in the context of a modest overall increase in measured research quality.

TABLE 5: AVERAGE WEIGHTED COMPONENT SCORES BY GENDER, 2012 AND 2018 QUALITY EVALUATION

Quality Evaluation	Male	Female	Difference
2018	419	363	56
2012	409	351	58

Source: (TEC, 2019d).

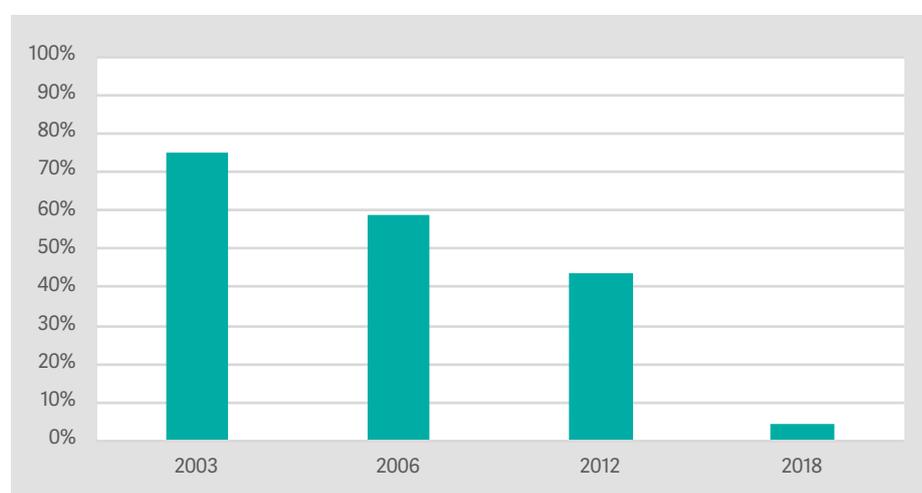
Note: Polynomial trendlines are shown. Average of weighted component scores for all evidence portfolios of staff of a given age. Component scores provide a useful, albeit incomplete, proxy for assessment outcomes. Panels are not bound by particular component scoring results in assigning Quality Categories.

› Circumstances that influence measured research quality

Circumstances, whether outside the control of individuals or due to choices about how best to allocate time and resources, can influence assessment outcomes. The main effects are likely due to the reduced output and activity of these staff and the judgements of peer review panel members about the way in which the quantity of available evidence might have been influenced.

Since 2003 there have been opportunities for staff to convey these circumstances and for panels to take account of them in assessing the quantity of research produced and research contributions. The proportion of evidence portfolios claiming these circumstances has reduced markedly declining from 75% of all evidence portfolios in 2003 to 5% in 2018 (see Figure 6).

FIGURE 6: PROPORTION OF EVIDENCE PORTFOLIOS THAT CLAIMED SPECIAL OR EXTRAORDINARY CIRCUMSTANCES, 2003–2018 QUALITY EVALUATION



Source: (TEC, 2013), (TEC, 2019b)

Note: Proportion of non-FTE weighted Evidence Portfolios. Results for 2018 relate to the extraordinary circumstances provision. All others relate to the special circumstances provision.

The reductions were not reflective of a lessening of the complexity of the working and personal lives of researchers. Rather these changes are the result of better understanding of the process, deliberate decisions to exclude certain circumstances from the ‘approved’ categories of extraordinary circumstances and the setting of ever more explicit minimum periods over which some impact needed to have occurred.

The reduction between:

- 2003 and 2006 reflected better understanding of the application of the criteria and the effects of the ‘partial’ round when a considerable number of evidence portfolios retained the quality category assigned in 2003.
- 2006 and 2012 when advice was introduced indicating that the circumstances needed to be sustained over at least one half of the assessment period to influence the assigned Quality Category, and removal of the provision to claim special circumstances due to becoming research active for the first time (for 2012) (TEC, 2013a).

- This reduction occurred even as 10.6% of evidence portfolios claimed the new Canterbury earthquakes special circumstances.
- 2012 to 2018 resulted from the renaming of the provision from 'Special Circumstances' to 'Extraordinary Circumstances', the introduction of a formal threshold of three years of impact, and the formal exclusion of part-time employment or leadership positions as a valid type (2018) (TEC, 2016a).
- The latter change did not preclude panels from considering employment arrangements including part-time status during their holistic assessment of evidence portfolios.

The new 'Extraordinary Circumstances' allowed claims on the basis of long-term illness or leave, significant family or community responsibilities or obligations or impacts arising from the Canterbury earthquakes. Staff needed to demonstrate impacts over at least half of the assessment period, that is three years (TEC, 2016a).

The use of the 'Extraordinary Circumstances' provision was influential on assessment outcomes at the margin with these evidence portfolios being slightly more likely than other evidence portfolios to have a higher quality category assigned at the holistic assessment phase. No portfolio that claimed such circumstances was assigned a lower Quality Category at this phase (TEC, 2019b).

Female staff were much more likely to claim the 'Extraordinary Circumstances' of extended personal leave (67% of the 30 claims) and significant family/community responsibilities (76% of the 132 claims). Long-term illness was more equally distributed by gender, with women claiming 55% of the 122 claims (TEC, 2019l).

The effects of the progressive tightening of the provision may also be gendered. Women (16.4% of all evidence portfolios) were twice as likely as men (8.0%) to be employed on a part-time basis in 2018 (TEC, 2019j). Analysis of the results of the 2012 Quality Evaluation showed that the weighted component scores assigned to the evidence portfolios of part-time female staff for the 2012 Quality Evaluation were markedly lower than those of part-time male staff (James, et al., 2019).

The reasons why women might pursue part-time employment differ from their male counterparts. Women are more likely to be part-time due to childcare responsibilities (when aged 30-50) or other care obligations (aged 40-60). Part-time status is linked to the pursuit of other employment or consultancy work for 'high achievers' aged 50 years or older, or those seeking a phased retirement (aged 60 years or older) irrespective of gender (James, et al., 2019).

In the panel's view, these changes have created a three-tier system for staff who experience some impact on their opportunity to undertake research. These tiers relate to those staff:

- who demonstrated impacts relating to the defined 'extraordinary circumstances' over at least three years, relating to long-term illness or disability, extended personal leave, significant family or community responsibilities and a group of effects arising from the Canterbury earthquakes.
- whose employment arrangements included part-time employment, becoming research active during the assessment period, or teaching on sub-degree programmes. These staff may provide commentary about the nature of their employment arrangements and their impact as part of the platform of research contextual summary in evidence portfolios.

- who experienced the kinds of circumstances cited under the ‘extraordinary circumstances’ provision but which did not meet the threshold for inclusion, and/or experience other barriers than those cited in the guidelines in relation to their employment arrangements.

We lack definitive information about the effects of this tiered system on assessment outcomes, but it seems plausible that women were disadvantaged by the increasingly restrictive nature of the special/extraordinary circumstances provision. Members of peer review panels appeared alert to the risks presented by this differentiated approach, with calls for information on the FTE of staff to be included in evidence portfolios as a matter of course (TEC, 2019b).

It also seems apparent that the design of the extraordinary circumstances provision is increasingly disconnected from good human resource practice. Many organisations have taken steps to promote the concept of merit relative to opportunity – the goal of fair and equitable assessment of staff members’ achievements relative to the opportunities given to them (ARC, 2018), (UoA, 2019), (RSNZ, 2018), (Te Pūnaha Matatini, 2019), (Monash, 2019), (UNSW, 2019).

› Our take

This evidence was consistent with concerns that we heard about the:

- systemic nature of some biases in the assessment framework and particularly the impacts on women given the gendered nature of employment, and
- restrictive nature of the ‘Extraordinary Circumstances’ provision and the perceived need to share sensitive information to support claims.

We explore how we might address these issues in the section ‘*Working toward more equitable assessment outcomes*’.

Transaction costs do not appear to be excessive

- › The panel heard through submissions and from key informants that transaction costs overall have reduced over time, and many of the activities involved in complying with the PBRF would be undertaken anyway.

The PBRF involves a relatively complex and resource-intensive, but periodic, assessment of research quality, and two, relatively low-cost, proxy measures which are updated annually.

Participation in the Quality Evaluation measure is a requirement to access any PBRF funding (TEC, 2016b). This measure involves the recording and collation of evidence of research excellence and the preparation of evidence portfolios by TEO staff. Undertaking these tasks involves a mix of academic and non-academic staff time and requires investment in the technology and quality assurance systems.

The TEC incurs costs in administering the Quality Evaluation, including detailed design, training, technology, audit, assessment and reporting costs. Peer review panel members will also incur opportunity costs given the mismatch between the modest fees they are paid, and the actual level of effort involved.

The two proxy measures involve relatively modest transaction costs. The Research Degree Completions measure is based on data supplied through the main data reporting system for TEOs, the Single Data Return, augmented by straightforward course level registers and data accuracy reports (TEC, 2014).

The External Research Income measure involves an annual return and, for amounts of \$200,000 or more, an independent audit opinion. Ten of the 21 TEOs that reported External Research Income in the 2017 year were exempt from that requirement (TEC, 2018).

“

“When I (came to New Zealand) research was seen as a kind of hobby, something you did after teaching or on weekends, the PBRF has changed that”

KEY INFORMANT, UNIVERSITY MANAGER

There is little reliable data on transaction costs (MoE, 2013). An attempt was made to quantify these costs as part of the review following the 2012 Quality Evaluation. That review estimated costs for universities of \$56.7 million over six years, with the majority (88.8%) attributed to the Quality Evaluation measure. The main components of these costs were:

- \$40.2 million incurred by universities, largely the time taken by staff to compile and collate information for evidence portfolios, estimated at approximately 264,000 hours.
- \$9.5 million incurred by the TEC in administering the Quality Evaluation,
- \$2.4 million of ‘in-kind’ contributions made by members of the peer review panels.
- \$6.4 million for the TEC and the universities to administer the Research Degree Completions and External Research Income measures.

While large in a gross sense, the figure of \$56.7 million was equivalent to 4.0% of the total amount of funding allocated through the PBRF over the same period. These figures were used as part of the 2013 review to support efforts to simplify the design of the Quality Evaluation, such as the reduction in the number of items that might be included in evidence portfolios.

The panel made several observations about the figures cited in this report and their applicability to the current review. These were:

- none of the assumptions besides the direct costs incurred by the TEC have been tested in any rigorous way,
- the time estimated for staff to collect and collate the information required evidence portfolios at approximately 44.8 hours per full-time staff member (or 7.5 hours per year) appears generous. The general quality and ease of use of research management systems in universities ought to have reduced the burden on staff considerably over time, although the panel heard widely varying estimates of the time required of staff.

- the estimates were likely to be more applicable to universities than smaller TEOs, with, for example, some suggestions that the costs of participation outweighed benefits for wānanga, private training establishments and some institutes of technology and polytechnics.
- the compiling of information for evidence portfolios is difficult to disentangle from the normal expectations that staff need to keep a record of their research outputs for promotion and other purposes. Additionally, innovations such as Open Researcher and Contributor ID and the New Zealand Research Management System (NZRIS) will, in the future, address some of the cost of compiling information.
- the simplification of evidence portfolios for 2018 ought to have contributed to a reduced burden in terms of the collation of evidence.
- the estimates for the proxy measures appear high given their simplicity.

Concerns about transaction costs were a reasonable feature of criticisms of the PBRF during the first decade of its implementation. It is apparent that the initial concerns reflected a mix of start-up costs, the learning curve involved in adapting to the new process and the costs of taking a core function of universities more seriously.

These concerns have attenuated over the past several years. We heard from submitters that the costs are increasingly seen as a long-term investment in a refocus on the research mission of universities. This pattern of changing attitudes to costs is consistent with the findings of the independent review of the PBRF conducted in 2008 (Adams, 2008).

› Our take

We heard few significant concerns about the transaction costs involved in administering the PBRF. Rather submitters to the panel’s public consultation process noted that:

- the transaction costs are not currently excessive for universities, and most ongoing costs would be incurred anyway, given the increased priority those organisations had given to research and research management.
- the transaction costs for smaller TEOs are high in a relative sense, but the non-financial benefits compensate to a very large degree (see *Some smaller TEOs see non-financial benefits from participation*)
- there was a strong, albeit not universal, preference for few or no changes to the design of the PBRF, particularly in terms of the unit of assessment, as a new model would result in large transition costs (see *Thinking about the unit of assessment*).

Some of the panel’s recommendations would have the effect of reducing transaction costs, but as discussed above these costs do not appear significant enough to warrant wholesale changes.

For smaller TEOs the costs and benefits of participating are complex

- › The panel heard through submissions and from key informants that while TEOs with few PBRF-eligible staff incurred significant transaction costs, they valued the opportunity for rigorous benchmarking of their research performance.

All TEOs that receive Student Achievement Component funding and have degree-granting authority are eligible to participate in the PBRF (TEC, 2016a).

The number of TEOs participating in the PBRF grew between 2003 and 2018, from 22 to 36. Fourteen institutes of technology and polytechnics, two wānanga and twelve private training establishments participated in the 2018 Quality Evaluation (TEC, 2019a).

The financial incentives for non-university TEOs to participate are much weaker than those for universities. Collectively these TEOs attracted just 3.0% of the total funding allocated through the PBRF in the 2019 calendar year (TEC, 2019j).

Distributed across 28 TEOs, this share of funding appears is very modest. Indeed, five TEOs attracted less than \$50,000 in the 2019 year. While there is a paucity of good data about the transaction costs incurred by TEOs participating in the PBRF (see *What we know about transaction costs*), it seems likely for at least some TEOs the costs of participation either exceed or are disproportionate relative to the potential financial and other benefits.

Three important considerations paint a more complex picture. These are:

- the PBRF involves a large sum of money, so a 3.0% share for the non-university TEOs was \$10.4 million (GST exclusive) in the 2019 year.
- participation in the Quality Evaluation determines funding for the following six years. The median amount of funding allocated to a non-university TEO between 2019 and 2024 (inclusive) will be at least \$1.04m (GST exclusive).
- there are large differences between subsectors. The median funding for private training establishments from the PBRF can be estimated at about \$0.5 million over the next six years. The relevant figures for institutes of technology and polytechnics and wānanga are \$2.2 million and \$2.1 million respectively.

Changes in the sector will also influence institutional decisions about whether to participate. The government's planned reform of vocational education involves the consolidation of the sixteen individual institutes of technology and polytechnics into a single national provider (MoE, 2019). Based on the funding allocated to institutes of technology and polytechnics, the national provider is likely to attract around \$8.5 million per annum through the PBRF, which is about 15% less than Lincoln University.

The new national provider for vocational education also creates opportunities to consolidate research leadership, activity and support. Based on the results of the 2018 Quality Evaluation, the institutes of technology and polytechnics would employ collectively over 430 (FTE) researchers whose evidence portfolios met the standard for a funded Quality Category. This number of staff is more than twice the current size of Lincoln University and about the same size as the University of Waikato.

“

“We do it for academic credibility and benchmarking”

KEY INFORMANT, PTE RESEARCHER

We heard from submitters and key informants that they were generally comfortable with the trade-offs inherent in participating in the Quality Evaluation. The reputational benefits were considered important, particularly in terms of quality assurance processes, and financial benefits included attracting funding that could be used to support research anchored in engagement with communities.

Many non-university TEOs pass on the financial rewards associated with the Quality Evaluation directly to staff to enable them to sustain their research programmes, which was considered a valuable tool for motivating and retaining highly valued staff.

Others spoke about the perceived value of a robust, albeit indirect, external validation of the quality of degree-level and postgraduate teaching and learning. More directly for individual staff, the peer assessment provided an affirmation about where they fit into the wider research, science and innovation system.



› Our take

It is apparent based on the evidence we have seen that:

- many smaller TEOs assess the financial costs of participating as outweighing the financial return, and
- there are many non-financial benefits associated with participation.

These effects are experienced differently depending on the type of organisation. We explore how we might address the issues relating to the wānanga sector below, and the possible responses to those relevant to institutes of technology and polytechnics in the section *‘Introducing new funding incentives’*.

Wānanga do not have a clear place in the PBRF

- › The panel heard through submissions and from key informants that the PBRF is not working well for wānanga and more should be done to support the development of research capability in these organisations.

The wānanga sector is an integral part of the tertiary education system in Aotearoa New Zealand offering a vehicle for educational development of Māori in a Māori-controlled environment (Waitangi Tribunal, 1999).

These TEOs have been a significant factor in the increased participation by Māori in tertiary education, mostly built around indigenous world views and tribal knowledge but also addressing contemporary Māori society (Durie, 2009).

Ngā wānanga have engaged selectively with the PBRF. All have participated in the PBRF in some way since 2003 (see sidebar), but express persistent concerns about the appropriateness of the model for assessing the kinds of research that their staff are engaged in.

Wānanga have expressed a range of concerns about the PBRF including:

- that the PBRF definition of research does not conform with their conceptions of Rangahau (an inquiry platform grounded in tikanga Māori and ahuatanga Māori (culture and traditions)).
- a lack of trust among staff that panels can assess their research contributions equitably.
- a discomfort with the notion of competitive assessment and self-promotion due to cultural norms, and a preference for some form of group-based assessment and the valuing of research output as a form of contribution to iwi and whānau development.
- past underinvestment in the sector means that the staff of wānanga lack of suitable systems and support resources.
- the modest amount of funding allocated to wānanga reinforces stereotypes about the relative quality of these TEOs.
- a lack of reciprocity in the partnership with other TEOs, particularly the lack of support with PBRF processes despite some extensive research collaborations.
- an implied devaluing of mātauranga Māori through the funding weighting assigned to the Māori Knowledge and Development subject area.

Participation by ngā wānanga

Te Wānanga o Aotearoa participated in the 2003, 2006 and 2018 Quality Evaluations. The number of (FTE-weighted) staff whose evidence portfolios met the standard for a funded Quality Category increased over that period from 8.8 to 17.0.

Te Wānanga o Aotearoa was allocated \$177,357 (GST exclusive) in funding in 2019 from its participation in the Quality Evaluation and a small component from the External Research Income measure. The wānanga received no Research Degree Completion funding.

Te Whare Wānanga o Awanuiārangi participated in the 2006, 2012 and 2018 Quality Evaluations. The number of (FTE-weighted) staff whose evidence portfolios met the standard for a funded Quality Category increased over that period from 14.75 to 18.33.

Te Whare Wānanga o Awanuiārangi was allocated \$533,639 (GST exclusive) in funding in 2019 largely from the Research Degree Completions measure (64.0%). The Quality Evaluation accounted for 28.7% and the balance (7.3%) came from the External Research Income measure.

Te Wānanga o Raukawa received a small amount of funding from the External Research Income measure between 2003 and 2006 – before a requirement that TEOs participate in the Quality Evaluation was introduced in 2006.

The panel also heard from key informants about the mismatch between the expectations of wānanga in the Education Act 1989 and the government’s investment in the sector. These institutions are characterised ‘...by teaching and research that maintains, advances, and disseminates knowledge and develops intellectual independence, and assists the application of knowledge regarding ahuatanga Māori according to tikanga Māori.’ (Parliamentary Counsel Office, 2019).

Modest efforts started in 2014 to address the mismatch between the government’s investment in wānanga and the expectations placed on these organisations. Since 2014, each wānanga received \$500,000 per annum through a targeted fund, the Wānanga Research Capability Fund. This fund aims to support research capability building within wānanga, particularly in the area of wānanga specialisation in mātauranga Māori/Māori knowledge.

While the panel was preparing this report, agreement was reached between the Crown and Te Wānanga o Raukawa to address the issues raised by the wānanga in its Waitangi Tribunal claim. (Davis & Hipkins, 2019). The panel was encouraged by the planned investment in the research capacity and capability of the wānanga and noted the possible implications for the rest of the wānanga sector (Johnsen, 2019).



“The PBRF is irrelevant to what we do”

KEY INFORMANT, WĀNANGA RESEARCHER

Still, it seemed apparent to the panel that the PBRF is not working well for wānanga for a variety of reasons. Structural factors such as historical underinvestment, heavy teaching burdens on an, often, dispersed workforce, and characteristics of the assessment framework all play a role.



› Our take

It seems apparent that the PBRF is not optimally configured for the research that the staff of wānanga undertake. It was not clear whether some separate mechanism of research assessment would be necessary or desirable, but we heard strong views that:

the current design of the PBRF is not well-suited to the current state of research at wānanga and that more effort is required to develop a more collaborative model focused on nurturing and growing research.

Māori researchers, including those working in wānanga, should be more deeply involved in the design and implementation of the fund.

We explore how we might address the issues relating to the wānanga sector in the sections ‘*Adopting a more capacious definition of excellence*’ and ‘*Introducing new funding incentives*’.

Thinking about the unit of assessment

- › The panel heard a general consensus from submissions and key informants that the individual should be retained as the unit of assessment because any change would not fix the problems attributed to it and incur considerable costs.

The Quality Evaluation measure involves the assessment of the quality of research produced and contributions made by individuals by panels of peer reviewers. The results of these assessments are then aggregated to provide a view on the distribution of research excellence across the tertiary education system.

