



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

## **SUBMISSION: STANDING COMMITTEE ON EDUCATION, EMPLOYMENT AND TRAINING INQUIRY INTO FUNDING AUSTRALIA'S RESEARCH**

**29 June 2018**

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### **Introduction**

The University of Wollongong welcomes the opportunity to make a submission to the House of Representatives' Standing Committee on Employment, Education and Training on the Inquiry into Funding Australia's Research. Our submission below addresses the four areas being considered by the Inquiry.

### **About the University of Wollongong**

The University of Wollongong (UOW) is a research-intensive institution, committed to generating outstanding research and world-class results. Our university is representative of a new generation of universities with just over 40 years as an independent institution. UOW consistently delivers research of outstanding quality and impact, as evidenced by our placement in the top 2% of QS and Times Higher Education (THE) world university rankings. We are one of the world's best modern universities, ranked 30<sup>th</sup> in the world in THE Young University Rankings in 2017.

The University currently employs 1051 FTE academic staff involved in research-related roles. Over 1580 higher degree research students are currently enrolled at UOW and in 2017, 306 PhD and Masters (Research) students graduated.

UOW invests in excess of \$140 million a year in research. Over the past 20 years we have created the globally recognised research entities of the Australian Institute for Innovative Materials (AIIM), Early Start, Illawarra Health & Medical Research Institute, SMART Infrastructure Facility, Sustainable Buildings Research Centre and the iAccelerate Incubator.

Research at UOW crosses international and disciplinary boundaries to deliver results. Our local and global partnerships between researchers, business, industry and government help build the University's reputation for research excellence and impact.

Together with our partners, UOW is delivering global outcomes which are helping solve challenges facing the world. The dissemination of our research to user communities, including industry, is one of UOW's key goals and we have a justifiably strong reputation for our engagement with industry. We maintain our focus on emerging industries and have increased our capacity to commercialise outcomes of our research into services and products nationally and internationally. UOW is supporting the growth of the Illawarra's innovation ecosystem, engaging with industry to drive advanced manufacturing and the introduction of disruptive technologies.

**TOR1 - The diversity, fragmentation and efficiency of research investment across the Australian Government, including the range of programs, guidelines and methods of assessment of grants**

**1.1 Diversity and fragmentation**

Australian Government funding for research is diverse for a variety of historical reasons. This is not necessarily a negative feature of the Australian funding landscape, as it can enhance collaboration with, investment by and impact on a variety of sectors (such as through the Rural Development Corporations model which attracts significant industry co-investment). The 2018 Australian Competitive Grants Register (ACGR) lists research funding available from Commonwealth agencies, including:

- 11 Australian Government Departments (including the ARC and NHMRC), and
- 13 Rural Research and Development (R&D) Corporations.

All of these organisations have separate funding guidelines, application formats and assessment methods for the various competitive grant schemes they administer.

The ACGR Commonwealth listing confirms that the national research funding system is fragmented. Commonwealth funding bodies each retain bespoke application and management systems which are not integrated. This often leads to the double-handling of information and opportunities for increased processing errors. The fragmentation often leads to confusion on the part of researchers and industry, and requires deep expertise on the part of research managers to negotiate the funding landscape.

The United Kingdom (UK) by contrast has one overarching Council: UK Research and Innovation<sup>1</sup>, comprising seven broad, discipline-based Research Councils<sup>2</sup>. Applications can be made to the relevant Research Council, using the Joint Electronic Submission System (Je-S). The Councils have a Cross-Council Funding Agreement, with structures and systems that enable them to support research across Council boundaries. This allows co-investment on a case-by-case basis and reallocation of applications across Councils with minimum additional workload for applicants. This approach is also designed to ensure that the Councils' structures support and encourage interdisciplinary research "to ensure equality of opportunity for proposals at the interface between traditional disciplines, where many of the major research challenges of our time are located."<sup>3</sup> This in stark contrast to the Australian situation, where our medical research overlap rules jeopardise the eligibility of applications in areas where disciplines (for example engineering) converge with medical sciences<sup>4</sup>.

