Australian National University

The Australian National University's Response to *SERD*

The Australian National University is pleased to be able to respond to the Strategic Examination of R&D discussion paper.

The Australian National University (ANU) was founded in a spirit of post-war optimism, our role was to help realise Australia's potential as the world recovered from a global crisis. That vision, to support the development of national unity and identity, improve our understanding of ourselves and our neighbours, and provide our nation with research capacity amongst the best in the world, and education in areas vital for our future, has been our mission ever since. We connect talented people with diverse perspectives, equipping and encouraging them to address the most complex of tomorrow's problems, and ensuring Australia's future is not just our approach-it's also our national role and international responsibility as Australia's national university.

The Dawkins Reforms of the late 1980's saw the R&D environment change dramatically as significantly more entities were given University status and had to develop and maintain a research effort. Despite multiple policy tweaks since, universities remain in competition and are exposed to significant market pressures. Low grant success rates, and constant grant writing rather than focussing on doing R&D remains a characteristic of university research.

Long term, mission-based funding, that supports both direct and indirect costs could be developed by combining or aligning the multiple R&D funding schemes currently provided by Government. The funds for RTP could be divided by a University's mission aligned to national need. The funds within the RSP program could be added to direct research funding and provide the full economic cost of funding for research aligned to national priorities.

This mission-like funding would allow stability and long-term research collaborations between industry and universities. Universities also play a vital role in place-based innovation and regional development. Research could be aligned to and fully funded by clearly articulated state and regional funding streams, building on the base support provided by Federal Government. This will strengthen economic resilience and ensure inclusive national growth.

1. What should an integrated, sustainable, dynamic and impactful Australian R&D system look like?

An R&D system that is integrated, sustainable, dynamic and impactful is wholly contingent on a drastic increase in overall R&D investment which must be stimulated by straightforward Federal Government policy and economic support that operates consistently and dependably across decades. Short term, reactionary policy interventions coupled with a disjointed, onerous and opaque funding landscape for research is driving an unsustainable gap in funding for research, research infrastructure and research translation activities that is currently subsidised by postgraduate education and international students. Universities are compelled to provide an ever-expanding range of delivery-oriented services including "commercialisation", "industry engagement" and "innovation" related activities, which fall well outside the core business model of a university, without any additional funding or support. This paradigm is sending seismic shockwaves through the operational and structural epicentres of our higher education sector. Our top researchers are also teaching staff who perform

significant additional duties including but not limited to teaching, student support, administration, leadership, supervision, service, external engagement, project management, grant writing, fundraising, people management, publishing, governance, compliance, and public speaking. Any additional pressures applied to our research community directly impacts our national higher education capability as well. Furthermore, Universities are scrambling to identify, develop and maintain a skilled professional workforce to address the ever-expanding range of services that demand highly specialised expertise that fall well-outside the traditional research and teaching support roles of a University.

However, according to a report by Deloitte Access Economics, every dollar invested in university research and development has historically generated approximately $5 in GDP over the long term and a Universities Australia study showed that companies receive a return of around $4.50 for every $1 invested in collaborative university research in Australia. Therefore, we are compelled as a nation to achieve an integrated, sustainable, dynamic and impactful Australian R&D system. Our national innovation ecosystem must facilitate the seamless translation of research through straightforward and consistent industry incentive schemes and policies spearheaded by the Federal Government. Together, government grants and the research block grants must provide for the full economic cost of research.

The decline in GERD in recent decades has largely been driven by a decline in business sector investment, along with reduced R&D by government agencies. By contrast, universities have lifted and increased higher education expenditure from 0.40% of GDP in 2000 to 0.61% in 2024 – a value above the average for OECD countries. Underpinning this increase has been an expansion of the sector, facilitated by increased income from student fees. Student fees subsidise university R&D expenditure and attempt to prop up the sector in the face of inadequate funding for indirect costs associated with translating research.

To achieve an integrated, sustainable, dynamic and impactful Australian R&D system we must address 5 systemic interventions that reflect global best practice and deliver proven results.

