

SUBMISSION TO THE

**House of Representatives
Standing Committee on Employment,
Education and Training Inquiry into
Funding Australia's Research**

JUNE 2018

ATSE SUBMISSION TO THE INQUIRY INTO FUNDING AUSTRALIA'S RESEARCH

The Australian Academy of Technology and Engineering (ATSE)¹ welcomes the opportunity to provide input to the House of Representative's Standing Committee on Employment, Education and Training Inquiry into Funding Australia's Research.

Key points and recommendations

- Basic, strategic basic and applied research are all essential parts of a productive and innovative research system that contributes to Australia's economic, social and environmental prosperity.
- Australia's gross funding for research and development as a percentage of gross domestic product is below the OECD average.
- In principle, the Academy supports efforts to reduce fragmentation and duplication in Australia's research funding systems but Australia requires a diversity of research funding mechanisms in order to reflect the differences between fields of research.
- The Academy strongly supports the role of targeted funding to enhance collaboration.
- While efforts should be made to reduce administrative burden, the development of grant applications and research proposals is an intrinsic and valuable component of the research process.
- It is too soon to fully evaluate the impact of the changes that have been made since the Watt Review.
- The operation of a robust, independent peer review system is a vital process for quality control that ensures that Australia's limited government funding for research is directed to high quality research.
- The ARC should publicly report the percentage of grant applications judged as internationally competitive that are funded in each round to provide a metric of the adequacy of research funding in Australia.
- It is essential that Australia's research funding mechanisms are designed to support diverse and inclusive research communities, and foster the career development of early-career researchers.

Funding Australia's Research

Basic, strategic basic and applied research are all essential parts of a productive and innovative research system that contributes to Australia's economic, social and

¹ ATSE is an independent think tank that comprises the leaders in the fields of technology and engineering, who gain Fellowship to the Academy in a highly competitive process. ATSE is one of Australia's four national Learned Academies but uniquely its 800-strong Fellowship come from industry, government and research organisations, as well as academia. Our Fellowship develops trusted, informed and visionary views to persuade decision-makers to implement the most progressive policies on the development of technology for the betterment of Australia and its people. www.atse.org.au

environmental prosperity. It is essential that different types of research, ranging from blue sky research for knowledge discovery to applied and collaborative research that targets real world problems with solutions for society's benefit, are supported with appropriate mechanisms. ATSE notes that between 1992 and 2016, the proportion of basic research in Australian universities decreased from 40 per cent to 23 per cent. In the same period, strategic basic research declined from 24 per cent to 19 per cent². ATSE is very supportive of applied and collaborative research, but the decline in basic and especially in strategic basic research is a concern. Many significant breakthroughs in science and technology are the result of pure or strategic basic research and Australia should not undervalue its importance.

ATSE notes that **Australia's gross funding for research and development as a percentage of gross domestic product is significantly below the OECD average³**, and supports the recommendation of Innovation and Science Australia's 2030 Strategic Plan⁴ to ensure that government support for research and innovation activities as a proportion of GDP does not fall below its long term average. The actual cost of research is not funded properly, even by the combination of block-grant and direct costs because the sum of these does not equate to a sensible overhead cost. Thus to offset this deficit cross-subsidy from other activity (typically teaching) occurs ATSE notes that this cross-subsidy approach creates many issues and is harmful to Australia's overall competitiveness in research. Noting this, the Academy's submission focuses only on the administrative aspects of Australia's research funding system.

In consultation with its expert Fellows, the Academy has prepared detailed responses to the Committee's terms of reference, which are included below. The Academy would be pleased to provide further advice to the Committee. Please contact ATSE Policy Analyst, Dominic Banfield, on (03) 9864 0903 or dominic.banfield@atse.org.au, if you have any further questions.

² See <https://www.universitiesaustralia.edu.au/Media-and-Events/HIGHER-ED-ITION/Articles/2016-2017/-BACK-TO-BASICS--WILL-FUTURE-PROOF-AUSTRALIA-S-R-D>

³ See <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>

⁴ See <https://industry.gov.au/Innovation-and-Science-Australia/Australia-2030/Pages/default.aspx>

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

In principle, the Academy supports efforts to reduce fragmentation and duplication Australia's research funding systems. ATSE notes that this has already received attention from policy makers over recent years. Where appropriate, funding programs should be consolidated to minimise duplication and reduce administrative burdens. However, ATSE understands that some rationalisation of the grants in the Australian Competitive Grants Register has already occurred, and **Australia requires a diversity of research funding mechanisms in order to reflect the differences between research and industry sectors.** The design of these funding mechanisms seeks to take into account diverse factors, including: the scope for the grant recipient to reap benefits (e.g. research undertaken by industry), national need (e.g. biosecurity research is an area that does not normally attract a lot of interest from researchers), and the cost of undertaking the research (e.g. international collaborative research).