Whilst it may not be possible to wholly replicate the UK Research Council model in Australia, major efficiencies could be gained from increased collaboration between Commonwealth funding agencies, with the explicit aim to reduce administrative burden on researchers and universities by integrating application processes and grant management systems.

**Recommendation 1:**

UOW recommends that the Commonwealth consider consolidation of competitive research grant mechanisms across funding agency boundaries, and integration of research grant application and management systems, in order to increase efficiency and transparency and reduce the administrative burden within the research sector.

<sup>1</sup> <https://www.ukri.org/>

<sup>2</sup> Arts & Humanities Research Council, Biotechnology & Biological Sciences Research Council, Engineering & Physical Sciences Research Council, Economic & Social Research Council, Medical Research Council, Natural Environment Research Council, Science and Technology Facilities Council

<sup>3</sup> <https://www.ukri.org/funding/how-to-apply/applications-across-research-council-remits/>

<sup>4</sup> <http://www.arc.gov.au/arc-medical-research-policy>

## 1.2 Efficiency of research investment

Research, development and innovation is critical to the prosperity of the Australian economy, yet research investment in Australia is lagging (1.88% of GDP versus OECD average of 2.38%<sup>5</sup>), and at the same time it is becoming increasingly politicised.

In the last decade there has been an observable trend in Australia to move from open, competitive funding schemes to targeted funding calls for specific research topics or topic areas. The increased emphasis via the Government's National Innovation and Science Agenda (NISA) to work with end users may result in more focus on applied research. This targeted and government priority driven approach has a tension with achieving transformative fundamental research outcomes that enable Australia to compete globally in the longer term.

Whilst targeted funding has its purpose and an important role to play in the innovation ecosystem and to strengthen the economy, this should not be done at the expense of curiosity-driven, fundamental research. Many future challenges will be solved using ideas not yet conceived and technologies whose time has not yet come.

The significant amount of time spent by researchers developing grant applications, with ever-dwindling success rates and often heavily reduced budgets compared with requested funds, detracts from time available to undertake research of benefit to Australia. Academics are beginning to question this investment of time, and we are seeing a reduction in application numbers.

Whilst the NHMRC is out of scope for this Inquiry, it is worth noting that the recent NHMRC Structural Review<sup>6</sup> highlighted feedback from the research sector that the work required to prepare and evaluate high numbers of grant applications that will not be funded is placing an unsustainable burden on applicants and peer reviewers. Concerns have also been raised that many researchers, especially those at early and mid-career stages, are becoming discouraged from pursuing research and that there are disincentives to exploring new areas of research. The Review noted that "Applicants may be more likely to propose, and peer reviewers more likely to favour "safe" research to the detriment of innovation."<sup>7</sup>

This is a real concern for Australia's future as an innovative and enterprising nation and unfortunately not limited to the NHMRC. For example, it is obvious from Australian Research Council (ARC) Selection Reports for Discovery Projects (DPs) that the funding pool for fundamental research across all non-medical disciplines has decreased, as has the number of applications. Total funds awarded for 2015 DP grants totalled \$250,044,435 with a success rate of 17.7%, while total funds awarded for 2018 DP grants were \$225,661,033<sup>8</sup> with a success rate of 18.9%, a decrease of 10% in available funding pool. Over this period the number of applications decreased from 3689 to 3136 (-15%) and the number of projects awarded decreased from 665 to 594 (-11%) in the last three years.

By contrast, the need to increase investment in fundamental research has been recognised by overseas funding agencies including the European Union. To this end, the European Research Council (ERC) was established in

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<sup>5</sup> Organisation for Economic Cooperation and Development, November 2017, *Highlights from the OECD Science, Technology and Industry Scoreboard 2017 – The Digital Transformation: Australia*. Available at:

<https://www.oecd.org/australia/sti-scoreboard-2017-australia.pdf>

<sup>6</sup> <https://www.nhmrc.gov.au/grants-funding/structural-review-nhmrc-s-grant-program>