New Zealand is the only country in the world to undertake assessments of individuals. Other systems aim to assess either institutions as a whole or groups of researchers (Kolarz, et al., 2019b).

The model is powerful in terms of leveraging professional incentives of individuals and giving TEOs strong reasons to invest in the staff, facilities and support needed to excel. Certainly, based on the feedback the panel received, it seems unlikely that the changes in measured research quality would have occurred without some mechanism to recognise and reward excellence (MoE, 2002).

Focusing on individuals is believed by some to have several serious drawbacks. These include discouraging collaboration, negative impacts on the development and sustainability of the workforce, engendering high compliance costs, having negative effects on staff and making it harder to measure impact.

■ Is there too little collaboration?

Collaboration is often valued with evidence indicating that it is associated with higher research productivity (Subramanyam, 1983), less variability in research quality (Rigby & Edler, 2005) and higher future research output (He, et al., 2009). Collaboration between academic and non-academic partners (industry, government, community) helps connect research to socioeconomic impacts (Phipps, et al., 2015)

The draft Research, Science and Innovation Strategy emphasises the benefits of connections. The strategy argues that these connections allow a smoother, easier flow of people, knowledge, capabilities, funding and capital, and through the diversity of connections, an increased likelihood that new ideas will be generated (MBIE, 2019).

The PBRF is thought by some to discourage collaboration because individuals are strongly incentivised to capture as much of the benefits of their research themselves. Individualistic pursuit of personal progress, promotion and a narrow focus on international research publications is encouraged. The commitment to collaborative success across groups or institutions, research focused on the needs of industry or communities, and broader engagement is thereby diminished.

We saw little evidence to support this view. Empirical evidence suggests that the rate of inter-institutional collaboration in indexed journal articles increased since 2003 (Smart, 2013), (MoE, 2017) and New Zealand researcher have high levels of international collaboration (MBIE, 2018). This trend suggests that, at least, the PBRF is not actively diminishing such collaborations.

We heard also that the idea of the individual as the unit of assessment is not fit for a context where knowledge generation is the result of collective effort. Other key informants suggested that there was often a poor correlation between academic units within institutions and meaningful, substantive research collaborations. Many collaborations tended to be episodic and cross-institutional. In any case, there have been many examples of evidence portfolios where staff had offered complementary descriptions of their contribution to complex projects that involved several researchers.

The panel noted that research connections and collaboration are a long-standing feature of research in New Zealand. We agree in principle that collaboration ought to be encouraged, but we did not think it was credible to conflate the desirability of collaboration with some form of group-based assessment.

The panel was sensitive to concerns that the design of the PBRF might discourage engagement with research stakeholders or the pursuit of research that is aimed at addressing the needs of end-users. Some key informants and submitters raised issues about the way the assessment framework values or recognises certain kinds of research (see Research excellence is diverse), however the extent to which the unit of assessment influences the choices of researchers is unclear.

■ How does the unit of assessment influence the workforce?

The development and sustainability of the workforce is a vital concern. A well-functioning system ought to result in a balanced profile with more experienced staff, those consolidating their careers and others who are developing and honing their skills. It should also deliver sufficient diversity of viewpoints, perspectives and capacity to engage learners, communities, business and other stakeholders. Ideally, it should also help to foster a working environment that is positive and conducive (see *Looking after our people*).

The system might not deliver an optimal configuration of the workforce, whether because the short-term incentives of the PBRF lead to poor decisions or staff might experience pressures to deprioritise some important functions.

The combination of using individuals as the unit of assessment and a reporting framework that privileges TEOs that can demonstrate high concentrations of 'A' and 'B' Quality Categories creates potential issues.

Managers may respond to short-term pressures to maximise their average quality score and relative ranking by maximising the number of individuals with a strong track record. That might take the form of 'poaching' staff or 'free-riding' on the work of other TEOs to develop new and emerging researchers.

“

“PBRF looks like a grade, and it looks like a grade with a manual”

KEY INFORMANT, EARLY CAREER RESEARCHER

The literature on the PBRF indicates that staff experience considerable pressures to perform, and TEOs have acted on the imperatives that the fund creates (see *Looking after our people*).

These issues could lead to an underinvestment in the next generation of researchers, lead to environments that are not conducive to the ongoing development and support of more experienced researchers, or academic departments that are vulnerable to the career decisions of a small number of key people.

There are proxies we can use to test how significant these issues are. These include the distribution of quality categories and the staff turnover rates among TEOs. The former helps us understand whether the workforce is becoming unbalanced, and the latter provides an indication of employee satisfaction, albeit with important limitations (Mobley, et al., 1979), (Campion, 1991).

The results of the four Quality Evaluations suggest that there is a reasonably balanced profile of staff overall. The proportion of evidence portfolios assigned an 'A' and 'C(NE)' quality category increased between 2012 and 2018, accounting for around one in six of all quality categories. The proportion made up by 'B' quality categories was stable at a little over 40% over the same period. Only the proportion assigned a 'C' dropped from 32.0% to 29.1%, even as the number of FTE-weighted staff those quality categories related to increased from 2,020,2 to 2,155,7 (see *Context – Results of the PBRF*).

Neither does there appear to have been an exodus of existing staff from the sector. Staff turnover rates in the university sector show that academic staff are leaving employment at much lower rates than general staff, public sector staff generally or people in the wider economy (see **Table 6**). The reasons why individuals might leave employment can vary and the rates shown may, for example, conceal varying patterns of coercion or other forms of involuntary turnover.

TABLE 6: STAFF TURNOVER RATES BY SELECTED JOB CATEGORIES, 2006-2017

Category	Average rate
University academic staff	5.7%
University general/professional staff	11.0%
Public sector staff	17.6%
All employees (NZ)	15.8%

Source: University and public sector rates provided as part of a submission to the panel. National data from Statistics New Zealand (StatsNZ, 2019).

Notes: For reference, the average for the ANZSIC06 level 1 classification of Professional, Scientific, and Technical Services was 12.2%, Education and Training was 15.3%, and Healthcare and Social Assistance was 11.8% (StatsNZ, 2019).

There may also be different patterns of turnover specific to subject areas or units within TEOs or the demographic characteristics of the staff concerned.

There may also be other effects that are not measured by turnover rates, including stress and poor morale. We were unable to test these in any systematic way, but staff surveys report that working conditions for academic staff have been deteriorating in New Zealand since 1994 (TEU, 2019), and stress is an issue for academics internationally (Pignata, et al., 2016), (Weale, 2019).

Understanding these patterns may provide insights into whether the design of the Quality Evaluation impacts differently on specific groups of staff. Certainly, the panel heard of concerning practices at some TEOs which might give rise to these differentiated impacts (see also *Looking after our people*).

■ Does the unit of assessment drive transaction costs?

*Transaction costs may be a relevant consideration. We have explored the transaction costs incurred by the current model including the different effects depending on the type of TEO and an apparent modest amount of time spent by staff compiling and collating evidence portfolios (see *Transaction costs for universities matter less*, and *Some smaller TEOs see non-financial benefits from participation*).*

We have heard arguments for adopting groups as the unit of assessment, including on the basis that this approach might lead to lower transaction costs. The case made centres on the likelihood that any change would involve fewer people preparing portfolios (or their equivalent).

We heard from submitters and key informants that they saw considerable potential for any transition to a different unit of assessment to involve large costs. The experience of the initial implementation of the PBRF suggested that the start-up costs can be high (Adams, 2008) even if the costs on an ongoing basis could be lower.

Several universities noted that they had made large investments in information technology, staff training and process and systems design to comply with the existing system. There was little appetite to incur a further set of costs to change a policy intervention that appeared to be delivering the intended results.

A further potential issue that may impact on transaction costs is the unknown scope of any group-based assessment, including how such groups might be configured and what kinds of information might be required to be supplied. Submissions to the panel argued for and against several different models such as research groups, subject areas, disciplines, academic units and organisations as a whole.

We were certainly conscious that many researchers will move fluidly between different collaborations and research 'groups' during the six-year assessment period making attribution difficult. Academic units might seem like a suitable choice, but we recognised that they may often be an administrative convenience primarily related to teaching, rather than a signal of some coherent or common research purpose.

We also heard that changing the unit of assessment might allow insights into the strategy, effectiveness and impact of groups. The potential for lower transaction costs might be attenuated if any new model requires different kinds of information to be collected and collated.

■ Would a different unit of assessment ameliorate impacts on individuals?

Reducing negative impacts on individuals is offered as a reason to change the unit of assessment. Changing the unit of assessment is often cited as a potential fix for some of the negative effects on individuals associated with the current Quality Evaluation. The evidence that changing the unit of assessment would deliver such benefits is mixed.

We heard from key informants and through submissions that using the group as the unit of assessment would reduce stress on individual academics and categories of academics and reduce damaging human resource practices. Others noted that a group-based model might offer a pathway to more meaningful academic management and leadership of research.

A review of the effects of the Research Excellence Framework in the United Kingdom, a group-based model, found that system was associated with a de-emphasising of functions other than the production of research outputs, discouraged publication for non-academic audiences and led to an increase in journal outputs, contributed to a two-tier workforce with non-research roles having considerably less status and gave more power to research managers to shape research priorities and the careers of academics (Arnold, et al., 2018).

Further, a survey of members of the University and College Union found that 71.6% thought that not being included in a Research Excellence Framework submission would damage their career prospects and 48.0% thought that if their performance was below expectations then less support would be forthcoming for their research in the future (Arnold, et al., 2018).

