

PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Australian Government Funding Arrangements for non-NHMRC Research

House of Representatives Standing Committee on Employment, Education and
Training

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Chair's Foreword

Australia enjoys a reputation for producing world class research. Australian researchers have contributed to significant discovery and development including WiFi, GPS and the cochlear implant.

The Australian Government supports research through a range of funding mechanisms. For universities, research funding is primarily administered through competitive grants and research block grants; the former comprising an application and assessment process based on merit and peer review.

The context of the inquiry was that researchers spend significant time, effort and resources applying for research funding. With low success rates, it is often implied that this time and effort is wasted.

Cognisant of reforms already underway in the Australian research sector, the Committee sought to examine ways to simplify application and assessment processes, particularly for university researchers.

This report makes 15 recommendations designed to streamline and improve research funding arrangements.

Four fundamental elements underpin the Committee's recommendations. The first is to reduce the voluminous amount of information currently provided in support of grant funding applications. The second is to make use of existing data and information pertaining to researchers and research institutions. The third is to provide as much document uniformity as possible across the research funding schemes. And the fourth is to level the playing field for under-represented research groups. This includes early and mid-career researchers, women, minority groups, Indigenous researchers and rural and regional universities.

The key recommendation of the Committee is that a central online research management system be introduced for all Commonwealth grant programs. To maximise the efficiency of this system, it is recommended the system be linked to

existing data sources to prepopulate information where available. In addition, the Committee recommends the introduction of a two-stage application process which emphasises the strength and merit of research ideas. Ancillary information unlikely to impact project ranking need only be submitted by successful applicants.

Improving research funding arrangements is as much about supporting the next generation of Australian researchers as it is making the current funding processes easier to access and navigate. Early and mid-career researchers are the future of Australia's knowledge base. It is imperative that these researchers can be competitive in the funding environment. The Committee considers the range of strategies put forward in this report will go a long way to better support and develop the research capacity of this cohort.

As a final note, I would like to acknowledge the opportunities for Australian researchers to contribute to more global research endeavours. Whether that be through international partnerships or international mobility, there are ways in which our researchers can be better supported in the international arena. While this issue was beyond the scope of the Committee's inquiry, it is worth highlighting the potential for greater international collaboration and contribution arising from better coordination and alignment of our research funding arrangements. This includes more strategic investment in this area.

The Committee is grateful to all the universities, research providers, government agencies and other stakeholders who contributed to this inquiry. The time spent preparing submissions and appearing at public hearings is not lost on the Committee.

Mr Andrew Laming MP
Chair

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Members

Chair

Mr Andrew Laming MP Bowman, QLD

Deputy Chair

Ms Susan Lamb MP (*from 12.09.2018*) Longman, QLD

Ms Terri Butler MP (*to 10.09.2018*) Griffith, QLD

Members

Ms Terri Butler MP (*to 10.09.2018; from 12.09.2018*) Griffith, QLD

Mr Trevor Evans MP Brisbane, QLD

Mr Jason Falinski MP Mackellar, NSW

Mr Andrew Giles MP (*from 21.5.2018; to 12.09.2018*) Scullin, Vic

Ms Susan Lamb MP (*to 10.05.2018*) Longman, QLD

Hon Brendan O'Connor MP Gorton, VIC

Mr Ken O'Dowd MP Flynn, QLD

Ms Rebekha Sharkie MP (*to 11.05.2018; from 14.08.2018*) Mayo, SA

Mrs Ann Sudmalis MP Gilmore, NSW

Mr Andrew Wallace MP Fisher, QLD

Terms of Reference

The House Standing Committee on Employment, Education and Training will inquire into and report on the efficiency, effectiveness and coherency of Australian Government funding for research, in the following terms:

- 1 The diversity, fragmentation and efficiency of research investment across the Australian Government, including the range of programs, guidelines and methods of assessment of grants;
- 2 The process and administrative role undertaken by research institutions, in particular universities, in developing and managing applications for research funding;
- 3 The effectiveness and efficiency of operating a dual funding system for university research, namely competitive grants and performance-based block grants to cover systemic costs of research; and
- 4 Opportunities to maximise the impact of funding by ensuring optimal simplicity and efficiency for researchers and research institutions while prioritising delivery of national priorities and public benefit.

This inquiry will be focused on federally funded research agencies, their funding mechanisms and university collaborative research. The inquiry will not consider the National Health and Medical Research Council, nor non-federal research funding.

Abbreviations

AAH	Australian Academy of the Humanities
AAP	Australian Association of Philosophy
AAHMS	Australian Academy of Health and Medical Sciences
AAMRI	Association of Australian Medical Research Institutes
ACGR	Australian Competitive Grants Register
ACT	Australian Capital Territory
ANSTO	Australian Nuclear Science and Technology Organisation
ANU	Australian National University
AOASG	Australasian Open Access Strategy Group
ARC	Australian Research Council
CAPA	Council of Australian Postgraduate Associations
CAPHIA	Council of Academic Public Health Institutions Australasia
CAUL	Council of Australian University Librarians
CORDIS	Community Research and Development Information Service
CRC	Cooperative Research Centre
CRN	Collaborative Research Network
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DECRA	Discovery Early Career Researcher Award
DFG	German Research Foundation (Deutsche Forschungsgemeinschaft)
EIA	Engagement and Impact Assessment

EIF	Education Investment Fund
EMCR	Early and Mid-Career Researcher
EOI	Expression of Interest
ERA	Excellence in Research Australia
EU	European Union
GDP	Gross Domestic Product
GERD	Gross Expenditure on Research and Development
GPS	Global Positioning System
GRDC	Grains Research and Development Corporation
HASS	Humanities and Social Sciences
MRFF	Medical Research Future Fund
MRI	Medical Research Institute
NCGP	National Competitive Grants Program
NHMRC	National Health and Medical Research Council
NSW	New South Wales
NTEU	National Tertiary Education Union
OECD	Organisation for Economic Cooperation and Development
ORCID	Open Researcher and Contributor ID
PFRA	Publicly Funded Research Agency
R&D	Research and Development
RMS	Research Management System
ROPE	Research Opportunity and Performance Evidence
SAGE	Science in Australia Gender Equity
SEER	System to Evaluate Excellence of Research
STEM	Science, Technology, Engineering and Mathematics
SWAN	Scientific Women's Academic Network
TAFE	Technical and Further Education
UK	United Kingdom
UN	United Nations

US	United States
QUT	Queensland University of Technology
QIMR	Queensland Institute of Medical Research

List of Recommendations

Recommendation 1

3.56 To reduce the administrative burden on research agencies and streamline grant funding processes, comprehensive reform is needed across three key areas—research management, application and assessment, and grant funding documentation. In particular, the Committee recommends:

Single online research management system

- the introduction of a single whole-of-government online system for all Commonwealth grant applications and post award management; and
- that, where possible, this online system link to existing systems and databases, such as ORCID (Open Researcher and Contributor ID), to prepopulate necessary data fields.

Two-stage application process

- a two-stage grant application process be introduced across Commonwealth funding schemes to reduce the amount of information provided in support of applications; comprising:
 - Stage one: a competitive component including an expression of interest designed to give weight to the research proposal, and prepopulated information regarding track record and research capacity; and
 - Stage two: a non-competitive component for successful stage one applicants to provide a full proposal and budget.

Grant funding documentation

- that only information and documentation that will inform a decision be provided across grant funding schemes; and
- the standardisation of grant funding documentation, including application forms, guidelines and contracts, across the Commonwealth.

Recommendation 2

- 3.57 The Committee recommends that the Australian Government introduce a risk-based approach to post award variations that would allow universities to make minor or simple variations without seeking approval from funding agencies.

Recommendation 3

- 3.58 The Committee recommends that grant funding be available to support smaller scale research projects across disciplines.

Recommendation 4

- 3.77 The Committee recommends that the peer review system be maintained to support competitive grant funding in Australia.
- 3.78 The Committee recommends that the peer review process be strengthened by:
- providing detailed information and constructive feedback to unsuccessful applicants; and
 - ensuring that the training of peer reviewers is of the highest standard.

Recommendation 5

- 3.89 The Committee recommends that the administration of research block grants be reviewed to provide more timely and adequate support for the indirect costs of research.

Recommendation 6

3.103 The Committee recommends equitable access to and open competition for all research providers, including TAFE, regardless of their links to or partnerships with universities to ensure that research is assessed on merit.

Recommendation 7

4.38 The Committee recommends targeted support for early and mid-career researchers (EMCRs). This support should include but not be limited to:

- reweighting of criteria and metrics for EMCRs to reflect career stages of researchers, and favour the strength of the research proposal rather than track record;
- awarding more points to proposals that include EMCRs;
- reform of specific grants and fellowships to better support EMCRs; and
- where post award budgetary constraints impact on research projects, that EMCRs are not removed from projects, and continue to be supported.

Recommendation 8

4.39 The Committee recognises the importance of under-represented groups. It recommends that:

- peer reviewers are mindful of under-represented groups including EMCRs, Indigenous researchers, women, minority groups and rural and regional universities; and
- funding agencies monitor and report annually on grant funding success rates for under-represented groups.

Recommendation 9

- 4.47 The Committee recommends the introduction of mechanisms to better support interdisciplinary research. This includes:
- clearer guidelines on the type of research to be supported by each scheme;
 - the establishment of a point of contact or panel to assist researchers determine which funding scheme will support interdisciplinary research; and
 - stronger consideration of interdisciplinary research as an important field to be supported and accommodated.

Recommendation 10

- 4.58 The Committee recommends that the Australian Government explore the feasibility of a public portal—similar to that adopted by the European Commission—to facilitate partnerships between research institutions, industry, and other strategic partners.
- 4.59 The Committee recommends that any feasibility study be undertaken in consultation with the research sector to identify and manage any potential risks.

Recommendation 11

- 4.67 The Committee recommends closer examination of models, strategies and incentives, including those used internationally, to increase industry collaboration with universities and other publicly funded research institutions.
- 4.68 The Committee recommends the Australian Government consider this issue for a future parliamentary inquiry.

Recommendation 12

- 5.18 The Committee recommends that the Australian Government develop a more strategic approach to Australia's open scholarship environment.

Recommendation 13

5.27 The Committee recommends that the Excellence in Research for Australia (ERA) and Engagement and Impact Assessment (EIA) programs be reviewed to consider ways to reduce the cost and administrative burden on universities. In particular, the Committee recommends:

- universities no longer be required to provide any information or data that is already available; and
- in recognition of the amount of data already in the public domain and the labour-intensive nature of the ERA and EIA, that the timing of the data collection be reduced from three to five years.

Recommendation 14

5.70 The Committee recommends the Australian Government provide greater oversight and coordination of Australia's research investment. It recommends a broader strategic review of Australia's research and development investment to identify key research priorities, better coordinate national and international research efforts, and ensure adequate investment across the research pipeline.

5.71 The Committee recommends consideration be given to the establishment of a future or translation fund for non-medical research.

Recommendation 15

5.72 Given the strength of Australia's research impact, the Committee recommends that the Australian Government consider investing and participating in international research funds such as Horizon Europe.

1. Introduction

- 1.1 This chapter provides the background to the Committee’s inquiry and sets out how the report is structured.

Background

- 1.2 On 9 May 2018, the House Standing Committee on Employment, Education and Training (the Committee) adopted an inquiry referred by the then Minister for Employment, Education and Training, Senator the Hon Simon Birmingham.¹ The Committee was asked to inquire into and report on the efficiency, effectiveness and coherency of Australian Government funding for research. The terms of reference for the inquiry can be found on page xi.

- 1.3 The context of the Committee’s inquiry was set out by Minister Birmingham:

For every successful application for competitive research funding, researchers and their partners in universities, industry and the wider community, must spend significant time, energy and resources to apply, whilst significant taxpayer infrastructure is used in assessment processes to ensure research meets the highest standards. Around 80 per cent of applications are unsuccessful.

The Committee is well placed to further Australia’s significant research achievements by assessing ways to simplify, streamline and improve funding arrangements.

¹ The letter of referral can be found on the Committee’s website. www.aph.gov.au/Parliamentary_Business/Committees/House/Employment_Education_and_Training/FundingResearch accessed 8 October 2018.

Setting the scope of the inquiry

- 1.4 The Committee acknowledges that the current system of Australian research funding is complex, involving a range of programs, open to a broad range of agencies and institutions, and characterised by different application processes.
- 1.5 In adopting the terms of reference, the Committee defined the scope of the inquiry, noting it would not examine the National Health and Medical Research Council (NHMRC) nor non-federally funded research. Rather, the Committee specified the inquiry would focus on federally funded research agencies, their funding mechanisms and university collaborative research.
- 1.6 The Committee was acutely aware of recent reviews into selected research funding arrangements and systems and sought to avoid revisiting reform already underway.² For example, the Committee acknowledges change within the research funding space arising from the:
- NHMRC’s structural review of its grant program³;
 - Australian Council of Learned Academies’ review of Australia’s research training system;
 - Miles Review of the Cooperative Research Centres Programme;
 - Watt review of research policy and funding arrangements; and
 - Research and development tax incentive announced in the 2018-2019 budget.⁴
- 1.7 The Committee also acknowledges the continuous and collaborative efforts of Commonwealth funding agencies to improve their research funding processes, reduce administrative burden for applicants, and ensure consistency where possible. For example, the Australian Research Council (ARC) told the Committee:

The ARC works closely with the National Health and Medical Research Council (NHMRC, Department of Health), the Cooperative Research Centres

² Some of these reviews include the *Performance Review of the Australian Innovation, Science and Research System*, Innovation and Science Australia (December 2016), *Structural Review of NHMRC’s Grant Program*, NHMRC (July 2016), and *Review of Research Policy and Funding Arrangements*, Dr Ian Watt (November 2015).

³ A new NHMRC grant program was announced in 2017 following a structural review. Funding under these new arrangements will commence in 2020.

⁴ Universities Australia, *Submission 27*, p. 9.

Program (Department of Industry) and other agencies across government to share best practice in research grant delivery, to ensure scheme timelines are staggered to minimise the impost on the sector and to facilitate a consistent approach to data collection.⁵

- 1.8 Given that some complex funding arrangements are currently undergoing reform, and new processes are being introduced across the research sector, the Committee was careful to avoid further duplication of efforts, or confuse stakeholders around research funding issues more broadly. It therefore sought to examine ways to streamline and simplify application and assessment processes, particularly for the university sector.
- 1.9 Specifically, the Committee sought to examine ways to reduce red tape, and to help reduce the time and effort spent by researchers applying for funding. By improving the administration of application and assessment processes, it is envisaged that researchers will have more time to conduct innovative and collaborative research. Research which ultimately drives Australia's economic and social prosperity, and reinforces our reputation for producing world-class research.

Research funding principles

- 1.10 A commitment to clearly defined research funding principles is fundamental to a healthy and robust funding system. Research funding principles should not only underpin how research funds are administered, but they should also guide future development of the system.
- 1.11 The Committee fully supports the principles succinctly articulated by the Academy of Science:

The Academy of Science supports a research funding environment that is fair and equitable, rigorous and transparent, strongly based on scientific merit and geared towards scientific excellence, accessible to researchers without undue administrative burden, stable enough to develop long-term research strengths, flexible enough to support innovative research pathways and sufficient to allow a research career to develop from PhD and early-career research through to research leaders. Continuity and a career for researchers are really important.⁶

⁵ Australian Research Council, *Submission 46*, p. 9.

⁶ Dr TJ Higgins, *Committee Hansard*, Canberra, 20 August 2018, p. 5.

1.12 Similar principles were promoted in other submissions to the inquiry.⁷

Inquiry process

1.13 The Committee called for written submissions when it announced its inquiry on 10 May 2018. In total, 97 submissions were received. A list of these submissions can be found at Appendix A.

1.14 Some submissions to the inquiry called for the Committee to give any recent changes to the research funding system time to be implemented and evaluated before introducing further change. The Committee is mindful that the impact of any new arrangements may not be known for some time.

Public hearings

1.15 The Committee held four public hearings for its inquiry. Table 1.1 lists the dates and locations of these hearings.

Table 1.1 Public hearing schedule.

Location	Date
Brisbane, Qld	30 July 2018
Melbourne, Vic	6 August 2018
Sydney, NSW	7 August 2018
Canberra, ACT	20 August 2018

Source: House Standing Committee on Employment, Education and Training.

1.16 For each public hearing, the Committee convened two roundtables. One roundtable was held for universities, and a second roundtable was held for other research organisations, institutions and associations. Transcripts for all public hearings can be found on the Committee's website.⁸

1.17 A list of witnesses who appeared at the roundtable discussions can be found at Appendix B.

⁷ For example Universities Australia, *Submission 27*, pp. 1-2 and University of South Australia, *Submission 15*, p. 2.

⁸ See www.aph.gov.au/Parliamentary_Business/Committees/House/Employment_Education_and_Training/FundingResearch/Public_Hearings accessed 8 October 2018.