<sup>7</sup> <https://www.nhmrc.gov.au/restructure/changes>

<sup>8</sup> <http://www.arc.gov.au/selection-report-discovery-projects-2018> and <http://www.arc.gov.au/selection-report-discovery-projects-2016>

2007<sup>9</sup> with the goal of providing funding to investigators to pursue ground-breaking, high-risk/high-gain research across Europe. The ERC is now part of the first pillar - 'Excellent Science' - of Horizon 2020, the EU Programme for Research and Innovation. The total budget allocated to the ERC for the period 2014-2020 is €13.1 billion. Which means, in real terms (i.e. without considering inflation), an increase of 60% compared to the previous FP7<sup>10</sup>.

What is needed for Australia to remain globally competitive is long-term investment in fundamental science akin to the ten year, \$8.3 billion funding commitment by the Government as part of *Backing Australia's Ability*<sup>11</sup>. BAA represented a serious commitment by the then Government to pursue excellence in research, science and technology, through three key themes: the generation of new ideas (research and development); the commercial application of ideas; and developing and retaining skills. There is a dire need within Australia for predictable, sustainable levels of funding for programs that enable researchers to plan their long-term career pathways.

**Recommendation 2:**

UOW recommends that the Australian Government, in partnership with the higher education sector, should develop a long-term investment strategy with the goal of significantly increasing the intensity and scale of R&D in Australia, particularly in fundamental research, across disciplines. This should complement existing mechanisms and initiatives such as the Medical Research Future Fund (MRFF).

### 1.3 Peer Review and Assessment

Peer review is essential to the integrity of the research funding system and to ensure rigorous assessment of research grant proposals. However, it comes at a significant cost to the University sector who provide the majority of Australian peer reviewers. We therefore need to ensure that the peer review system is making an efficient use of reviewer time. Introducing a two-stage application process with a short stage 1 application, would reduce the need to review lengthy applications that are uncompetitive in a limited funding pool.

In addition, some consideration should be given to extending the concept of continuous application and assessment processes, as successfully demonstrated in the ARC Linkage Projects scheme. Whilst this approach may not be suitable for all competitive grant schemes (e.g., individual fellowships and major program funding), it should work well for project-based funding schemes.

Another area of inefficiency that could be improved is the re-submission of 'near-miss' grants that were ranked highly and clearly fundable. These grants typically miss out because the annual funding pool can only extend 'so far' down the list of fundable projects, yet the grant reviewers and assessment panels have already conducted the due diligence to consider them fundable. The current system typically requires the investigators to rewrite and submit these proposals (often changing application formats each year) and reviewers and panel members then must review these submissions. This is a huge expense to all involved.

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<sup>9</sup>[https://erc.europa.eu/sites/default/files/qualitative\\_evaluation\\_of\\_completed\\_projects\\_funded\\_by\\_the\\_erc.pdf](https://erc.europa.eu/sites/default/files/qualitative_evaluation_of_completed_projects_funded_by_the_erc.pdf)

<sup>10</sup> <https://erc.europa.eu/> and <https://erc.europa.eu/projects-figures/facts-and-figures>

<sup>11</sup> Backing Australia's Ability – Building our Future through Science and Innovation was an investment package totalling \$5.3 billion over seven years from 2004-05. This package, announced by the Prime Minister the Hon John Howard on 6 May 2004, built on the initial 2001 Backing Australia's Ability investment of \$3 billion over five years to 2005-06. Together these packages constitute a ten year, \$8.3 billion funding commitment stretching from 2001-02 to 2010-11. Available at: <https://web.archive.org/web/20070202161059/http://backingaus.innovation.gov.au/>

**Recommendation 3:**

UOW recommends that Commonwealth funding agencies consider ways to strengthen peer review processes, e.g., two-staged and/or continuous competitive grant application processes.

***TOR 2- The process and administrative role undertaken by research institutions, in particular universities, in developing and managing applications for research funding***

Considerable time is spent by Research Offices and researchers to meet the differing compliance requirements of various Government schemes. The introduction of a unified set of government grant compliance requirements and application templates would significantly reduce duplication of effort in presenting the same information in various formats. In addition, the compliance requirements of individual schemes have increased in scale and complexity.