Changes were made to the Research Excellence Framework for 2021 to ensure that all staff with significant responsibility for research were included in the periodic staff census (REE, 2019), in part to mitigate the effects on individuals (Stern, 2016).

~~~~~

## › Our take

We heard strong advocates for both retaining the current unit of assessment and for shifting to the group as the unit of assessment. It was apparent that:

- There are many potential issues where changes should be considered to the design and implementation of the Quality Evaluation.
- The evidence attributing particular issues to the current unit of assessment is mixed, as is the evidence that any change would necessarily result in better outcomes.
- There were concerns that shifting to a group-based assessment might create perverse incentives for TEOs that might impact on employment relationships, particularly where staff are excluded from any groups put forward for assessment.
- We should do more to recognise high-calibre researchers where-ever they are working

We explore how we might address the issues relating to the unit of assessment and possible responses in the section '*Building on our successes*'.

## Research excellence is diverse

- › The panel heard that while the research excellence takes many forms, the assessment framework does not value them all equally.

The definition of research for the PBRF and the kinds of evidence that can be evaluated is intentionally broad (MoE, 2002). The definition of research encompasses cultural innovation, aesthetic refinement, production of new materials, products and processes and contributions to the intellectual underpinnings of subjects and disciplines (TEC, 2016a).

Evidence that can be used to verify these contributions is equally expansive including exhibitions, intellectual property, *whaikōrero*, software, compositions, as well as books, conference papers and journal articles (TEC, 2016a).

Portfolios include evidence not just of research outputs but also research contributions. These might include initiatives to grow Pacific knowledge bases and capacity, invitations to contribute to *iwi* projects and fulfilling a ‘critic and conscience’ role, as well as prizes, securing contestable grants and invitations to deliver keynote addresses (TEC, 2016a).

Despite these provisions, there have been persistent concerns that the fund privileges certain kinds of research, discouraging the application of existing knowledge to problems specific to New Zealand (EAP, 2013), engagement with communities (Neilsen, 2019) and undervaluing the impact of research.

Not all of these concerns are valid. The panel was concerned to also note several submissions asserted that the assessment framework discouraged or indicated a preference for certain kinds of research, views that were contrary to the explicit provisions in the assessment guidelines. We also heard from staff about the advice they received to focus on particular outlets for their research or target a particular number of outputs. The panel was concerned about how these ‘myths’ about the assessment framework are propagated.

We also heard concerns from the staff of *wānanga* that they felt excluded. There may be an opportunity to recognise the research work of a significant cohort of Māori researchers and research that used Māori methodologies and was relevant to *iwi* and *hapū*. This change would be both intrinsically worthwhile and contribute to wider equity and diversity goals.

The contents of evidence portfolios in the 2018 Quality Evaluation indicated that either there are structural issues with the way research is conducted in New Zealand, or researchers are self-editing the kinds of evidence that they put forward for assessment. Among the kinds of research contributions least likely to appear in evidence portfolios were examples of ‘uptake and impact’ (4.1% of all research contributions). These contributions were slightly more prevalent in the Engineering, Technology and Architecture panel (5.6% of all contributions).

Outreach and engagement contributions were somewhat more common at 7.9% and most likely to be present in evidence portfolios submitted to the Pacific Research (11.1%), Māori Knowledge and Development (10.1%), Creative and Performing Arts (9.8%) and Social Sciences and Other Cultural/Social Studies (9.5%) panels.

“

*The system needs to use as many models as possible to make it easy for us”*

**KEY INFORMANT, CREATIVE ARTS RESEARCHER**

The reasons for the modest use of these types of evidence appear complex and interrelated. The stakes involved in the Quality Evaluation are perceived to be very high for some staff promoting a risk-averse framing. Journal rankings are a commonly used heuristic among academics and those providing guidance and advice to them for the relative quality of research even as their currency among peer review panels is minimal.

Other kinds of research that carry deep value for stakeholders appear less valued through the assessment framework because they can be harder to explain and validate, such as the development of new industrial processes or the kind of engagement and codesign that working with iwi/hapū demand.

The higher weighting for research outputs and the implied primacy of the four nominated research outputs may diminish the relative value of research contributions. The impact of research, processes of engagement and connections with communities are incorporated into evidence portfolios in a way that is disconnected from relevant research outputs.

We heard from some key informants that their research outputs and contributions did not fit well within the Quality Evaluation. Some of these concerns related to institutional capability with some staff reporting a lack of support or a lack of a common understanding of how certain kinds of research are valued by the assessment system.

Others thought that the system failed to adequately recognise the highest performing researchers and the teams that they cultivated. Conversely, some senior researchers described a career trajectory where a heavy emphasis on research outputs evolved to a greater focus on cultivating the impact of their research and other research contributions. Such researchers noted that a lower Quality Category would be the net effect of this transition, even if, as the panel noted, these contributions had the potential to be highly impactful.

Some of the issues may relate to the opacity of the panel process and their coverage. We heard about effective practices within panels to seek out the broadest range of possibly relevant research. For example, the coverage of the Pacific research panel encompasses Pacific research methods, Pacific-centred subject matter, impact on Pacific communities and contributions to Pacific knowledge.



## How best to assess excellence?

- › The panel heard a strong preference for retaining the peer review of research quality, although some enhancements were proposed.

The panel heard a range of perspectives on the most appropriate ways to assess research excellence. We set out below the international practice in research assessments, the arguments we heard about the suitability of metrics and those in favour of peer review.

### ■ The international context

The main axis on which the measurement of research excellence is set is the balance between a reliance on peer review assessments and on metrics. Three models predominate: quantitative/bibliometric research assessments, bibliometrics informed peer review and peer review that de-emphasises metrics (Jonkers & Zacharewicz, 2016), (Kolarz, et al., 2019).

The choices made by countries often reflect the desired level of analysis: bibliometrics can be suitable for assessing organisations, while peer review is often seen as necessary for departments or research groupings. Other jurisdictions appear comfortable accepting a trade-off between simplicity and the ability to recognise the full range of research excellence.

*“Excellence is non-negotiable but is shown in different ways”*

KEY INFORMANT, UNIVERSITY RESEARCHER

Almost all systems that seek to link research performance to funding rely on metrics to some extent. For example, a survey of performance-based funding systems in the European Union found that ten of the fifteen systems with more extensive assessment approaches relied primarily on metrics. Peer review assessments were used by five countries, with four using selected metrics to augment those processes (Jonkers & Zacharewicz, 2016).

Research publications tend to be the main focus, most often based on assessments of the number of publications in national and international journals, increasingly augmented by categorisation of journals and publishers, and/or citation rates. Other metrics such as the number of graduates, patents and research funding are often used and taken account of in making funding allocations.

Quantitative/bibliometric research assessments are not necessarily simple. A mix of metrics is commonly used, reflecting their ease of use and the desire to develop a balanced view of research excellence. Many systems involve intricate weightings and provisions for specific disciplines, such as the model employed by Finland (Kolarz, et al., 2019b).

The smaller group of countries that rely on peer review tend to rely on bibliometrics such as citation rates to inform peer review judgements. These systems also include other metrics such as numbers of graduates and patents, the amount of research funding attracted and the degree of internationalisation.

A key outlier is the United Kingdom, where other metrics and bibliometrics play a lesser role and case studies of societal impact are incorporated (Zacharewicz, et al., 2019).

Notably, only Australia, Hong Kong, Italy, New Zealand, Portugal and the United Kingdom undertake peer review of the quality of individual research outputs. Most peer review involves assessments of institutional self-evaluations or research strategies (Kolarz, et al., 2019).



## › Using metrics

---

We received a minority of submissions in favour of making more use of metrics in the assessment of research excellence. These arguments centred around the potential for metrics to replace peer review assessment or to assist with peer review.

Conversely, some submissions and key informants expressed considerable concern about the perceived undue influence of metrics on assessment outcomes.

One submission presented the results of an analysis of the number of publications and citations and funding allocations of the 2018 Quality Evaluation. The results showed a high correlation ( $r=0.97$ ) at an institutional level but provided no insights into the distribution of research excellence at a discipline level.

Other submissions suggested that the wider use of metrics might simplify the work of peer review panels by providing a reference point for assessment. One suggested that metrics might allow some staff to avoid the work involved in preparing evidence portfolios entirely if the results indicated clearly that a particular funded Quality Category was likely.

Several submissions recommended developing a complex set of metrics to accommodate particular fields of research or providing the option of peer review for those disciplines that are not well-served by bibliometrics (such as creative arts). Others noted that some groups of staff might experience a kind of 'collection tax' associated with the effort required to gather evidence that sits outside of commonly accepted bibliometrics.

A review of the suitability of bibliometrics argued that they are not appropriate for many subject areas and commonly cited measures such as journal impact factors suffer from considerable limitations, systematically disadvantage women and early career researchers and tend to encourage research output over quality (Boston, 2019).

---

## › Our take

---

We heard strong advocacy for retaining peer review assessment. It was apparent that:

- peer review panels were crucial in providing a more holistic view of research excellence than bibliometrics could offer.
- the arguments in favour of the wider adoption of metrics tended to focus on their potential for reducing transaction costs and their usefulness in distributing funding.
- the assessment framework already provides opportunities for evidence portfolios to include metrics, albeit as one way to inform judgements about research quality (see sidebar).
- some staff perceived that metrics had an excessive influence on the assessment of research excellence.

We discuss our recommendations in relation to the best ways to assess research quality as part of the section ‘*Building on our successes*’.

---

## Looking after our people

---

### › The panel heard a mix of perspectives about the impact of the PBRF on individuals and some concerning practices.

---

The focus on individuals (see *Thinking about the unit of assessment*) in the Quality Evaluation makes it somewhat pervasive, the link to funding creates strong managerial imperatives and the results of the Quality Evaluation indicate that it has wrought significant change.

Ideally, the PBRF ought to have created a positive dynamic with the measurement of research quality creating incentives for institutions to support the research efforts of staff, and the increased funding enabling that support.

---

### › The experiences of some staff are mixed

---

Many key informants were positive about the fund. The incentives of the fund have raised the profile of research and enabled greater recognition of their contributions. Some staff saw the Quality Evaluation as a positive opportunity to gain external validation, providing evidence to support their claims for career progression and enabling access to assistance and development resource.

Other staff do not experience the PBRF positively. We heard from key informants that the pressure to perform soon after

### PBRF and the use of metrics

The PBRF uses metrics as part of proxy indicators of research quality, to inform assessments of the quality of research outputs and as an indicator of peer esteem.

The proxy indicators of research quality (External Research Income and Research Degree Completions) account for 45% of the funding allocated through the fund currently.

The fund guidelines emphasise the importance of assessing all research activity on its merits (TEC, 2016a). But many peer review panel-specific guidelines welcome use of one or more metrics such as citations, h-index and journal rankings.

The panels generally take care to emphasise the contributory nature of these data, the importance of supporting commentary and affirm the primacy of the underlying quality of the research (TEC, 2016).

The research contribution component of evidence portfolios includes the category of ‘Recognition of research outputs’.

This category is designed to capture the esteem in which a staff member’s specific research outputs are held by their peers and other stakeholders.

Citation counts are identified as *one of the possible ways* that such recognition might be evidenced (TEC, 2016a).

appointment to their first academic roles is strong, that the PBRF guidelines act as a kind of “rulebook” and some staff felt unsupported by their employers. Some staff attributed their experience to structural discrimination within institutions. We heard that for some staff, the pressures to publish research and meet their service obligations were overwhelming.

---

*“(the PBRF) is a blunt stick to beat me with”*

KEY INFORMANT, UNIVERSITY RESEARCHER

There are numerous examples in the literature of more staff reporting stress from expectations to perform to a set of criteria that may not sit comfortably with their self-conception of the role of academics (Middleton, 2005), (Nislev & Cain, 2018), (Asirvatham & Humphries, 2019), (Narayan, 2019), (Puawai Collective, 2019), (Sutherland & Petersen, 2009), (TEU, 2019) (Thomas, et al., 2019).



› The management imperatives

Research assessment frameworks create considerable pressures for institutional managers. We heard clear evidence that universities had internalised the value system of the Quality Evaluation, which was reflected in the priorities, strategies and investment they made in success in the PBRF.

Some of the responses of institutions will reflect their own organisational culture (Edgar & Geare, 2010) and the extent to which they aligned the internal and external indicators of success (Woelert & McKenzie, 2018).

Notwithstanding the incentives at play, the panel heard concerning stories about the experience of some staff suggesting that whatever the accuracy of these concerns, not all staff access the kind of support they believe they need to realise their potential. Some staff also reported unambiguous advice to increase the number of research outputs, to focus on specific outlets for their research and avoid some topics of research.

Such guidance is broadly speaking incompatible with the emphasis on the intrinsic quality of research and research contributions in the assessment framework for the Quality Evaluation, and may be contrary to the way individual researchers understand the exercise of academic freedom.

---

## › Disentangling effects

---

The results of the Quality Evaluation, wider changes in the tertiary education workforce and the mere fact of a research evaluation mechanism will have affected staff.

The 2003 Quality Evaluation identified many staff (3,278) whose evidence portfolios did not meet the standard for a funded Quality Category (TEC, 2004). Perhaps coincidentally, the rate of turnover was slightly higher (5.3% per annum) between the 2003 and 2006 Quality Evaluation among PBRF-eligible staff than between 2006 and 2012 (3.2% per annum). The cumulative effect was that 34.6% of those staff reported as PBRF-eligible in 2003 were no longer reported as eligible in the 2012 census (TEC, 2013).

It seems plausible that during the early period of the fund, there was considerable effort put into both understanding and applying the eligibility criteria for the Quality Evaluation and taking active steps to reshape the academic workforce. Certainly, there were some suggestions that TEOs shifted staff into roles that would not be eligible to participate in the Quality Evaluation, allegedly for the purpose of maximising TEO ranking (Farrar, 2013).

It is difficult to disentangle these changes from long-standing trends in the tertiary sector. A 1994 survey of university academic staff found increasing workloads and stress (Boyd & Wylie, 1994), with working conditions reportedly continuing to deteriorate through to the most recent survey in 2018 (TEU, 2019). These results contrast with the relatively modest rates of staff turnover reported through the Quality Evaluation, or by universities (see Table 6).

It is possible that the particular design or implementation of the PBRF is not a decisive factor. A survey of academic staff in the United Kingdom indicated that any mechanism that assesses research quality is associated with a detrimental impact on working conditions and career development (Arnold, et al., 2018).

---

## › Our take

---

We heard a mix of perspectives about the impacts of the PBRF on staff. It was apparent that:

- many staff report high workload pressures and stress, but it is not clear whether the PBRF is a unique factor and, in any case, rates of staff turnover do not appear excessive.
- some key informants were positive about the influence of the PBRF on their careers and their ability to commit time and resources to research.
- some staff may have received advice that did not fully align with the assessment guidelines or perceived that metrics had an outsized influence on the assessment of research excellence, suggesting some unevenness in the understanding of the assessment framework.

We discuss how we might make the fund more inclusive and address issues with the guidance that staff receive in the sections '*Adopting more inclusive language*' and '*Building on our successes*'.

# Our recommendations

---

The following section of the report organises our recommendations into five groups. These groups reflect the key shifts required to realise the potential of the fund more fully, which are:

---

- Adopting a more capacious definition of excellence
- Working toward more equitable assessment outcomes
- Introducing new funding incentives
- Adopting more inclusive language
- Building on our successes

We set out the opportunities that we see, the specific recommendations we make and the related rationale, and the potential benefits in the discussion of each set of grouped recommendations.

We also present the wider set of options that we considered as part of our deliberations with a brief overview of the advantages and disadvantages that we identified for each (see *Options for change we considered*).

# Adopting a more capacious definition of excellence

---

The assessment framework should adopt a more capacious definition of research excellence that encompasses the production of research, engagement and impact relating to that research and support for vibrant, diverse research cultures. Rather than simplistic categorisation of research as basic or applied, or traditional or non-traditional, we need to draw out the richest examples of research excellence, focusing on research outputs of the highest quality and the most important research contributions.

---

We should change the assessment framework to continue the journey begun in 2003. The main changes we seek are:

- more porous boundaries between research outputs and research contributions,
- the placing of ever more weight on excellence rather than volume, and
- a refocusing of the research contribution component on those activities that sustain and develop the research, science and innovation system.

To deliver these shifts, we have made four interrelated recommendations.

## A more capacious definition of research excellence

### RECOMMENDATION 1

A more capacious definition of excellence should be adopted to create new opportunities for excellent research to be recognised, encompassing the production of research, engagement and impact relating to that research and support for vibrant, diverse research cultures.

The assessment framework for the Quality Evaluation has several important characteristics: the definition of research is broad, the range of research outputs that can be included are expansive, and the peer review assessment looks to the intrinsic quality of the evidence presented for assessment.

This approach is powerful. It creates scope for research activities as diverse as a journal article in *Nature* to be assessed on the same basis as *whaikōrero* delivered at a *marae*. The venue or mode through which the research is presented or published is not relevant, rather, each research output is assessed on its merit.

Yet the aspiration for an expansive assessment framework is incomplete. As researchers, we easily default to describing research in simplistic terms such as basic or applied, or categorising it as traditional or non-traditional. There have also been persistent concerns about the ability of peer review panels to assess the quality of research engagement and impact, of activities in some research areas, particularly interdisciplinary research, and the contributions that many researchers make to a vibrant research environment.

A new more capacious definition of research excellence is needed to create space for researchers to see themselves in the assessment, and for the peer review panels to have the flexibility to recognise research excellence in all its diverse forms.

## Examples of research excellence

### RECOMMENDATION 2

The nominated research output section should be replaced with a new section 'Examples of Research Excellence', which can be used to present up to four examples of research of how these outputs exemplify research excellence including scholarly and non-scholarly (broadly defined) impacts.

The design of evidence portfolios should support this more capacious definition. For too long, there has been a sharp distinction between outputs and contributions.

We recommend that a new section in evidence portfolios is created, 'Examples of Research Excellence', to replace the 'Nominated Research Outputs'.

The new section will allow researchers to present up to four examples of research excellence across research production, engagement, impact and support for research cultures. These examples will continue to be anchored in specific research outputs, but we envisage a future where a single evidence portfolio might include four examples of research excellence underpinned by research outputs covering, for example:

- excellence in research production evidenced by a high-quality research output presented in a New Zealand journal;
- excellence in engagement evidenced by co-design with hapū of a research project underpinned by sustained connections and emotional labour which led to a research output;
- excellence in research leading to change in the way an industry handles a by-product of a construction process evidenced by the design and application of the new process; and
- excellence in support for vibrant, diverse research cultures evidenced by significant responsibilities for developing a cohort of emerging researchers and the peer esteem linked to those activities.

A new narrative section will be required for each example to allow staff to convey the level of detail necessary for peer review panels to understand and interpret their contributions.

## Fewer other research outputs

### RECOMMENDATION 3

The number of 'Other Examples of Research Excellence' should be reduced from twelve to six to further indicate a preference for the quality of research outputs over quantity.

The assessment framework has progressively reduced the maximum number of examples of other research outputs to emphasise the preference for quality over quantity. This change tends to simplify the task of selecting research outputs for submission and their assessment by peer review panel members.

The panel agreed that we should build on this trend. Accordingly, we recommend that the number of 'Other Research Outputs' should reduce from twelve to six.

The panel considered that ten research outputs (four linked to examples of research excellence, and six other research outputs) provide a sufficient basis to assess a researcher's platform of research.

## A refocused typology of research contributions

### RECOMMENDATION 4

The research contribution component of evidence portfolios should be refocused on the best examples of those activities that contribute to the sustainability and vitality of the research system.

The panel considered that the current range of items that can be presented as research contributions is too broad. More weight should be placed on the most meaningful contributions.

Some submissions proposed increasing the weighting for the research contribution component to signal greater parity of esteem with research production. The panel considered that the change to introduce the 'Examples of Research Excellence' would achieve that objective but focusing the research contributions would be warranted as it would tend to send a clear signal about where researchers should put their efforts.

We formed a view that the research contributions that matter are, in the language of the Research Excellence Framework in the United Kingdom, those that relate to the sustainability and vitality of the research system.

On that basis, research activity such as leadership roles within disciplines, mentoring of junior colleagues and support for students ought to matter much more than the esteem of peers.

We have developed a straw person model of the kinds of contributions to the research environment (see *Appendix D: Contribution to the Research Environment*) that we would expect to see to better illustrate this new approach.

The Sector Reference Group (see recommendation 34) will need to refine this list, particularly ensuring the examples offered cater to the range of career stages of staff, the specific peer groups of some researchers and the importance of a capacious conception of what excellence in research contributions entails.

## The benefits we see

We think that taken together, these changes will build on existing trends that value excellent engagement practice, place more value on the impact of research, reduce the artificial boundary between research production and research contributions and make more explicit the privileging of quality over quantity.

These changes will also help to:

- give clearer signals about the value of both research production and research contributions,
- address some of the unevenness we detected in the understanding of the assessment framework,
- create more opportunities for those staff who bear a disproportionate burden of high-quality research engagement, collaboration and development of the research environment,
- provide a more obvious pathway for staff to have the impact of their research recognised, and
- reduce transaction costs at the margins.

# Working toward more equitable assessment outcomes

---

We should be more ambitious and sympathetic in recognising the circumstances of individual researchers, particularly where these differences are systematic, ensuring panel members are more representative and addressing misconceptions about the assessment framework.

---

The assessment framework aspires to reasonable judgements about the quality of research of several thousand individuals and demands the marshalling of a significant number of peer review panel members, researchers and research managers to that end.

The design of the Quality Evaluation influences decisions about how researchers and TEOs prioritise their research effort. Evidence portfolios allow researchers to present a rich picture of the results, and this information is then used by almost 300 expert peer review panel members to form judgements against standards-referenced criteria.

These decisions and judgements are reliant on both clearly defined guidelines, appropriate accommodations for the circumstances of individuals and a comprehensive understanding of the rules and expectations of the assessment.

Much progress has been made in our collective understanding of what is required of the PBRF, but we identified some unevenness. The assessment framework is not optimally organised to handle circumstances outside of the control of individuals, many myths about the process persist, and arguably not all the differences in measured research quality can be explained by the contents of evidence portfolios.

We should continue the work toward more equitable assessment outcomes by:

- taking a more sensitive and flexible approach to circumstances that impact on the ability of individuals to produce evidence of research excellence,
- making sure that the membership of peer review panels reflects the future research workforce, and
- investing more in training about the assessment framework.

To deliver these shifts, we have made five interrelated recommendations.

## Reviewing the exceptional circumstances provision

### RECOMMENDATION 5

The exceptional circumstances provision should be reviewed in consultation with the sector with a view to:

- › normalising the very great diversity of career trajectories of academic staff so that there are no particular parts of the human experience that are categorised as 'exceptional' or 'special'.
- › introducing a 'merit relative to opportunity' concept when panels assess the quantity of research.
- › limiting the number of people who have access to sensitive or confidential information relating to any circumstances, such as through some assessment at the TEO level or a tightly constrained group of peer review panel members.

The provisions designed to allow peer review panels to take account of the individual circumstances of researchers have been progressively tightened since 2003.

We think that the culmination of that process created the veneer of a simpler, less onerous process, but resulted in a complex, incomplete set of arrangements. They did not address the clear need for some mechanism to take account of the reasonable range of factors that limit the opportunities available to individuals.

We recommend that the way in which the circumstances of individuals are recognised in the assessment framework is changed. Peer review panels must have better tools to take account of the circumstances of individuals, and staff require confidence and clarity about how these circumstances are taken into account.

We should move beyond a view that normal parts of the human experience, for example, ill-health, mental health, pregnancy and caring for others, are somehow 'exceptional'. Rather the assessment framework should recognise that the 'normal' career trajectories of academic staff are diverse.

The concept of 'merit relative to opportunity' should be placed at the centre of this redesigned provision. The redesign should provide for a mechanism to take account of the trajectory of an individual's career considering factors such as mental and physical health, illness and disability, family responsibilities including the full gambit of obligations that might be assumed relating to fertility, childbirth and rearing and care for other family group members, community responsibilities, interruptions to employment, part-time or flexible working arrangements, becoming research active during the assessment period or teaching on sub-degree programmes.

We encourage the Sector Reference Group (see recommendation 34) to engage with the sector to ensure that these factors are described fully. We anticipate that the Tertiary Education Union ought to be in a strong position to contribute examples and insights.

We should be more sensitive to the risks to individuals of declaring intensely personal matters. We recommend that steps are taken to minimise the number of people who might have access to this kind of information. These steps might include strict prohibitions about sharing of the detail of some circumstances (as opposed to their impacts), a separate pathway within the peer review assessment or some role for TEOs in informing judgements.

## Shaping the composition of peer review panels

### RECOMMENDATION 6

The TEC should take a more proactive role in identifying candidates for the peer review panels to ensure that members better reflect the current and growing epistemological and demographic diversity of the research workforce including ensuring gender parity, significant representation of Māori and Pacific researchers and a broad representation of researchers and other experts across career stages and organizational context in *each* panel.