Private briefings

- 1.18 The Committee held private briefings with three Commonwealth agencies, including the:
- Department of Education and Training;
 - National Health and Medical Research Council; and
 - Australian Research Council.
- 1.19 The Department of Education and Training and the ARC also provided written submissions to the inquiry.⁹

Structure of the report

- 1.20 This report is structured into five chapters:
- Chapter one is this introduction.
 - Chapter two provides an overview of Australia's research funding system. In particular, it provides a breakdown of Australian Government investment in research across Commonwealth portfolios and research sectors.
 - Chapter three discusses university research funding. It introduces the dual funding system used to support university research and identifies ways to simplify and streamline application and assessment processes.
 - Chapter four identifies some specific capacity and collaboration issues regarding research funding in Australia. This includes challenges for early and mid-career researchers, regional universities and other research providers. Barriers to interdisciplinary research are also highlighted.
 - Chapter five considers more strategic issues related to Australian research investment, including long term planning, research performance, and levels of investment. The costs associated with publishing research are also discussed.
- 1.21 Two appendices are included in this report. They are:
- Appendix A: Submissions; and
 - Appendix B: List of Hearings and Witnesses.

⁹ See Department of Education and Training, *Submission 92* and the Australian Research Council, *Submission 46*.

Acknowledgements

- 1.22 The Committee would like to thank everyone who provided written submissions, appeared at public hearings, and briefed the Committee for its inquiry.

2. Australian Government Research Investment

- 2.1 Chapter two provides an overview of Australia’s research funding system. In particular, it provides a breakdown of Australian Government investment in research across Commonwealth portfolios and research sectors.

Commonwealth funding

- 2.2 Commonwealth research funding is dispersed through a range of means, different portfolios, and various research funding programs. There is no central body or department responsible for administering research funding.
- 2.3 For example, in 2017-18, the Australian Government invested \$10.3 billion in research and development (R&D). This R&D investment was dispersed:
- through six methods of funding allocation;
 - across 14 Commonwealth portfolios; and
 - over 119 R&D initiatives.
- 2.4 Of the 119 R&D initiatives, around 60 were different Commonwealth competitive grant programs administered across six portfolios.¹
- 2.5 Table 1 shows a breakdown of these R&D initiatives by portfolio.

¹ See Australian Research Council, *Australian Research Landscape*, <www.arc.gov.au/news-publications/media/presentations/standard-australian-research-landscape> and Department of Industry, Innovation and Science, *Science, Research and Innovation Budget Tables Snapshot 2017-18* <www.industry.gov.au/sites/g/files/net3906/f/2017-18-sri-budget-tables-snapshot.pdf> accessed 8 October 2018. Also see Department of Education and Training, *Submission 92*, pp. 14-15.

Table 2.1 Australian Government investment in R&D by portfolio 2017-18.

Portfolio	Total Investment (\$M)	Programs
Industry, Innovation and Science	4729.20	22
Education and Training	3078.86	8
Health	1045.15	27
Defence	488.70	8
Environment and Energy	443.00	12
Agriculture and Water Resources	347.80	19
Foreign Affairs and Trade	106.29	1
Social Services	27.98	5
Veterans' Affairs	8.97	5
Infrastructure and Regional Development	5.72	5
Attorney-General's	3.34	2
Prime Minister and Cabinet	2.00	1
Treasury	1.75	1
Communication and the Arts	0.41	3
TOTAL	10289.17	119

Source: Extract from Department of Education and Training, Submission 92, Attachment A.

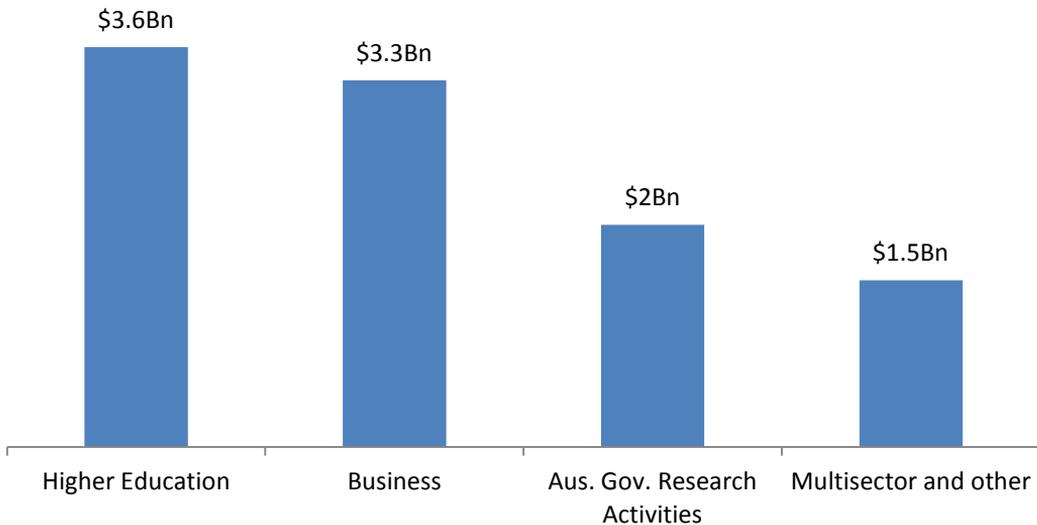
2.6 The Department of Industry, Innovation and Science explained that over three quarters of Australian Government investment (\$7.9 billion) in 2017-18 was provided through the following mechanisms:

- R&D tax incentive;
- University block grants provided by the Department of Education and Training;
- Competitive grants administered by the National Health and Medical Research Council (NHMRC) and Australian Research Council (ARC);
- the Commonwealth Scientific and Industrial Research Organisation (CSIRO); and

- the Defence Science and Technology Group.²

2.7 Australian universities receive the largest proportion of Federal Government funding for research. Figure 2.1 shows a breakdown of R&D investment by research sector. Of the \$10.3 billion invested in R&D, \$3.6 billion went to higher education or universities, and \$3.3 billion went to businesses.³

Figure 2.1 Australian Government investment in R&D by sector 2017-18.



Source: Department of Industry, Innovation and Science, Science, Research and Innovation Budget Tables Snapshot 2017-18.

Education Investment Fund

2.8 Since the Government has not elected to proceed with the Education Investment Fund (EIF), Australia's research institutions and universities lack access to this specific funding for indirect research costs which include new equipment, laboratories or renovation of existing facilities. In 2008, EIF was established to provide co-investment for critical infrastructure and research in Australian research institutions, universities and TAFEs. The \$3.9 billion fund now lies dormant in the Future Fund. Research institutions,

² Department of Industry, Innovation and Science, *Submission 42*, pp. 4-5.

³ Department of Education and Training, *Submission 92*, pp. 5-6. Also see www.industry.gov.au/sites/g/files/net3906/f/2017-18-sri-budget-tables-snapshot.pdf accessed 8 October 2018.

universities and TAFEs now are forced to fund infrastructure through vastly depleted operating grants.

- 2.9 The Committee acknowledges the complexity of the Australian research funding system, including the different stakeholders involved and the different methods used to disperse Commonwealth funds.

Diversity and fragmentation

- 2.10 The Committee's terms of reference asked the Committee to consider 'the diversity, fragmentation and efficiency of research investment'. Fragmentation is often used to characterise the research funding system. However, it is important to differentiate between fragmentation of research investment and funding, and fragmentation of funding processes.
- 2.11 Evidence to the inquiry suggests that while the former is considered a strength of the current system, it is the latter that is considered inefficient, costly, time consuming and an administrative burden.
- 2.12 For example, the Committee was told that the range of different funding opportunities and grant programs is an essential part of the current system. Griffith University noted that:

...diversity, also characterised as fragmentation, of research funding programs is within reason a positive attribute of the current system.⁴

- 2.13 Diversity of research funding was considered necessary to accommodate Australia's broad research interests, provide for different research disciplines, and support each stage of the research pipeline from basic to translation research. In other words, diversity of funding allows for Australia to provide research programs that are fit for purpose. This was articulated by Charles Sturt University in its submission to the inquiry:

Diversity of funding schemes is necessary to support the full expanse of real-world challenges Australian research seeks to solve. Diversity is essential in primary research to focus design on need.⁵

- 2.14 The University of Newcastle noted that a range of competitive grant programs allows for flexibility in the research funding system. Specifically, the University of Newcastle highlighted the flexibility to fund:

⁴ Griffith University, *Submission 19*, p. 1.

⁵ Charles Sturt University, *Submission 32*, p. 2.

-
- research from all discipline areas;
 - targeted calls when required;
 - novel and emerging areas of research; and
 - a balance between basic and translational research.⁶

2.15 Deakin University also supported the diversity that exists in the current research funding schemes.⁷

Fragmentation of process

2.16 The Committee heard that the key issue for the research sector, in particular universities, is a lack of consistency across the research funding landscape. For example, each of the 119 R&D initiatives has separate administrative processes and arrangements.

2.17 This fragmentation was repeatedly raised as costly and challenging for researchers, with repeated calls for better coordination of research funding arrangements.

2.18 The University of Sydney described the impact of this fragmentation on research outcomes:

While governments often deem it desirable to develop new research funding schemes in areas of priority, it is equally important to ensure that the research funding system remains coherent and well-managed. A proliferation of programs, with different objectives, funding rules and processes undermines efficiency and ultimately reduces the likelihood that the outcomes desired by governments are achieved.⁸

2.19 A particular focus of the Committee's inquiry was university research funding. Many of the issues raised in relation to funding Australia's research sector were particular to university researchers. For example, while diversity of research funding opportunities was supported, many challenges were identified with the administration of these opportunities.

⁶ The University of Newcastle, *Submission 89*, p. 6.

⁷ Deakin University, *Submission 10*, p. 2.

⁸ University of Sydney, *Submission 87*, p. 4.

2.20 For university research funding, these issues can be distilled into five key themes; that the research funding system:

- is fragmented, inefficient and an administrative burden on researchers and research institutions;
- disadvantages particular researchers – especially early and mid-career researchers, Indigenous researchers, women, minority groups, and those within regional universities;
- is risk averse – favouring researchers with proven track records, and research that is considered safe;
- is difficult for industry to navigate; and
- is underfunded overall.

2.21 The following chapters discuss these issues more fully.

3. University Research Funding

3.1 Chapter three discusses university research funding. It introduces the dual funding system used to support university research and identifies ways to simplify and streamline application and assessment processes.

Dual funding system

3.2 The Australian Government supports university research through a dual funding system of competitive grants and research block grants. In 2017-18, 99 per cent of Australian Government funding for university research was provided through competitive grants and research block grants.¹

3.3 Competitive grant funding is awarded to universities to undertake specific research projects. Research funding is awarded to successful applicants following a merit-based expert peer review process.

3.4 The Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) are largely responsible for the administration of competitive grant funding in Australia. Both research councils provide competitive grant funding for a mix of individual research projects, industry linked research, collaborative centres and research fellowships.

3.5 As noted in Chapter 2, there are around 60 different competitive grant programs administered across six Commonwealth portfolios.²

¹ Department of Industry, Innovation and Science, *Submission 42*, p. 5.

² Department of Education and Training, *2018 Australian Competitive Grants Register*, <www.education.gov.au/news/2018-australian-competitive-grants-register-acgr-now-available> accessed 8 October 2018.

- 3.6 Research block grants are allocated to universities to support the indirect or systemic costs of conducting research. These indirect costs essentially fund research overheads and include equipment and infrastructure, information technology facilities, and researchers' salaries etc. Research block grants are allocated to universities according to a performance based formula which considers income received from competitive grants.
- 3.7 Submissions to the inquiry were largely supportive of the dual funding system, noting that the system is not fundamentally broken. Notwithstanding, a number of issues were identified regarding the efficiency and administration of competitive grant application and assessment processes, and research block funding arrangements.

Competitive grants

- 3.8 The Australian National University (ANU) described the current competitive grants landscape. In particular, the ANU highlighted fragmentation and complexity, and the impact of this on university administration, investment and planning.

The 2018 Australian Competitive Grants Register (ACGR) includes 12 active ARC schemes, 34 active NHMRC schemes, and 34 other active schemes (including Rural R&D schemes). These schemes have non-aligned guidelines, submission and assessment processes, and non-coordinated deadlines, imposing significant administrative overhead on Universities. These schemes operate alongside contracts, consulting, international funders, trusts and CRCs [Cooperative Research Centres] (categories 2-4), many of which fund related areas and projects. As a result, there are frequently schemes or funding opportunities announced ad hoc, with short notice for submission of applications (4-6 weeks), and frequently with new guidelines and applications processes. This fragmentation does not allow for sustained, long term investment and planning in research priorities by Universities.³

- 3.9 Universities told the Committee that it is administratively challenging to stay across the different funding requirements and processes, particularly when they are subject to change on a regular basis. In addition, more pressure is placed on universities when they are required to employ staff, in specialist positions, to manage and oversee grant applications.

³ Australian National University, *Submission 31*, p. 1.

3.10 To give some scale of the administration involved, the University of Sydney set out the workload and resourcing that it dedicates to support funding from Australian Government and other grant schemes. It noted:

- in 2017, 1,375 domestic and international grant applications were submitted; 70 per cent to federal funding schemes;
- eight full-time staff are employed to manage and deliver research development and collaboration initiatives and support services;
- six full-time equivalent Research Administration Officers spend on average 32 hours a week processing funding applications (ARC and NHMRC grants represent 30 per cent of this work for most of the year);
- between January to April, five of these six staff spend 100 per cent of their time administering ARC and NHMRC grants;
- 16 casual staff (approximately) are employed for four weeks each year from January to February, and dedicate 35 hours a week to ARC and NHMRC funding applications;
- four full-time equivalent Research Administration Officers spend 100 per cent of their time on post-award administration activities, plus a seasonal casual staff member who assists the team during peak periods;
- two full-time equivalent Research Reporting and Compliance Officers spend 100 per cent of their time on the monitoring, review and submission of progress and final reports to funding agencies; and
- one full-time equivalent Major Initiative Coordinator spends on average 20 hours per week leading the administration of significant and complex funding applications 100 per cent focused on ARC and NHMRC, with these hours increasing from January to March.⁴

3.11 Many submissions to the inquiry called for competitive grant processes to be simplified, and suggested a whole-of-government approach to research funding in Australia. That is, streamlining research guidelines, timelines, processes and contract management across all Commonwealth departments and agencies. For example, in its submission, Research Australia called for a review of all research funding programs to ensure as much uniformity as possible.⁵

⁴ University of Sydney, *Submission 87*, p. 6.

⁵ Research Australia, *Submission 53*, p. 8.

Applications

- 3.12 Australian universities spend considerable time and effort applying for research funding through competitive grants. Approximately 80 per cent of these applications will be unsuccessful.
- 3.13 There was consistent acknowledgement that the grant application and assessment processes are the source of much inefficiency in the research funding system.
- 3.14 In particular, evidence to the Committee highlighted issues with the design of the application forms, the information and data requested, and the systems used to collect the information. Some of this evidence included:
- application forms are too long, and time consuming to complete;
 - forms are not compatible with other software or programs, and there is inconsistency across form data fields, word and page limits;
 - the level of detail and information requested is burdensome and often unnecessary; and
 - there are frequent changes to the prescribed formats of grant applications as well as eligibility criteria.
- 3.15 At the Committee's public hearing in Melbourne, two dense applications were shown to the Committee as an indication of the volume of information requested in a competitive grant. The Committee was surprised to see the amount of information provided in support of an application, and to hear the amount of time researchers are said to be spending applying for funding. Some of these estimates included 28 to 38 days, 3 to 4 months, and 550 years cumulatively across all proposals for a round.
- 3.16 Evidence regarding the volume and time associated with grant application forms and processes was compelling. The strong message to the Committee was that 'the issue is not the writing of the actual research proposals, but rather the disproportionate amount of time and effort necessary to complete the supporting elements'.⁶
- 3.17 For example, Ms Maaiké Wienk, Research and Policy Adviser at the Australian Mathematical Sciences Institute told the Committee that:
- ... nobody questions writing the core of the research proposal, thinking about what research is to be undertaken, how it fits with existing theory and what the method should be. I think the researchers find that a useful exercise.

⁶ Australian Mathematical Sciences Institute, *Submission 94*, p. 1.

It's the other bits. An aspect of it that people resent is having to put in a detailed budget rather than just tick a box. ... it is quite painful. You have to calculate salaries, you have to add a multiplier specific to your university and you have to make an assessment of travel costs three years in advance. All those sorts of exercises, when in actual fact the budget that you apply for you never receive. Those are the kinds of things.⁷

- 3.18 Similarly, Professor Frank Gannon, Fellow of the Australian Academy of Health and Medical Sciences (AAHMS) noted the complexity of the paperwork. Professor Gannon shared his experience of Australia's grant funding system compared to other countries:

... I've run these in all of Europe and in Ireland. When I came to Australia, I found it's incredibly complex here. There's the attention to minutiae required to be addressed and, if you do not address them, you're excluded. It's extraordinary. It's counterproductive. It's a burden. There's nothing wrong with it, but, as has been said in more than one case, there's a difference between what's legally right and what's right. I think we've got ourselves in Australia into a quagmire of making sure that we address the paperwork rather than the problems we're really trying to address.⁸

- 3.19 It is important to emphasise that evidence to the inquiry questioned the assumption that completing grant applications is wasted time and effort. Rather, submissions asserted that the process of applying for a competitive grant – regardless of the outcome – is a valuable one. As noted earlier, this is because it allows researchers to test ideas, to work together and innovate, and to develop good research proposals.
- 3.20 The issue for this inquiry to consider however is one of balance. As put to the Committee the 'benefits are not generally sufficient to justify the commitment of time, resources and effort where the overall levels of competitive funding and the success rate are too low.'⁹

Timing of grant applications

- 3.21 Currently, most deadlines for competitive grant funding are scheduled for early in a new year – February and March. The Committee heard that this timing may disadvantage some researchers, particularly women and those

⁷ Ms Maaïke Wienk, *Committee Hansard*, Melbourne, 6 August 2018, pp. 23-24.