1. Increase incentives for private sector investment: Mechanisms need to be put in place that increase investment in R&D by the business sector. A careful review of the R&D Tax incentive is needed to ensure true collaboration is a component, rather than just paying for consultants. Thorny problems are solved through transdisciplinary research, and industry needs the transdisciplinary capability of universities. Straightforward, consistent and enduring matched funding schemes that reward businesses at all stages and in across all industries including the not-for-profit and social sector to invest in innovation by collaborating with Australia's Universities is vital.
2. Align research activities to national priorities: Mission style, large scale, outcome focussed initiatives, that meet the full economic costs of research, that encourage collaboration and research across all Technology Readiness Levels (TRL), could align funding from all different pools and be aligned to national priorities. Research funding should not be diluted as proposed in the ARC's NCGP review but condensed where it is needed. An example of how this could work are the Australian National University's Innovation Institutes. ANU has developed Innovation institutes including ANU Agrifood Innovation Institute (AFII) and ANU Institute for Space (InSpace) that connect researchers to industry. This allows them to better leverage interdisciplinary capabilities that universities foster to address the national priorities, be they economic, societal, industrial or environmental. ANU appoints people with extensive experience in industry to do industry aligned research, lead engagement with industry and to teach students. The Institute provides a doorway into transdisciplinary approaches, allows non-traditional pathways to research and develops measurable outcomes aligned to the national interest.
3. Increase proof-of-concept (PoC) funding to bridge private and public sector investments: Industry cannot, will not and should not invest in early-stage research and traditional grant funding schemes are not designed to incentivise the development aspects required for research translation. Other countries like the US and the UK understand and support the fundamental need for straightforward and consistent funding schemes that are dynamic, accessible and impactful. The United Kingdom has recognised the importance of Proof-of-Concept funding to bridge the gap between

academic research and commercial application. In the Autumn Budget of 2024, the UK government allocated £40 million over five years to establish a PoC fund aimed at transforming pioneering university research into successful companies. Complementing this, UK Research and Innovation (UKRI) announced a £9 million Proof-of-Concept fund in January 2025. This initiative supports the commercialization of research across various disciplines, offering grants ranging from £100,000 to £250,000. The funding is intended for activities such as prototype development, user testing, and market validation, with the goal of accelerating the transition from research to market-ready products and services. Furthermore, an independent review recommended an annual addition of approximately £108 million to public core research funds to establish sustainable PoC funding across UK universities. This recommendation aims to de-risk innovations and attract substantial private investment, thereby fostering job creation and economic growth.

4. Build strategic professional capability: It is critical to address the fundamental gap in the University business model that is the "third mission" of universities, beyond teaching and research, and refers to their engagement with society and the economy, focusing on knowledge transfer, innovation, and addressing societal challenges. The Federal Government must provide straightforward and consistent funding, deployed directly to individual institutions to ensure they build staffing and specialised capability to activate and support an integrated, sustainable, dynamic and impactful R&D system. There are clear examples in Australia where this type of government stimulus, enables by localised decision-making has resulted in highly impactful and sustainable R&D.
5. Mobility between academia and the real world: At the core of the University business model is tenured academic positions established over decades, that balance intensive teaching loads with the full-time and demanding activities that drive research which include writing highly cited journal publications, winning grant funding for projects, attracting PhD students. This creates an echo chamber for early-stage research that is siloed, cut-off and devoid of diverse inputs and real-world feedback loops. In order for Australia to continue producing impactful research and world-class innovations through a thriving R&D system, the Federal Government must provide funding and incentives for universities that will enable their core workforce to develop new specialist skills and move talent seamlessly between industry and academia via mobility scholarships, enterprise fellowships, sabbaticals and secondments. Industry based PhDs are not enough and a good example of the impact of such schemes was the Innovation Connections grant facilitated through the Entrepreneurs Programme which provided both proof-of-concept funding and then further subsidised businesses that went on to hire additional R&D expertise into their business.

2. What government, university and business policy settings inhibit R&D and innovation why?

Short-term funding cycles are inherently risk averse. Short term grants lead to focussing on short term goals. In contrast, the national interest will be better served when researchers are enabled to focus on high-risk high reward transformative research and supported to progress it through the TRL stages.

Constant change in government priorities and tweaks to funding programs that are designed to drive universities to refocus on government policy intentions create uncertainty for both researchers and industry, making planning and investment over the long term too difficult and risky.

Burdensome application processes for short term grants and funding deter both researchers and industry. This is particularly true in Australia where industry is largely SME, with limited administrative capability. SMEs need a lower barrier to participate.

Lack of clear innovation priorities have led to R&D being dispersed and without strategic alignment to key national challenges and approaches.

Insufficient support for translation and commercialisation due to lack of dedicated funding and support for activities including prototyping, market validation and early-stage scaling. While AEA Ignite and AEA Innovate are promising programs to move research through the TRLs and collaborate with industry, clearer alignment with other programs would be beneficial.

Restrictive immigration policies for skilled workers create challenges in attracting and retaining the skilled researchers needed from around the world to boost capability.

Publications are more important than impact when viewing university performance. The Excellence in Research for Australia (ERA) program and need to attract international students through various University Rankings to cross subsidise research have seen universities reward high publication metrics more than creating impact. Building the relationships with community and industry take time that cannot be measured, benchmarked, recognised and rewarded by universities through their performance and promotions schemes. This lack of incentive to engage with industry will continue to inhibit collaboration with industry.