Peer review panel members face a daunting task. It will not be uncommon for panel members to lead the assessment of 60 or more evidence portfolios on behalf of the wider panel and review 200 or more research outputs. They must also contribute to the calibration of scoring across multiple discipline areas, all the while being cognizant of their own biases, whether conscious or unconscious.

We are sympathetic to concerns that the composition of peer review panels might inadvertently introduce biases into the outcomes of assessments. In our view, the reliance of on nominations by TEOs may tend to perpetuate pre-existing assumptions about the desirable characteristics of panel members.

We think that it is possible to refine the membership of peer review panels to ensure that they are better equipped to cope with the epistemological and demographic diversity we anticipate. We heard about how the membership of Marsden fund assessment panels had been changed through a more active and deliberate approach.

We should have many more emerging researchers, those working part-time and women, Māori and Pacific people on panels. We also need people who are experts in quality engagement methodologies, are able to assess evidence of impact and who have a successful track record in developing vibrant, diverse research cultures. There will be a place for other experts on panels, particularly individuals who are familiar with research conducted in an academic context but who might not be employed by a research organisation currently.

Accordingly, we recommend that the TEC take a much more proactive role in identifying candidates for the peer review panels. Rather than relying on nominations from TEOs, the TEC should support panel chairs to curate more diverse panels. That support might include a public call for nominations and structured approaches to suitable individuals. This expanded role will be challenging, but other funds have shown how careful planning and active engagement with the sector can deliver good results.

## Continued training of peer review panel members

### RECOMMENDATION 7

The TEC should continue to build on the successful programme of training for peer review panel members, particularly strengthening the capacity of panels to take account of the diversity of research excellence and the application of the 'merit relative to opportunity' approach.

The TEC has considerably improved the quality of the training delivered to peer review panel members and put more effort into tailoring guidelines and other communications collateral to different audiences.

We identified three related challenges that should be faced for the next Quality Evaluation. Panels require support to apply the new more capacious definition of research excellence, there is a persistent unevenness in the understanding of the assessment framework in the academic community, and we lack useful exemplars of good practice to challenge myths about the process.

While the refreshed composition of peer review panels will go some way to preparing for the application of the more capacious definition of excellence, considerable work will be needed to help panels interpret and assess the new kinds of evidence we expect to see. We recommend that the TEC builds on its successful programme of training of peer review panel members to:

- strengthen their capacity to take account of the diversity of research excellence,
- support better understanding of the contemporary and historical contexts for the creation and dissemination of mātauranga Māori research and Pacific research, and
- application of the redesigned extraordinary circumstances provision.

## More comprehensive training generally

### RECOMMENDATION 8

The TEC should invest in a comprehensive programme of training for researchers and research managers, using a panel of suitably experienced people, to improve understanding and address myths about the assessment framework.

We identified some unevenness in the understanding of the assessment framework among researchers and research managers. This unevenness results from the episodic nature of the task, the reasonable reliance on casual or short-term staff by both the TEC and TEOs to support the process and the inherent complexity of a deliberately inclusive assessment framework.

We think that tailoring resources to different audiences were a good step, but we must professionalise this support. This unevenness is a critical and perhaps underappreciated risk to the credibility of the process, particularly as much responsibility is devolved to TEOs.

The TEC should explore how it can deliver high-quality training both to smaller groups and at scale. We recommend that as a first step, a panel of suitably experienced people be appointed to deliver comprehensive training for researchers and research managers to help address myths about the assessment framework.

There may also be merit in facilitating connections between TEOs with more extensive capacity to deal with the requirements of the fund and those that have relatively less experience, or arrange workshops involving panel chairs and panel members with staff of these TEOs so they can share insights and knowledge about the way the assessment framework is applied.

## Developing exemplars

### RECOMMENDATION 9

The TEC should develop exemplars of evidence portfolios that demonstrate how the assessment framework enables researchers to describe impact, collaboration and engagement with end-users effectively as part of wider work to improve understanding, address myths and explain the new more capacious definition of excellence.

To complement this investment in training, we should bring greater transparency to what constitutes good practice in the construction of evidence portfolios. The presentation of evidence and understanding of the expectations of the assessment framework ought not to be a competitive advantage for researchers or TEOs.

There were attempts to construct exemplar evidence portfolios to support the training of peer review panel members for each of the Quality Evaluations. These exercises were generally either limited in scope (few evidence portfolios were developed), looked backwards (content from previous Quality Evaluations predominated) or were artificial in construction (comprising an amalgam of multiple evidence portfolios).

These constraints reflected a narrow focus on the calibration of assessment standards, a lack of priority and the difficulties of obtaining consent from submitting TEOs.

It would be desirable to invest more effort in preparing evidence portfolios that are reasonably representative across a range of disciplines, more reflective of actual practice and purposeful in terms of addressing new elements of the assessment framework.

Accordingly, we recommend that the TEC develop exemplars of evidence portfolios. These exemplars should help researchers understand the flexibility within the assessment framework and will be useful for the calibration of assessment standards on an inter- and intra-panel basis.

## The benefits we see

We think that these changes will help to ensure that:

- peer review panel members have the skills and competencies they require,
- there is greater consistency in the understanding of the assessment framework across the research workforce and among research managers,
- the barriers that some TEOs experience in engaging with the fund are reduced, and
- training and intra- and inter-panel calibration of assessment standards is enhanced.

# Introducing new funding incentives

---

Changes to the funding system will help to address the critical undersupply of Māori and Pacific researchers, shift resources toward the Māori Knowledge and Development and Pacific Research subject areas, and better support excellent research across the system including among the staff of wānanga and the new national provider of vocational education.

---

The PBRF has an important role to play in sustaining and renewing the research workforce in TEOs, across the broader research, science and innovation sector and the economy.

The research workforce does not reflect New Zealand society and progress in increasing the number of Māori and Pacific researchers is slower than we would like. We think that this 'hidden crisis' demands a strong response, and that funding incentives can play a role.

The 'hidden costs' of some kinds of research, particularly that which is often dependent on sustained, high-quality engagement with iwi/hapū and Pacific communities, are also not well-recognised. We think that the design of the funding system creates disincentives to engage in research based on Māori world views and Māori methods of research and Pacific-based research methodologies and methods.

We also saw some risks from the transition to a new model for New Zealand's institutes of technology and polytechnics. There is a considerable group of researchers in these institutions who are currently dispersed across several organisations throughout New Zealand. The panel considered that we should attempt to protect that capacity.

The panel was unconvinced that the current subject-area weightings for the PBRF are fit for purpose. The rationale and distinctions between each are not well-articulated or understood. More work is required to ensure that this important influence on funding outcomes is appropriate.

In the panel's view, we should further develop the design of the funding system to:

- create tangible financial incentives for TEOs to recruit, develop and support Māori and Pacific researchers,
- ensure that research that falls within the coverage of the Māori Knowledge and Development Panel and the Pacific Research panel is appropriately rewarded through the funding system, and
- protect important capabilities that enable research that engages Māori and Pacific communities, such as expertise in engagement and deep connections to those communities.

To deliver these shifts, we have made five recommendations.

## Addressing underrepresentation of Māori and Pacific peoples

### RECOMMENDATION 10

The design of the fund should reinforce the efforts to address the underrepresentation of Māori and Pacific researchers in the research workforce by assigning an additional funding weighting to evidence portfolios submitted by staff who identify as New Zealand Māori or with a Pacific ethnicity of:

- a. '2' for all evidence portfolios that meet the standard for a funded Quality Category and
- b. '4' for evidence portfolios assigned a 'C(NE)' Quality Category.

There has been a measurable shift in the diversity of research students, the research workforce and research methods since 2003. The Quality Evaluation measure has brought attention to concentrations of research excellence associated with Māori and Pacific researchers.

Yet we are not making enough progress in increasing the number of Māori and Pacific researchers. This lack of success puts at risk the government's aspirations for a more diverse research workforce. It also leads to fewer opportunities for our increasingly diverse communities to see themselves in academic roles.

We heard from many TEOs that they were strongly committed to increasing the diversity of the research workforce. We think that there is a strong case for rewarding TEOs that have a successful track record and create stronger incentives for those who are still making progress.

There is already a weighting of '2' that applies to Research Degree Completions associated with students who identify as Māori and/or Pacific peoples. The panel recommended that this higher weighting be extended to funded quality categories associated with researchers who identify with these ethnic groups.

A higher weighting of '4' is recommended for staff who identify as Māori and/or Pacific peoples, meet the criteria for new and emerging researchers and whose evidence portfolios are assigned a 'C(NE)' quality category. This provision would strengthen incentives for TEOs to invest in the transition of the growing number of Research Degree Completions into research employment.

The panel was not persuaded that the weighting of '4' should apply to those new and emerging staff assigned an 'A' or 'B' quality category given the small numbers involved.

The panel gave some thought to the effect of the changes to the funding weightings (including recommendations 11 and 12) on the relativities between different mixes of quality categories and subject areas and the level of funding allocated for particular subject-areas and TEOs. The panel was not convinced that these effects were sufficiently large to warrant transitional arrangements given the relatively small number of evidence portfolios involved.

## Strengthening research based on kaupapa Māori and mātauranga Māori

### RECOMMENDATION 11

The design of the fund should reinforce the efforts to strengthen research based on kaupapa Māori and mātauranga Māori by applying the subject-area weighting of '2.5' to the Māori Knowledge and Development subject area.

Research that is based on Māori world views and Māori methods of research is a unique taonga of Aotearoa New Zealand. The Māori Knowledge and Development panel provides a vehicle for relevant research excellence to be recognised and rewarded.

The panel recommended applying a higher weighting of '2.5' evidence portfolio relating to the subject area of Māori Knowledge and Development. The panel considered that this change more appropriately reflects both the particular complexities and costs associated with the relevant research. These might include the need to develop and sustain deep and intense personal connections and relationships with iwi and hapū. It also recognises the additional benefits that research in other subject areas derives from the relatively few staff undertaking research using these relationships and methods.

This change provides a tangible expression of the partnership between Crown and iwi by recognising past underinvestment in relevant research and research methodologies.

The existing provision for the underlying subject area weighting of evidence portfolios assessed by the Māori Knowledge and Development panel to be applied would be retained. For example, an evidence portfolio that involved research in the subject area of 'Psychology' and included evidence of Māori methods of research could be both assessed by the panel and retain the subject-area weighting of '2'.

## Strengthening Pacific research

### RECOMMENDATION 12

The design of the fund should reinforce the efforts to strengthen research based on Pacific-based research methodologies and methods, or that involve Pacific-centred subject matter, or that impact on Pacific peoples by applying the subject-area weighting of '2.5' to the Pacific Research subject area.

The Pacific Research panel established for the 2018 Quality Evaluation provides a means to recognise research based on Pacific-based research methodologies and methods, or that involve Pacific-centred subject matter, or that impact on Pacific communities.

The panel recommended applying a higher weighting of '2.5' evidence portfolio relating to the subject area of Pacific Research. The panel considered that this change also more appropriately reflects both the particular complexities and costs associated with the relevant research. The change also recognises the demands for the New Zealand Research, Science and Innovation system to be more responsive to Pacific communities both in New Zealand and across the Pacific.

The provision for the underlying subject-area weighting of evidence portfolios applied to evidence portfolios assessed by the Pacific Research panel would be retained.

## Assisting with a managed transition

### RECOMMENDATION 13

The share of funding allocated through the Quality Evaluation measure to the new national provider of vocational education should be fixed at the proportion allocated through the 2018 Quality Evaluation to Institutes of Technology and Polytechnics until 2030 unless the level of research quality measured through the 2024 Quality Evaluation indicates a higher share is warranted.

The Reform of Vocational Education will result in considerable change to the way a significant part of the tertiary education sector operates. The change offers many opportunities, but the transition will be complex and carries some risks.

A key focus is expected to be the consolidation of the sixteen institutes of technology and polytechnics into a single national entity. The consolidation will bring together 430 (FTE-weighted) researchers, roughly the same size as the University of Waikato, who offer research capabilities of strong relevance to local and regional New Zealand.

The process of bringing the sixteen organisations together is not expected to be completed until the end of 2022, and the consolidation of research cultures, processes and systems may take longer. We anticipate the potential for considerable disruption to the way research is conducted and managed over the next several years.

We think that there is a strong case to ease the pressure on these valuable researchers as they work through this transition. The unified organisation could choose to submit evidence portfolios for the 2024 Quality Evaluation, but the funding share would only change if measured research quality increased.

Ring-fencing the modest (2.4%) share of funding allocated to institutes of technology and polytechnics through the 2018 Quality Evaluation would give some certainty of funding. Surety of funding would help with the retention and support of these staff, without having a meaningful effect on other participating TEOs.

## Reviewing the subject-area weightings

### RECOMMENDATION 14

The subject-area weightings that apply to the fund should be reviewed because they may not accurately reflect either the costs of undertaking certain types of research or the incentives required to give effect to the new more capacious definition of research excellence.

The PBRF uses three classes of subject-area weightings, '1', '2' and '2.5', to modify the amount of funding each TEO receives through the Quality Evaluation and Research Degree Completions measure.

These weightings are intended to account for differences in the cost of undertaking research between subject areas. These weightings were based on the funding rates that applied in 2003 and were not the result of robust analysis (MoE, 2002).

We received some submissions that argued for changes to the subject-area weightings for specific disciplines. We were sympathetic to these arguments but were reluctant to undertake piecemeal changes in the absence of compelling evidence of historic underinvestment (see recommendations 11 and 12). We recognise that the current subject-area weightings might have cumulative effects that give rise to some systematic bias in the way research quality is rewarded.

We have recommended that policy work be done to understand the costs of research by subject area, taking into account the full range of differences in the methodological, engagement and physical requirements of each. The results of that work should then inform changes to the subject-area weightings.

### The benefits we see

We think that taken together, these changes align powerfully with efforts to promote greater diversity in the research, science and innovation workforce and research methods, direct resources to areas where research excellence has been undervalued and contribute to regional development.

# Adopting more inclusive language

We should find a new language to talk about the fund, its principles and objectives and how research excellence is understood. Te reo Māori names will connect with the excellent work underway across the sector to anchor research in the distinctive cultural heritage of Aotearoa New Zealand.

We have made several recommendations that seek to make the fund more inclusive and the assessment of research excellence more equitable. Changes to the definition of research excellence, the design of evidence portfolios and the way funding is allocated should all contribute to these goals.

We should find a new language that reflects these aspirations in how we talk about the fund and its fundamental design elements. The partnership between the Crown and iwi and the distinctive cultural values of tikanga Māori should be at the heart of this new language.

We recognise that creating an inclusive research community and obtaining equitable assessment outcomes is an ongoing journey; one that we should reflect explicitly in the principles that guide the implementation of the fund.

The changes we seek aim to:

- convey a more positive, aspirational view of the assessment of research excellence, and
- put inclusion and equity at the centre of the design and implementation of the fund.

To deliver these shifts, we have made five interrelated recommendations.

## Inclusivity as an objective

### RECOMMENDATION 15

A new objective for the fund should be added; which is 'To ensure a flourishing and inclusive system for developing and sustaining research excellence in New Zealand'.

The panel has recommended several changes intended to result in a more inclusive approach to recognising and rewarding research excellence.

These changes included the more capacious definition of research excellence (recommendation 1), the more porous boundary between research production and research contributions (recommendation 2), applying the concept of ‘merit relative to opportunity’ (recommendation 5), changes to the composition of peer review panels (recommendation 6) and altered funding incentives (recommendations 10, 11 and 12).

In the panel’s view, the objectives of the fund should reference inclusivity more directly to reflect the direction of travel signalled by these changes. Accordingly, a new primary objective for the fund should be introduced that is, ‘To ensure a flourishing and inclusive system for developing and sustaining research excellence in New Zealand’.

## Use of te reo Māori

### RECOMMENDATION 16

The TEC should seek the guidance on appropriate te reo Māori names for the fund as a whole and key elements of the process including evidence portfolios and their components that better reflect the distinctive kaupapa that informs the ethical and professional expectations of researchers in Aotearoa New Zealand.

The adoption and incorporation of te reo and tikanga Māori into how we talk and think about the fund are ways that we can give effect to the partnership between Crown and iwi. It also reflects the distinctive kaupapa that guides researchers in Aotearoa New Zealand and the unique place of Māori in our society and culture.

The ethical and professional expectations of researchers in our TEOs, at their best, embody the concept of partnership. The panel considered that the fund ought to reflect these expectations.

To that end, we think that the TEC should work with iwi to identify suitable names in te reo Māori for the fund and key elements of the process. These names should reflect the kaupapa of the fund as a whole and give us a new language to talk about research excellence generally, evidence portfolios and the components therein and the key elements of the fund.

We have suggested a new English language name for the fund (see recommendation 17) which may inform this process.

## A new name for the fund

### RECOMMENDATION 17

The fund should be renamed as the Tertiary Research Excellence Evaluation or TREE, to better reflect the focus of the fund and the greater emphasis that should be placed on diversity and inclusiveness.

The panel recommended that the fund should be renamed. This new name must capture the distinctive focus of the fund, particularly the kinds of organisations that participate in it and the nature of the assessment. To that end, we recommend the adoption of the English language name Tertiary Research Excellence Evaluation or TREE.

The new name implies a sense of sustainable growth and renewal, an aspiration toward new knowledge and a deep foundation based on a long history of academic endeavour.

It reinforces the positive aspects of the assessment – the opportunity presented for recognition of research excellence in its diverse forms and the scope it provides for researchers to convey the progression and development of their research careers.

In choosing a name, we thought it essential to convey a clear focus on the research of the tertiary education sector making explicit the emphasis on research excellence and providing a link to the new, more capacious definition of research excellence.

The name also conveys a sense that the process is intended to be constructive and formative for those researchers and TEOs participating in it. This change would have the advantage of de-emphasising the funding implications of the Quality Evaluation and thereby alluding to the broader objectives of the fund.

An appropriate name in te reo Māori will also need to be adopted (see recommendation 16).

## Clarifying the principles

### RECOMMENDATION 18

Three new principles for the fund should be added:

- › 'Partnership: The fund should reflect the bicultural nature of New Zealand and the special role and status of the Treaty of Waitangi (Te Tiriti o Waitangi)', to reflect the significance of the partnership that underpins the relationship between Crown and iwi.
- › 'Inclusiveness: The fund should encourage and recognise the full diversity of epistemologies, knowledges and methodologies to reflect New Zealand's people', to reflect diversity in society and our commitment to a capacious definition of research excellence.
- › 'Equity: Different approaches and resources are needed to ensure that the measurement of research excellence leads to equitable outcomes', to underline the vital importance of addressing persistent, embedded and inherited inequities and their negative effects on the capacity of women, Māori and Pacific peoples among other groups to participate in the research, science and innovation system.

### RECOMMENDATION 19

The existing principle of 'Cultural inclusiveness' should be removed as it will be superseded by the changes set out in recommendation 18. The TEC should seek the guidance on appropriate te reo Māori names for the fund as a whole and key elements of the process including evidence portfolios and their components that better reflect the distinctive kaupapa that informs the ethical and professional expectations of researchers in Aotearoa New Zealand.

The panel considered that, in general, the principles of the fund are appropriate, but recommended some refinements.

The existing principle of 'Cultural inclusiveness' combines a recognition of the partnership between the Crown and iwi based on the Treaty of Waitangi and the growing social and ethnic diversity of New Zealand society.

The panel considered that these two concepts ought to be distinct through new principles of:

- 'Partnership' which acknowledges the unique partnership between Crown and iwi and the bicultural foundation of New Zealand society.
- 'Inclusiveness' which acknowledges the very great diversity of epistemologies, knowledges and methodologies and the need to recognise and reward these.

There is also a case for a new principle relating to 'Equity'. This principle links to the changes that the panel recommended that aim to achieve greater inclusivity, recognising that different approaches may be required to ensure more equitable outcomes.

## The benefits we see

We think that taken together, these changes will provide a coherent rationale for the panel's recommendations that promote inclusiveness, help more researchers to see a place for themselves and their research contributions in the fund and offer a tangible signal of the place of Māori in the kaupapa of the fund.

# Building on our successes

The key design elements of the fund and the Quality Evaluation, in particular, are working well. We recommend some changes to focus the fund on recognising and rewarding research excellence and research workforce development, help to manage the transitions underway in the vocational education sector and deepen our collective understanding of the effects of the fund.

The fund has delivered considerable change in the priority given to research in the tertiary education system. We surveyed the overall design of the fund and the key elements of the assessment framework. Key informants and submissions affirmed many aspects of the design of the fund and the assessment framework.

We saw some opportunities to build on the success of the fund and make improvements to the existing settings by:

- resetting the measures of research quality so that they better reflect the objectives and distinctive contribution of the fund,
- retaining those aspects of the design of the Quality Evaluation that are working well and for which there is little appetite for change,
- continuing to develop the capability of wānanga and institutes of technology and polytechnics to realise their potential for research excellence more fully, and
- making best use of the evidence about the results and outcomes of the fund and emerging developments in research management.

To deliver these shifts, we have made twelve recommendations.

## Simplifying the measurement of research excellence

### RECOMMENDATION 20

The Quality Evaluation and Research Degree Completions measures should be retained as they provide a comprehensive measure of the distribution of research excellence and the completion of research degrees.

## RECOMMENDATION 21

The External Research Income measure should be discontinued as it is input-focused, skewed by investment decisions of government and business, is unduly concentrated and duplicates existing incentives. Funding allocated through this measure would be reduced progressively to zero between 2024 and 2029 and the share associated with the Quality Evaluation measure increased commensurately.

The three measures of the fund, the Quality Evaluation, Research Degree Completions and External Research Income, each perform different functions.

The Quality Evaluation provides the most direct and reliable measure of research quality across the tertiary education system but is relatively resource-intensive so is conducted periodically. The panel recommended that this measure is retained because of the incentives for research excellence that it creates.

The Research Degree Completions measure is a proxy measure of research quality. It assumes that learners will tend to search out departments and supervisors with high reputations for quality in research and research training (MoE, 2002). The panel recommended that this measure is retained because of the important function of the fund in resourcing research training.

The External Research Income measure is a proxy measure of research quality. It assumes that external funders will be discerning in where they invest scarce resources and so acts as a proxy for quality and peer or stakeholder esteem (MoE, 2002).

The panel was concerned that the External Research Income measure focuses attention on inputs to research, is skewed by investment decisions of government and business, is unduly concentrated and duplicates existing incentives for researchers and research organisations.

The panel recommended that the External Research Income measure be discontinued. The proportion of funding allocated through this measure should be allocated through the Quality Evaluation measure. The net effect will be to rebalance the weightings of the fund so that 75% is allocated through the Quality Evaluation measure and 25% through the Research Degree Completions measure.

The effects of this change are not uniform across the sector. Progressive implementation of this change will smooth the impacts. To give sufficient time for adjustment, the change should be phased in from 2024 with the proportion of funding reduced to zero over the six years to 2029.

## Retaining external peer review

### RECOMMENDATION 22

Peer assessment should be retained as the primary mechanism whereby research excellence is assessed given the weight of international evidence supporting such models and the contribution that this model makes to the objectives of the fund.

### RECOMMENDATION 23

Peer assessment should be undertaken independently of TEOs, given the potential for self-review to impact negatively on the collegiality that is vital for research.

The panel considered whether external peer assessment remains the most appropriate option for assessing research excellence.

Most submissions advocated for the retention of peer assessment of research excellence. As we noted in our review of the relevant issues (see *Opportunities and challenges*), there is a persuasive case for retaining peer assessment, primarily because of the perceived credibility of such processes and the opportunity they provide to obtain a more complete assessment.

We note that metrics are already a feature of the assessment framework and determine the allocation of a significant proportion of funding through the proxy measures of research excellence.

The panel received some submissions that advocated for the expanded use of metrics. The case for replacing the Quality Evaluation with metrics was not made. Other than a high correlation of funding outcomes at a TEO level, greater reliance on bibliometrics would tend to perpetuate disparities in assessment outcomes and privilege some kinds of research activities unjustifiably.

There was no support expressed by the key informants or in the submissions we received for TEOs to assume a more significant role in the assessment of research excellence through mechanisms such as self-review.

In the panel's view, such a change would tend to increase transaction costs given the need to duplicate assessment and moderation functions across the participating TEOs. Additionally, self-review could impact on collegiality among TEO staff.

Accordingly, the panel recommended that external peer review remains the primary mechanism whereby research excellence is assessed.

## The individual should be retained as the unit of assessment

### RECOMMENDATION 24

The individual should be retained as the unit of assessment in the absence of any compelling evidence that different assessment models would result in any of the claimed benefits or a more accurate measurement of research quality.

The panel was asked to consider whether the unit of assessment for the Quality Evaluation should be changed.

We detected little appetite in our discussions with key informants and in the submissions we received to change the unit of assessment. We think that the costs associated with replacing the unit of assessment are prohibitive and the claimed benefits unconvincing.

Many of the common complaints attributed to the current unit of assessment appeared to have a weak evidence base. Collaboration among New Zealand researchers seems to be high, higher levels of stress is a trend that predates the fund's introduction and, in any case, is not reflected in turnover data, transaction costs are not actually all that excessive and the oft-repeated claim that a group-based model would somehow be 'better' is not supported by evidence from the United Kingdom (see *Thinking about the unit of assessment*).