⁸ Professor Frank Gannon, *Committee Hansard*, Brisbane, 30 July, p. 20.

⁹ Queensland University of Technology, *Submission 34*, p. 3.

researchers with children who may have family commitments over the Christmas and New Year period.

- 3.22 Dr MaryAnne Aitken, Executive Director at Latrobe University, raised this issue at the Committee's Melbourne public hearing:

... we are running the Athena SWAN [Scientific Women's Academic Network] SAGE [Science in Australia Gender Equity] program for gender equity in research. We've had focus groups and surveys and all sorts of things. One of the most common issues that we hear about is the fact that the major grant rounds are in February and March, and if you have children on summer holidays for six weeks it ruins your summer holidays. We hear this over and over again. I think that having different timing would be good.¹⁰

- 3.23 Revising the timing of annual grant cycles was supported by other witnesses at the Melbourne round table. It was acknowledged however that this is a very difficult issue that would require more consultation with stakeholders, particularly given potential clashes with other deadlines and processes across the research sector.¹¹

Post award management

- 3.24 Like grant application processes, the Committee heard that post award management processes are unnecessarily onerous. This is particularly apparent when variations to contracts are required.
- 3.25 Evidence to the Committee highlighted that universities consider the level of detail required to satisfy public sector accountability requirements far outweigh the changes being made. For example, in its submission, the University of Wollongong said:

In many cases variation documentation and processes required by funding agencies are overly onerous, with no nett benefit to researcher or funder. The types of variations required for approval by the funder could be drastically reduced using a risk-based approach.¹²

- 3.26 The ANU also recommended funding agencies take a risk-based approach to ongoing project management and variations.¹³

¹⁰ Dr MaryAnne Aitken, *Committee Hansard*, Melbourne, 6 August 2018, p. 16.

¹¹ See *Committee Hansard*, Melbourne, 6 August 2018, pp. 16-18.

¹² University of Wollongong, *Submission 50*, pp. 6-7.

¹³ Australian National University, *Submission 31*, p. 3.

- 3.27 It was suggested that the post award management of funding be streamlined in the same way as recommended for the grant management system—that is, by adopting a more uniformed approach. For example, Mrs Lyn McBriarty, Strategic Advisor, Office of the Senior Deputy Vice-Chancellor at the University of Newcastle, told the Committee:

I would extend the opportunities to streamline beyond the application process to the actual management of the applications and the contracts. There are so many different types of contracts, each with little nuances, that you have to be an expert in each one of them, and that's very time consuming. There are huge opportunities to streamline, both pre- and post-award, to make it much more efficient.¹⁴

Improving the application process

Single research management system

- 3.28 There were persistent calls for more compatibility between the ARC and NHMRC, and to consolidate processes across the Commonwealth. Many submissions identified the need for a single whole-of-government system or portal to manage competitive grant funding.
- 3.29 The University of Technology Sydney described the advantage of this consolidation:

The availability of one online government platform to manage the grant lifecycle across multiple grant schemes, from application submission, post-award management to final report submission, would not only create greater efficiency for research institutions but also assist funders to streamline funding programs and access data on research investment.¹⁵

- 3.30 Similarly, the University of Notre Dame also suggested a central system and provided some more detail regarding a single research management system:

... this could involve a GrantsConnect research management system which might be utilised by ARC, NHMRC, GRDC [Grains Research and Development Corporation] and all government departments or agencies. Government agencies could also harmonise standard templates for contracts for public funding, including the wording of terms and conditions of those contracts. Furthermore, an agreed date and format for annual reporting for all government schemes would be more efficient and save money. Greater

¹⁴ Mrs Lyn McBriarty, *Committee Hansard*, Sydney, 7 August 2018, p. 2.

¹⁵ University of Technology Sydney, *Submission 85*, p. 4.

consensus and consistency in reporting to government would be welcomed within the university sector.¹⁶

- 3.31 The wider use of GrantConnect and other existing systems such as ORCID (Open Researcher and Contributor ID) and the ARC's Research Management System (RMS) were identified as viable ways to streamline and consolidate fragmented processes.
- 3.32 GrantConnect is the Australian Government's central online facility that publishes information about upcoming and current competitive grant opportunities, grant guidelines and grants awarded.¹⁷ It is currently used by the ARC and NHMRC.
- 3.33 ORCID is a global online researcher identification system that records the professional information of researchers.¹⁸ Professor Kathryn McGrath, Deputy Vice-Chancellor, Research at the University of Technology Sydney explained the value of ORCID in providing relevant, current researcher information through a single source:
- The researcher is only having to provide their ORCID number and the government then has immediate access to a whole suite of information. If the government and funding agencies started to use ORCID, that would drive the researchers to provide better and better source information. There would be more assurance that we are getting a complete story for each of our researchers that have been named on funding applications. Then it is all sides of the sector: the individuals are ensuring their source data is appropriate; the universities can ensure that they utilise ORCID as well, in a whole range of different things; and the government is massively increasing the amount of information they have readily available through a single source point.¹⁹
- 3.34 The Committee was strongly encouraged to consider ORCID as an option for identifying and obtaining current researcher information, rather than researchers providing this information for each grant application. Evidence to the inquiry suggested that the universal use of ORCID may also prevent

¹⁶ University of Notre Dame, *Submission 13*, p. 4.

¹⁷ See Department of Finance, *GrantConnect*, <www.finance.gov.au/resource-management/grants/grantconnect/> accessed 8 October 2018.

¹⁸ See *ORCID*, <<https://orcid.org/>> accessed 8 October 2018.

¹⁹ Professor Kathryn McGrath, *Committee Hansard*, Sydney, 7 August 2018, pp. 7-8.

data entry errors, the use of out-of-date publication lists, and negate possible compliance issues like incorrect headings or fonts.²⁰

- 3.35 Furthermore, the use of ORCID may facilitate auto-population of data through compatible platforms, and better support the movement of researchers and their data between institutions and funding agencies.²¹
- 3.36 The ARC's RMS is a purpose built information technology system that enables electronic creation, submission and assessment of grant applications, and post-award management of progress reports. The system has received 'international attention as a best practice system'.²² It is the view of the ARC—and other submissions to this inquiry—that such a system could be used to support 'better research grants administration across government'.²³
- 3.37 Universal use of online systems such as GrantConnect, ORCID and RMS for all grant funding applications and management was acknowledged as a positive step to reduce inefficiency, duplication and administrative burden on researchers and research institutions. Building automatic compliance checks into application systems was also recommended as a means to improve efficiency. For example, compliance checking undertaken by the ARC's System to Evaluate Excellence of Research (SEER) was identified as an example of this process.²⁴
- 3.38 The Committee sees value in using existing applications to streamline and consolidate application processes. It also sees value in accessing data and information that is already used and maintained by researchers and research institutions. That is, making use of what is already available and known to the research sector. Exploring options to link to these data systems is recommended.

Two-stage process

- 3.39 Two-stage processes were identified as a potential way to reduce the time and effort associated with completing lengthy grant applications, and assessing them. It also provides for applications to be assessed on the quality

²⁰ Regional Universities Network, *Submission 16*, p. 2.

²¹ University of Technology Sydney, *Submission 85*, p. 5.

²² Australian Research Council, *Submission 46*, p. 9.

²³ Australian Research Council, *Submission 46*, p. 9.

²⁴ University of New South Wales, *Submission 62*, p. 3.

and strength of the research idea, in the first stage, before considering other factors in stage two. This process was strongly supported in evidence received by the Committee.

- 3.40 While there are variations on the two-stage process, generally the first stage calls for an Expression of Interest (EOI) comprising a short research proposal, and possibly other brief supporting information. The EOI is designed to be a truncated application, with submitters suggesting anywhere from 1-20 pages in length.
- 3.41 The second stage is only open by invitation to those with a competitive proposal assessed at the first stage. At this second stage, a full application is provided.
- 3.42 Two-stage processes are already undertaken by some funding programs in Australia including the Cooperative Research Centres, ARC Centres of Excellence and the Australian Renewable Energy Agency. Two-stage processes are also used in some international schemes including the European Commission, the Leverhume Trust in the United Kingdom (UK), and in New Zealand, the Health Research Council and the Marsden Fund.²⁵
- 3.43 All were considered good examples of two-stage processes that could be adopted more widely.

Other application processes

- 3.44 Some other suggestions identified for improving the application and funding processes included:
- *A rolling deadline or continuous application process* that allows for grant funding applications to be submitted and assessed anytime. Greater flexibility around when applications can be submitted 'may increase success rates for researchers who can contribute more effective time, data, and coherency in their proposals'.²⁶ It may also benefit those researchers who may be out on field work when there are application deadlines.²⁷
 - *A single application process* whereby fundable but not funded applications stay in the mix for subsequent funding rounds. This process

²⁵ Deans of Arts, Social Sciences and Humanities, *Submission 21*, pp. [3-4].

²⁶ Ecological Society of Australia, *Submission 66*, p. 3.

²⁷ Dr Bek Christensen, *Committee Hansard*, Brisbane, 30 July 2018, p. 27.

acknowledges the ‘near miss’ grants that are highly rated and fundable yet miss out because the ‘funding pool can only extend “so far” down the list of fundable projects’.²⁸

- *The introduction of ‘revise and resubmit’ categories for high quality applications that are considered close but ‘not ranked quite highly enough’ to be funded in a particular round. These ‘revise and resubmit’ applications are then considered in the next round of funding.*²⁹

3.45 The Committee notes that some of these processes are already in place across some competitive grant schemes.

Flexible funding

3.46 The Australian Academy of the Humanities (AAH) noted that there are efficiencies to be gained from taking a more flexible approach to the way in which grant programs allocate their funding. In particular, to differentiate between low and high cost research, rather than favour the latter. The AAH argues that there is a strong case for allowing flexibility in funding thresholds to cater for different funding requirements across disciplines.³⁰

3.47 Similarly, the Australian Association of Philosophy (AAP) observed that ‘it makes sense to have grant bodies that are specific to very different families of disciplines’.³¹ In its submission, the AAP noted that ‘Many excellent projects in the Humanities simply do not cost enough to qualify for ARC funding and therefore receive no support at all’.³²

3.48 The AAP argued that better outcomes in humanities and social sciences (HASS) might flow in competitive grant schemes by ‘funding *more* projects, each of which costs *less* than the current minimum thresholds for Discovery and Linkage grants’.³³ The AAP highlighted a two-stream funding model used by the Social Sciences and Humanities Research Council of Canada, which offers funding for low and high cost research projects.

²⁸ University of Wollongong, *Submission 50*, p. 4.

²⁹ University of New South Wales, *Submission 62*, p. 2.

³⁰ Australian Academy of the Humanities, *Submission 60*, p. [3].

³¹ Australasian Association of Philosophy, *Submission 58*, p. [5].

³² Australasian Association of Philosophy, *Submission 58*, p. [4].

³³ Australasian Association of Philosophy, *Submission 58*, p. [4].

- 3.49 Dr Nicholas White illustrated the same point in his submission, noting that in the field of chemistry ‘Discovery Project applications that request less than \$100,000 a year are not taken seriously by reviewers and so are almost never funded.’³⁴
- 3.50 Dr White suggested that there be two tiers of funding within the same scheme to accommodate researchers who may not want a large amount of money. Dr White suggested that these can:
- ... be requested with a short application and high success rate, while more ambitious programmes that want larger sums of money... need a more detailed application and have a lower success rate.³⁵
- 3.51 As an alternative, Dr White suggests that university block funding could be altered to ensure that researchers are directly funded to pay for basic equipment and consumables.³⁶
- 3.52 The Committee appreciates the needs of researchers will differ across disciplines, and acknowledges that different levels of funding are required to support these needs. In supporting flexibility within the research funding system, the Committee recommends that consideration be given to funding smaller scale projects.

Committee Comment

- 3.53 The Committee supports the diversity of research funding opportunities inherent in the current system. It agrees that such arrangements are necessary to support Australia’s broad research interests, and to provide a flexible system that is responsive to new and emerging research priorities.
- 3.54 Evidence to the inquiry highlighted that for the 119 funding initiatives across the research sector, each has their own processes and arrangements. There is little doubt that this landscape is administratively challenging, particularly for universities, accompanied by significant time, cost, and frustration.
- 3.55 The Committee supports the need to better coordinate research funding efforts, especially the administrative processes associated with applying for competitive grants. It recommends reform of three key areas – management

³⁴ Dr Nicholas White, *Submission 3*, p. 1.

³⁵ Dr Nicholas White, *Submission 3*, p. 1.

³⁶ Dr Nicholas White, *Submission 3*, p. 1.

of research grants, the application and assessment process, and the information and documentation to support an application. It is envisaged that such reforms will reduce the time spent by researchers preparing voluminous applications by making use of information that is already available, restricting information to that which will inform a decision, and keeping relevant forms, guidelines and contracts as uniform as possible.

Recommendation 1

3.56 To reduce the administrative burden on research agencies and streamline grant funding processes, comprehensive reform is needed across three key areas—research management, application and assessment, and grant funding documentation. In particular, the Committee recommends:

Single online research management system

- the introduction of a single whole-of-government online system for all Commonwealth grant applications and post award management; and
- that, where possible, this online system link to existing systems and databases, such as ORCID (Open Researcher and Contributor ID), to prepopulate necessary data fields.

Two-stage application process

- a two-stage grant application process be introduced across Commonwealth funding schemes to reduce the amount of information provided in support of applications; comprising:
 - Stage one: a competitive component including an expression of interest designed to give weight to the research proposal, and prepopulated information regarding track record and research capacity; and
 - Stage two: a non-competitive component for successful stage one applicants to provide a full proposal and budget.

Grant funding documentation

- that only information and documentation that will inform a decision be provided across grant funding schemes; and

- **the standardisation of grant funding documentation, including application forms, guidelines and contracts, across the Commonwealth.**

Recommendation 2

3.57 The Committee recommends that the Australian Government introduce a risk-based approach to post award variations that would allow universities to make minor or simple variations without seeking approval from funding agencies.

Recommendation 3

3.58 The Committee recommends that grant funding be available to support smaller scale research projects across disciplines.

Peer review

- 3.59 Peer review was overwhelmingly supported in evidence to the Committee. In particular, peer review was described as the ‘bedrock of all academic research’³⁷, a ‘hallmark and driver of high quality’³⁸, and ensuring ‘merit and value’.³⁹
- 3.60 In its submission to the inquiry, the ARC noted that peer review represents international best practice, and highlighted the commitment of the international research community to this process. The ARC also noted that peer review is fundamental to the agency, its risk management and to the accountability of publicly funded research.⁴⁰
- 3.61 Notwithstanding the support for peer review, submissions did identify some shortcomings with this process, including:
- it is a burden on universities and peer reviewers;
 - there is no consistency in peer reviewers and a lack of institutional memory from year to year;

³⁷ Australian Research Council, *Submission 46*, p. 10.

³⁸ Charles Sturt University, *Submission 32*, p. 3.

³⁹ Deakin University, *Submission 10*, p. 2.

⁴⁰ Australian Research Council, *Submission 46*, p. 10.

- it is open to cronyism, conflicts of interest, and biases related to gender, age, career stage, and discipline of researcher; and
- there is limited or unhelpful feedback on research proposals.

3.62 The role of peer reviewers and feedback provided on grant applications is discussed further below.

Peer reviewers

3.63 The current peer review system was described as ‘labour intensive’⁴¹, ‘untenably strained’⁴² and also undertaken to ‘different standards’⁴³. In its written submission, Macquarie University noted:

While peer review is the gold standard for evaluating the merit of research, it is very time and effort intensive and causes enormous workloads for researchers around the globe. It is often difficult for funding agencies to source enough leading researchers to meet the need for peer review, which causes delays and overburdens those researchers who contribute reliably to the peer review ecosystem.⁴⁴

3.64 The Committee heard that more needs to be done to support the peer review system. This is to ensure that peer reviewers are equipped for the task, and to reduce the likelihood of other factors influencing merit-based decisions. For example, Professor James McCluskey, Deputy Vice-Chancellor, Research at the University of Melbourne said:

Could I be unequivocal and say that, at all cost, we must preserve the peer review system. We can improve it. We could do more training of our grant assessors. We could coach them in what we consider to be important, how to make balanced and objective judgements, and have training around unconscious bias. I think these are terribly important and non-trivial. We don’t do a particularly good job of that at the moment. Where the peer review system has fallen into disrespect, it’s often because the overload has led to sourcing of assessors who are not fit to assess. They’re either too junior or they’re out of their disciplines or, as happens occasionally, they’re from somewhere outside of Australia and they don’t understand our system.⁴⁵

⁴¹ Innovative Research Universities, *Submission 90*, p. 6.