The Academy strongly supports the role of targeted funding to enhance collaboration between universities and industry, government and not-for-profit institutions through programs **such as the Co-operative Research Centres (CRC) Program, and ARC Linkage grants. The Academy also supports the Rural Research and Development Corporation (RDC) model** applied in the agriculture sector, which recognises that farmers in Australia share the benefits of research and therefore should share the costs and be involved in the decisions about what research gets done. The model has been in place for a long time, and is one of the reasons Australian agricultural R and D is strong, as the agricultural industries are able to continue to adopt new technologies, and maintain productivity and profitability through innovation. This system effectively results in the Commonwealth funds leveraging industry dollars via the statutory levy system which is in place.

Other elements of the research funding system, such as the **National Collaborative Research Infrastructure Strategy (NCRIS)** are valuable components of the research system. ATSE supports the recommendations of the 2016 National Research Infrastructure Roadmap. NCRIS raises the efficiency of the research system by enabling researchers shared access to state of the art equipment which in turns means our research remains globally competitive.

It is important for research funding mechanisms to be able to facilitate interdisciplinary research. It is likely that many future breakthroughs will occur at the intersections of traditional disciplines but both university faculty/school structures and ARC/NHMRC assessment processes can impose additional challenges for interdisciplinary proposals to receive funding. It is important that the research funding system has the capacity to efficiently evaluate and fund interdisciplinary research projects to solve complex challenges.

The process and administrative role undertaken by research institutions, in particular universities, in developing and managing applications for research funding;

While efforts should be made to reduce administrative burden on researchers, **the development of grant applications and research proposals is an intrinsic and valuable component of the research process.** These activities are an essential part of an academic's career development and should not be considered wasted time. Universities have highly-evolved and professionally administered processes in place to support their researchers in the development of research proposals.

ATSE notes that the Watt Review⁵ recommended that “universities take a more active role in scrutinising applications for competitive research grant funding to filter out those potential applications which are less competitive” and that “universities should also revise any policies that may encourage the submission of applications without due regard to quality.” These recommendations have already been supported by government and are being implemented by Australian universities. ATSE agrees that internal peer review within research institutions is valuable in that researchers that are unprepared are identified and assisted within their home university. However, this is unlikely to improve the overall number of successful applications nationally. ARC panels are better placed to provide constructive independent feedback to unsuccessful applicants regarding the competitiveness of their research proposal on a national basis.

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;

The dual funding system aims to strike a balance between providing direct funding for high quality research through competitive grants (CGs), and incentivising desirable university behaviour, supporting strategic decision making, and funding the systemic costs of research through performance-based research block grants (RBGs). The balance between CGs and RBGs has been subject to regular reviews. **ATSE considers it to be too soon to fully evaluate the impact of the changes that have been made since the Watt Review,** including changes to the RBG formulae and the introduction of Engagement and Impact Assessment⁶ (inspired by the Research Engagement for Australia metrics developed by ATSE⁷) as a companion to the Excellence in Research Australia evaluations.

⁵ Watt, I (2015). *Review of Research Policy and Funding Arrangements*. Available at <https://docs.education.gov.au/node/38976>

⁶ See <http://www.arc.gov.au/engagement-and-impact-assessment>

⁷ See <https://www.atse.org.au/content/publications/reports/industry-innovation/research-engagement-for-australia.aspx>

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.

The elimination of red tape and simplification of the application process via online submissions and other mechanisms have greatly enhanced the efficiency of the agencies managing research grants. However, a number of active research Fellows noted that the frequent and bureaucratic changes to the ARC's application guidelines and formatting requirements create a significant extra burden for researchers when preparing grant applications.

Other considerations

The operation of a robust, independent peer review system is an imperfect but nonetheless vital process of quality control that ensures that Australia's limited government funding for research is directed to high quality research. However, as noted by the Committee, the success rates of ARC grant applications hover around 20 per cent. **ATSE recommends that the ARC publicly report the percentage of grant applications judged as internationally competitive that are funded in each round.** This can be benchmarked against other national competitive grant systems, to provide a metric of the adequacy of research funding in Australia.

The Academy is highly encouraging of efforts to support diverse and inclusive research communities, and foster the career development of early-career researchers. The Science in Australia Gender Equity (SAGE) Initiative is a partnership between ATSE and the Australian Academy of Science, which seeks to improve gender equity in the Australian higher education and research sector by building a sustainable and adaptable Athena SWAN model for Australia. It is essential that Australia's research funding mechanisms are designed to support these outcomes. As an example, the German Research Foundation assesses proposals for Clusters of Excellence on four equally important criteria: Research; Researchers; Supporting structures and strategies in the cluster of excellence; and Environment of the cluster of excellence. The *Supporting Structures* category includes criteria relating to support of early career researchers, support for equal opportunity, and science communication; and the *Researchers* category includes criteria for diversity in the composition of the group (disciplines, gender, career stage, internationalization). Applying these kind of criteria can play a part in driving wider change that benefits innovation and productivity in the university sector.

The Academy encourages the Committee and Secretariat to investigate international case studies to investigate best practices for efficient and effective research funding outcomes. ATSE would be very happy to discuss opportunities to support further research and action in this area.