We did develop a view that some aspects of the design of the PBRF should change. Our recommendations seek to create a more inclusive assessment framework (see recommendations 1, 2 and 6) and address unevenness in the understanding of the assessment framework (see recommendation 7).

Accordingly, we recommended that the individual be retained as the unit of assessment.

## Continue to conduct the Quality Evaluation every six years

### RECOMMENDATION 25

The period of six years between Quality Evaluations should be retained to a) allow for timely adjustments in funding for TEOs based on the measured change in research excellence, and b) give government timely information on the overall change in measured research excellence.

The panel was asked to consider whether the period of time between each Quality Evaluation should be changed.

We received submissions on this issue, including several suggestions for alternative arrangements. These suggestions included staggering the peer review assessments so that a subset of evidence portfolios was assessed each year, and extending the period of time between Quality Evaluations.

The panel was not convinced that these changes would offer sufficient benefits to justify the potential costs and risks. The staggering of assessments would tend to result in the retention of more capability among research managers given the regularity of essential tasks relating to the Quality Evaluation but would increase transaction costs disproportionately.

Extending the period between Quality Evaluations would reduce some of the burdens on researchers, particularly as evidence portfolios would be collated less often.

Conversely, the period of six years is already reasonably long compared to other similar assessments. The change would also tend to make the fund less responsive to change in measured quality, whether in terms of funding or performance information. It would also make it harder to maintain the capability necessary to administer the Quality Evaluation at TEOs and the TEC.

Accordingly, the panel recommended that the period of six years between Quality Evaluations should be retained.

## Simplifying the eligibility criteria for new and emerging researchers

### RECOMMENDATION 26

The provision for new and emerging researchers should be retained; however the eligibility and assessment criteria should be reviewed and simplified.

The distinct assessment pathway for staff at the beginning of their research careers has been a considerable success. Introduced for the 2006 Quality Evaluation, the pathway has provided a way for panels to apply an appropriate assessment standard to almost 3,000 (FTE-weighted) new and emerging researchers.

The criteria for identifying which staff might be eligible to be treated as new and emerging researchers can be problematic to apply and interpret. Misidentification of staff as new and emerging was the second most common staff eligibility error in 2012. Peer review panel members have also expressed concern about instances that did not conform with their intuitive understanding of the status of researchers.

Changes were introduced for the 2018 Quality Evaluation to reduce the misidentification of staff by TEOs. A new principle was developed that required that staff were ‘...undertaking substantive and independent research for the first time in their career’.

We heard that these changes appear to have had the opposite effect by introducing onerous obligations on TEOs, excluding some staff on arguably counterproductive grounds and may have increased the incidence of misidentification. Possibly as a result, the number of instances of misidentification increased from 57 staff in 2012 to 69 staff in 2018.

TEOs were required to review the entirety of an individual's, often extensive professional, work history to apply this new principle creating a degree of uncertainty and complexity. Research students who engaged in desirable practice, such as producing research outputs or completing their "PhD by publication" before commencing academic employment could find themselves ineligible because these outputs were produced just before the assessment period.

The panel recommended that the criteria be reviewed and simplified, potentially by placing more emphasis on the initiation of a substantive employment relationship with a participating TEO. Less weight would then be placed on incidental research activity undertaken as part of a researcher's prior employment.

## Investment in wānanga

### RECOMMENDATION 27

The panel endorses the investment in the capability of wānanga and ongoing support to engage with the fund.

Wānanga have a distinct and important role in the tertiary education system, and the research these organisations foster reflects this. Wānanga offer a platform to grow research based on Māori concepts and values that offer solutions to many of the long-term challenges that New Zealand faces.

We heard concerns that the fund is not well-configured for the current stage of development of wānanga. The reasons for this mismatch relate to the way the design of the fund does not reflect fully the research foci of wānanga, the relatively short period since these organisations were formally recognised by the Crown and the historic underinvestment in the sector.

The panel was encouraged by the implications of the November 2019 agreement between the Crown and Te Wānanga o Raukawa, building on the modest capability funding provided to the three wānanga to assist them in engaging with the PBRF.

The panel endorsed these approaches and the continued engagement between the Crown and the three wānanga.

## Planning for the new national provider of vocational education and training

### RECOMMENDATION 28

The Reform of Vocational Education and the transitional support for the new national provider of vocational education and training should make appropriate provisions for researcher support and research capability and development.

We understand that there is significant work underway to plan the transition to the new vocational education system as part of the Reform of Vocational Education.

The panel noted that decisions about the way the new national provider will approach its role are still emerging. We saw considerable opportunities to build on the existing research capability in the sector through the transition.

The panel recommended that appropriate attention and focus is given to researcher support and research capability and development as part of the planning for the new national provider to take advantage of these opportunities.

## Better information for decision-making

### RECOMMENDATION 29

The TEC should, in conjunction with stakeholders, commission an ongoing programme of research and evaluation to ensure that the moderators for future Quality Evaluations and review processes have access to analysis about systemic biases in assessment outcomes and the results and effects of the fund.

### RECOMMENDATION 30

The TEC should, in conjunction with stakeholders, take steps to improve the quality of publicly-available information about the research workforce.

The panel was grateful for the valuable analysis provided by researchers and staff of government agencies, especially the TEC, who have explored the data generated by the PBRF. We also heard that workforce data collected through the Quality Evaluation is used to inform policy advice and strategy and can help to highlight significant issues (Brower & James, 2020).

As useful as the advice was, it was clear that much of the analysis was opportunistic. We think that there is a strong case to put some strategy and structure around the research and evaluation relating to the fund.

We recommend that the TEC should commission an ongoing programme of research and evaluation to help us understand the operation and effects of the fund. Process evaluations of each Quality Evaluation would systematically collect key learning from the process.

A planned programme of analysis of the assessment results would be valuable. Funding this research could ensure that useful work to identify measured differences in outcomes for particular groups is continued. It may also be possible to integrate this analysis into the moderation processes for each Quality Evaluation, offering opportunities to provide guidance to peer review panels.

The panel found it challenging to draw conclusions about patterns of change in the workforce between Quality Evaluations. There is a case for collecting detailed staffing data on a more regular basis so we can better understand the impacts of the fund.

## Looking for opportunities for systems integration

### RECOMMENDATION 31

The TEC should explore the adoption of the Open Researcher and Contributor ID as the unique identifier for PBRF-eligible staff and opportunities for better integration with the New Zealand Research Information System.

The operation of the Quality Evaluation relies on unique identifiers for researchers, and data collated and submitted by TEOs. We think that there are opportunities to streamline these processes by building on existing and emerging tools such as the Open Researcher and Contributor ID and the NZRIS.

The National Student Index, a database of student identity data administered by the Ministry of Education, is used by TEOs to obtain unique identifiers of staff. These identifiers are used for staffing census returns and the submission of evidence portfolios. The use of this system was an administrative convenience for the first Quality Evaluation designed to avoid the need to establish a new system to validate the identity of researchers.

Since then, the Open Researcher and Contributor ID has gained considerable traction with 6.9 million ids in use internationally. This open-source system provides a unique identifier for researchers that can be used to link to research outputs and activities.

We think that there is a case for using Open Researcher and Contributor ID identifiers for future Quality Evaluations. These identifiers potential benefits including the opportunity to link to research outputs and activities that researchers may have produced before joining the New Zealand tertiary education system and may be more appropriate for an evaluation of research excellence than the NSI.

These identifiers are also intended to integrate with NZRIS, a national, online hub of information about research activity in New Zealand. There may be scope to integrate the information management systems for the Quality Evaluation with NZRIS over time.

## Investing in excellence

### RECOMMENDATION 32

The value of the fund should increase by at least \$100m per annum as an uplift with annual adjustments thereafter to maintain the rates of real funding on a per capita basis through the Quality Evaluation and Research Degree Completions measures.

The panel was concerned about evidence that the financial incentives associated with the fund were diminishing over time. These concerns were shared by several submitters who noted that constrained funding was making it increasingly difficult to continue to invest in the development of staff, potentially putting at risk future improvements in measured research quality.

The recommendations in this report, particularly the more capacious and inclusive approach to assessment, ought to better recognise research excellence. It would be a poor outcome if the beneficiaries of these changes did not see commensurate financial benefits. These concerns extend to the Research Degree Completions measure. It would be counter to the objectives of the fund if diminishing financial incentives encouraged the rationing of research training.

We are also creating new incentives that ought, over time, increase the number of Māori and Pacific researchers in our TEOs. Strong financial incentives will be an important way we drive the much-needed investment required to address this critical gap in our research workforce.

Our modelling indicated that the fund would need to increase to \$415m per annum, an increase of \$100m, to return to the rate of real funding achieved earlier in the fund's history. Annual adjustments will also be needed to maintain these rates in real terms.

This increase is substantial, and we acknowledge that any additional investment might need to be phased in over several years. Nonetheless, increased investment is an important part of the implicit trade-off involved in the fund's design and a tangible example of the government's commitment to supporting research excellence.

## Reporting the results

### RECOMMENDATION 33

The TEC should retain the focus on the increase in the total number of funded Quality Categories when reporting the results of the Quality Evaluation, and discontinue the average quality score metrics.

The results of the 2018 Quality Evaluation were reported in an accessible way, including the use of web-based data visualisation apps and infographics. Part of the approach to reporting was to place much less emphasis on measures of the relative intensity of research quality, the average quality scores. The changes to the reporting framework appear to have been welcomed by the sector and the panel considered that they were a positive change.

The reporting of average quality scores does, however, appear to be a point of continued tension. The reasons for these concerns reflect both the design of the measures and results of the calculations themselves

These metrics imply that a higher score is better given the natural tendency for organisations to use them for ranking purposes. High scores might indicate a concentration of, for example, A Quality Categories at a TEO. That result might be a useful reference point for some stakeholders.

At the same time, given the correlation between career stage and higher quality categories, a very high result might not be compatible with the need for a more balanced profile that ensures the research workforce is continually replenished. A focus on research intensity among staff might also be misleading given the growing diversity of roles among academics, particularly progress in providing specialist career pathways.

The results of the average quality scores measure calculations are not particularly intuitive. The range for the average quality score that aims to measure research intensity among staff (AQS(S)) was between 29.19 and 0.23. The comparable ratio for the score linked to enrolments was between 2.14 and 0.19.

While the results of the AQS(S) show a marked difference between universities and other TEOs, there is no evident correlation between the two scores and the numbers have no intrinsic meaning either locally or internationally.

We were sympathetic to concerns expressed through submissions that the average quality scores are not particularly meaningful, and what value does accrue from them may well be outweighed by their perceived lack of credibility among some stakeholders.

Accordingly, the panel considered that the average quality score metrics should be discontinued.

## Continuing to collaborate with the sector

### RECOMMENDATION 34

A Sector Reference Group should be established to advise on the implementation of the changes to the fund agreed by government and this group should include significant representation of Māori and Pacific researchers and a broad representation of researchers across career stages and organizational context.

The panel noted that many of its recommendation, if agreed by government, will require further elucidation and have implications for the implementation of the fund.

The panel considered that the past practice of co-designing the fund with the sector, most notably through Sector Reference Groups, was highly desirable, and should be continued.

The panel identified several matters that will require particular attention by the Sector Reference Group (see *Next steps*).

### The benefits we see

We think that taken together, these changes will protect the key strengths of the Quality Evaluation and support existing positive trends, particularly in capability development outside of the university sector.

# Options for change we considered

This table presents the options considered by the panel and brief comments pertaining to each. These options were either raised as part of submissions to the panel (indicated by the source ‘Submissions’) or which arose from discussions involving panel members and, in many cases, input from key informants (all other options).

| Option                                                                                                                                                | Source      | Comment                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objectives and principles of the fund</b>                                                                                                          |             |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Weight the primary and secondary objectives equally                                                                                                   | Submissions | The panel was satisfied that distinguishing between the primary objectives of the fund (noting recommendation 15) and the secondary objectives was warranted.<br><br>The panel was satisfied that the three secondary objectives relating to researcher development, the wider benefits or research and technology and knowledge transfer were appropriate as they reflected secondary outcomes of the fund.            |
| The objective relating to the international ranking of TEOs should only be retained if the size of the fund is increased                              | Submissions | See recommendation 32.                                                                                                                                                                                                                                                                                                                                                                                                  |
| Set a minimum criterion to participate in the fund that recognises the research-intensive nature of the university sector                             | Submissions | The panel considered that a change of this nature would be counter to the more capacious definition of research excellence that it has proposed and would tend to affect those TEOs that had experienced historic underinvestment in their research capability.<br><br>The panel was comfortable with the current minimum requirement that TEOs participate in the Quality Evaluation to be able to access any funding. |
| Create a new fund to support research in specific discipline areas, for types of TEOs or for groups in the workforce, such as post-doctoral positions | Submissions | The panel noted that its terms of reference did not include consideration of alternative ways of funding research.                                                                                                                                                                                                                                                                                                      |
| Adopt the OECD Frascati Manual definitions of research                                                                                                | Submissions | See recommendation 1.                                                                                                                                                                                                                                                                                                                                                                                                   |

| Option                                                                                                                             | Source      | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reducing transaction costs</b>                                                                                                  |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Simplify the assessment criteria for the 'C' Quality Category so that some staff are not required to submit an evidence portfolio. |             | The panel was not satisfied that the modest compliance burden for staff whose evidence portfolios were likely to attract a 'C' Quality Category (see <i>Transaction costs for universities matter less than for other TEOs</i> ) would warrant the additional complexity.                                                                                                                                                                             |
| Discontinue the peer-review assessment                                                                                             |             | See recommendation 22.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Extend the period between Quality Evaluation assessments                                                                           | Submissions | See recommendation 25.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Stagger the Quality Evaluation over the 6-year cycle, such as assessing a subset of subject areas each year                        |             | The panel noted that such an approach might aid with continuity of staff capability and expertise, but would likely increase transaction costs given the need to maintain scaled up staffing and investment in systems and make calibration of assessment standards across the whole system more difficult.                                                                                                                                           |
| Undertake the Quality Evaluation assessment over a longer period, such as up to a year                                             |             | The panel was not convinced that extending the period over which the Quality Evaluation assessment is conducted would be practical, given the difficulties of retaining peer review panel members over the current five-month period. These difficulties would be exacerbated for international panellists.                                                                                                                                           |
| Introduce TEO self-assessment                                                                                                      |             | See recommendation 23.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Introduce sample-based assessment                                                                                                  |             | The panel was not satisfied that a sample-based assessment would provide a comprehensive view of the distribution of research excellence. This approach may reduce some central and TEO administration at the margins, but would need to be carefully managed to ensure credibility of the overall assessment, would reduce the opportunity for external validation of staff research development and provide only a partial view of TEO performance. |
| Undertake a comprehensive individual assessment every ten years and group-based assessment every five years                        |             | See recommendation 25. Undertaking assessments based on both individuals and groups would tend to overcomplicate the fund.                                                                                                                                                                                                                                                                                                                            |
| Staff whose Evidence Portfolios were assigned an 'A' Quality Categories could 'skip' the next Quality Evaluation                   | Submissions | The panel was not convinced that the reduced transaction costs would be sufficient to justify such a change.                                                                                                                                                                                                                                                                                                                                          |

| Option                                                                                                                                                                                        | Source      | Comment                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preferencing quality</b>                                                                                                                                                                   |             |                                                                                                                                                                                                                                                                                            |
| Introduce a more capacious definition of research excellence                                                                                                                                  | Submissions | See recommendation 1.                                                                                                                                                                                                                                                                      |
| Exclude research outputs of lesser quality from inclusion in evidence portfolios                                                                                                              | Submissions | See recommendation 3. Fewer opportunities to present other research outputs should have this effect.                                                                                                                                                                                       |
| Increase the number of Nominated Research Outputs from four to six, reduce the number of Other Research Outputs and refocus the Research Contributions section of Evidence Portfolios         | Submissions | The panel considered that four examples of research excellence was sufficient, but agreed that research contributions ought to be refocused (see recommendation 4).                                                                                                                        |
| Change the relative weighting of Research Outputs and Research Contributions in the assessment framework                                                                                      | Submissions | The more porous boundary between research outputs and research contributions (see recommendation 2) ought to address possible concerns about the undue weighting of the research output section.                                                                                           |
| Allow individuals to choose the relative weighting of research outputs and research contributions                                                                                             | Submissions | The panel considered that the complexity this change would introduce for peer review panels and the implication that the assessment was a mechanistic, rather than holistic, exercise outweighed any possible benefits.                                                                    |
| Refocus on research outputs rather than research-related activities to avoid the notion of a one-size-fits-all model of academic career                                                       | Submissions | The panel considered that a singular focus on research outputs would undervalue important contributions to the context in which research takes place.                                                                                                                                      |
| Removing all references to journal rankings from the assessment guidelines, including panel-specific guidelines, would address the undervaluing of research published in New Zealand journals | Submissions | The panel considered that the high proportion of nominated research outputs reviewed by panels guarded against undue reliance on journal rankings but anticipated that the more extensive training would guard against the devaluing of New Zealand journals (see recommendation 7 and 8). |
| Setting a higher standard for the award of a 'C' Quality Category                                                                                                                             | Submissions | The panel was satisfied that the current assessment criteria for the various Quality Categories were broadly appropriate.                                                                                                                                                                  |
| Broadening the new and emerging researcher assessment criteria so that applied research projects may be treated on the same basis as PhD completion                                           | Submission  | The panel noted that there is no requirement for a new and emerging researcher to hold a PhD whether for eligibility or for their evidence portfolio to be assigned a 'C(NE)' Quality Category.                                                                                            |
| Give greater weight to research service                                                                                                                                                       | Submissions | See recommendation 2.                                                                                                                                                                                                                                                                      |

| Option                                                                                                                                                                           | Source      | Comment                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conduct an audit of the decisions of peer review panels to understand which aspects of evidence portfolios they placed the greatest weight on and abridge portfolios accordingly | Submissions | The panel was satisfied that peer review panels have ample opportunity to provide feedback on the assessment framework.                                                                                                                                                |
| Provide a clearer definition of 'world-leading'                                                                                                                                  | Submissions | The panel noted that 'world-class' research is defined in the guidelines for the 2018 Quality Evaluation and is reasonably explicit, and many panel-specific guidelines expand on that definition.                                                                     |
| <b>Unit of assessment</b>                                                                                                                                                        |             |                                                                                                                                                                                                                                                                        |
| Group-based assessment should be pursued but with several possible models mooted, such as TEOs, subject areas, methodologies and researcher self-selection                       | Submissions | See recommendation 24 and <i>'Thinking about the unit of assessment'</i> .                                                                                                                                                                                             |
| Assess institutions against ideal profile targets such as the number of Quality Categories, and gender and ethnicity mix                                                         | Submissions | The panel preferred to maintain the individual as the unit of assessment, and was concerned that profile targets might be misunderstood as quotas or maxima.                                                                                                           |
| Assess institutions against their research plans                                                                                                                                 | Submissions | The panel considered that this approach would be useful in understanding some of the inputs into the production of research and research contributions, but would not recognise and reward research quality.                                                           |
| Introducing a more intensive assessment of the research of individual researchers                                                                                                | Submissions | The panel noted that qualitative and substantive feedback on the work of individual researchers is desirable, but the transaction costs associated with a centrally coordinated system of this nature would be prohibitive and would displace the obligations of TEOs. |
| Involve all staff who had an evidence portfolio submitted in the relevant subject area participate in the assessment of relevant evidence portfolios                             | Submissions | The panel considered that the challenges of panel training, moderation, privacy implications and transaction costs would be prohibitive.                                                                                                                               |
| Allow staff the option of participating in either a group or individual assessment                                                                                               | Submissions | The panel was concerned that this option would be impractical to administer.                                                                                                                                                                                           |
| <b>Using metrics</b>                                                                                                                                                             |             |                                                                                                                                                                                                                                                                        |