⁴² The University of Western Australia, *Submission 9*, p. [2].

⁴³ Ecological Society of Australia, *Submission 66*, p. 4.

⁴⁴ Macquarie University, *Submission 59*, p. 3.

⁴⁵ Professor James McCluskey, *Committee Hansard*, Melbourne, 6 August 2018, p. 14.

- 3.65 The University of Notre Dame also noted a lack of diversity on assessment panels which can arise from cost and time challenges that prevent participation, particularly of Western Australian researchers. This lack of diversity was considered to lead to lost opportunities for innovation in assessing applications, and difficulties in assessing interdisciplinary research projects. In response, the University of Notre Dame called for new mechanisms to ensure greater diversity and inclusion within the assessment processes, such as rotation systems, video conferences, and better incentives and financial support for travel.⁴⁶

Feedback

- 3.66 Feedback on competitive grant applications is an enormous benefit for both the individuals and institutions.⁴⁷ It not only allows for individual researchers to improve and further develop their research ideas and proposals, but it allows universities to make better judgements about whether to submit grant applications in the first place.

- 3.67 This point was made by Murdoch University in its submission to the inquiry, which noted:

If universities are to submit competitive grant proposals for consideration, then it is critical that they receive detailed feedback on the assessment of applications to be able to refine internal processes.

The administrative load for granting agencies is reduced when the number of applications is reduced. It is in their interests, therefore, to improve feedback that will allow universities to more accurately assess the likelihood of success of internally submitted proposals.⁴⁸

- 3.68 Professor Adrian Manning asserts that feedback is one of the best and simplest ways to improve the quality of research applications, and also a way to ensure the best ideas are funded.⁴⁹ Yet many submissions to the inquiry noted a lack of transparency in the assessment process and a lack of consistent and constructive feedback overall.

⁴⁶ University of Notre Dame, *Submission 13*, p. 3.

⁴⁷ Professor Kathryn McGrath, *Committee Hansard*, Sydney, 7 August 2018, pp. 16-17.

⁴⁸ Murdoch University, *Submission 28*, p. [3].

⁴⁹ Professor Adrian Manning, *Submission 97*, p. 1.

3.69 For example, in their submission to the inquiry, Dr Mathew Lewsey and his colleagues described a lack of transparency with the ARC assessment process. In particular, they noted:

... a great lack of transparency around how individual applications are scored. The specific comments from the General Assessors performing the first review are given to the applicants, who are then invited to respond through a rejoinder, but the associated scores are never disclosed. After the funding announcement (success/failure), the final scores of the application are coarsely given in terms of broad percentile bands... but no comments or feedback are provided from the final assessment or the discussion at the College of Experts.⁵⁰

3.70 Dr Lewsey suggests that this lack of feedback prevents applicants from making informed decisions about the next steps for their research proposal, and also creates the impression that the system is unfair. His submission is one of several which calls for accurate scores and feedback to be provided to all grant applicants; noting the European Union Framework Programme as a good example of this process.⁵¹

3.71 It was suggested that improving the training of peer reviewers may also assist in providing improved feedback for applicants and support the process of internal peer review.⁵²

Lottery system

3.72 In their joint submission to the inquiry, Professors Adrian Barnett and Philip Clarke challenged the merits of the peer review process and introduced the idea of a lottery system to fund research, based on the following principles:

- 1 Researchers prepare short applications that outline how their proposed research addresses the goals of the funding scheme, potentially including national research priorities.
- 2 Applications are screened for eligibility and to check that the researchers are qualified and have some basic experience.
- 3 The available funding is allocated randomly amongst the remaining applications. Applications could be stratified to award more funding to help

⁵⁰ Dr Mathew Lewsey, *Submission 64*, p. [2].

⁵¹ Dr Mathew Lewsey, *Submission 64*, p. [3].

⁵² Regional Universities Network, *Submission 16*, p. [3].

fix current issues of under-representation, such as more funding for women and younger researchers.⁵³

3.73 The authors note, that while a ‘seemingly radical idea’, lotteries are supported by scientific evidence.⁵⁴ This evidence includes research which found little association between peer review scores and subsequent success—for example, in published papers and patents.

3.74 At the Committee’s public hearing in Brisbane, Professor Barnett told the Committee:

I think a lot of what we are doing here when judging grants is not necessarily peer review, it is peer preview; we are trying to predict which grants are going to give the best return. In the national institutes of health in the US, they looked at their data, where they looked at all the projects that were funded—from the ones that everybody thought were amazing to the ones that got it just above the funding line, and all the ones in between—and there was very little correlation between those scores and the impacts of those grants. And the conclusion was, science is wonderfully hard to predict, and it’s very hard to predict where you’re going to get the biggest returns.⁵⁵

3.75 Professors Barnett and Clarke assert that any policy change should be based on scientific evidence. They highlight the element of randomness already in our current research funding system, particularly when deciding between highly competitive grant applications. They also claim that the introduction of a lottery system would reduce the time and effort applying for research grants, prevent some of the perceived biases in the current system, and increase diversity in research.⁵⁶

3.76 The Committee understands that while the idea of a lottery might have some appeal, it supports the principles of open competition and expert peer review within the grant funding system. It also acknowledges that peer review is strongly supported by the research sector as best practice and is the best process for determining the allocation of grant funding.

⁵³ Professors Adrian Barnett and Philip Clarke, *Submission 33*, p. 2.

⁵⁴ Professors Adrian Barnett and Philip Clarke, *Submission 33*, p. 2.

⁵⁵ Professor Adrian Barnett, *Committee Hansard*, Brisbane, 30 July 2018, p. 5.

⁵⁶ Professors Adrian Barnett and Philip Clarke, *Submission 33*, pp. 1-3 and *Submission 33.1*, pp. 1-2.

Recommendation 4

- 3.77 The Committee recommends that the peer review system be maintained to support competitive grant funding in Australia.**
- 3.78 The Committee recommends that the peer review process be strengthened by:**
- **providing detailed information and constructive feedback to unsuccessful applicants; and**
 - **ensuring that the training of peer reviewers is of the highest standard.**

Research block grants

- 3.79** The second component of the dual funding system is research block grants. The most consistent issue in written submissions and evidence at public hearings regarding block grant funding was that it does not cover the indirect costs of conducting government funded research. As stated by Universities Australia:

For many years there has been a significant gap between the full cost of research and the block grants provided by Government. Each new grant scheme that does not support the indirect costs of research makes this issue worse – to the point that in some cases, institutions may not be able to adequately support their researchers to undertake competitive grant research. On average, each dollar of competitive grants requires supporting, flexible expenditure of 85 cents.⁵⁷

- 3.80** Monash University provided a specific example of this shortfall, noting the amount of block funding it received to support competitive grants:

In 2018, each \$100 of Category 1 funding acquired by Monash University was accompanied by \$23.58 in block funding, which is less than half the amount required to cover the costs of implementation of this research.⁵⁸

- 3.81** Similarly, in 2011, the University of Melbourne estimated that it spent \$1.71 for every dollar of competitive research income.⁵⁹ It notes that block grant

⁵⁷ Universities Australia, *Submission 27*, p. 11.

⁵⁸ Monash University – School of Biological Sciences, *Submission 7*, p. 2.

⁵⁹ University of Melbourne, *Submission 81*, p. 10.

funding has remained static at around 22 cents. This is considered to be substantially lower than for universities in the UK and the United States (US), where indirect costs are met at 80 per cent and 50-60 per cent respectively for competitive grants.⁶⁰

3.82 Two key issues with the current research block funding arrangements were identified. First, it creates a perverse system that effectively costs successful universities when they win competitive grants. Second, it requires universities to increasingly cover these indirect costs through other university revenue such as general university funds and international student fees.

3.83 In its submission to the inquiry, the Association of Australian Medical Research Institutes (AAMRI) highlights the first issue that arises when indirect funding does not cover research costs:

Inadequate financial support for systemic costs of research creates a perverse system which effectively punishes excellence as the more successful a research organisation is at receiving competitive peer reviewed grants, the greater the financial gap they must bridge each year.⁶¹

3.84 A similar view was expressed by QIMR Berghofer Medical Research Institute when it highlighted a \$10 million gap between grant funding and the 'true cost' of research. It noted that 'the more successful a research institute is in terms of winning competitive funding, the greater the funding deficit that the institute must make up from other sources'.⁶²

3.85 The second issue, the trend of universities covering these indirect costs through other means, was canvassed by the National Tertiary Education Union (NTEU). It highlighted the vulnerability of university research to this type of funding:

The problem of relying on general university funds to pay for over half of our universities research efforts however, is that research is not only affected by policy or funding changes directly targeted at university research... but is also affected by policy changes related to Commonwealth Supported Places as well

⁶⁰ Swinburne University of Technology, *Submission 75*, p. 4.

⁶¹ Association of Australian Medical Research Institutes, *Submission 36*, p. 3.

⁶² QIMR Berghofer, *Submission 22*, p. 1.

as other policy changes such as changes to visa requirements that might directly impact on international student enrolments.⁶³

- 3.86 Ms Victoria Hocking, Executive Manager, Research at Macquarie University drew this latter point out further by noting that the more universities dip into revenue from international students to cover the indirect costs of research, the less money universities have to invest in international student experiences and attract them to Australia, which ultimately impacts on overall university revenue.⁶⁴
- 3.87 Not surprisingly, there were consistent calls from universities and research institutions to increase block grants to cover the full cost of research.
- 3.88 Others however called for more systemic changes. For example, Swinburne University of Technology suggested that the current approach to dual funding be reviewed to bring it into line with other economies such as the UK and the US.⁶⁵ The Group of Eight made a similar recommendation calling for ‘serious consideration’ of a full economic cost model as operated in the UK and US, under which a percentage of the indirect and direct costs of research are delivered together.⁶⁶

Recommendation 5

- 3.89 **The Committee recommends that the administration of research block grants be reviewed to provide more timely and adequate support for the indirect costs of research.**

Funding inconsistency

- 3.90 Some submissions to the inquiry called for greater parity under the dual funding system between universities and other research institutions. For example, it was noted that for competitive grant and block grant funding purposes, medical research institutes (MRIs) are treated differently to universities and are preventing from applying. This was considered by some

⁶³ National Tertiary Education Union, *Submission 93*, p. 8.

⁶⁴ Ms Victoria Hocking, *Committee Hansard*, Sydney, 7 August 2018, p. 20.

⁶⁵ Swinburne University of Technology, *Submission 75*, p. 4.

⁶⁶ The Group of Eight, *Submission 91*, p. [6].

to be arbitrary, given that the same work is being treated in two different ways, based on the location of the researcher.⁶⁷

- 3.91 This point was explained by Professor Tony Cunningham, President of the AAMRI, when discussing interdisciplinary research within medical research institutes:

Many of our engineers and biostatisticians would normally be able to apply to ARC if they were situated on a university campus. If they're situated in a medical research institute, they can't do that. So I think there's a level of inequity there. It's important in that it influences Australia's competitiveness in this area. We want the best people to get our research grants and put out the best research, and there shouldn't be a restriction on the site where people are. We've just had an agreement on this with the cooperative research centre funding. That is now open to medical research institutes as it is to CSIRO and universities.⁶⁸

- 3.92 In its written submission, the University of Melbourne sets out the inconsistencies in block grant funding between universities and other research providers.⁶⁹ Professor James McCluskey, Vice-Chancellor, Research at the University of Melbourne told the Committee that these inconsistencies may lead to competitive tensions, and called for a simpler set of arrangements for block funding:

What this does is to fracture the research community because they receive their funding support in different ways, which creates competitive tensions whenever there's a funding shortage or a shift in the policy settings and leads to language around an uneven playing field – 'Why are you different?' So it would make a lot of sense if we could have a single way of providing indirect costs to research providers.⁷⁰

- 3.93 Alphacrucis College emphasised the potential for greater competition when calling for ARC grants and other government funding opportunities to be opened to private providers. In particular, the College argued:

Extending eligibility to apply for ARC grants to all institutions which have the capacity to support research would be cost neutral for the government as the total pool of funds would not change, only the allocation between institutions.

⁶⁷ Association of Australian Medical Research Institutes, *Submission 36*, p. 3.

⁶⁸ Professor Tony Cunningham, *Committee Hansard*, Sydney, 7 August 2018, p. 22.

⁶⁹ University of Melbourne, *Submission 81*, pp. 10-11.

⁷⁰ Professor James McCluskey, *Committee Hansard*, Melbourne, 6 August 2018, p. 18.

Besides equity and improving the efficiency of the system through greater competition, the research carried out at private providers tends to be user-focused and more in line with national research priorities.⁷¹

3.94 At the Committee's Sydney public hearing, Professor Paul Oslington, Dean of Business at Alphacrucis College asserted that the competitive grants system should include a threshold of administrative capacity, plus free competition in the relevant schemes for those who have passed that threshold. Specifically, Professor Oslington said:

I think it should be that any institution that has a demonstrable research capacity, a capacity to administer a grant, a prima facie active research program or an administrative capacity supported grant should be allowed to apply to the relevant scheme. Then, once you're over that threshold, it should be free competition: may the best project and researcher win.⁷²

3.95 The different arrangements applied to universities and research agencies was said to not only restrict competition but also hamper industry collaboration. This is particularly apparent when other research institutions or industry bodies are required to partner with universities to be eligible for funding. This may lead to additional administrative burden, as well as unnecessary partnerships.

3.96 For example, the AAMRI and the Australian Nuclear Science and Technology Organisation (ANSTO) highlighted the inefficiency that arises when a university partner is required to be eligible for an ARC Linkage Grant.⁷³ In its written submission, ANSTO said:

At times, ANSTO's ability to contribute to this collaborative research effort is hindered by its ineligibility to apply directly to the Australian Research Council (ARC) Linkage Grant Scheme.

... In cases where the industry participant requires access to ANSTO's landmark and national research infrastructure to complete the project, the university partner often acts as an essentially superfluous intermediary.⁷⁴

⁷¹ Alphacrucis College, *Submission 6*, p. [3].

⁷² Professor Dean Oslington, *Committee Hansard*, Sydney, 7 August 2018, p. 25.

⁷³ Association of Australian Medical Research Institutes, *Submission 36*, pp. 8-10.

⁷⁴ Australian Nuclear Science and Technology Organisation, *Submission 54*, p. 2.

- 3.97 ANSTO suggests that amending the eligibility criteria would 'make it easier for industry to access landmark and national research infrastructure managed by PFRAs [publicly funded research agencies], diversifying the user base and maximising the benefit derived.'⁷⁵ In addition, ANSTO asserts that such an amendment would enable PFRAs to lead more collaborative industry-focused research and increase opportunities to strengthen cohesion across the research sector.⁷⁶
- 3.98 In Brisbane, Professor Frank Gannon from the AAHMS raised the risk of gaming that arises when MRIs are required to partner with a university to access ARC funding:
- Medical research institutes know how to play the game. If you appoint somebody with 20 per cent of a university position, they're eligible. They're not going to go to the university and they're not going to do anything with the university, but they put their money through that and then they're eligible. I think that's not a great idea.⁷⁷
- 3.99 Professor Gannon suggested that by changing the eligibility criteria to include MRIs there would be better applicants and better competition.⁷⁸

TAFE

- 3.100 Similar views were expressed by those in the TAFE sector who noted two ways in which the TAFE research sector is not supported. The first is exclusion from existing research funds, and the second is an absence of programs explicitly designed and targeted towards research in TAFE.⁷⁹
- 3.101 The Committee was told that TAFEs are not considered part of the research sector in Australia. This is because TAFEs do not fall under the definition of a publicly funded research organisation. They may only participate in research if they partner with a university. It was thought that this was a missed opportunity, particularly given the strong links between TAFE and industry and its capacity to undertake applied research.⁸⁰

⁷⁵ Australian Nuclear Science and Technology Organisation, *Submission 54*, p. 2.

⁷⁶ Australian Nuclear Science and Technology Organisation, *Submission 54*, p. 2.

⁷⁷ Professor Frank Gannon, *Committee Hansard*, Brisbane, 30 July 2018, pp. 22-23.

⁷⁸ Professor Frank Gannon, *Committee Hansard*, Brisbane, 30 July 2018, p. 22.

⁷⁹ Victorian TAFE Association, *Submission 40*, p. 5.

⁸⁰ Ms Francesca Beddie and Ms Linda Simon, *Submission 5*, pp. [1-2].

3.102 As noted earlier, the Committee supports the principles of open competition and excellence in research. It also supports simplified funding arrangements.

Recommendation 6

3.103 The Committee recommends equitable access to and open competition for all research providers, including TAFE, regardless of their links to or partnerships with universities to ensure that research is assessed on merit.

4. Capacity and Collaboration

- 4.1 Chapter four identifies some specific capacity and collaboration issues regarding research funding in Australia. This includes challenges for early and mid-career researchers, regional universities and other research providers. Barriers to interdisciplinary research are also highlighted.

