Australian Academy of Science

Strategic Examination of Research and Development: response to issues papers 5 & 6

Australian Academy of Science submission

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Foundational research

(*This section responds to the issues paper: Foundational research*)

Which of our proposals will work well?

The Australian Academy of Science strongly supports the panel's three proposals to ensure long-term funding and strategic planning for national research infrastructure. NCRIS should have secure, strategic, long-term funding and organised, transparent funding rounds to give the sector, and research infrastructure organisations, more certainty.

The Academy also strongly supports the proposal for investment in next-generation, high-performance computing and data (HPCD) to underpin Australia's digital innovation and AI capabilities. This must be supported by a long-term national strategy and roadmap to build national HPCD capacity. Data-intensive research requires faster, scalable systems to process massive datasets and run high-resolution simulations. The expansion of HPCD capability also offers opportunities for innovative industry-research collaborations.

The Academy supports the idea of setting a share of national competitive grants to support longer term projects and suggests that a share also be aimed at supporting highly novel, potentially transformational research.

The Academy supports the proposal to simplify grant application and management processes to reduce regulatory burden and minimise administrative overheads. Burdensome, time-consuming application processes with low success rates do not serve Australia's research effort.

What could be improved and how?

The Academy is deeply concerned that the issues paper on 'foundational research' has no proposals aimed at boosting funding for discovery research, which data shows is in decline. There are few proposals that are aimed at supporting or strengthening discovery research.

The issues paper implies that research is only important if it is translated or commercialised. This attitude is concerning given the steady decline in investment in basic research for over a decade. Government budget allocations for R&D have stagnated at 0.36% of GDP, compared to the OECD average of 0.73% of GDP. The proportion of total expenditure on basic research contributed by government fell from 24% in 2002 to 16% in 2022. Funding for ARC and NHMRC has declined over the last decade, falling 27% from 2013-14 to 2023-24 (according to SRI budget tables).

It is inconceivable that the SERD could acknowledge the limited resources, rising costs of research and pressure funding models are under, yet not make any recommendations that meaningfully increase government investment in research.

The Academy supports the intention to protect and strengthen foundational research through sustainable funding models. The proposal to set a growth rate of ARC funding linked to the long-run GDP rather than CPI should be considered in comparison with other indexation models applied to competitive grant funding. Regardless, the presented indexation model will not create the shift needed to uplift investment in research. A 10-year investment plan must be developed so that the public and private sectors can work together to create an R&D ecosystem that makes Australia globally competitive and recognises R&D capability as a national strategic asset.

The paper proposes consolidation of translational research under the pillar focus areas. Under this model, the Academy recommends that most of the competitive grant funding through the ARC and NHMRC be secured for basic and applied research, with a limit set for how much funding can be directed to programmatic or priority-driven research. This would rebalance the focus on basic research which has become distorted over time with incoherent research policy settings that have prioritised translation and commercialisation, and abandoned basic research despite it being a legislated responsibility of funding councils.

The Academy supports the proposal for a robust R&D costing framework, which should inform decision-making on research funding, as well as increasing funding for indirect costs. Funding for indirect costs must also be available to medical research institutes who, unlike universities, are not eligible for the Research Support Program, and do not receive support for costs associated with MRFF grants.

The proposal to provide a premium rate of indirect costs support for projects in the pillar focus areas could bias the research pursued by universities towards translational research, which would be detrimental to basic research; the engine of future innovations.

The proposal to "Redesign funding and performance frameworks to better recognise translational impact, industry engagement and societal benefit" risks placing emphasis on metrics that are not suited to assessing the impact of basic research.

Government as an exemplar

(*This section responds to the issues paper: Government as an exemplar*)

Which of our proposals will work well?

The Academy supports the following proposals:

- Establish an outcome-focused national RD&I performance framework that defines metrics to assess impact (economic, social and environmental) and quality at both the program and system levels.
- Improve data collection for more frequent and comprehensive monitoring of RD&I performance, with metrics aligned to the national framework.
- Streamline and simplify government grant application and management processes nationally.
- Embedding PRFAs in a more coordinated RD&I system.

What could be improved and how?

The Academy strongly recommends that a 10-year investment plan be developed so that the public and private sectors can work together to create an R&D ecosystem that makes Australia globally competitive. This plan should include approaches to grow the pool of funds available for public investment in research, such as a Research Future Fund which could be established through a temporary R&D levy, a mechanism that has been successfully implemented in other parts of the R&D system.

The Academy welcomes the proposal to establish an outcome-focused national RD&I performance framework and improve data collection for enhanced monitoring of RD&I. The framework should reflect innovations in data-driven approaches to research assessment, including using digital identifiers to track research activity (such as ARDC's RAiD service). The report "Research Assessment in Australia: Evidence for Modernisation" by ACOLA, provides recommendations for Australia's system.

The Academy supports the proposal to simplify grant application and management processes. The requirements for researchers, reviewers and research organisations are disproportionate given the size of the grants and the very low success rates.

For competitive grant funding, burden could be reduced by implementing smaller or staged applications and introducing expression of interest stages. Commonwealth Research Rules and Guidelines across all Commonwealth research related grants could be established that would stipulate commonly agreed requirements, such as the for Open/FAIR principles and the use of identifiers. The aim would be to bring consistency across the research system on some important matters that shape the research system but are promulgated separately by funders.

Measures to improve the peer review process should also be implemented, including to broaden the base of available reviewers, and rebuilding networks of international peer reviewers. The peer review system must also account for the unique needs of interdisciplinary research, including identifying and supporting the development of assessors with the skills to assess these projects.

The introduction of more sophisticated data collection and analysis, including the mandated use of digital identifiers, will assist with streamlining application processes. Diversity principles and equity of access must be maintained.

Delayed and inconsistent funding announcement timelines have negative impacts on research planning, career certainty, and research operations. Transparency, communication and timeliness of deadlines should be built into systems to address this.

The government plays a vital role in implementing policy and programs that support diversity in the STEM workforce and promote inclusive, accessible and more certain research career pathways. As an immediate action, the Academy urges the Australian Government to formally respond to and implement the recommendations of the Pathways to Diversity in STEM review.