| Incorporate metrics into peer review assessment                                                                                                                                  |             | The assessment framework incorporates bibliometrics (see <i>How best to assess excellence</i> ).                                                                                                                                                                       |
| Allocate funding on the basis of the number of enrolled students or staff teaching at degree-level                                                                               | Submissions | The panel noted that the fund was introduced in response to concerns that the funding of research and research students was too reliant on enrolment metrics and that the alternatives proposed would not make it possible to recognise or reward research quality.    |

| Option                                                                                                                                                      | Source      | Comment                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use bibliometrics to assess research quality on an annual basis to reduce compliance costs, while recognising these may not be suitable for all disciplines | Submissions | See recommendation 22.                                                                                                                                                                                                                                                                                                                                                   |
| <b>Changes to the way funding is calculated</b>                                                                                                             |             |                                                                                                                                                                                                                                                                                                                                                                          |
| Change the weightings of the Quality Evaluation, Research Degree Completions and External Research Income measures                                          | Submissions | See recommendations 20 and 21.                                                                                                                                                                                                                                                                                                                                           |
| The fund should preference certain types of research, such as climate change, topics of national need or the circular economy when allocating funding       | Submissions | The panel noted that the government has many other mechanisms to signal its priorities for research, and the fund is best placed to recognise and reward research quality wherever it arises.                                                                                                                                                                            |
| Fund Research Degree Completions separately and adjust the amount of funding based on the number of completions                                             | Submissions | The panel noted that funding linked to the enrolment of research degree students is volume-based. The fund uses Research Degree Completions as a proxy measure of research excellence and also creates incentives to encourage more timely completions of research degrees.                                                                                              |
| Add a weighting for post-doctoral researchers to the funding system                                                                                         | Submissions | The panel was satisfied that both the provisions for new and emerging researchers (see recommendation 26) and the new funding weights for such researchers (see recommendation 10) were sufficient to recognise and reward post-doctoral positions.                                                                                                                      |
| Discontinue the External Research Income measure                                                                                                            | Submissions | See recommendation 21.                                                                                                                                                                                                                                                                                                                                                   |
| Discontinue subject-area weightings for Evidence Portfolios assigned an 'A' Quality Category and allocate a fixed value                                     |             | The panel saw some advantages in rewarding research excellence in a fixed way, as it was consistent with the commitment to assessing the intrinsic quality of the evidence presented in evidence portfolios. The panel noted however that setting funding levels might prove to be cumbersome, and the potential effects on funding for some TEOs were very significant. |
| Introduce a fixed amount of funding for all new and emerging researchers                                                                                    |             | See above                                                                                                                                                                                                                                                                                                                                                                |
| Increase the funding weightings for Māori Knowledge and Development and Pacific subject areas                                                               |             | See recommendation 11 and 12.                                                                                                                                                                                                                                                                                                                                            |
| Increase the funding weighting for staff who identify as NZ Māori or one or more of the Pacific ethnicities                                                 |             | See recommendation 10.                                                                                                                                                                                                                                                                                                                                                   |

| Option                                                                                                                                                                            | Source      | Comment                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Change the subject area weighting of the 'Design' subject area to match that of the 'Architecture, Design, Planning, Surveying' subject area                                      | Submissions | See recommendation 14.                                                                                                                                                                               |
| Introduce supplementary funding for Māori and Pacific student and staff                                                                                                           | Submissions | See recommendation 11 and 12. The Research Degree Completions measure also provides an additional funding weighting for TEOs based on the number of Māori and Pacific graduates of research degrees. |
| Change the funding weighting for the quality categories of 'A', 'B' and 'C' from 5/3/1 to 3/2/1                                                                                   | Submissions | The panel was comfortable with the relative weighting of funded quality categories overall given the demanding standards for an 'A' and 'B' Quality Category.                                        |
| Introduce a targeted weighting to encourage a culture of open research                                                                                                            | Submissions | The panel considered that giving preference to types of research outlets was inconsistent with the commitment to assessing the intrinsic quality of the evidence presented in evidence portfolios.   |
| Allocate funding directly to individual researchers                                                                                                                               | Submissions | The panel was concerned that such an approach would undermine the institutional autonomy of TEOs and impact on their ability to plan strategically.                                                  |
| Account for the level of research support and administration in funding allocations, with funding advantages for smaller TEOs                                                     | Submissions | The panel was concerned that such a model would tend to benefit TEOs that elected to invest less in research infrastructure compared to those that invest more.                                      |
| Include research dissertations associated with taught postgraduate programmes in the Research Degree Completions measure                                                          | Submissions | The panel was satisfied that this issue had been exhaustively considered by Sector Reference Groups in the past.                                                                                     |
| Introduce a higher weighting for the completion of practitioner postgraduate research relating to initial teacher education                                                       | Submissions | The panel was not satisfied that there was a clear case to preference initial teacher education in this way.                                                                                         |
| Introduce supplemental funding for evidence of impact                                                                                                                             | Submissions | The panel was concerned to avoid the impression that impact was additional to research excellence and preferred a system where impact was one of many ways that excellence might be demonstrated.    |
| <b>Strengthening the panel system</b>                                                                                                                                             |             |                                                                                                                                                                                                      |
| Improve training of panel members in various areas including impact, mātauranga Māori research and Pacific research. treatment of part-time staff and extraordinary circumstances | Submissions | See recommendation 7.                                                                                                                                                                                |

| Option                                                                                                                                                  | Source      | Comment                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ensure that the membership of peer review panels is more diverse                                                                                        | Submissions | See recommendation 6.                                                                                                                                                                                                                                                                                                                      |
| Offer more extensive training including online resources and targeted capability support for researchers, as well as smaller TEOs and research managers |             | See recommendation 8.                                                                                                                                                                                                                                                                                                                      |
| Ensure that peer review panels include people with expertise in foreign languages and multidisciplinary research                                        | Submissions | The panel recommended changes to the composition of peer review panels to ensure members better reflect the current and growing epistemological diversity of the research workforce (recommendation 6).                                                                                                                                    |
| Reintroduce specialist advisors                                                                                                                         | Submissions | The panel considered that specialist advisors had only a minor influence on assessment outcomes in past Quality Evaluations and the mechanisms in the assessment framework, including the scope for extensive commentary about the evidence presented in evidence portfolios and the generalist expertise of panel members are sufficient. |
| Improve access to assessors with mātauranga Māori assessment expertise to staff                                                                         | Submissions | The panel recommended a more capacious definition of research excellence, changes to the composition of panels and more extensive training which ought to improve the quality of assessment outcomes.                                                                                                                                      |
| Panels should explicitly allow certain kinds of research to be counted                                                                                  | Submissions | The panel was concerned to receive submissions that suggested that certain kinds of research were disallowed by panel-specific guidelines. Recommendation 8 is intended to provide a mechanism to address persistent myths about the assessment framework such as these.                                                                   |
| Cross-referrals of evidence portfolios should be permitted                                                                                              | Submissions | The panel noted that cross-referrals were possible under the guidelines for the 2018 Quality Evaluation, but, with the exception of those to the Māori Knowledge and Development panel and the Pacific Research panel, were initiated by panel chairs only. The panel was satisfied that this mechanism was appropriate.                   |
| <b>Technical changes</b>                                                                                                                                |             |                                                                                                                                                                                                                                                                                                                                            |
| Introduce more flexible rules around the date of publication when determining the eligibility of research outputs                                       | Submissions | The panel was sympathetic to concerns that the eligibility criteria for research outputs might require refinement but considered that such matters should be considered by the Sector Reference Group.                                                                                                                                     |
| Simplify the eligibility criteria for new and emerging researchers to avoid penalties to people who engage in research prior to PhD completion.         | Submissions | See recommendation 26.                                                                                                                                                                                                                                                                                                                     |

| Option                                                                                                           | Source      | Comment                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Provide for a wider diversity of output types                                                                    |             | The panel was confident that the range of research output types was sufficient but that there was a need to make the boundaries between research outputs and research contributions more porous (recommendation 2) and to focus the research contribution types (recommendation 4). |
| Simplify the date of final publication for eligibility purposes                                                  | Submissions | The panel thought that the criteria relating to the eligibility of research outputs should be considered by the Sector Reference Group for the next Quality Evaluation.                                                                                                             |
| Distinguish within the 'B' Quality Category and introduce an 'A+' Quality Category                               | Submissions | The panel considered that there were already considerable incentives for high-performing researchers external to the fund and further disaggregating the higher Quality Categories would not have a material effect.                                                                |
| Consider academic representation on audit panel                                                                  | Submissions | The panel was comfortable that trained auditors were best placed to perform the function of the audit panel, particularly given the considerable influence that the sector has over the design and implementation of the fund.                                                      |
| Stage the implementation of any significant changes over two Quality Evaluations                                 | Submissions | The panel proposed incremental changes that ought not to be burdensome for participating TEOs. Having said that, the panel recognised that the results of the changes might take time to arise.                                                                                     |
| Alternatives to patents as evidence of commercialisation outcomes should be considered                           | Submissions | The panel noted that further work might be required on the types of evidence of research outputs that are permitted and anticipated that the Sector Reference Group for the next Quality Evaluation will consider these.                                                            |
| Adopt Open Researcher and Contributor ID numbers as unique identifiers of researchers for the Quality Evaluation | Submissions | See recommendation 31.                                                                                                                                                                                                                                                              |
| <b>Measuring impact</b>                                                                                          |             |                                                                                                                                                                                                                                                                                     |
| Better reflect the perspectives of industry and the community                                                    | Submissions | The new 'Examples of Research Excellence' section should be able to capture evidence of engagement and impact for communities (see recommendation 2).                                                                                                                               |
| Introduce variable weightings for types of impact in the assessment framework                                    |             | The panel was not persuaded that a separate mechanism would be desirable because of the significant transaction costs that would arise but agreed that impact could be integrated into the new 'Examples of Research Excellence' section (see recommendation 2).                    |
| Provide for ex-ante impact assessment                                                                            |             | The panel noted advice from the Ministry of Business, Innovation and Employment that forecast impacts were not a particularly reliable way of determining the likely impacts of research.                                                                                           |

| Option                                                                                                                                                                                                                                                                     | Source      | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use metrics to assess impact                                                                                                                                                                                                                                               | Submissions | The panel was not convinced that impact measurement could be conducted using a set of simple metrics. For a more general discussion of these issues see <i>'How best to assess excellence'</i> .                                                                                                                                                                                                                                                                                                                    |
| Provide for impact to be listed in place of one or more nominated research outputs                                                                                                                                                                                         |             | See recommendation 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Require impact to be weaved into nominated research output descriptors wherever possible                                                                                                                                                                                   |             | See recommendation 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Provide for testimonials to be included as evidence of impact                                                                                                                                                                                                              |             | The panel considered that the kinds of evidence required to verify impact should be considered by the Sector Reference Group.                                                                                                                                                                                                                                                                                                                                                                                       |
| Provide exemplars of evidence of impact and better guidance to staff potentially in panel specific guidelines                                                                                                                                                              | Submissions | See recommendation 8.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Create a separate mechanism to assess impact, such as assessing impact at the institutional level using case studies with some mechanism to account for the number of full-time equivalent researchers, and provide financial rewards through a separate funding mechanism | Submissions | The panel was not persuaded that a separate mechanism would be desirable because of the significant transaction costs that would arise but agreed that impact could be integrated into the new 'Examples of Research Excellence' section (see recommendation 2).                                                                                                                                                                                                                                                    |
| Refocus the research contribution section of evidence portfolios on research co-design, end-users, knowledge transfer, path to impact and research impact                                                                                                                  | Submissions | See recommendation 4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Introduce a section of evidence portfolios that allows researchers to describe their contributions outside academia                                                                                                                                                        | Submissions | See recommendation 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Enable projects that started earlier than the current assessment period to be reported so that impact may be demonstrated                                                                                                                                                  | Submissions | <p>The panel was sympathetic to concerns that the six-year assessment period was a limiting factor in terms of some kinds of impact that might take considerable periods to accrue.</p> <p>The panel was concerned however to ensure that any 'Examples of Research Excellence' (see recommendation 2) are anchored in a research output. It would, therefore, be necessary to evidence impact through a relevant output, which may differ from the original scholarship that gave rise to the eventual impact.</p> |

| Option                                                                                                                                                             | Source      | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Improving research collaboration and engagement with end-users</b>                                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Give more weight to the research contribution type 'Facilitation, networking and collaboration'                                                                    |             | See recommendation 4.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Provide for clearer recognition of collaborative research                                                                                                          | Submissions | See recommendation 2.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Use a self-reported Likert scale to describe the relative contribution of researchers to collaborative work                                                        | Submissions | The panel was satisfied that the option to provide commentary on the contributions of individuals to research provided richer and more useful information to peer review panels.                                                                                                                                                                                                                                                                  |
| <b>Recognising individual circumstances</b>                                                                                                                        |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Reduce the threshold for extraordinary circumstances from three years to two years.                                                                                | Submissions | The panel recommended a review of the extraordinary circumstances provision (see recommendation 5).                                                                                                                                                                                                                                                                                                                                               |
| Look at more equitable treatment of part-time staff by reducing the number of other research outputs or including the FTE of small members on evidence portfolios. | Submissions | The panel recommended that the concept of 'merit relative to opportunity' be introduced which includes consideration of part-time employment (recommendation 3) and that the number of 'Other Research outputs' should be reduced from twelve to six (recommendation 3).<br><br>It was noted that including the FTE of staff on evidence portfolios might be confusing in cases where the employment arrangements of staff had changed over time. |
| Devolve assessment of extraordinary circumstances to TEOs to reduce the number of people potentially reviewing personal or sensitive information                   | Submissions | The panel recommended that steps be taken to limit access to sensitive or confidential information (recommendation 5). The Sector Reference Group should consider how best to implement this recommendation.                                                                                                                                                                                                                                      |
| Remove exceptional circumstances and introduce the concept of merit relative to opportunity                                                                        | Submissions | The panel recommended that the concept of 'merit relative to opportunity' be introduced (recommendation 5).                                                                                                                                                                                                                                                                                                                                       |
| Including part-time status as an extraordinary circumstance                                                                                                        | Submissions | The panel recommended that part-time employment be taken into account through the assessment framework more deliberately (recommendation 5).                                                                                                                                                                                                                                                                                                      |
| Introduce a mechanistic process to pro-rata the expected quantity of research output and contributions based on the full-time equivalent status of staff           | Submissions | The panel was reluctant to support mechanistic calculations of expected output given the variability in research practice and the mix of research outputs produced by staff but noted that the Sector Reference Group should consider how best to implement recommendation 5.                                                                                                                                                                     |

| Option                                                                                                                   | Source      | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Supporting TEOs with developing research cultures</b>                                                                 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Offer partnership opportunities for universities to assist non-university TEOs                                           | Submissions | The panel identified the potential for the TEC to facilitate connections between TEOs as part of our commentary on recommendation 8.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Create an alternative assessment pathway for smaller TEOs                                                                |             | See <i>'For smaller TEOs the costs and benefits of participating are complex'</i> and recommendation 27.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Extend the funding weighting for the 'C(NE)' Quality Category for longer than six years for smaller TEOs                 | Submissions | The panel noted that the higher weighting for the 'C(NE)' Quality Category applies for six years following each Quality Evaluation which was a reasonable period of time.                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Better recognising Māori research</b>                                                                                 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Widen the scope of the Māori Knowledge and Development panel to better reflect the diversity of Māori research           |             | <p>The Sector Reference Group will consider the scope of panels as part of the implementation of any changes agreed by government, and the members of the Māori Knowledge and Development panel will be involved in the detailed elucidation of panel coverage through the panel-specific guidelines.</p> <p>The panel noted that in several cases during the 2018 Quality Evaluation, the Māori Knowledge and Development panel expressed confidence in the capacity of other peer review panels to assess research that employed relevant methodologies.</p> |