Early and mid-career researchers

- 4.2 The future of Australia's research sector depends on the availability of a strong and talented pool of researchers. Investing in early and mid-career researchers (EMCRs) is therefore imperative.
- 4.3 The Committee heard that the current research funding arrangements can be difficult for EMCRs to compete and establish careers. Rather than encourage, support and develop Australian research capabilities, the current system can discourage researchers from the sector, or contribute to researchers looking for opportunities overseas.
- 4.4 This view was articulately expressed by the Australian Academy of Science EMCR Forum (the EMCR Forum) when it noted the concerns of science, technology, engineering and mathematics (STEM) researchers in establishing and sustaining research careers:

This encompasses uncertainty about how to collaborate across and move between different sectors, fears about the casualisation of contracts and job stability, issues affecting the ability of emerging researchers to access funding allocated through competitive processes, and concerns about the subsequent impact of these factors on mental health and wellbeing.¹

¹ Australian Academy of Science Early- and Mid-Career Researcher Forum, *Submission 84*, p. 3.

- 4.5 Similar issues were identified by Professional Scientists Australia in its survey of researchers in the medical research institute (MRI) sector.²
- 4.6 The EMCR Forum also provides a good overview of the issues consistently raised in evidence to the Committee regarding the impact of the current research funding arrangements on EMCRs.³ These issues include administrative burden, funding bias, workforce casualisation, and barriers to cross sector mobility and collaboration.
- 1 *Administrative burden:* EMCRs feel that the time spent applying for competitive research grants not only means less time to conduct research, but it does not represent reward for effort. The problem is compounded by the low success rates which results in researchers completing multiple applications across various schemes to fund the same project.
 - 2 *Funding bias:* particular groups are under-represented across grant funding including EMCRs, women and minorities. This results in under-represented groups spending more time completing and applying for grants. The flow-on effects are significant. More time applying for grants means less time conducting research; research which is required to demonstrate track record; track record that is needed to support a competitive application. This situation may not only discourage people from applying but discourage researchers from the sector altogether.
 - 3 *Workforce casualisation:* a lack of job security can contribute to the loss of highly skilled research talent. In addition, it can present significant barriers to research, affect long term projects and planning, and discourage risk taking and innovation in research.
 - 4 *Barriers to cross sector mobility and collaboration:* industry partners may be discouraged from research collaboration when the current environment is characterised by protracted funding cycles, a lack of agility and government 'red tape'.⁴

² Professional Scientists Australia, *Submission 79*, pp. [2-3].

³ Australian Academy of Science Early- and Mid-Career Researcher Forum, *Submission 84*, pp. 1-9.

⁴ Australian Academy of Science Early- and Mid-Career Researcher Forum, *Submission 84*, pp. 1-9.

4.7 The National Tertiary Education Union (NTEU) also noted the risk of insecure employment within universities on researchers. In its submission, the NTEU discusses ‘taylorisation’ (a specific term referring to specialisation) of university work. It notes that greater specialisation of positions within the university sector is coupled with greater use of insecure (casual and limited term contracts) employment. While this model might provide universities with more flexibility and opportunities to create efficiencies, the NTEU questions whether this is in the best medium to long term interests of the sector, particularly for attracting the best researchers, specifically that:

... one of the most critical issues which needs to be addressed in relation to efficiency and effectiveness of public investment in research and development within the higher education sector, is to ask whether the current funding arrangements for universities more generally ensure they are in a position to offer academic researchers rewarding and secure careers.⁵

4.8 A lack of engagement and development of EMCRs can threaten the future of Australia’s research investment and the nation’s ability to innovate and grow. A further issue arises if researchers pursue opportunities overseas. The challenge is then to attract researchers back to Australia to engage and contribute more locally to the sector.

Track record

4.9 The focus on chief investigators and track record when assessing grant applications was identified as particularly problematic for EMCRs, as well as other research groups. This is because EMCRs tend to juggle teaching and administrative duties, which leaves them less time to conduct research. They are therefore not well positioned to build and demonstrate a track record which is needed to be competitive.

⁵ National Tertiary Education Union, *Submission 93*, p. 10.

- 4.10 The University of Notre Dame highlighted track record as an impediment for a range of researchers. It noted:

Emphasis on track records acts as an obstacle for researchers from a variety of groups including newer academics, part-time researchers, academics with significant teaching commitments, and women and men with carer responsibilities. The ARC's 2016-2017 report references those groups that perform poorly within the National Competitive Grants Program (NCGP): just 27 per cent were female researchers, 12 per cent were early-career researchers, and 1 per cent were Aboriginal and Torres Strait Islander researchers. Researchers from regional or remote campuses, who are often affiliated with smaller universities, are also disadvantaged.⁶

- 4.11 The issue is said to be compounded when the current system becomes a self-fulfilling one that reinforces the success of the same researchers. For example, the Ecological Society of Australia noted that while it is important to ensure that researchers have the requisite skills and experience to undertake a proposed endeavour, track records lead:

... to perverse outcomes, including a 'self-fulfilling prophecy' where the only researchers to be funded are those who have been funded previously, and have thus had the opportunity to establish a lengthy 'track record'.⁷

- 4.12 The University of Canberra made a similar point, and also acknowledges that this not only disadvantages new researchers but creates a risk-averse research system.

The system has become a self-perpetuating 'success breeds success' model, rendering it very difficult for 'newbies' to enter. This conservative approach of supporting researchers who have been tried and tested in turn means we have in place a funding system that is risk-averse and shies away from supporting pioneering projects.⁸

- 4.13 In addition, focusing on track record and the need to publish articles may discourage researchers from seeking research collaborations and other opportunities with industry and government. This is because of the

⁶ University of Notre Dame, *Submission 13*, p. 3.

⁷ Ecological Society of Australia, *Submission 66*, p. 3.

⁸ University of Canberra, *Submission 45*, p. 2.

perception that such engagement may be detrimental to the long term career prospects of EMCRs.⁹

- 4.14 Issues associated with track record have resulted in many people calling for a reweighting or reemphasis of the criteria away from track record and institutional reputation to the strength and potential impact of the research proposal itself. Such a shift would ensure that it is the best ideas and proposals that are being assessed, rather than focusing on the people involved. As stated by the University of Notre Dame:

... prioritisation of track records has a broader impact on the innovation and diversity of *projects*, not just researchers. There needs to be more weighting given to the dynamism, value and impact of the individual project itself, not merely the person or institution proposing it. Assessment panels need to better consider the prospective value of research in their deliberations.¹⁰

- 4.15 Evidence to the inquiry highlighted a need to better support EMCRs as well as other under-represented groups to not only level the competitive playing field, but to ensure there is greater diversity in research. This includes diversity of researchers, ideas and approaches within the sector.

Improving opportunity for EMCRs

- 4.16 In its submission to the inquiry, the EMCR Forum suggested the following reforms:
- decrease the length of applications and adopt a central online system for applications;
 - expand the interpretation of successful track record to encompass diverse career pathways and decrease the relative weighting of track record in favour of project quality, innovation, benefit and feasibility;
 - monitor and report on funding success rates for under-represented minorities and reward institutions who implement successful minority and diversity policies;
 - expand the Research Opportunity and Performance Evidence (ROPE) framework to include factors that affect the ability of under-represented minorities to establish a competitive track record;

⁹ Australian Academy of Science Early- and Mid-Career Researcher Forum, *Submission 84*, p. 8.

¹⁰ University of Notre Dame, *Submission 13*, p. 3.

- allow academic and government staff to hold joint appointments or spend time working in industry to build collaboration and relevant research outputs; and
 - mandate real flexible working options with minimum employment terms.¹¹
- 4.17 Professor Duncan Ivison from the University of Sydney also supported encouraging funding agencies to publish data on the distribution of their grants across regional, rural, gender and other under-represented groups.¹²
- 4.18 Many submissions to the inquiry advocated for better support of EMCRs to establish and develop their careers. In these submissions, two consistent themes emerged—less emphasis on the investigator and track record, and more targeted funding for EMCRs.
- 4.19 For example, Dr Mathew Lewsey and his colleagues proposed that:
- ... the Investigator(s) category should contribute a much lower proportion of an application’s final score. Importantly, there should be a separate category to assess potential of early-to-mid career applicants, to provide them a positive weighting on their final score and enable them to compete with senior researchers. The metric for the research output of early career researchers should also give more weight to the quality of outcomes rather than quantity, as it is currently the case.¹³
- 4.20 The authors drew the Committee’s attention to the process used by the UK Biotechnology and Biological Sciences Research Council. The Council applies a positive weighting to grant applications of early career researchers who have never received funding. New applicants therefore have approximately double the likelihood of success in their first application compared to those who have been previously funded.
- 4.21 The Council of Australian Postgraduate Associations (CAPA) also recommended allocating more points to proposals that name at least one early career researcher and reserving some research funding for applications led by junior researchers.¹⁴ In addition, Ms Natasha Abrahams, President of CAPA highlighted the vulnerability of EMCRs to be removed from research

¹¹ Australian Academy of Science Early- and Mid-Career Researchers Forum, *Submission 84*, p. 1.

¹² Professor Duncan Ivison, *Committee Hansard*, Sydney, 7 August 2018, p. 11.

¹³ Dr Mathew Lewsey et al, *Submission 64*, p. [2].

¹⁴ Council of Australian Postgraduate Associations, *Submission 67*, p. 5.

projects following post award budgetary considerations, and recommended the retention of EMCRs in these circumstances.¹⁵

- 4.22 Changing the method of awarding fellowships was identified as a good way to better support EMCRs. For example, QIMR Berghofer specifically recommends that ‘professorial-level researchers should be ineligible to compete for fellowships that are designed for early- and mid-career researchers’.¹⁶ This recommendation follows concern about the availability of career development awards to senior university appointments. QIMR Berghofer argues that this not only makes it difficult for EMCRs to compete for the awards, but research institutions have to increasingly support younger researchers with their own funding.
- 4.23 Similarly, Professor Andre Luiten also recommended reform of fellowship awards. Specifically, he suggests the introduction of a fourth ARC fellowship scheme aimed at early-career researchers who are less than three years out of their PhD, and better research support for Discovery Early Career Researcher Award (DECRA) fellowships. Professor Luiten also suggests that non-tenured staff should be eligible to apply for ARC fellowships given current staff already have secure employment.¹⁷
- 4.24 The Committee notes a range of other strategies suggested to improve equity, diversity and inclusion in the competitive grants process. For example, Science and Technology Australia urged the introduction of diversity quotas, gender application limits, de-identifying applications, limiting publication records, and restricting Emeritus Professors from inclusion on grant applications.¹⁸
- 4.25 Furthermore, discussing the under-representation of women in senior STEM roles, Dr Janine Pickering stated that ‘we need to change how productivity is defined and how work is organised’.¹⁹ In particular, Dr Pickering suggests that ‘Australia should move away from a centralised grants system focused on individual scientists and toward block funding whole institutions’.²⁰ This

¹⁵ Ms Natasha Abrahams, *Committee Hansard*, Melbourne, 6 August 2018, pp. 32-33.

¹⁶ QIMR Berghofer Medical Research Institute, *Submission 22*, p. [2].

¹⁷ Professor Andre Luiten, *Submission 78*, p. 4.

¹⁸ Science and Technology Australia, *Submission 37*, p. 8.

¹⁹ Dr Janine Pickering, *Submission 73*, p. 1.

²⁰ Dr Janine Pickering, *Submission 73*, p. 1.

would offer research institutions greater flexibility to manage research, resources, staff, and to support and promote diversity within these institutions.

- 4.26 The Committee fully supports the development of EMCRs as well as a capable and diverse research sector.

Regional universities

- 4.27 Regional and smaller universities were also identified as being disadvantaged by the current funding system. Specifically, the Committee was told that the current system favours the same universities:

In the current research environment, a limited number of universities control the bulk of the research funding from the government in both the competitive and Research Block Grant areas due to a history of success; this success is compounded year-on-year which sets the younger universities at an enduring disadvantage. The current grant assessment processes exacerbate these disparities; there is a culture of lead universities retaining all or the biggest portion of the grant with other universities with collaborating project members being overlooked.²¹

- 4.28 Distance from more populated areas, fewer research and support staff, and generally less revenue contribute to the challenges for regional universities in securing adequate funding for research. Southern Cross University set out some of these challenges in its submission. For example it noted:

- the relative age and location of the university appears to influence its ability to secure different funding streams from diverse sources;
- its geographic isolation from collaborators often requires significant investment in time and travel costs which are not always covered by grant funding; and
- the competitive funding system and national reporting frameworks place a significant workload burden on smaller universities which is challenging to absorb.²²

- 4.29 Murdoch University shared a similar view regarding the cost of administration, noting that the 'administration burden affects smaller

²¹ University of Notre Dame, *Submission 13*, p. 5.

²² Southern Cross University, *Submission 38*, p. [2].

institutions disproportionately because of the minimum ‘fixed costs’ in effectively managing research administration’.²³

- 4.30 The Menzies School of Health Research also noted the challenges of the dual funding system for agencies in regional areas. In its submission, it lists the additional expenses that are associated with conducting ‘meaningful’ Indigenous health research. In particular, they note the burden of covering the shortfall of indirect research costs ‘is often heaviest for institutes based in regional or remote areas, where external funding options are limited’. They further note that they spend a ‘disproportionate amount of time and resources raising money to cover this funding gap’.²⁴
- 4.31 Strategies put to the Committee to improve the competitiveness of regional universities included introducing:
- a new competitive funding program for rural and regional universities or to support regional research;
 - a target (20 per cent) for Commonwealth-commissioned research and consulting to take place through regionally based universities;
 - a regional loading for block grant funding, similar to that provided under the Commonwealth Grants Scheme; and
 - tied university fellowships to ensure that successful applicants are not recruited by other research institutions.²⁵

Collaborative Research Networks

- 4.32 Some regional and outer-metropolitan universities are strong research organisations in their own right—institutions like Deakin, Newcastle and Wollongong Universities. Others have traditionally focused on teaching and learning, but have research strengths they can build on. Working with larger universities that have a depth of research excellence enables a less research-intensive university to access new knowledge, facilities and networks. To address this the Commonwealth introduced the Collaborative Research Networks (CRN) program to help smaller and regional universities develop their research capacity by teaming up with other institutions.

²³ Murdoch University, *Submission 28*, p. [2].

²⁴ Menzies School of Health Research, *Submission 39*, p. [2].

²⁵ See Southern Cross University, *Submission 38* and Latrobe University, *Submission 52* for discussion.

- 4.33 The CRN program was extremely successful. An independent mid-term review found that it substantially exceeded its targets in relation to four out of five objectives, and that the value of grants won increased by 85 per cent (see Box 4.1).²⁶

Box 4.1 Indicative achievements of the CRN program, as at May 2014

- Prior to CRN 81 research Masters and PhD students were engaged in the identified areas of research. As of May 2014, this had increased to 219, significantly exceeding the target of 155.
- The number of journal papers published by CRN supported research groups increased from a baseline of 20 to 157 in May 2014, exceeding the target of 125 journal publications.
- As of May 2014, CRN participants had submitted 370 joint grant applications, up from a baseline of 26 and more than double the target of 139.
- The number of successful joint grant applications by CRN participants was also more than double the target, with 39 successes compared with a target of 15 and a baseline of 1.
- By May 2014, \$4.3 million of grants had been won, which was somewhat below the target of \$5.4 million, but nevertheless an 85 per cent increase over the baseline of \$2.6 million.

Source: ACIL Allen Consulting, Mid Term Programme Evaluation – Collaborative Research Networks, April 2015, p. ii.

- 4.34 The review found that CRN ‘helped develop research capacity by enabling a sustainable framework for the establishment of collaborative research consortia that should facilitate a more robust research and innovation system’.²⁷
- 4.35 The CRN program ceased in June 2016, and was not replaced.

²⁶ ACIL Allen Consulting, *Mid Term Programme Evaluation – Collaborative Research Networks*, <https://docs.education.gov.au/system/files/doc/other/crn_acil_eval_final_report_april_2015_0.pdf>, April 2015, p. ii (Note: Not all projects reported against all criteria).

²⁷ ACIL Allen Consulting, *Mid Term Programme Evaluation – Collaborative Research Networks*, <https://docs.education.gov.au/system/files/doc/other/crn_acil_eval_final_report_april_2015_0.pdf>, April 2015, p. ii.

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- 4.36 The Committee supports the discussion and recommendation of the recent Select Committee on Regional Development and Decentralisation which recommended that the Australian Government strengthen the role of, and better support, regional universities as pivotal institutions for social and economic development in regional areas.²⁸
- 4.37 To demonstrate its support of EMCRs and strong regional universities, the Committee makes the following recommendations:

Recommendation 7

- 4.38 **The Committee recommends targeted support for early and mid-career researchers (EMCRs). This support should include but not be limited to:**
- **reweighting of criteria and metrics for EMCRs to reflect career stages of researchers, and favour the strength of the research proposal rather than track record;**
 - **awarding more points to proposals that include EMCRs;**
 - **reform of specific grants and fellowships to better support EMCRs; and**
 - **where post award budgetary constraints impact on research projects, that EMCRs are not removed from projects, and continue to be supported.**

Recommendation 8

- 4.39 **The Committee recognises the importance of under-represented groups. It recommends that:**
- **peer reviewers are mindful of under-represented groups including EMCRs, Indigenous researchers, women, minority groups and rural and regional universities; and**
 - **funding agencies monitor and report annually on grant funding success rates for under-represented groups.**

²⁸ House Select Committee on Regional Development and Decentralisation, *Regions at the Ready: Investing in Australia's Future*, June 2018, p. 136.