**Recommendation 4:**

UOW recommends the introduction of a unified set of government grant compliance requirements and application templates, supported by national grant application management systems that verify compliance prior to submission, thereby reducing the time and effort required on these matters.

***TOR 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*****Competitive and Research Block Grants**

We need to fully fund research to grow research capacity and capability, including Australia's ability to attract research leaders, maintain cutting edge facilities and engage internationally. Government granting bodies typically fund awards at 60-70% of applicant requests; grants normally exclude the significant cost of researcher salaries, and fellowship salaries fall significantly short of the actual salaries universities must pay to retain staff.

Research block grant (RBG) funding does not fully cover the indirect costs of research activities. The lack of full funding means universities are cross subsidising research out of other income, which significantly reduces the capacity of all universities to undertake large scale research projects. Research should be fully funded either via a dual system or via indirect costs being incorporated into research grants.

RBG funding is an important driver of research excellence and should continue. The discretionary nature of this funding allows institutions a degree of flexibility to provide essential support for existing research endeavours, as well as seeding development of new emerging research activities, delivering programs to support research personnel and critical research infrastructure, and providing scholarship schemes for research students. Currently such support is largely provided from teaching funds. The current inadequate support to institutions has seriously undermined research facilities in all areas. The lack of RBG funding has also created more focus on teaching and international student markets, diminishing university capacity to spend time on research and industry collaboration.

There is a need to maintain a dual funding system for university research, as competitive grants support only part of the required research effort and infrastructure. As a consequence of the gap between the full costs of research and those items which are funded through research grants, a separate, flexible funding regime is necessary. RBG grants, namely the Research Support Program and the Research Training Program, allow

universities to maintain a core research capability and to train research students. For many years there has been a significant gap between the full cost of research and RBG funding provided by the Government.

RBG funding (in part) provides a critical role in balancing the shortcomings of competitive grant funding, in particular it provides:

- A more stable source of income, which allows for longer-term planning, development and continued funding for critical research – addressing the short-term limitations of competitive grants.
- Opportunities for near-miss funding for high quality research projects that narrowly missed out on competitive grant funding – addressing the limited pool of funding available for highly ranked projects in competitive grant rounds.
- A means for institutions to support innovative research that does not fit into the traditional criteria for competitive grant funding – addressing the risk-averse nature of competitive grant funding. For example, a significant majority of impact case studies prepared by our institution for the forthcoming ARC EI assessment.

Flexible RBG funding supports not only the maintenance of expertise that lies in Australia’s talented researchers, but also the infrastructure and resources necessary to conduct their research. Whilst the Commonwealth supports landmark and national research infrastructure, institutional research infrastructure remains a vital part of the Australian research system, and without dedicated infrastructure funding through the Education Investment Fund, universities are increasingly trying to make their flexible funding and general university funds stretch further and further to maintain this infrastructure.

Further, the lack of any direct government funding to universities in support of the national *Excellence for Research in Australia* and the new *Engagement and Impact* assessment exercises is a significant issue within the research system (see below).

**Recommendation 5:**

It is recommended the dual research funding system be maintained and that more adequate funding be provided to the University sector to cover the significant and long term costs of maintaining research infrastructure and research capacity, not currently met by (short-term) competitive research grants.

***TOR 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***

**4.1 Post award management of grants**

We must accept that not all research of value will be captured by predetermined topics or National Research Priorities and the Government must ensure minimal red tape in order to ensure that the investment in research is allowed to return its maximum value to the community. This reduction of red tape should occur at all stages of the application, award and grant management life cycle to ensure that maximum time can be spent on research rather than on onerous reporting and compliance.

Significant efficiencies are possible by more adequately funding the national research system, simplifying funding application processes, and by developing a uniform application and grant management system across all funding agencies. Gains can also be made in the post award management of grants. 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. In many cases (e.g., changes to investigators, organisations and timelines), simply notifying the funding agency of changes that have occurred over the life of a grant should suffice. In other cases, workload can be significantly reduced by requiring reporting by exception only over the life of the grant, as successfully done by the ARC.