| Place clearer emphasis on research contributions to the Māori research environment and addressing inequities in outcomes | Submissions | See recommendations 1 and 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Create alternative pathway or mechanism for wānanga                                                                      | Submissions | The panel considered that incremental improvements to the fund would better recognise mātauranga Māori and Pacific research without needing a separate fund, but has recommended several changes that ought to better recognise the research excellence of the staff of wānanga (recommendations 1 and 11), deliver increased investment (recommendation 10) and endorses the investment in the research capability of those organisations (recommendation 27).                                                                                                |
| Create a separate performance-based fund for mātauranga Māori research                                                   | Submissions | The panel considered that incremental improvements to the fund would better recognise mātauranga Māori research without needing a separate fund, but has recommended several changes that ought to better recognise the research excellence of associated with mātauranga Māori research (recommendations 1, 10 and 11).                                                                                                                                                                                                                                       |
| Introduce a section of evidence portfolios that focuses on Vision Mātauranga                                             | Submissions | The panel considered that the changes it proposed to the assessment framework would contribute to the goals of Vision Mātauranga, particularly better recognising the role of Māori as partners in science and innovation and building the capacity of Māori.                                                                                                                                                                                                                                                                                                  |

| Option                                                                                                                                     | Source      | Comment                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Better recognising Pacific research</b>                                                                                                 |             |                                                                                                                                                                                                                                                                                                                                                        |
| Create a separate performance-based fund for Pacific research                                                                              | Submissions | The panel considered that incremental improvements to the fund would better recognise Pacific research without needing a separate fund, but has recommended several changes that ought to better recognise the research excellence associated with Pacific research (recommendations 1, 10 and 12).                                                    |
| Introduce equity or supplementary funding to support Pacific researchers                                                                   | Submissions | See recommendations 10 and 12.                                                                                                                                                                                                                                                                                                                         |
| <b>Workforce</b>                                                                                                                           |             |                                                                                                                                                                                                                                                                                                                                                        |
| Allow recognition of more discrete pathways for advancement relating to teaching, research and impact-related research                     |             | The panel recommended the introduction of a new section of Evidence Portfolios, 'Examples of Research Excellence', that will allow for better recognition of research excellence broadly conceived (recommendation 2). The panel considered that TEOs were best placed to develop career pathways for staff pursuing careers that emphasised teaching. |
| Provide component scores to aid researcher development to TEOs                                                                             | Submissions | The panel was unconvinced that component scores are useful for TEOs or researchers given the emphasis in the assessment system on the final Quality Category. TEOs will have a much richer understanding of the career development status, and future development opportunities of staff than a periodic evaluation of research quality may offer.     |
| Do not provide Quality Categories for individual evidence portfolios to TEOs                                                               | Submissions | The panel noted that this change would require legislative change and, in any case, would be contrary to the general principles of transparency of funding decisions.                                                                                                                                                                                  |
| Place more emphasis on fostering a research environment that attracts, encourages and supports the careers of new and emerging researchers | Submissions | See recommendation 15.                                                                                                                                                                                                                                                                                                                                 |
| <b>Reporting framework</b>                                                                                                                 |             |                                                                                                                                                                                                                                                                                                                                                        |
| Remove the Average Quality Score because it is not meaningful and encourages gaming                                                        | Submissions | See recommendation 32.                                                                                                                                                                                                                                                                                                                                 |
| Revert to an Average Quality Score based on a denominator of the number of evidence portfolios submitted                                   | Submissions | See recommendation 32.                                                                                                                                                                                                                                                                                                                                 |
| Exclude research only staff from the denominator to encourage a focus on the nexus between teaching and research                           | Submissions | See recommendation 32.                                                                                                                                                                                                                                                                                                                                 |

| Option                                                                                                                | Source      | Comment                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Other changes</b>                                                                                                  |             |                                                                                                                                                                  |
| Increasing funding allocated through the fund                                                                         | Submissions | See recommendation 32.                                                                                                                                           |
| Strengthen the monitoring and evaluation of the PBRF                                                                  | Submissions | See recommendation 29.                                                                                                                                           |
| The Education Panel should be reconstituted into two separate panels covering Education and Initial Teacher Education | Submissions | The panel noted that the Sector Reference Group for the next Quality Evaluation would likely consider the number and composition of the peer review panels.      |
| TEOs should be required to report on the uses to which they put any funding received                                  | Submissions | The panel was satisfied that the bulk funding model with institutional accountability managed through other mechanisms such as investment plans was appropriate. |

# Next steps

---

The panel recognised that its recommendations form advice to government and a process of consultation on options for change to the fund will follow.

---

To the extent that the panel's recommendations are taken forward, we considered that engagement and consultation with the sector on the detailed implementation of any changes will be important. The panel has provided a direction of travel for changes to the fund, but more detailed work is required to tease out their practical implications.

The role that the sector plays in co-designing and co-developing the approach for research assessment is a key strength of the model we employ in New Zealand. These processes should mirror those employed by the Sector Reference Group appointed as part of the preparations for the 2006, 2012 and 2018 Quality Evaluations.

The panel noted that some recommendations will require particular attention. These include the:

- detail of the more capacious definition of research excellence,
- design of the new 'Examples of Research Excellence' section of evidence portfolios, and the supporting guidelines,
- categories and examples of the refocused 'Research Contribution' section,
- design and implementation guidance for the new 'merit relative to opportunity' approach,
- review and simplification of the criteria for new and emerging researchers,
- priorities for the ongoing programme of research and evaluation, and
- exploiting of opportunities for integration with Open Researcher and Contributor ID and NZRIS.

There will be other matters that require further exploration, but decisions about these will be for the Sector Reference Group to determine in consultation with government agencies and the sector.

# Appendix A: PBRF Review Panel Terms of Reference

---

# Terms of Reference

## Review of the Performance-based Research Fund (PBRF) 2019

---

The purpose of the Performance-Based Research Fund (PBRF) is to ensure that excellent research in the tertiary education sector is encouraged and rewarded.

The PBRF is regularly reviewed and the aim of the 2019 review is to examine ways government can continue to support research excellence by improving the effectiveness and efficiency of the PBRF settings and to ensure the benefits of this research are shared across New Zealand. Any changes to PBRF would be take into account the nature of the existing research culture within the tertiary education setting, and the government's priorities for New Zealand's research and innovation system and tertiary education system.

---

### Context

The PBRF was established in 2002 and supports excellence in investigator-led research within the tertiary education sector, and in turn, supports quality research-led teaching. The PBRF has supported the development of a stronger research culture across tertiary education organisations over the last 16 years. Given the growing maturity of the research functions across many parts of the tertiary education sector, a focus of this periodic review will be the way that research excellence is evaluated and measured via the PBRF.

The PBRF will allocate \$316 million in government funding to tertiary education organisations in 2018/19, based on the level and quality of their research activities. The PBRF is accessed primarily by universities, although institutes of technology and polytechnics (ITPs), wānanga and private training establishments (PTEs) also participate.

Allocation of research funding across organisations is determined from a mix of measures that evaluate the quality of research, including a six-yearly peer assessment process that evaluates each researcher's past performance, the number of postgraduate degrees completed and the level of external research income organisations earn.

### Previous Reviews of PBRF

The PBRF has been reviewed periodically every 4-5 years since it was established in 2002 (with three previous reviews — 2004, 2008 and 2012/13). The last review found the PBRF had supported a significant increase in the research performance and productivity of tertiary education organisations. Fundamental changes to PBRF were not warranted, but some refinements were made to reduce compliance costs, better support new and emerging researchers, increase collaboration with end-users, improve reporting information and clarify the overarching objectives. The overall impact of those changes of PBRF on the quality of researchers will be known by mid-2019, when this review will begin.

## Revisiting the objectives of the PBRF

The objectives of the PBRF were originally agreed in 2002 and the primary purpose of the PBRF has remained unchanged – namely, rewarding and encouraging high-quality tertiary education research and research-led teaching and learning (at degree level and above).

The PBRF objectives were modified in 2014 after the last PBRF review in 2012/13, to reflect the role of PBRF in supporting government’s wider priorities in science, research and innovation.

The primary objectives of the PBRF are to:

- increase the quality of basic and applied research at New Zealand's degree-granting tertiary education organisations (TEOs)
- support world-leading teaching and learning at degree and postgraduate levels
- assist New Zealand's TEOs to maintain and lift their competitive rankings relative to their international peers
- provide robust public information to stakeholders about research performance within and across TEOs.

In doing so, the PBRF will also:

- support the development of postgraduate student researchers and new and emerging researchers
- support research activities that provide economic, social, cultural, and environmental benefits to New Zealand, including the advancement of Mātauranga Māori
- support technology and knowledge transfer to New Zealand businesses, iwi and communities.

This review provides another opportunity to consider the current objectives and the primary purpose of PBRF. It provides an opportunity to ensure that the PBRF objectives align with any changes in direction or priorities within the wider science and research system or the tertiary education system. For example, the update of the *Tertiary Education Strategy* or the development of principles to underpin New Zealand’s research practice with a *National Research Charter for Aotearoa New Zealand*.

The Review will consider whether the current objectives need to be further modified to ensure the PBRF meets current and future challenges and priorities in the research system and in the research-led teaching environment.

## Improving research collaboration and engagement with end-users

The individual researcher has been the 'unit of assessment' for measuring the quality of research excellence within the PBRF since it began. This year 8,281 researchers have submitted an evidence portfolio for peer review assessment, as part of the 2018 Quality Evaluation process.

While the amount of information that has to be submitted within a portfolio had been reduced for 2018 to lessen compliance costs, the process of individual evaluation can still be burdensome, imposing costs on the individual researcher, their organisation and the government.

Collaboration is a fundamental component of high-quality science, research and innovation, and collaboration is explicitly supported and encouraged by other government funding of research activity (for example, the National Science Challenges and the Centres of Research Excellence [CoRES]).

Many in the sector see the individual researcher as the best way of establishing the quality of research across organisations. However, focussing on a group unit of assessment may be a way of encouraging effective collaboration amongst researchers and with end-users. A group approach to research assessment could also support greater mentoring of new and emerging researchers and ensure that New Zealand sustains and grows its research workforce (particularly given the highly skilled but aging research workforce).

Collaboration, particularly with end-users of research, could also be enhanced the ability of organisations or 'groups' to provide improved information on the pathway to impact of their research activity. The group or organisational lens could be a more appropriate unit for PBRF to assess impact, rather than an individual researcher. The individual researcher has limited capacity to directly link his/her research work to impacts on economic, social and environmental outcomes, whereas a group or organisation can be more easily measured in how they have supported their researchers' efforts in collaboration, outreach activities, dissemination and engagement (which ultimately create an impact for the research).

Group-based assessment could also prove to be more complicated for tertiary education organisations and government in terms of determining the membership, measurement and definitions for a group (for example, grouped by department, around research themes, by disciplines or interdisciplinary groups).

The Review will examine the merits of moving from individual-based assessment to a group-based assessment, in terms of boosting collaboration, supporting workforce development and sustainability, reducing compliance costs and measuring impact of research.

If individual is to be retained as the unit of assessment, the Review will identify options within the PBRF settings to improve collaboration and impact assessment via other PBRF settings.

## **Boosting the impact of tertiary education research**

Across the world, governments are working to ensure public investment in research demonstrates an ‘impact’ in terms of improvements in societal wellbeing, economic development and environmental outcomes. New Zealand’s *National Statement of Science Investment 2015-2025* has impact as one of two pillars of the science system.

Tertiary education organisations also have an explicit legislative role as critic and conscience of society (s.162 (4)(a)(v) Education Act 1989), which also underpins the organisations and research staff engaging in impactful conversations with New Zealand communities, based on their research knowledge and expertise.

It is important that the benefits of research undertaken in the tertiary sector are shared across New Zealand society. There are concerns that the current Research Contribution measure in the Quality Evaluation may not adequately capture the value of applied research, patents, mātauranga Māori research and other research which benefits local community, industry or environment.

Measuring impact from research activity is not without complexity, but many other government research investments already target impact specifically. Any change to PBRF to better assess impact will need to strike a balance in terms of compliance costs and rewarding impactful research activity. The review will draw on the changes to assessing impact internationally through metrics, case studies and impact statements, including in the United Kingdom, Canada and Australia.

The Review will examine options for improving the assessment and rewards for research that has a tangible impact for communities, the environment, businesses or government sectors. The Review will provide advice on the costs and benefits of introducing further measures to assess impact into the PBRF.

## **Assessing excellent research with lower transaction costs**

Currently the excellence in research undertaken by tertiary education organisations determined by three components – primarily the quality evaluation assessment process every six years, the yearly postgraduate research degree completions and the amount of external research income generated annually.

The PBRF quality evaluation assessment process is thorough and robust in measuring each researcher’s performance in terms of research outputs (journal articles, conference presentations, creative work exhibition or performance, etc) and research contribution (eg supervision of research student and factors that reflect a researcher’s contribution to student-related activity, impact of research for a community or business, networking and collaboration, peer or industry recognition or prizes, etc)

The review provides an opportunity to consider how the PBRF settings could be adjusted to measure excellent research at a lower transaction cost (either for staff, management or government). This will include consideration of:

- Reducing the frequency of the quality evaluation by moving from six-yearly cycle to eight or ten-yearly assessment cycle, and whether variable assessment cycles should be introduced depending on the seniority of researchers
- Introducing simpler metrics to assess research quality. For example, using new information research reporting data such as the *National Research Information System* (an information hub about New Zealand's research activities), which has the potential to reduce compliance costs via streamlined research reporting. Other options that could be considered are use of new data systems that monitor dissemination activities, use of H-indices or bibliometrics to provide more frequent excellence measures for particular research disciplines.
- Introducing self-assessment processes for some research areas or some tertiary education organisations that have a strong research culture embedded.

The Review will identify options for modifying current PBRF settings to reduce transaction costs for research staff, tertiary organisations and government, including changes to the unit of assessment, changes in the time period(s) for quality evaluation, use of new metrics to assess research quality, use of self-assessment and the funding proportions allocated across the current three measures (quality evaluation, research degree completions and external research income).

### **Recognising and rewarding all types of research activity**

There is ongoing concern that the PBRF is not adequately recognising and rewarding the full spectrum of research activity undertaken with tertiary education organisations, from basic through to professional and applied research, mātauranga Māori research and new fields of research drawing on Pacific and other cultural perspectives.

PBRF assessment processes (including the appointment and training of panel members for the six-yearly quality evaluation) and guidelines have been continually improved to ensure equitable assessment of all types of research. However, concerns continue to be voiced within the sector that PBRF discriminates against applied research in favour of fundamental research. There is limited evidence that such discrimination occurs and analysis of some quality scores from the last quality evaluation do not point to any explicit bias.

The nature of the PBRF settings may not adequately recognise the excellence of some specific types of research undertaken across the tertiary education sector. Alternatively, PBRF settings may recognise excellent research across a wide range of activity, but this excellence is not rewarded because the tertiary organisations undertaking the research do not have the capability or capacity to effectively engage in the PBRF process (for example,

where insufficient organisational resources or knowledge are available to support the submission of high-quality evidence portfolios).

Wānanga have previously raised concerns about funding for mātauranga Māori research by PBRF, which resulted in the establishment of a separate *Wānanga Research Aspirations* project. This project will consider a bespoke approach to support for mātauranga Māori research. However, for wānanga that continue to participate in PBRF, the review will consider what further support could be provided to them, and for Māori research undertaken in other tertiary organisations.

The Review will consider how the PBRF can better support the research activity of all types of research, including basic, applied, creative, mātauranga Māori research, and Pacific or other cultural research perspectives. This will include consideration of whether any specific support is required to enable some organisations to effectively participate in the PBRF, or whether a separate funding mechanism may be required to support particular types of research activity or help organisations build their research capacity and capability.

### **Sustainable and diverse workforce with investigator-led research capability**

The tertiary education sector plays a key role in developing New Zealand's research workforce, and this is reflected in the specific funding within the PBRF for annual research degree completions. The way people engage in work will continue to evolve and the PBRF will need to ensure that it does not disadvantage any researchers (for example, the changing nature of work may increase numbers of staff working part-time, flexible working arrangements, working across multiple workplaces or contracting arrangements).

There are concerns that the nature of the PBRF quality evaluation process may disadvantage those working less than fulltime due to family and parental responsibilities, who cannot provide as wide a research contribution or research outputs. The review will consider whether further consideration needs to be given to provide better recognition for staff working less than fulltime (for example, the instances in which tertiary education organisations are determining and verifying parttime employment due to childcare as an extraordinary circumstance).

There has been concern that tertiary organisations' response to the PBRF settings have led to a less diverse and sustainable workforce. Changes were made following the 2012/13 review to better support the sustainability of the workforce with the introduction of a financial weighting for evidence portfolios submitted by new and emerging researchers. There is also extra weighing provided by PBRF for research degree completions by Māori and Pacific students or for a thesis submitted in te reo Māori.

Senior researchers have a key role in supporting the development of new and emerging researchers, and concerns have been raised that the nature of PBRF rankings can have a deleterious impact on organisations' approaches to mentoring and developing the next generation of researchers. For example, moving to a group as unit of assessment for quality evaluation may enable greater mentoring and collaboration within a discipline or department.

The Review will examine the effectiveness of the PBRF on the development of highly-skilled and diverse research workforce for New Zealand in the context of the changing nature of work and workplaces. This will include consideration of whether any adjustments to PBRF settings are required to support a sustainable mix of gender, ethnicity and ages across the tertiary research workforce.

The Review will also consider whether the PBRF creates any incentives or disincentives within tertiary education organisations given the changing nature of work and the continued evolution of new types of working arrangements, ways of working and workforce development.

# Appendix B: Principles and objectives

---

The following presents the objectives and principles of the fund. The new wording is underlined. Deleted wording is indicated by text that has been struck through.

---

## ■ The objectives of the PBRF

The PBRF is a performance-based funding system to encourage and reward excellent research in New Zealand's degree-granting organisations. It does not fund research directly but supports research, including post-graduate level teaching support.

The primary objectives of the PBRF are to:

- Increase the quality of basic and applied research at New Zealand's degree-granting tertiary education organisations (TEOs)
- Support world-leading teaching and learning at degree and postgraduate levels
- To ensure a flourishing and inclusive system for developing and sustaining research excellence in New Zealand
- Assist New Zealand's TEOs to maintain and lift their competitive rankings relative to their international peers
- Provide robust public information to stakeholders about research performance within and across TEOs.

In doing so, the PBRF will also:

- Support the development of postgraduate student researchers and new and emerging researchers
- Support research activities that provide economic, social, cultural, and environmental benefits to New Zealand, including the advancement of Mātauranga Māori
- Support technology and knowledge transfer to New Zealand businesses, iwi and communities.

To meet these objectives, the main focus of the PBRF is on rewarding and encouraging excellence. Excellence is not just about the production of high-quality research articles, books, exhibitions and other forms of research output. It includes all of the following:

- the production and creation of leading-edge knowledge
- the application of that knowledge
- the dissemination of that knowledge to students and the wider community, and
- supporting current and potential researchers (e.g. postgraduate students) in the creation, application and dissemination of knowledge.

## ■ PBRF governing principles

The PBRF is governed by the following principles:

- **Comprehensiveness:** the PBRF should appropriately measure the quality of the full range of original investigative activity that occurs within the sector, regardless of its type, form, or place of output.
- **Respect for academic traditions:** the PBRF should operate in a manner that is consistent with academic freedom and institutional autonomy.
- **Consistency:** evaluations of quality made through the PBRF should be consistent across the different subject areas and in the calibration of quality ratings against international standards of excellence.
- **Continuity:** changes to the PBRF process should only be made where they can bring demonstrable improvements that outweigh the cost of implementing them.
- **Differentiation:** the PBRF should allow stakeholders and the government to differentiate between providers and their units on the basis of their relative quality.
- **Credibility:** the methodology, format and processes employed in the PBRF must be credible to those being assessed.
- **Efficiency:** administrative and compliance costs should be kept to the minimum consistent with a robust and credible process.
- **Transparency:** decisions and decision-making processes must be explained openly, except where there is a need to preserve confidentiality and privacy.
- **Complementarity:** the PBRF should be integrated with new and existing policies and quality assurance systems for degrees and degree providers.
- **Cultural inclusiveness:** the PBRF should reflect the cultural nature of New Zealand and the special role and status of the Treaty of Waitangi (te Tiriti o Waitangi), and should appropriately reflect and include the full diversity of New Zealand's population.
- **Partnership:** The fund should reflect the bicultural nature of New Zealand and the special role and status of the Treaty of Waitangi (Te Tiriti o Waitangi).
- **Inclusiveness:** The fund should encourage and recognise the full diversity of research methodologies, knowledges, epistemologies and methods to reflect the full diversity of New Zealand's people.
- **Equity:** Different approaches and resources are needed to ensure that the measurement of research excellence leads to equitable outcomes.

# Appendix C: Informants and submissions

This appendix provides more detail on the key informants that we met with, the organisations that made submissions to the panel and the presentations and reports we received.

## ■ Key informants

The panel interviewed 60 key informants generally organised into groups based on common characteristics and engaged with representatives of the major tertiary education sub-sectors (see Table 7).

**TABLE 7: KEY INFORMANTS**

| Key informant                | Institutional affiliation              |
|------------------------------|----------------------------------------|
| Pauline Adams                | Te Wānanga o Aotearoa                  |
| Dr M Daud Ahmed              | Manukau Institute of Technology        |
| Megan Allardice              | Waikato Institute of Technology        |
| Jenny Aimers                 | Otago Polytechnic                      |
| Dr Shirley Barnett           | Massey University                      |
| Lindsay Baxter               | Te Wānanga o Aotearoa                  |
| Professor Richard Blaikie    | University of Otago                    |
| Dr Ann Brower                | University of Canterbury               |
| Professor Giselle Byrnes     | Massey University                      |
| Manu Caddie                  | Hikurangi Enterprises                  |
| Professor Martin Carroll     | Manukau Institute of Technology        |
| Lee Cooper                   | Tertiary Education Union               |
| Professor Sally Davenport    | Victoria University of Wellington      |
| Professor Trevor Drage       | University of Waikato                  |
| Professor Grant Edwards      | Lincoln University                     |
| Dr Shane Edwards             | Independent researcher                 |
| Dr Steven Elers              | Massey University                      |