Inter-disciplinary research

- 4.40 An emerging issue in evidence to the Committee was that the current research funding system does not adequately support interdisciplinary and multidisciplinary research, which can also be a barrier to collaboration. This is because it is either not clear which grant funding programs will support inter and multidisciplinary projects or these projects do not neatly fit into existing schemes. As such, it was suggested that there is a tendency for these projects to be overlooked or fall through the cracks.
- 4.41 The ARC Centre for Excellence for Climate Extremes stated that the current research system has evolved to ‘disincentivise collaboration’²⁹ and it also ‘remains hard to win research funding for genuinely interdisciplinary research’³⁰. It explained that:
- ... solving a problem like climate change requires physical science (physics, fluid dynamics, chemistry, physics and so on), engineering, law, economics and behavioral sciences, wrapped in policy-relevance. Such a proposal would cross all ARC panels and would almost certainly fall between those panels. The most impactful proposals are therefore at most risk of not being properly assessed.³¹
- 4.42 The Centre recommends the development of a national long term research strategy, and a review of funding to ‘highlight duplication, overlaps, conflicting data/tool investment’ in this area.³²
- 4.43 The same views were expressed by the University of Western Sydney, noting that ‘the call for inter and multidisciplinary projects has increased in recent years’, however these ‘highly innovative projects suffer because of their interdisciplinary qualities’. This is because ‘multi and interdisciplinary projects struggle to fit the assessment model under existing ARC panels’.³³
- 4.44 The Council of Academic Public Health Institutions Australasia (CAPHIA) also discusses the problem of funding interdisciplinary research under the current research funding system:

²⁹ Australian Research Council Centre of Excellence for Climate Extremes, *Submission 4*, p. [1].

³⁰ Australian Research Council Centre of Excellence for Climate Extremes, *Submission 4*, p. [3].

³¹ Australian Research Council Centre of Excellence for Climate Extremes, *Submission 4*, p. [3].

³² Australian Research Council Centre of Excellence for Climate Extremes, *Submission 4*, p. [1].

³³ Western Sydney University, *Submission 63*, p. [2].

... it places these researchers at a significant disadvantage, as reviewers of both funding schemes decide that interdisciplinary research is more appropriately funded by the other agency. Given the broad and interdisciplinary nature of much public health research, these issues about the purview of different agencies can mean that valuable projects are ineligible for funding from any agency. In other cases it can be unclear the relevant type or source of funding for a public health research project.³⁴

- 4.45 The CAPHIA also notes that this can place an unnecessary administrative burden on universities as they spend time and energy determining eligible funds, and preparing applications which will be unsuccessful.³⁵
- 4.46 Submissions called for clearer guidelines and mutually exclusive guidelines between the grant funding bodies and schemes to ensure that inter and multidisciplinary research is submitted to the right place, and managed by the right research panel. In addition, it was suggested that a combined ARC and NHMRC Committee be established to determine which agency would consider such applications.³⁶ This would remove the need for researchers to decide, and to spend time applying to different schemes to ensure the research proposal is considered.

Recommendation 9

- 4.47 **The Committee recommends the introduction of mechanisms to better support interdisciplinary research. This includes:**
- **clearer guidelines on the type of research to be supported by each scheme;**
 - **the establishment of a point of contact or panel to assist researchers determine which funding scheme will support interdisciplinary research; and**
 - **stronger consideration of interdisciplinary research as an important field to be supported and accommodated.**

³⁴ Council of Academic Public Health Institutions Australasia, *Submission 68*, p. [2].

³⁵ Council of Academic Public Health Institutions Australasia, *Submission 68*, p. [2].

³⁶ Professor Timothy Marchant, *Committee Hansard*, Sydney, Tuesday 7 August 2018, p. 8.

Industry collaboration

- 4.48 The Committee explored the issue of ‘near misses’ in its roundtable discussions. Near misses refer to those competitive grant proposals that are of high quality and fundable, but do not receive funding in the round.
- 4.49 The current research funding system adopts an all or nothing approach to funding. That is, if a researcher is successful, they will receive government funding; if they are unsuccessful, they have to find other funding opportunities.
- 4.50 The Committee heard that if a proposal is not successful in a competitive round, it may still attract funding through other means. Potential avenues for near miss research projects might include:
- applications being revised and resubmitted for the following round;
 - applications being repurposed for other funding schemes;
 - universities supporting the research through other revenue; and
 - obtaining funding through third parties such as industry or philanthropic donations.
- 4.51 Evidence to the Committee on ‘near miss’ funding highlighted the broader issue of industry collaboration. In particular, how to attract and engage with industry and other parties in a collaborative partnership.
- 4.52 One suggestion put to the Committee for attracting third party investment was the creation of a public portal similar to the European Commission’s Community Research and Development Information Service (CORDIS).³⁷ The idea of the portal is to share information about near miss projects as a means to attract funding and research partnerships. As described by Professor Brigid Heywood, Deputy Vice-Chancellor, Research at the University of Tasmania:
- ...if you’re alpha and funded with an industry partner, then it’s an opportunity for that kind of research. You can nominate to have that kind of research put up in a public portal and then others can see that that was a highly rated proposal, possibly with a partner but still needing some additional funding because it didn’t get picked up in the funding round.

³⁷ See *European Commission Community Research and Development Information Service* <https://cordis.europa.eu/guidance/home_en.html> accessed 8 October 2018.

Others might come in and go, 'Well, actually, we're very interested in that topic. We'd like to pick that up and partner with it'.³⁸

4.53 Discussions at the Committee's public hearings highlighted some issues for consideration if a similar model were introduced in Australia. Some of these considerations include the risks associated with publishing research proposals and ideas on a public site; potential changes to peer-reviewed proposals when other partners are included or substituted; and the broader issue of how research projects should be funded.³⁹

4.54 A further risk of devaluing the relationship with third parties was also identified, particularly if industry and donors might be seen as an 'afterthought'. As explained by Professor Kathryn McGrath, Vice-Chancellor, Research at the University of Technology Sydney:

... one of the things that is embedded in that relationship with donors and industry is that you are actually not just valuing the money that they are going to give you; you are valuing their expertise and knowledge base. If the government were to start to explore this from a position of 'You're now going to come and fix our problem of short funding by funding our near misses,' then we are devaluing what they bring and just saying they're just a money tree.⁴⁰

4.55 Professor McGrath further cautioned that 'we really need to be careful that we don't lose that full understanding of what the value of each of the parties is within the research sector.'⁴¹

³⁸ Professor Brigid Heywood, *Committee Hansard*, Melbourne, 6 August 2018, p. 10.

³⁹ See *Committee Hansard*, Melbourne, 6 August 2018 and Sydney, 7 August 2018.

⁴⁰ Professor Kathryn McGrath, *Committee Hansard*, Sydney, 7 August 2018, p. 3.

⁴¹ Professor Kathryn McGrath, *Committee Hansard*, Sydney, 7 August 2018, p. 3.

4.56 The Committee's attention was drawn to the suggestion that the near miss portal is 'at the wrong point'.⁴² Rather than something that is used after the application process – and a perceived 'afterthought' – it was suggested that it be used at the start of the process. Mrs Lyn McBriarty, Strategic Advisor, Office of the Senior Deputy Vice-Chancellor at the University of Newcastle observed:

You're actually trying to marry the partners of the academia up before the application, so you're actually getting a stronger, well-thought-through application before it gets to that end point.⁴³

4.57 The Committee sees the potential of a public portal to improve industry collaboration and to increase overall research and development (R&D) investment.

Recommendation 10

4.58 The Committee recommends that the Australian Government explore the feasibility of a public portal – similar to that adopted by the European Commission – to facilitate partnerships between research institutions, industry, and other strategic partners.

4.59 The Committee recommends that any feasibility study be undertaken in consultation with the research sector to identify and manage any potential risks.

Improving industry collaboration

4.60 The Committee heard that industry collaboration is important to the research sector for two main reasons. It contributes to the development of ideas and innovation and the sharing of expertise and infrastructure. And secondly, it increases financial investment in research.

4.61 The Committee also heard that the current research and funding system is a barrier to industry collaboration. In his submission to the inquiry, Professor Adrian Manning noted the research funding process is problematic for potential industry partners:

⁴² Mrs Lyn McBriarty, *Committee Hansard*, Sydney, 7 August 2018, p. 3.

⁴³ Mrs Lyn McBriarty, *Committee Hansard*, Sydney, 7 August 2018, p. 4.

The pedantic and excessively long application process is particularly problematic for industry partners. Many simply don't understand why the process is the way it is, because in many sectors outside academia, such a process would never be acceptable. The current system risks alienating potential funders of research.⁴⁴

4.62 The Australian Academy of Science made a number of recommendations in its submission for improving the interface between the academic and industry sectors. These include:

- establishing a central point of access for industry and commercial organisations to connect to the knowledge, expertise, services and facilities available from Australian universities and research institutes (for example, Scotland's Interface Program);
- increasing collaborative funding arrangements, including introducing a collaboration premium for the R&D tax incentive; and
- strengthening Industry Growth Centres, expanding inter-sectoral mobility, and growing the Co-operative Research Centre program.⁴⁵

4.63 Similar suggestions were made in other submissions to the inquiry. For example, the Group of Eight advocated for a collaboration premium in the R&D tax incentive to encourage business to work with universities and other publicly funded research institutions.⁴⁶

4.64 Scotland's Interface Program was highlighted as a successful model that connects business with academic expertise. According to its website, Interface was established in 2005 and:

- works with businesses of all sizes, in all sectors, to match them to Scotland's world-leading academic expertise to help them grow;
- has established and efficient processes to save time and money in finding and accessing academic expertise, research, technologies, specialist facilities and funding;
- facilitates clusters of businesses and academics working together to tackle industry sector challenges leading to transformational outcomes and impacts;

⁴⁴ Professor Adrian Manning, *Submission 97*, p. 2.

⁴⁵ Australian Academy of Science, *Submission 82*, p. 2.

⁴⁶ The Group of Eight, *Submission 91*, p. 11.

- helps organisations to become more competitive, enabling them to increase their profits, maximise their export potential and ultimately become more sustainable; and
 - helps organisations to access a range of funding options to offset the cost of their project.⁴⁷
- 4.65 The Committee sees value in this approach, particularly as a possible means to overcome some of the difficulty industry may have in identifying potential collaborative partnerships and funding opportunities.
- 4.66 The Committee notes the collaboration premium was a recommendation of the *Review of the R&D Tax Incentive*.⁴⁸

Recommendation 11

- 4.67 The Committee recommends closer examination of models, strategies and incentives, including those used internationally, to increase industry collaboration with universities and other publicly funded research institutions.**
- 4.68 The Committee recommends the Australian Government consider this issue for a future parliamentary inquiry.**

⁴⁷ *Interface* <<https://interface-online.org.uk>> accessed 8 October 2018.

⁴⁸ Ferris, B, Finkel, A, Fraser, J, *Review of the R&D Tax Incentive*, 4 April 2016. <<https://archive.industry.gov.au/innovation/InnovationPolicy/Research-and-development-tax-incentive/Documents/Research-and-development-tax-incentive-review-report.pdf>> accessed 8 October 2018.

5. Research Performance and Investment

- 5.1 In this final chapter, the Committee considers more strategic issues related to Australian research investment, including long term planning, research performance, and levels of investment. The costs associated with publishing research are also discussed.

Long term planning

- 5.2 Submissions to the inquiry suggested a more strategic approach is needed to the management of Australia's research investment, including long term planning and coordination.
- 5.3 For example, Macquarie University called for a research landscape that balances and supports different types of research, and stated that 'long term, stable and coordinated planning and resourcing are vital to maintaining the national research capability and competitiveness'.¹ Similarly, Queensland University of Technology (QUT) identified 'agreement on a long term national vision for research' as a key structural issue, specifically, that 'vision and investment must be long-term and insulated from the vagaries of election cycles'.²

¹ Macquarie University, *Submission 59*, p. 2.

² Queensland University of Technology, *Submission 34*, p. 1.

- 5.4 The value of such long term planning was noted by Innovation and Science Australia:

Longer term policy and investment settings are important and enable researchers and their institutions to focus on delivering outcomes.³

- 5.5 Professor Bronwyn Harch from the University of Queensland also pointed out that long term planning and infrastructure aids in attracting and retaining research talent.⁴ This is because people are aware of the research priorities and can see where investment is being made. Researchers can then make informed decisions about their research endeavours.

Research performance

- 5.6 Australia enjoys a reputation for producing world class research, and is often described as ‘punching above its weight’. Universities Australia cites the *Scimago Journal and Country Rank* which notes that ‘in 2017, Australia was responsible for 2.7 per cent of the world’s scientific output, while being home to only 0.34 per cent of the world’s population’.⁵
- 5.7 Australian research has contributed to significant innovation and development including including Wi-Fi, solar technology, the cervical cancer vaccine, the cochlear implant, antibiotics and ultrasound. In addition to the obvious benefits of such life-changing research, there are some other indicators that are used to measure research performance. These indicators include publications and citations, and Australian Research Council (ARC) assessment measures – Excellence in Research for Australian (ERA), and Engagement and Impact Assessment (EIA).
- 5.8 The relevance of these indicators to the Committee’s inquiry extends beyond the solid picture it provides of Australia’s research capability. These indicators also highlight further areas of inefficiencies identified in evidence.

³ Innovation and Science Australia, *Submission 30*, p. 1.

⁴ Professor Bronwyn Harch, *Committee Hansard*, Brisbane, 30 July 2018, pp. 7-8.

⁵ Universities Australia, *Submission 27*, p. 5.

Research publications

- 5.9 Australia's annual published research has more than doubled over the past decade. Between 2006 and 2016, Australia's publications grew by 112 per cent. This is significantly more than comparable countries such as the United Kingdom (UK) (49 per cent), the United States (US) (30 per cent) and the Organisation for Economic Cooperation and Development (OECD) (39 per cent).⁶
- 5.10 A similar trend was reported for research citations. Between 2006 and 2016, Australian publication citations, increased from 17 per cent to 37 per cent. Again, these figures are above the OECD total (10 per cent), and are comparable with the UK and US.⁷
- 5.11 The importance of publications and citations to the research sector was emphasised by Professor Andrea Bishop, Director, Office for Research at Griffith University:
- Research publications are part of the currency in which we trade within our disciplines. How you become influential in your discipline and how you become a thought leader is by pushing the ideas that you have through peer reviewed literature. The numbers that we're talking about are not just about the volume of ideas that are being shared; it's also about how those ideas are being picked up.⁸
- 5.12 While Australia clearly performs well internationally with regard to its publication and citation outputs, the costs and inefficiencies associated with the current system of publishing research were raised with the Committee.
- 5.13 In submissions to the inquiry, the Australasian Open Access Strategy Group (AOASG) and Council of Australian University Librarians (CAUL) describe the predominant model for publishing research in Australia.⁹ In particular, they note this is largely through subscription journals which is 'a multi-billion dollar commercial industry, mostly of non-Australian for-profit publishers'.¹⁰

⁶ Innovative Research Universities, *Submission 90*, p. 2.

⁷ Innovative Research Universities, *Submission 90*, p. 2.

⁸ Professor Andrea Bishop, *Committee Hansard*, Brisbane, 30 July 2018, p. 11.

⁹ Australasian Open Access Strategy Group, *Submission 11 and Submission 11.1* and Council of Australian University Librarians, *Submission 56*.

¹⁰ Australasian Open Access Strategy Group, *Submission 11*, p. [1].

5.14 The system of subscription journals was further described as ‘largely closed, complex, costly, and non-competitive’¹¹ and represents a ‘fundamental inefficiency in the system’¹² when every university that wants to provide access to specific journals has to subscribe to those journals.¹³ For context, CAUL provided the following subscription costs:

To put the cost of access to research outputs into perspective Australian university libraries spent approximately \$281.76 million on access to journal subscriptions alone in 2017 ... a cost which continues to increase. In addition to this, researchers may also be asked to pay Article Processing Charges (APCs) by publishers to make their work openly available, these fees can range from \$1500 to \$8000 per article.¹⁴

5.15 The Committee heard that the costs associated with subscription journals differ between countries and lack transparency, with individual countries negotiating their own subscription costs.¹⁵

5.16 An emerging model within scholarly publishing is open access publishing. Open access journals provide free online access to anyone wanting Australian published research. It is considered more cost effective than subscription journals because open access journals only incur a one-off cost at the time of publication.