**Recommendation 6:**

UOW recommends review of the post award management of grants by Commonwealth funding agencies, with a view to simplifying these and reducing red-tape for the research sector.

## 4.2 Optimising translation to impact

There remains a need for simple funding mechanisms in Australia that enable great fundamental research to progress through the various stages for further development to deliver benefits to society. Overseas agencies have easily accessible mechanisms in place that allow researchers to do this. For example, in the USA, all federal government funding agencies must spend 1% of their budgets on industry-focused grants. The European Research Council (ERC) *Proof of Concept Grants* provide up to €150,000 for existing ERC fellowship grant holders to bring their blue sky research ideas closer to market<sup>12</sup>, a mechanism that is easily accessible through the same sponsor. This initiative could be introduced here to include an option for researchers to apply for an additional year of competitive grant funding for them to develop and take products from the lab to market.

**Recommendation 7:**

UOW recommends the establishment and implementation of Proof of Concept Grant mechanisms, similar to those offered by the ERC, for Australian researchers to bring their ideas closer to market.

## 4.3 Institutional Research Data Reporting

Universities devote significant resources to provide information for various Government research data collections (e.g., annual Higher Education Research Data Collection; bi-annual Australian Bureau of Statistics R&D Expenditure Survey, Higher Education Student Data Collection etc.). With the recent introduction of the ARC *Research Impact and Engagement* (REI) Assessment, the Australian Government is mirroring similar overseas assessment processes (e.g., UK REF), but without the important driver of associated funding. This time-consuming and costly exercise is taking resources away from developing new impactful research. The 2017 Pilot and 2018 full REI assessment were both significant amounts of work, for which the University sector received no direct compensation.

The Government's need for accountability and transparency needs to be balanced with efficiency. Every effort must be made by the research sector as well as the Government to ensure that the investment in research is allowed to return its maximum value to the community. A significant barrier to that efficiency is the regulatory and reporting burden placed on the sector through differing requirements of schemes and agencies. Every dollar spent on collecting statistics, or providing reports to funders or Government, is a dollar that is not spent on research or teaching.

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<sup>12</sup> <https://erc.europa.eu/funding/proof-concept>



In the balance between accountability and efficiency, there would certainly be efficiencies available to reduce the regulatory burden on universities. For example, the ERA exercise that costs the sector tens of millions of dollars, as well as significant opportunity cost in the diversion of academic time towards service for this exercise, is conducted every three years, yet its data collection period is six years. This means that half of the data that counts towards the ERA rating was counted in the previous data collection as well.

Moreover, the ERA reporting program captures data that is significantly redundant: the prescribed income figures are captured in HERDC, HEIMS reports capture student data, publications data is largely already available from indices, such as Scopus and Web of Science, or extensive metadata available through open access repositories at universities. The specifications of these various research data collection initiatives vary to some degree, however, they feature enough commonality that undertaking each as a distinct exercise is entirely avoidable if funders and government departments could agree on a set of common report requirements, shared data definitions and improve the way they share data. The arbitrary nature of program requirements and the poorly planned execution of the collections causes extensive disruption to the sector for a reporting program that has negligible benefit to universities, researchers or the Australian public. Universities should not have to subsidise this costly and largely questionable exercise, particularly when the majority of necessary data is already available in the public domain.

***Recommendation 8:***

It is recommended that the Government mandate a single, streamlined higher education data collection based on commonly accepted standard data formats, predictable timeframes and stable requirements. All data collected should be shared openly with other agencies, the Australian public and other universities unless privacy, commerciality or other such reasons require withholding disclosure.

**Further Information**

The University would welcome further opportunities to elaborate upon, or further clarify, the matters raised within this submission. To do so, please do not hesitate to contact the UOW Director, Government Relations (Mr Canio Fierravanti) on 42215931 or via [canio\\_fierravanti@uow.edu.au](mailto:canio_fierravanti@uow.edu.au).