| Professor Juliet Gerrard     | Prime Minister's Chief Science Advisor |
| Michael Gilchrist            | Tertiary Education Union               |
| Professor Sir Peter Gluckman | University of Auckland                 |
| Professor Robert Greenberg   | University of Auckland                 |
| Professor Grant Guilford     | Victoria University of Wellington      |
| Dr Myk Habets                | Laidlaw College                        |

| <b>Key informant</b>             | <b>Institutional affiliation</b>                                    |
|----------------------------------|---------------------------------------------------------------------|
| Dr Jeremy Hapeta                 | Massey University                                                   |
| Professor Harlene Hayne          | University of Otago                                                 |
| Professor Nigel Hemmington       | Auckland University of Technology                                   |
| Dr Kelly Holt                    | New Zealand College of Chiropractic                                 |
| Professor Margaret Hyland        | Victoria University of Wellington                                   |
| Professor Bob Jahnke             | Massey University                                                   |
| Assoc. Professor Alex James      | University of Canterbury                                            |
| Dr Bronwen Kelly                 | Universities New Zealand                                            |
| Professor Lynda Johnston         | University of Waikato                                               |
| Professor Robyn Longhurst        | University of Waikato                                               |
| Dr Shireen Maged                 | Te Wānanga o Aotearoa                                               |
| Professor Jim Mann               | University of Otago                                                 |
| Professor Derek McCormack        | Auckland University of Technology                                   |
| Professor Stuart McCutcheon      | University of Auckland                                              |
| Professor Bruce McKenzie         | Lincoln University                                                  |
| Dr Tara McLaughlin               | Massey University                                                   |
| Professor Jim Metson             | University of Auckland                                              |
| Dr Karamia Muller                | University of Auckland                                              |
| Ben Ngaia                        | Te Wānanga o Aotearoa                                               |
| Professor Anne Noble             | Massey University                                                   |
| Dr Ashok Parbhu                  | Weltec Institute of Technology                                      |
| Professor Neil Quigley           | University of Waikato                                               |
| Professor Steven Ratuva          | University of Canterbury                                            |
| Dr John Reid                     | University of Canterbury                                            |
| Priyanka Roy                     | Victoria University of Wellington                                   |
| Anthony Scott                    | Science New Zealand                                                 |
| Dr Michael Shone                 | Ara Institute of Canterbury                                         |
| Assoc. Professor Jonathan Sibley | Eastern Institute of Technology                                     |
| Dr Naomi Simmonds                | Te Whare Wānanga o Awanuiārangi                                     |
| Professor Hamish Spencer         | University of Otago/Ministry of Business, Innovation and Employment |
| Professor Jan Thomas             | Massey University                                                   |
| Seuta'afili Dr Patrick Thomsen   | University of Auckland                                              |
| Chris Whelan                     | Universities New Zealand                                            |
| Shar Williams                    | Te Wānanga o Aotearoa                                               |
| Dr Scott Wilson                  | Unitec Institute of Technology                                      |
| Tumuarāmātauranga Nepia Winiata  | Te Wānanga o Aotearoa                                               |
| Professor Ian Wright             | University of Canterbury                                            |

## ■ Submissions

The panel received 50 submissions from organisations and individual researchers or groups of researchers. The distribution of submissions by type is presented in Table 8.

**TABLE 8: COUNT OF SUBMISSIONS BY SUBMITTER TYPE**

| Type                                               | Submissions (no.) |
|----------------------------------------------------|-------------------|
| Individuals or groups of researchers               | 19                |
| Universities (including units/departments thereof) | 14                |
| Institutes of Technology and Polytechnics          | 6                 |
| CRIs                                               | 1                 |
| Other Crown entities                               | 1                 |
| Peak bodies (including committees thereof)         | 3                 |
| Other organisations                                | 6                 |
| Total                                              | 50                |

The organisations from which submissions were received as set out in Table 9. Nineteen submissions were received from individual researchers who we have not identified.

**TABLE 9: LIST OF SUBMITTING ORGANISATIONS**

### Institute of Technology and Polytechnics

Ara Institute of Canterbury

Eastern Institute of Technology | Te Aho a Māui

Otago Polytechnic | Te Kura Matatini ki Otago

Toi-Ohomai Institute of Technology

Universal College of Learning | Te Pāe Mātauranga Ki Te Ao

Waikato Institute of Technology | Te Kuratini o Waikato

### Universities

Auckland University of Technology | Te Wānanga Aronui o Tāmaki Makau Rau

Lincoln University | Te Whare Wānaka o Aoraki

Massey University | Te Kunenga Ki Pūrehuroa  
– College of Creative Arts Toi Rauwharangi

The University of Auckland | Te Whare Wānanga o Tāmaki Makaurau  
– Planning and Information Office  
– Faculty of Arts

The University of Canterbury | Te Whare Wānanga o Waitaha  
– Library

The University of Otago | Te Whare Wānanga o Otago  
– Department of Public Health (Wellington)  
– Division of Health Sciences

---

The University of Waikato | Te Whare Wānanga o Waikato

---

Victoria University of Wellington | Te Herenga Waka

---

**Crown Research Institute**

---

Callaghan Innovation

---

**Other Crown entity**

---

Environmental Protection Authority | Te Mana Rauhi Taiao

---

**Peak bodies**

---

Universities New Zealand | Te Pōkai Tara

– Komiti Pasifika

---

Science New Zealand

---

**Other organisations**

---

Higher Education Research and Development Society of Australasia

---

Kiwinet

---

Otago University Students' Association

---

The Royal Society of New Zealand Te Apārangi

---

Tertiary Education Union | Te Hautū Kahurangi

---

The Mind Lab

---

## ■ Supporting presentations

The panel received the presentations and reports set out in **Table 10**.

**TABLE 10: SUPPORTING REPORTS AND PRESENTATIONS**

| Topic                                                                                                            | Type         | Source                                          |
|------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------------------------|
| Research, Science and Innovation Strategy                                                                        | Presentation | Ministry of Business, Innovation and Employment |
| New Zealand Research Information System                                                                          | Presentation | Ministry of Business, Innovation and Employment |
| Tertiary Education Strategy                                                                                      | Report       | Ministry of Education                           |
| PBRF Review Submissions Analysis                                                                                 | Report       | Ministry of Education                           |
| PBRF Review Submissions Analysis                                                                                 | Report       | Ministry of Education                           |
| PBRF demographic data                                                                                            | Presentation | TEC                                             |
| Quality Evaluation results                                                                                       | Presentation | TEC                                             |
| Terms of Reference Issue Paper One, Revisiting the Objectives of the PBRF                                        | Issues paper | Ministry of Education                           |
| Terms of Reference Issue Paper Two, Minimising Transaction Costs of the PBRF                                     | Issues paper | Ministry of Education                           |
| Terms of Reference Issue Paper Three, Recognising and rewarding all types of research activity                   | Issues paper | Ministry of Education                           |
| Terms of Reference Issue Paper Four, Sustainable and diverse workforce with investigator-led research capability | Issues paper | Ministry of Education                           |
| Terms of Reference Issue Paper Five, Boosting Impact of Research                                                 | Issues paper | Ministry of Education                           |
| Terms of Reference Issue Paper Six, Improving Research Collaboration                                             | Issues paper | Ministry of Education                           |
| Modelling of funding weighting options                                                                           | Report       | Independent support person                      |
| Demographic analysis                                                                                             | Report       | Independent support person                      |
| Funding analysis                                                                                                 | Report       | Ministry of Education                           |

## ■ Other literature

A list of the literature considered by the panel is set out in the *Bibliography* section of this report.

# Appendix D: Contribution to the Research Environment

Contribution types to be retained and amended through consultation with the sector

| Category                                   | Examples                                                                                                                                                                                                                                                                       |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Research Discipline and Environment        | Leadership roles or contributions within the discipline and/or institution                                                                                                                                                                                                     |
| Facilitation, Networking and Collaboration | Major roles in conferences<br>Leadership or contributions to research networks<br>Hosting international visitors<br>Major roles in Professional or Industry groups/Consortia                                                                                                   |
| Outreach and Engagement                    | Leadership or contributions to outreach and engagement activities<br>Development and maintenance of deep, sustained and enduring partnerships outside of institutions, particularly with the community, iwi and industry<br>Prominent role in critic and conscience activities |
| Research and Funding Support               | Track record of securing contestable grants                                                                                                                                                                                                                                    |
| Prizes, Fellowships and Awards             | Significant, externally validated, awards relative to the career stage of staff                                                                                                                                                                                                |
| Researcher Development                     | Track record of successful mentoring of junior colleagues, particularly in relation to historically underrepresented groups<br>Successful initiatives to support new and emerging/early career researchers                                                                     |
| Reviewing and Refereeing                   | Major roles in funding, advisory, promotions, tenure committees<br>Specialist advisory roles to institutions, governments, international bodies                                                                                                                                |
| Student Factors                            | Track record of student success, particularly in relation to historically underrepresented groups                                                                                                                                                                              |
| Uptake and Impact                          | Leadership roles or contributions to research dissemination outside academia<br>Leadership roles or contributions to developing institutional capacity to support uptake and impact<br>Entrepreneurial success                                                                 |
| Māori Research Contributions               | Leadership in or contributions to undertaking and supporting research with Māori communities<br>Institutional leadership in or contributions to developing relative cultural capacity relating to research                                                                     |
| Pacific Research Contributions             | Leadership in or contributions to undertaking and supporting research with Pacific communities<br>Institutional leadership in or contributions to developing relative cultural capacity relating to research                                                                   |

Note: It is recognised that contributions will be commensurate with the expectations of the staff member's role and career stage.

The following contribution types should be discontinued: Invitations to Present (removed as all are examples of peer esteem and can be added to Examples of Research Excellence); Other Evidence (Removed as all are examples of peer esteem); and Recognition of Research Outputs (removed as all are examples of peer esteem).

# Bibliography

- Adams, J., 2008. *Strategic review of the Performance-based Research Fund – the assessment process*, Leeds: Evidence.
- ARC, 2018. *ARC Research Opportunity and Performance Evidence (ROPE) Statement*, Canberra: Australian Research Council.
- Ardern, R. H. J., 2018. *Progressive and inclusive growth – sharing the benefits: Address to the Friedrich Ebert Foundation*. Berlin: New Zealand Government.
- Arnold, E. et al., 2018. *Review of the Research Excellence Framework – Evidence Report*, Brighton: Technopolis.
- Asirvatham, S. & Humphries, M., 2019. “Changing agents of change in neoliberally framed organizations”. *Gender in Management: An International Journal*, 34(1), pp. 45-58.
- AUT, 2019. *AUT Code of Conduct for Research*, Auckland: Auckland University of Technology.
- AWIS, 2011. *Women in science: A 2011 snapshot*, Wellington: Association for Women in Science.
- Bishop, R., Berryman, M., Cavanagh, T. & Teddy, L., 2009. Te Kotahitanga: Addressing educational disparities facing Māori students in New Zealand. *Teaching and Teacher Education*, pp. 1-9.
- Boston, J., 2019. *The future of the Performance-Based Research Fund – Lessons from the UK and elsewhere, and options for reform*, s.l.: Unpublished paper.
- Boyd, S. & Wylie, C., 1994. *Workload and stress in New Zealand universities*, Wellington: New Zealand Council for Educational Research.
- Brower, A. & James, A., 2020. Research performance and age explain less than half of the gender pay gap in New Zealand universities. *PLoS ONE*, 15(1).
- Brower, A., Menclova, Andrea & Webb, R., 2017. *Is the relationship between research grade and academic rank different for men than for women in New Zealand universities?*, Christchurch: Lincoln University.
- Buckle, R. & Creedy, J., 2017. *An evaluation of metrics used by the Performance-based Research Fund process in New Zealand*, Wellington: Victoria University of Wellington.
- Buckle, R. & Creedy, J., 2018. The Impact on Research Quality of Performance-Based Funding: The Case of New Zealand’s PBRF Scheme. *Agenda – A Journal of Policy Analysis and Reform*, Issue 25, pp. 25-48.
- Buckle, R. & Creedy, J., 2019. The ‘disciplinary effect’ of the performance-based research fund process in New Zealand. *New Zealand Economic Papers*.
- Budden, A. et al., 2008. Double-blind review favours increased representation of female authors. *Trends in ecology and evolution*, 23(1), pp. 4-6.
- Campion, M., 1991. Meaning and Measurement of Turnover: Comparison of Alternative Measures and Recommendations for Research. *Journal of Applied Psychology*, 76(2), pp. 199-212.
- Caplar, N., Tacchella, S. & Birrer, S., 2017. Quantitative evaluation of gender bias in astronomical publications from citation counts. *Nat Astron*.
- Cole, A. O., 2019. *Special issue on engaging with hapū (part 2/7) – Can literature review method be used as an instrument of Māori knowledge development?*, Tauranga: Kōrero Māori report 16.
- Crimms, G., 2018. The double life of a casual academic. In: A. Black & S. Garvis, eds. *Lived Experiences of Women in Academia: Metaphors, Manifestos and Memoir*. New York: Routledge.

- Cullen, H. M., 2006. *Budget speech, 18 May 2006*, Wellington: New Zealand Government.
- Davis, H. K. & Hipkins, H. C., 2019. *Progress made in Te Wānanga o Raukawa and Crown relationship*, Wellington: New Zealand Government.
- Durie, M., 2009. *Towards social cohesion: The indigenisation of higher education in New Zealand*, Kuala Lumpur: Vice-Chancellors Forum.
- EAP, 2013. *Proposal for tertiary education sector consultation – Design of PBRF Quality Evaluation 2013*, Wellington: Unpublished report of the PBRF External Advisory Panel – PBRF and CoREs Review.
- Edgar, F. & Geare, A., 2010. Characteristics of High- and Low-performing University Departments as Assessed by the New Zealand Performance Based Research Funding (PBRF) Exercise. *Australian Accounting Review*, 20(1).
- Edwards, S., 2009. *Titiro Whakakuri Kia Marama Ai Te Wao Nei: Whakapapa Epistemologies and Maniapoto Māori Cultural Identities*, Palmerston North: Massey University.
- Farrar, D., 2012. *TEC moves on PBRF reporting*, s.l.: Kiwiblog.
- Farrar, D., 2013. *Quantity or quality reporting?*, s.l.: Kiwiblog.
- Freeman, R. & Huang, W., 2014. *Collaborating with people like me: Ethnic co-authorship within the US*, Cambridge, MA: NBER.
- Ginther, D. et al., 2011. *Race, Ethnicity, and NIH Research Awards*, Washington, DC: American Association for the Advancement of Science.
- Harland, T. & Wald, N., 2017. Vanilla teaching as a rational choice: the impact of research and compliance on teacher development. *Teaching in Higher Education*, pp. 1-16.
- He, Z., Geng, X. & Campbell-Hunt, C., 2009. Research collaboration and research output: A longitudinal study of 65 biomedical scientists in a New Zealand university. *Research Policy*, 38(2), pp. 306-317.
- HRC, 2010. *Guidelines for researchers on health research involving Māori*, Auckland: Health Research Council.
- James, Alex; Chisnall, Rose; Plank, Michael, 2019. Gender and societies: a grassroots approach to women in science. *Royal Society Open Science*.
- James, A., Brower, A., Plank, M. & Chisnall, R., 2019. *Gender and PBRF*, University of Auckland: Te Pūnaha Matatini.
- Johnsen, M., 2019. *Te Wānanga o Raukawa receives one-off \$10m grant*, Wellington: RNZ.
- Jonkers, K. & Zacharewicz, T., 2016. *Research Performance Based Funding Systems: a Comparative Assessment*, Luxembourg: Publications Office of the European Union.
- Joyce, H. S., 2013. *Cabinet paper: Improving the efficiency and effectiveness of the Performance-based Research Fund*, Wellington: New Zealand Government.
- Joyce, H. S., 2013. *PBRF helps TEOs boost research quality*, Wellington: New Zealand Government.
- Kidman, J. & Chu, C., 2019. We're not the hottest ethnicity': Pacific scholars and the cultural politics of New Zealand universities. *Globalisation, Societies and Education*, Issue 4.
- Kidman, J., Chu, C., Fernandez, S. & Abella, I., 2015. *Māori Scholars and the University*, Wellington: Ngā Pae o te Māramatanga.
- Kolarz, P. et al., 2019b. *International landscape study of research and innovation systems – Annex report – Country profiles*, Bristol: Technopolis.
- Kolarz, P. et al., 2019. *International landscape study of research and innovation systems*, Brighton: Technopolis.
- LawsonWilliams, 2018. *New Zealand Staff Turnover Summary Survey Report 2018*, Auckland: LawsonWilliams.
- Marriott, L. S. D., 2015. Indicators of Inequality for Māori and Pacific People. *Journal of New Zealand Studies*, Volume NS20, pp. 24-50.

- Massey University, 2017. *Code of ethical conduct for Research, Teaching and Evaluations involving human participants*, Palmerston North: Massey University.
- MBIE, 2018. *Research, Science and Innovation System Performance Report 2018*, Wellington: New Zealand Government.
- MBIE, 2019. *MBIE Diversity in Science Statement*, Wellington: New Zealand Government.
- MBIE, 2019. *Research, Science and Innovation Strategy – Draft for consultation*, Wellington: New Zealand Government.
- McAllister, T., Kidman, J., Rowley, O. & Theodore, R., 2019. Why isn't my professor Māori?. *MAI Journal*, 8(2), pp. 235-249.
- Middleton, S., 2005. *Disciplining the subject of 'Education: Research Assessment, teacher educators, and professional identity.*. Dublin, Paper presented at the European Conference on Educational Research.
- Mobley, W. H., Griffeth, R. W., Hand, H. H. & Meglino, B. M., 1979. Review and conceptual analysis of the employee turnover process. *Psychological bulletin*, 86(3), p. 493.
- MoE, 2002. *Investing in Excellence – The Report of the Performance-based Research Fund Working Group*, Wellington: Ministry of Education and Transition Tertiary Education Commission.
- MoE, 2013. *Transaction costs associated with the Performance-Based Research Fund*, Wellington: Ministry of Education.
- MoE, 2017. *Profile and Trends New Zealand's Tertiary Education Research 2016*, Wellington: New Zealand Government.
- MoE, 2018a. *Research degree completion rates*, Wellington: Ministry of Education.
- MoE, 2018. *Financial resources*, Wellington: New Zealand Government.
- MoE, 2019. *A unified system for all vocational education*, Wellington: Ministry of Education.
- Monash, 2019. *Achievement relative to opportunity*, Melbourne: Monash University.
- Moorfield, J., 2005. *Te Aka: Māori-English, English Māori Dictionary*, Auckland: Pearson New Zealand.
- MoRST, 2007. *Vision Matauranga: Unlocking the innovation potential of Māori knowledge, resources and people*, Wellington: New Zealand Government.
- Naepi, S., 2019. Why isn't my professor Pasifika? A snapshot of the academic workforce in New Zealand universities. *MAI Journal*, 8(2), pp. 219-234.
- Naepi, S. et al., 2019. *The Pakaru 'Pipeline': Māori and Pasifika pathways within the academy*, s.l.: Unpublished report.
- Narayan, A. K., 2019. The development and use of performance measures in New Zealand tertiary education institutions. *Accounting History*, Volume 18 April 2019.
- Neilsen, B., 2019. *Reviewing Performance Funding in the Tertiary Education Sector*, Wellington: Tertiary Education Union.
- New Zealand Treasury, 2018. *The Treasury Approach to the Living Standards Framework*. Wellington: New Zealand Government.
- Nielsen, M. et al., 2017. Opinion: Gender diversity leads to better science. *PNAS*, pp. 1740-1742.
- Nislev, E. & Cain, M., 2018. Playing in the corridors of academia. In: A. Black & S. Garvis, eds. *Lived experiences of women in academia*. London: Routledge.
- NZ Government, 2019. *Economic Plan for a productive, sustainable and inclusive economy*, Wellington: New Zealand Government.
- NZPC, 2017. *New models of tertiary education*, Wellington: New Zealand Government.
- Parliamentary Counsel Office, 2019. *Education Act 1989*, Wellington: New Zealand Government.
- Patterson, S. E., 2018. *Beyond the Dusky Maiden: Pasifika women's experiences working in higher education*, Vancouver: University of British Columbia.

- Peters, D. & Ceci, S., 1980. A manuscript masquerade: How well does the review process work?. *The Sciences*, Volume September.
- Phipps, D. J., J. M. & Wedlock, J., 2015. An institutional process for brokering community-campus research collaborations. *Engaged Scholar Journal*, 1(1), pp. 69-86.
- Pignata, S., Winefield, A., Provis, C. & Boyd, C., 2016. Awareness of Stress-Reduction Interventions on Work Attitudes: The Impact of Tenure and Staff Group in Australian Universities. *Frontiers in Psychology*, Issue 18 August 2016.
- Puawai Collective, 2019. Assembling disruptive practice in the neoliberal university: an ethics of care. *Human Geography*, 101(1), pp. 33-43.
- REF, 2019. *Guidance on submissions (2019/01)*, Bristol: REF 2021.
- Rigby, J. & Edler, J., 2005. Peering inside research networks: Some observations on the effect of the intensity of collaboration on the variability of research quality. *Research Policy*, 34(6), pp. 784-794.
- Roa, T., Begg, J., Williams, J. & Moller, H., 2009. New Zealand's Performance Based Research Funding (PBRF) model undermines Māori research. *Journal of the Royal Society of New Zealand*, 39(4), pp. 233-238.
- Robertson, G., 2019. *Minister of Finance Wellbeing Budget speech*. Wellington: New Zealand Government.
- RSNZ, 2018. *2019 guidelines for Council and panel members*, Wellington: Royal Society of New Zealand Te Aparangi.
- Ruth, D., Wilson, S., Alakavuklar, O. & Dickson, A., 2018. Anxious academics: talking back to the audit culture through collegial, critical and creative autoethnography. *Culture and organisation*, 24(2), pp. 154-170.
- Smart, W., 2013. *An analysis of collaborative journal article authorship at New Zealand universities*, Wellington: Ministry of Education.
- Smart, W., 2019. *Government funding for research-led teaching and research performance – An analysis of PBRF and research top-ups funding allocations*, Wellington: Ministry of Education.
- Smart, W. & Engler, R., 2013. *In pursuit of excellence: Analysing the results of New Zealand's PBRF Quality Evaluation*, Wellington: Ministry of Education.
- Smith, A., 2008. *Benchmarking Google Scholar with the New Zealand PBRF research assessment exercise*, Wellington: Victoria University of Wellington.
- Smith, L. T., Maxwell, T. K., Puke, H. & Temara, P., 2016. Indigenous knowledge, methodology and mayhem: What is the role of methodology in producing indigenous insights? A discussion from Mātauranga Māori. *Knowledge Cultures*, 4(3), pp. 131-156.
- Sommer, J., 2010. 2008 Survey of New Zealand scientists and technologists. *New Zealand Science Review*, 67(1).
- StatsNZ, 2014. *2013 QuickStats About culture and identity*, Wellington: Statistics New Zealand.
- StatsNZ, 2019. *Highest qualification and ethnic group (grouped total responses) by age group, for the census usually resident population count aged 15 years and over, 2013 Census (RC, TA, AU)*, Wellington: Statistics New Zealand.
- StatsNZ, 2019. *Infoshare – Linked Employer-Employee Dataset – LED: Table: Sex and LEED ANZSIC06 Level 1 (2-way) (Qrtly-Mar/Jun/Sep/Dec)*, Wellington: Statistics New Zealand.
- Stern, N., 2016. *Building on success and learning from experience: An independent review of the Research Excellence Framework*, Bristol: HEFCE.
- Subramanyam, K., 1983. Bibliometric studies of research collaboration: A review. *Journal of Information Science*, 6(1), pp. 33-38.
- Sutherland, K. & Petersen, L., 2009. *The success and impact of early career academics in two New Zealand tertiary institutions*, Wellington: Ako Aotearoa.

- Sutherland, M. & Hall, K. A., 2017. He pī, ka rere: Māori Early Career Academics in New Zealand Universities. In: *Early Career Academics in New Zealand: Challenges and Prospects in Comparative Perspective. The Changing Academy – The Changing Academic Profession in International Comparative Perspective*. Cham: Springer, pp. 137-156.
- Tamblyn, R., Girard, N., Qian, C. J. & Hanley, J., 2018. Assessment of potential bias in research grant peer review in Canada. *CMAJ*, 190(16), pp. 489-499.
- Taonui, R., 2006. *Ranginui – the sky – The family of light*, s.l.: Te Ara – the Encyclopedia of New Zealand.
- Te Pūnaha Matatini, 2019. *Equity, diversity, access, and inclusion*, Auckland: The University of Auckland.
- TEC, 2004. *Performance-based Research Fund – Evaluating Research Excellence: the 2003 assessment*, Wellington: Tertiary Education Commission.
- TEC, 2013a. *Performance-based Research Fund – Quality Evaluation Guidelines 2012*, Wellington: Tertiary Education Commission.
- TEC, 2013. *Performance-based Research Fund: Evaluating research excellence – the 2012 assessment – Final Report*, Wellington: Tertiary Education Commission.
- TEC, 2014. *PBRF – Measuring research degree completions – Definitions and rules Version 3.3*, Wellington: Tertiary Education Commission.
- TEC, 2016a. *Guidelines for tertiary education organisations participating in the 2018 Quality Evaluation*, Wellington: Tertiary Education Commission.
- TEC, 2016b. *PBRF User Manual*, Wellington: Tertiary Education Commission.
- TEC, 2016. *Performance-based Research Fund: Panel-specific guidelines for the 2018 Quality Evaluation*, Wellington: Tertiary Education Commission.
- TEC, 2017. *Allocations for the 2017 Performance-based Research Fund*, Wellington: Tertiary Education Commission.
- TEC, 2018. *Allocations for the 2017 Performance-based Research Fund*, Wellington: Tertiary Education Commission.
- TEC, 2019a. *PBRF Quality Evaluation Results*, Wellington: Tertiary Education Commission.
- TEC, 2019b. *Report of the Moderation and Peer-Review Panels: PBRF 2018 Quality Evaluation*, Wellington: Tertiary Education Commission.
- TEC, 2019c. *Research demographics*, Wellington: Tertiary Education Commission.
- TEC, 2019d. *Administrative data – 2018 Quality Evaluation*, Wellington: Tertiary Education Commission.
- TEC, 2019e. *Diversity of the research workforce*, Wellington: Tertiary Education Commission.
- TEC, 2019f. *Previous Quality Evaluation rounds*, Wellington: Tertiary Education Commission.
- TEC, 2019g. *SRG consultation papers*, Wellington: Tertiary Education Commission.
- TEC, 2019h. *Research dissemination*, Wellington: Tertiary Education Commission.
- TEC, 2019i. *Author distribution*, Wellington: Tertiary Education Commission.
- TEC, 2019j. *Improving research quality – The results of the PBRF 2018 Quality Evaluation*, Wellington: Tertiary Education Commission.
- TEC, 2019k. *Researcher collaboration*, Wellington: Tertiary Education Commission.
- TEC, 2019l. *Unpublished analysis of extraordinary circumstances claims*, s.l.: s.n.
- TEC, 2019m. *TEC Annual Report 2017/18*, Wellington: Tertiary Education Commission.
- TEU, 2019. *The state of the public tertiary education sector survey, 2018*, Wellington: Tertiary Education Union.

- Thomas, A. et al., 2019. Tensions in the 'tent': Civic engagement in Aotearoa New Zealand universities. *Power and Education*, 11(1), pp. 96-110.
- UNSW, 2019. *Application of achievement relative to opportunity and performance evidence in academic promotions*, Sydney: University of New South Wales.
- UoA, 2019. *Merit Relative to Opportunity Policy and Procedures*, Auckland: The University of Auckland.
- UoC, 2019. *Research Conduct Policy*, Christchurch: University of Canterbury.
- UoO, 2010. *Research consultation with Māori Policy*, Dunedin: University of Otago.
- Waitangi Tribunal, 1999. *The Wananga Capital Establishment Report*, Wellington: GP Publications.
- Weale, S., 2019. *Higher education staff suffer 'epidemic' of poor mental health*, s.l.: The Guardian.
- WebResearch, 2004. *Phase 1 Evaluation of the implementation of the PBRF and the conduct of the 2003 Quality Evaluation*, Wellington: Centre for Research on Work, Education and Business Limited.
- Wensvoort, M., 2011. *Achievement in formal tertiary education*, Wellington: Ministry of Education.
- Woelert, P. & McKenzie, L., 2018. Follow the money? How Australian universities replicate national performance-based funding mechanisms. *Research Evaluation*, 27(3), pp. 184-195.
- Zacharewicz, T., Lepori, B., Reale, E. & Jonkers, K., 2019. Performance-based research funding in EU Member States—a comparative assessment. *Science and Public Policy*, 46(1), pp. 105-115.

# Glossary

---

## ■ Acronyms

| Acronym/term | Description                                     |
|--------------|-------------------------------------------------|
| FTE          | Full-time equivalent                            |
| MBIE         | Ministry of Business, Innovation and Employment |
| MOE          | Ministry of Education                           |
| NZRIS        | New Zealand Research Information System         |
| PBRF         | Performance-based Research Fund                 |
| TEC          | Tertiary Education Commission                   |
| TEO          | Tertiary Education Organisation                 |

## ■ Selected terms and their meaning

| Acronym/term              | Description                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Evidence Portfolios       | Evidence Portfolios are summations of the research outputs and contributions of staff                                                                                                 |
| Nominated Research Output | Nominated Research Outputs are the up to four highest quality outputs (such as journal articles, performances or patents) that a researcher has produced over the preceding six years |
| Quality Category          | Quality Categories are assigned to evidence portfolios by peer review panels. Each quality category denotes different degrees of research excellence.                                 |