5.17 While there are moves internationally and locally within Australia to shift to open scholarship, Australia lacks a national coordinated approach. In its submission, the AOASG sets out a proposal to establish a national coordinating body, funded for five years, to oversee the development of a strategic approach to open scholarship in Australia. It suggests that such a body could either be situated within an existing government agency or be constituted separately.¹⁶ The Committee supports these recommendations.

¹¹ Australasian Open Access Strategy Group, *Submission 11.1*, p. 1.

¹² Australasian Open Access Strategy Group, *Submission 11*, p. 1.

¹³ Australasian Open Access Strategy Group, *Submission 11*, p. 1.

¹⁴ Council of Australian University Librarians, *Submission 56*, p. 4.

¹⁵ Professor Virginia Barbour, *Committee Hansard*, Brisbane, 30 July 2018, p. 30.

¹⁶ Australasian Open Access Strategy Group, *Submission 11.1*, pp. 3-4.

Recommendation 12

5.18 The Committee recommends that the Australian Government develop a more strategic approach to Australia’s open scholarship environment.

ARC assessment measures

5.19 To provide information about the quality and impact of Australian university research, the ARC manages two performance programs in parallel:

- Excellence in Research for Australia (ERA) program which ‘measures performance within each discipline at each university’ to give a ‘detailed view of the research landscape in Australia’;¹⁷ and
- Engagement and Impact Assessment (EIA) program which will ‘assess the engagement of researchers with end-users, and show how universities are translating their research into economic, social, environmental and other impacts.’¹⁸

5.20 Evidence to the inquiry suggests that while there is merit and value in the ERA and EIA exercises, universities consider the processes to be costly and labour intensive.

5.21 For example, the University of Melbourne estimated that the cost of the ERA to its institution was \$1 million. It suggested moving the ERA from a three-year to a six-year cycle.¹⁹

5.22 In its submission, Griffith University not only noted the diminishing returns from ‘an exercise estimated to cost between \$60-80 million’ per ERA round but suggested conducting the ERA and EIA cycle every six years would free up universities’ time:

A six-year ERA/[EIA] cycle will deliver cost savings and free up considerable academic and administrative resources, benefiting both the Government and the university sector, to engage more effectively in peer review ranging from

¹⁷ See Australian Research Council, *Excellence in Research Australia*, <www.arc.gov.au/excellence-research-australia>, accessed 8 October 2018.

¹⁸ See Australian Research Council, *Engagement and Impact Assessment*, <www.arc.gov.au/engagement-and-impact-assessment> accessed 8 October 2018.

¹⁹ University of Melbourne, *Submission 81*, p. 6.

internal scrutiny of grant applications prior to submission to that conducted on behalf of the granting bodies.²⁰

5.23 The same view was shared by Macquarie University who highlighted that the ERA 'cost the sector tens of millions of dollars, as well as significant opportunity costs in the diversion of academic time towards service for this exercise'.²¹

5.24 In its submission, the University of Sydney focused on the administrative burden of these exercises :

[The ERA and EIA] require a huge investment of staff time and resources to complete. This inevitably increases our operating costs and diverts researchers away from their research. While we believe both ERA and [EIA] are important, care needs to be taken to ensure that the administrative burden they impose is commensurate with the value of the information they [deliver] about the quality and impact of Australian university research.²²

5.25 At a public hearing, Professor Duncan Ivison, Deputy Vice-Chancellor, Research, University of Sydney reinforced the point made in the written submission, noting particularly that much of the information is now publicly available:

... can we get the same outcomes, which I think are very important for the government, from the Excellence in Research Australia assessment exercise in a more light-touch way? A lot of the data that is driving that process is now publicly available through other means and that would relieve, I think, some of the administrative burden on the system, and also, frankly, on the ARC.²³

5.26 The University of Wollongong also noted that a lot of the ERA reporting data is 'significantly redundant' and available through other indices.²⁴ In supporting previous comments made about the ERA and EIA, Professor Timothy Marchant, Dean of Research at the University of Wollongong, also noted the burden on universities and that there are 'significant overlaps with other exercises that are already taking place on an international basis.'²⁵

²⁰ Griffith University, *Submission 19*, p. 3.

²¹ Macquarie University, *Submission 59*, p. 5.

²² University of Sydney, *Submission 87*, p. 4.

²³ Professor Duncan Ivison, *Committee Hansard*, Sydney, 7 August 2018, p. 2.

²⁴ University of Wollongong, *Submission 50*, p. 8.

²⁵ Professor Timothy Marchant, *Committee Hansard*, Sydney, 7 August 2018, p. 2.

Recommendation 13

5.27 The Committee recommends that the Excellence in Research for Australia (ERA) and Engagement and Impact Assessment (EIA) programs be reviewed to consider ways to reduce the cost and administrative burden on universities. In particular, the Committee recommends:

- **universities no longer be required to provide any information or data that is already available; and**
- **in recognition of the amount of data already in the public domain and the labour-intensive nature of the ERA and EIA, that the timing of the data collection be reduced from three to five years.**

Quantum of funding

5.28 In 2015-2016, Australia's total expenditure on research and development (R&D) was estimated to be \$31.2 billion or 1.88 per cent of Gross Domestic Product (GDP).²⁶ The Australian Government funded approximately one third of this expenditure.

5.29 The Department of Education and Training noted in its submission that 'Australian Government investment in R&D has steadily grown in real terms over the past decade, and has remained relatively stable as a proportion of GDP.'²⁷ On average, this investment is 0.62 per cent of GDP.²⁸

5.30 Increasing expenditure on R&D was a general theme in evidence to the inquiry. During discussions, the Committee's attention was drawn to four broad funding issues:

- overall investment in R&D;
- international opportunities for research;
- a non-medical future fund; and
- inequity across the research sector.

5.31 Each of these is discussed more fully below.

²⁶ Department of Education and Training, *Submission 92*, p. 5.

²⁷ Department of Education and Training, *Submission 92*, p. 6.

²⁸ Department of Industry, Innovation and Science, *Science, Research and Innovation Budget Tables Snapshot 2017-2018*, October 2017. See <www.industry.gov.au/sites/g/files/net3906/f/2017-18-sri-budget-tables-snapshot.pdf> accessed 12 September 2018.

Overall investment in R&D

5.32 The significance of R&D investment to Australia and indeed globally, cannot be overestimated. It underpins new knowledge and innovation and informs the way we live. As stated by Universities Australia:

Research and development is not simply a competing demand in budgetary consideration—it is one of the most productive mechanisms that we have as a society to invest in the future prosperity and wellbeing of both ourselves and future generations.²⁹

5.33 As noted earlier in this chapter, Australia is recognised for ‘punching above its weight’ when it comes to research performance and enjoys a world class reputation. Australian investment in R&D is widely recognised as money well spent. Ms Vicki Thomson, Chief Executive Officer of the Group of Eight highlighted the significance of research funding when quantifying the (near) ten-fold return on public investment. Ms Thomson told the Committee:

We know that research funding delivers bang for its buck, and we know that from the economic impact analysis that the Go8 released last week, but it’s true for the whole sector; we just took a cut from us, of course. We know that for every \$1 of taxpayers’ money that’s invested there’s nearly a \$10 return. So it’s not wasted, and it’s a very important investment.³⁰

5.34 Similarly, Macquarie University notes that research conducted by universities has been estimated to contribute around \$160 billion (10 per cent) per annum of GDP (2014).³¹

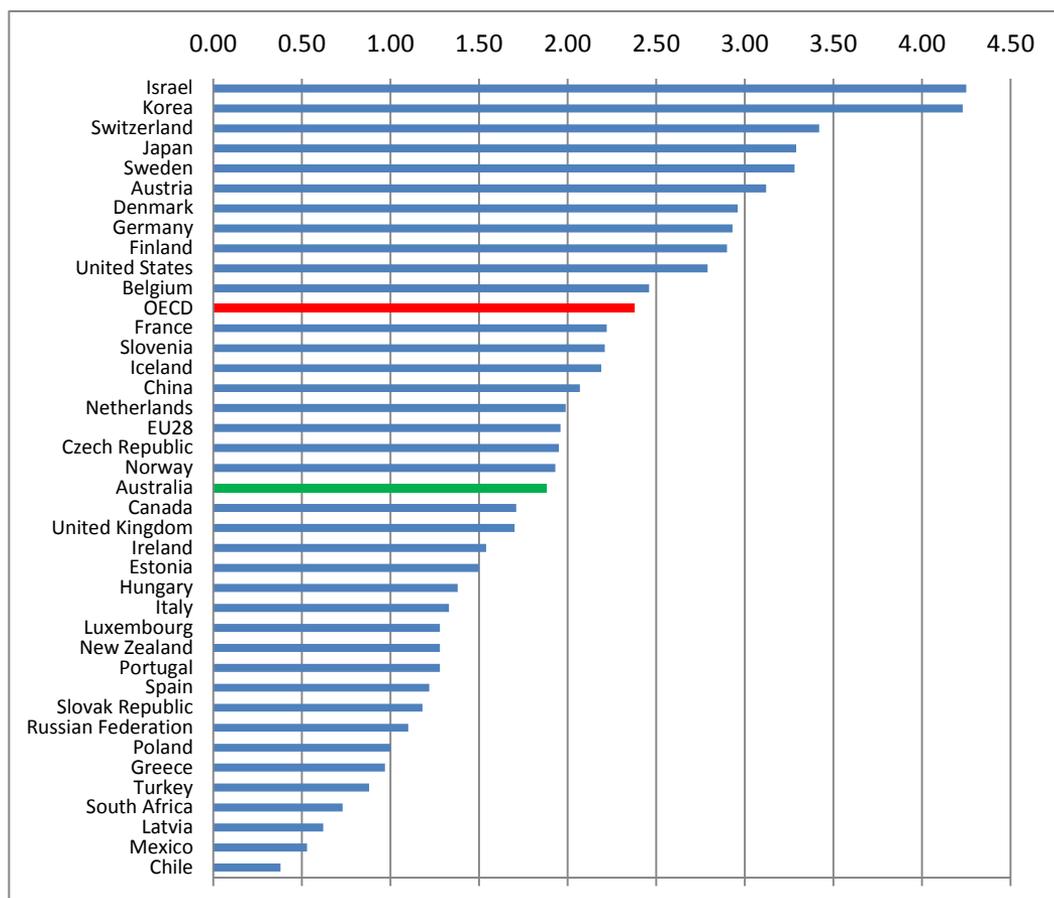
5.35 The Committee was told that compared to other OECD nations, Australia spends less on overall R&D investment. For example, in 2016 the average overall expenditure on R&D was 2.38 per cent for OECD countries, compared to 1.88 per cent in Australia. These comparisons are shown in Figure 5.1.

²⁹ Universities Australia, *Submission 27*, p. 5.

³⁰ Ms Vicki Thomson, *Committee Hansard*, Canberra, 20 August 2018, p. 1.

³¹ Macquarie University, *Submission 59*, p. 1.

Figure 5.1 Gross expenditure on R&D as a percentage of GDP.



Source: *Universities Australia, Submission 27, p. 4.*

5.36 Further, Australia's gross expenditure on R&D has declined from a high of 2.25 per cent in 2008-09 to 1.88 per cent in 2015-16.³²

³² See Research and Experimental Development, Businesses, Australia, 2015-16, *Gross Expenditure on R&D (GERD)*, <www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/8104.0Main%20Features22015-16?opendocument&tabname=Summary&prodno=8104.0&issue=2015-16&num=&view> and OECD Data, *Gross Domestic Spending on R&D*, <<https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>> accessed 8 October 2018.

Improving success rates

- 5.37 In its submission to the inquiry, QUT identified increased funding as the most effective means to address problems with Australia's research funding system, including grant success rates. Rather than changes to process, QUT suggests that changes to funding levels will drive effective change:

The single most significant impediment to the effectiveness of the national research enterprise discharging its obligations is not efficiency or process, it is the inadequate quantum of funding.

... Restoring funding to a healthy level will help with success rates and go some way to address the cost/benefit issues that apparently concern Committee members and that most submissions have raised. More money won't solve everything, of course, but the lack of it is definitely a factor hampering the system's effectiveness, and adequate funding will go far further to rectifying any concern the Committee could point to than could relatively minor tweaks to processes.³³

- 5.38 A consistent point to the Committee was that low success rates are a result of a limited pool of funds, not a limited pool of quality applications.

- 5.39 Professor Frank Gannon from the Australian Academy of Health and Medical Sciences (AAHMS) also linked low grant success rates to low levels of funding, telling the Committee:

Low levels of success are because either there are too many people applying or there isn't enough money in the system for it. I think the analysis would say that there aren't too many people applying compared to internationally, but Australia is spending down in this area.³⁴

- 5.40 Similarly, Professor Annette Woods, President of the Australian Association for Research in Australia said:

... there's much evidence to suggest that the applications that are going into schemes are of quality. We've seen an increase in that. They now are quality applications that are going in. So it's not about quality, as to why particular disciplines, or a large percentage of the grants that go in across all disciplines, are not being funded. It's about research funding.³⁵

³³ Queensland University of Technology, *Submission 34*, p. 5.

³⁴ Professor Frank Gannon, *Committee Hansard*, Brisbane, 30 July 2018, pp. 20.

³⁵ Professor Annette Woods, *Committee Hansard*, Brisbane, 30 July 2018, p. 22.

International opportunities for research

- 5.41 Research is conducted in a global environment. The development of ideas, fostering of research partnerships, and sharing research findings all occur within an international community. Universities Australia highlighted the value of international research, particularly collaboration, in its submission:

International collaborations are increasingly the most successful model for creating ground-breaking new research results to tackle global challenges and harness huge opportunities.³⁶

- 5.42 The Committee heard that despite Australia's standing as world class researchers, it does not maximise its opportunities to engage internationally. Professor Brigid Heywood, Deputy Vice-Chancellor, Research, University of Tasmania told the Committee:

Australia benefits from and contributes to an international arena of intellectual inquiry – that, with the knowledge creation processes that Australia benefits from, Australia draws benefit in part from its relationship through and with international collaborations. With many of the key problems for Australia, we share and gain experience by being part of other schemes internationally, yet our systems are not lined up to allow us to take best opportunity from those international schemes.³⁷

- 5.43 Professor Heywood explained that this shortcoming is introducing an inefficiency of cost and process, as well as missed opportunities for Australian researchers. She further noted that in the long term Australia will become less competitive internationally in terms of recruiting talent and joining large international collaborative projects.³⁸
- 5.44 Two specific issues were identified as contributing to this problem – timing of available funding, and access to international funds.

Timing

- 5.45 Evidence to the inquiry identified that Australian deadlines are not aligned with international funding deadlines. This is said to hamper collaborative research efforts between countries.

³⁶ Universities Australia, *Submission 27*, p. 13.

³⁷ Professor Brigid Heywood, *Committee Hansard*, Melbourne, 6 August 2018, p. 4.

³⁸ Professor Brigid Heywood, *Committee Hansard*, Melbourne, 6 August 2018, pp. 4-5.

5.46 For example, in its submission, the Australian National University (ANU) highlighted missed European opportunities:

... the German DFG International Research Training Groups program could potentially be aligned with the ARC Industrial Transformation Training Centres; however, the vastly different guidelines and timing of schemes does not enable joint proposals that could leverage international investment to create transformational impact.³⁹

5.47 Closer to home, Professor Heywood raised the same issue in regard to New Zealand funding opportunities, citing the launch of its national science web:

... they've put a significant amount of ten-year-based funding in national science priorities, which line up almost exactly with some of the things that we would argue are priorities here. But the alignment of our schemes is not allowing for what I would call genuine collaborative endeavour, which seems odd, given that research is an international collaborative endeavour.⁴⁰

Access

5.48 The Committee heard that Australia does not currently have a 'large scale multilateral government-supported funding scheme' to support international collaborative research.⁴¹ While there are some schemes that support bilateral research, there is no scheme to take advantage of wider international opportunities.⁴²

5.49 Similarly, the Committee was told that compared to international counterparts—for example, the German Academic Exchange Service, the US National Science Foundation, the China Scholarship Council, and the European Commission's Horizon 2020—Australia does not have any schemes to support international mobility.⁴³ International mobility of researchers was identified as being invaluable for universities to enhance their international reputation, build international relationships, increase exposure to new research areas, and to recruit international students.⁴⁴

³⁹ Australian National University, *Submission 31*, p. 4.

⁴⁰ Professor Brigid Heywood, *Committee Hansard*, Melbourne, 6 August 2018, p. 5.

⁴¹ University of Canberra, *Submission 45*, p. 3.

⁴² University of Canberra, *Submission 45*, p. 3.

⁴³ Macquarie University, *Submission 59*, p. 4.

⁴⁴ Macquarie University, *Submission 59*, p. 4.

- 5.50 Much of the shortfall in international opportunity has been attributed to a lack of government funding, rather than the availability of international opportunities. In other words, there are international research schemes available to Australian researchers but they require government support to participate.
- 5.51 Murdoch University stated in its written submission that Australia's university grant system is not internationally engaged. It noted that joint projects with an international focus, working on significant problems, require Australia to tap into the EU, US and UK funding.⁴⁵ Similarly, Professor Jim McCluskey, Deputy Vice Chancellor, Research, University of Melbourne explained to the Committee:

Apart from the administrative alignment and the alignment of national priorities, the single biggest obstacle is that we don't put money on the table. Eligibility for Horizon 2020 has been hampered by the fact that we are not actually a partner organisation with the EU. To become a partner organisation would require some negotiation at a government level, and it would require us to put cash on the table, which would be at risk, because you put it into a pool of EU funding and it gets competed for.⁴⁶

- 5.52 In a supplementary submission, the University of Melbourne outlines a process for securing involvement in programs such as Horizon Europe.⁴⁷ The Group of Eight also emphasised the importance of Australia's involvement.⁴⁸

Non-medical future fund

- 5.53 In 2014, the Australian Government announced the establishment of a Medical Research Future Fund (MRFF)—a \$20 billion investment in health and medical research.⁴⁹ The MRFF complements NHMRC funding to support translational research.

⁴⁵ Murdoch University, *Submission 28*, p. [1].

⁴⁶ Professor James McCluskey, *Committee Hansard*, Melbourne, 6 August 2018, p. 5.

⁴⁷ University of Melbourne, *Submission 81.1*, pp. 2-4.

⁴⁸ Ms Vicki Thomson, *Committee Hansard*, Canberra, 20 August 2018, p. 4.

⁴⁹ For more information see Department of Health, *Medical Research Future Fund*, <<https://beta.health.gov.au/initiatives-and-programs/medical-research-future-fund>> accessed 8 October 2018.

- 5.54 Several submissions to the inquiry called for the establishment of a non-medical research fund, similar to the MRFF. For example, the University of New South Wales recommended the introduction of an Australian Research Translation Future Fund; the Australian Academy of Science recommended the creation of a National Science Future Fund; Science and Technology Australia recommended the establishment of a Research Future Fund, and the Group of Eight recommended the creation of a translation fund for non-health and medical research.⁵⁰
- 5.55 A key reason put forward for the introduction of a non-medical future fund was the perceived funding inequity between health and medical research and other disciplines such as humanities and social sciences.
- 5.56 As explained by Professor McCluskey at the Committee’s public hearing in Melbourne:
- ... it’s certainly the case that at the moment the Australian Research Council is effectively the only real place a scholar in the humanities and social sciences can win a research grant. The ARC allocates about 20 per cent of its budget to humanities and social sciences. Whereas, if you’re a medico like me you can go to the NHMRC—\$850 million a year thereabouts—you can go to the Medical Research Future Fund and if you are clever enough you can frame the research grant as basic biological science, which it very often is and go to the ARC. That means it’s a very uneven playing field, and so the notion of having a little bit more funding for the humanities and social sciences I certainly would vote for.⁵¹
- 5.57 It was also noted that such a fund is not just about more investment, it is about leveraging and signalling to industry that engagement is an important priority.⁵²
- 5.58 Submissions calling for the introduction of a non-medical future fund also emphasised that any new fund should be additional research investment rather than replacing existing funding arrangements.

⁵⁰ University of New South Wales, *Submission 62*, p. 3; Australian Academy of Science, *Submission 82*, p. 3; Science and Technology, *Submission 37*, p. 3, and The Group of Eight, *Submission 91*, p. [8].

⁵¹ Professor James McCluskey, *Committee Hansard*, Melbourne, 6 August 2018, p. 2.

⁵² Ms Renee Hindmarsh, *Committee Hansard*, Canberra, 20 August 2018, p. 2.

Inequity across research sector

5.59 The Committee heard that there is inequity in funding across research stages and disciplines. Specifically, there is a tendency for applied research and shorter term research projects to be more attractive than blue sky or longer term research.⁵³

5.60 Throughout submissions, there was concern that blue sky and basic research is under pressure and being overlooked for more commercially attractive applied research. However, many submissions pointed out the latter cannot occur without the former.

5.61 For example, Macquarie University stated that the success of applied research is dependent upon the proper funding of basic research:

Business cases for applied research, particularly with clear end-user beneficiaries, are often more attractive to funders than proposals to conduct fundamental research. However, basic research, as the bedrock of advancement, has led to many important applications that almost without exception, unanticipated at the time that the research was undertaken.⁵⁴

5.62 The University of Melbourne made a similar statement:

While basic research does not normally target specific innovations, it plays an important enabling role in the innovation system by providing the theoretical basis for technological and other advances. It forms the sustaining pipeline through which further research innovation and translation can occur as discoveries move further along the commercialisation pathway.⁵⁵

5.63 The importance of blue sky research to Australia's research wealth was described by Professors Jordan Nash and Craig White from the Faculty of Science at Monash University. They said:

Basic, pure, or 'blue-skies' research seeks to advance our fundamental understanding of the natural world. It encompasses both the pursuit of new knowledge and the production of new tools and techniques to be used in the pursuit of that knowledge. It is the foundation on which technological innovation and commercialisation rest, and it is the cornerstone of Australia's scientific reputation. Our daily lives are continually impacted by innovations that can be traced back to basic research; examples include the invention of

⁵³ Macquarie University, *Submission 59*, p. 2.

⁵⁴ Macquarie University, *Submission 59*, p. 2.

⁵⁵ University of Melbourne, *Submission 81*, p. 12.

WiFi, the functioning of the satellite-based global positioning system (GPS), and the development of anti-cancer and other drugs.⁵⁶

5.64 Professors Nash and White note the decline in basic research funding over the last decade. While acknowledging that Australia still invests more in basic research than other OECD countries, the Department of Education and Training also noted the decline in Australia's expenditure on basic research:

While university expenditure on basic research has been increasing in real terms, it has been growing at a slower rate than expenditure on applied research. As a result, basic research as a share of total R&D expenditure has been steadily falling since the early 1990s.⁵⁷

5.65 Submissions to the inquiry called for greater balance in research investment across the research pipeline. In his submission, Professor Andre Luiten noted:

Any sustainable research project funding scheme needs to have opportunities at each of the various stages of the innovation pipeline, as well as a sensible method for appropriate projects to transition between each stage.⁵⁸

5.66 To support this, Professor Luiten describes the following framework:

- a. Long-term investments into blue-sky research with its potential for breakthrough technologies;
- b. Shorter term targeted investments to bring promising research to the point where it becomes of interest to the private sector;
- c. Co-funding research in academia between industry and government in circumstances where industry sees the technical or execution risk as too high for it to be undertaken from solely industry financial resources;
- d. Government-assistance for industry to undertake research where the financial risk would make the project otherwise unviable.⁵⁹

⁵⁶ Monash University – Faculty of Science, *Submission 61*, p. 1.

⁵⁷ Department of Education and Training, *Submission 92*, p. 8.

⁵⁸ Professor Andre Luiten, *Submission 78*, p. 1.

⁵⁹ Professor Andre Luiten, *Submission 78*, p. 1.

5.67 Similarly, there were calls for longer term grant funding, particularly when considering the nature of scientific or ecological experiments:

... not all research questions can be answered in a three-year time window, which is the length of most major grants currently. This is very true when investigating the dynamics of Australia's unique ecosystems, which often play out over decadal timescales. That means you need research and data streams at a decade timescale. So we would suggest that Australia explores establishing a new funding scheme that supports explicitly long-term research — research that is answering questions that require time series data on the scale of eight to 12 years.⁶⁰

5.68 A similar point was made by the Ecosystem Science Council. In its submission, the Council identified sustainable funding for long term ecological research as a priority issue to be addressed, suggesting the ARC's Act be amended to add a new funding stream for this purpose.⁶¹

5.69 The Committee's inquiry has very much focused on research funding processes and ways to improve the *administration* of funding in Australia. The Committee supports the need for long term planning and investment, as well as the identification of strategic research priorities to maximise Australia's research investment. It also recognises the importance of collaborative research endeavours, particularly in the international arena.

Recommendation 14

5.70 The Committee recommends the Australian Government provide greater oversight and coordination of Australia's research investment. It recommends a broader strategic review of Australia's research and development investment to identify key research priorities, better coordinate national and international research efforts, and ensure adequate investment across the research pipeline.

5.71 The Committee recommends consideration be given to the establishment of a future or translation fund for non-medical research.

⁶⁰ Dr Bek Christensen, *Committee Hansard*, Brisbane, 30 July 2018, p. 21.

⁶¹ Ecosystem Science Council, *Submission 2*, p. 1.

Recommendation 15

5.72 Given the strength of Australia's research impact, the Committee recommends that the Australian Government consider investing and participating in international research funds such as Horizon Europe.

Mr Andrew Laming MP

Chair

24 October 2018

A. Submissions

- 1 Professor Anthony Jorm
- 2 Ecosystem Science Council
- 3 Dr Nicholas White
- 4 ARC Centre of Excellence for Climate Extremes
- 5 Ms Francesca Beddie and Ms Linda Simon
- 6 Alphacrucis College
- 7 School of Biological Sciences, Monash University
- 8 *Name Withheld*
- 9 The University of Western Australia
- 10 Deakin University
- 11 Australasian Open Access Strategy Group
11.1 Supplementary submission
- 12 Knowledge Commercialisation Australasia Pty Ltd
- 13 The University of Notre Dame Australia
- 14 Geoscience Australia
- 15 University of South Australia
- 16 Regional Universities Network
- 17 The Royal Australian and New Zealand College of Psychiatrists
- 18 Simulation Australasia Limited
- 19 Griffith University

- 20 Professor Paul Glasziou
- 21 Australasian Council of Deans of Arts, Social Sciences and Humanities
- 22 QIMR Berghofer Medical Research Institute
- 23 The George Institute for Global Health
- 24 Neuroscience Research Australia
- 25 Australian Catholic University
- 26 Australian Academy of Health and Medical Sciences
- 27 Universities Australia
- 28 Murdoch University
- 29 Curtin University
- 30 Innovation and Science Australia
- 31 Australian National University
- 32 Charles Sturt University
- 33 Professor Adrian Barnett
 - 33.1 Supplementary submission
- 34 Queensland University of Technology
- 35 Australasian Research Management Society
- 36 Association of Australian Medical Research Institutes
- 37 Science and Technology Australia
- 38 Southern Cross University
- 39 Menzies School of Health Research
- 40 Victorian TAFE Association
- 41 University of Tasmania
- 42 Department of Industry, Innovation and Science
- 43 RMIT University
- 44 Academy of the Social Sciences in Australia
- 45 University of Canberra
 - 45.1 Supplementary submission
- 46 Australian Research Council

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- 47 Australian Antarctic Division
- 48 *Name Withheld*
- 49 Australian Centre for International Agricultural Research
- 50 University of Wollongong
- 51 FAUNA Research Alliance
- 52 La Trobe University
- 53 Research Australia
- 54 Australian Nuclear Science and Technology Organisation
- 55 IP Australia
- 56 Council of Australian University Librarians
- 57 Council of Rural Research and Development Corporations
- 58 Australasian Association of Philosophy
- 59 Macquarie University
- 60 Australian Academy of the Humanities
- 61 Faculty of Science Monash University
- 62 The University of NSW
- 63 Western Sydney University
- 64 Dr Mathew Lewsey
- 65 Heads of Department and Schools of Psychology Association
- 66 Ecological Society of Australia
- 67 Council of Australian Postgraduate Associations
- 68 Council of Academic Public Health Institutions Australasia
- 69 Children's Cancer Institute
- 70 Australian Society for Medical Research
- 71 Foundation for Alcohol Research and Education
- 72 Research Coaching Australia
- 73 Dr Janine Pickering
- 74 Mr Mark Fletcher
- 75 Swinburne University of Technology

- 76 Australian Association of Research in Education
- 77 Harry Perkins Institute of Medical Research
- 78 Professor Andre Luiten
- 79 Professional Scientists Australia
- 80 Grains Research and Development Corporation
- 81 University of Melbourne
 - 81.1 Supplementary submission
- 82 Australian Academy of Science
- 83 Australian Technology Network of Universities
- 84 Australian Academy of Science Early and Mid-Career Researcher Forum
- 85 University of Technology Sydney
- 86 Monash University
- 87 University of Sydney
- 88 Australian Academy of Technology and Engineering
- 89 University of Newcastle
- 90 Innovative Research Universities
- 91 The Group of Eight
- 92 Department of Education and Training
- 93 National Tertiary Education Union
 - 93.1 Supplementary submission
- 94 Australian Mathematical Sciences Institute
- 95 Australian Renewable Energy Agency
- 96 Australian Institute of Aboriginal and Torres Strait Islander Studies
- 97 Professor Adrian Manning

B. List of Hearings and Witnesses

Monday, 30 July 2018

Parliament House, Committee Room 3
Cnr George and Alice Streets, Brisbane

Griffith University

- Professor Andrea Bishop, Director, Office for Research

University of Queensland

- Professor Peter Hoj, Vice-Chancellor and President
- Professor Bronwyn Harch, Deputy Vice-Chancellor, Research
- Ms Nicole Thompson, Director, Office of Sponsored Research

Professor Adrian Barnett

Queensland University of Technology

- Professor Margaret Sheil, Vice-Chancellor and President

Australasian Open Access Strategy Group

- Dr Virginia Barbour, Director

QIMR Berghofer

- Professor David Whiteman, Deputy Director and Group Leader, Cancer Control

Australian Academy of Health and Medical Sciences

- Professor Frank Gannon, Fellow

Ecological Society of Australia

- Dr Bek Christensen, Vice President, Public Outreach and Policy

Australian Association for Research in Education

- Professor Annette Woods, President

Monday, 6 August 2018

The University of Melbourne, Dean's Boardroom

Level 12, Berkeley Street, (The Spot Building), Melbourne

The University of Melbourne

- Professor James McCluskey, Deputy Vice-Chancellor, Research

RMIT

- Professor Denise Cuthbert, Associate Deputy Vice-Chancellor

Swinburne University of Technology

- Dr Tania Bezzobs, Executive Director

Monash University

- Professor Matthew Gillespie, Vice-Provost Faculty and Graduate Affairs

Latrobe University

- Dr MaryAnne Aitken, Executive Director

Innovative Research Universities

- Mr Conor King, Executive Director

University of Tasmania

- Professor Brigid Heywood, Deputy Vice-Chancellor, Research

Research Australia

- Mr Greg Mullins, Head of Policy

Council for Australian Postgraduate Associations

- Ms Natasha Abrahams, President

Australian Academy of Technology and Engineering

- Professor Doreen Thomas, Director

Victorian TAFE Association

- Dr Arnaldo Barone, Director
- Dr Henry Pook, Director, Centre for Applied Research and Innovation, Holmesglen Institute of TAFE

National Tertiary Education Union

- Mr Paul Kniest, Policy and Research Coordinator

Australian Mathematical Sciences Institute

- Ms Maaiké Wienk, Research and Policy Advisor

Australian Nuclear Science and Technology Organisation

- Mr Andrew Peele, Director of the Australian Synchrotron

Tuesday, 7 August 2018

Parliament House, Macquarie Room

6 Macquarie Street, Sydney

University of Wollongong

- Professor Tim Marchant, Dean of Research

Macquarie University

- Ms Tori Hocking, Executive Manager

Western Sydney University

- Dr Annette McLaren, Senior Policy Advisor and Project Manager

University of Technology Sydney

- Professor Kate McGrath, Deputy Vice-Chancellor, Research

University of Sydney

- Professor Duncan Ivison, Deputy Vice-Chancellor, Research

University of Newcastle

- Mrs Lyn McBriarty, Strategic Advisor, Office of the Senior Deputy Vice-Chancellor

Centre for Excellence for Climate Extremes

- Professor Andy Pitman

Alphacrucis College

- Professor Paul Oslington, Dean of Business

The George Institute

- Mr Peter Dolnik, Director, Research Strategy and Services

Fauna Research Alliance

- Dr John Rodger, Chief Executive Officer
- Hon Bob Debus, Chairman

Children's Cancer Institute

- Dr Peter Wejbora, Head of Research Development & Partnerships

Australian Society for Medical Research

- Dr Roger Yazbek, President

Association of Australian Medical Research Institutes

- Professor Tony Cunningham, President

Monday, 20 August 2018

Parliament House, Committee Room 1R3

Canberra

Australian National University

- Mr Douglas Robertson, Director, Research Services

University of Canberra

- Professor George Cho AM, Deputy Vice-Chancellor, Research and Innovation

Charles Sturt University

- Professor Mary Kelly, Deputy Vice-Chancellor, Research, Development and Industry

Southern Cross University

- Professor Susan Nancarrow, Deputy Vice-Chancellor, Research

The Group of Eight

- Ms Vicki Thomson, Chief Executive Officer

Australian Technology Network

- Ms Renee Hindmarsh, Executive Director

Research Coaching Australia

- Emeritus Professor Keith Houghton

Innovation and Science Australia

- Dr Charles Day, Chief Executive Officer

Australian Academy of Science

- Dr TJ Higgins, Secretary of Biological Sciences

Australian Academy of Science Early and Midcareer Researcher Forum

- Dr Róisín McMahon, Deputy Chair

Academy of the Social Sciences in Australia

- Professor Bruce Chapman AM, Chair of Economics
- Mr Dylan Clements, Programs Manager

Australia Institute of Aboriginal and Torres Strait Islander Studies

- Dr Lisa Strelein, Executive Director of Research and Education