Risk-averse approach to IP and commercialisation in universities slows down research translation and commercialisation. Universities have learned to be protective of their IP as they constantly battle to cover the direct and indirect costs of research. By fully funding research, the Australian government could create an environment of trust, where impact has more importance than the need to generate income from commercialisation.

Drivers for trans-disciplinary research need to be added into the research environment. Exercises such as ERA and the University Rankings force universities to focus on developing siloed disciplinary strengths as the methodology does not allow the acknowledgement of excellent transdisciplinary research. This entrenched disciplinary focus stifles the university sectors ability to address the real thorny issues of today that require a transdisciplinary outlook. At ANU, we have attempted to work around this with the creation of the Innovation Institutes where we address real world challenges.

University research is reliant on funding from poorly indexed Research Block Grants. The Department of Education's Research Block Grants, RSP and RTP are vital to university research. The support for indirect costs of research as provided by the RSP has been diminishing in real terms over time due to an indexation rate lower than CPI and the two year delay between the activity and the support for indirect costs. While expenses go up, the funding in real terms drops. The Research Block Grant pool needs to be allocated alongside the direct research funding, perhaps to a rate of 25%-30% and indexation of the funds needs to map to increases in the costs of living.

3. What do we need to do to build a national culture of innovation excellence, and engage the public focus on success in R&D and innovation as a key national priority?

1. Integrated, Sustainable, Dynamic, and Impactful R&D System

For Australia's R&D system to be sustainable, dynamic, and impactful, overall R&D investment must increase. The decline in GERD in recent decades has largely been driven by a decline in business sector investment, along with reduced R&D by government agencies. By contrast, universities have increased higher education expenditure from 0.40% of GDP in 2000 to 0.61%

in 2024, above the OECD average. This increase has been facilitated by income from domestic and international student fees, which subsidize university R&D expenditure.

Recommendations:

- Long-Term Funding: Establish long-term, stable funding mechanisms that support both direct and indirect costs of research.
- Mission-Based Funding: Develop mission-based funding that supports long-term research collaborations between industry and universities.
- National R&D Investment Target: Formally adopt and implement a national R&D investment target of 3% of GDP by 2035.

2. Policy Settings Inhibiting R&D and Innovation

Short-term funding cycles are inherently risk-averse, leading to achievable goals rather than transformative research. Constant changes in government priorities and tweaks to funding programs create uncertainty, making long-term planning and investment difficult.

Recommendations:

- Reduce Bureaucracy: Create synergy through appropriate changes and increase government investment in R&D.
- Align Priorities: Ensure alignment between Government priorities, Ministerial responsibility, and funding sources.
- Support for Commercialization: Provide dedicated funding and support for activities including prototyping, market validation, and early-stage scaling.

3. Building a National Culture of Innovation Excellence

Short-term funding spread across many players can only provide lower-risk, lower-value research. There need to be grand challenges to discuss with the nation, larger fully funded research projects that value interdisciplinary collaboration, and a national R&D investment target.

Recommendations:

- National R&D Strategy: Establish a single National Agency for Research & Innovation to manage policy and funding.
- Annual Reporting: The Australian Bureau of Statistics (ABS) should survey and report annually on R&D investment for every sector of the economy.

4. Funding Sources, Models, and Infrastructure

Long-term funding sources that address complex challenges and are tied to the delivery of outputs and outcomes of national significance are needed. Examples include Horizon Europe and the UK Government's Resilience Framework.

Recommendations:

- Consistent Procurement Policy: Implement a policy where the Australian Government provides indirect cost support for all research procured.
- Research Infrastructure: Support ongoing investment in critical research infrastructure through programs like NCRIS.

5. Enhancing the Role of Research Institutions and Businesses

Long-term dependable funding that is fully funded and isn't tied to election cycles is crucial for giving research institutions and businesses the confidence to invest in innovation.
Recommendations:

- Knowledge Precincts: Work with States/Territories and local government to incentivize the development of knowledge precincts.
- STTR Program: Introduce a Small Business Technology Transfer (STTR) program to incentivize SMEs to engage with research institutions.

6. Supporting Basic or 'Discovery' Research

Basic research needs to be supported through long-term, fully funded programs. Political interference in basic research must be stopped to allow for high-risk, high-reward research.

Recommendations:

- Stable Funding: Provide stable, long-term funding for basic research.
- Independent Research Funding Bodies: Support strong independent research funding bodies to back the best and boldest blue-sky research proposals.

7. Attracting, Developing, and Retaining an R&D Workforce

Australian universities could offer structured industry PhD programs, where non-traditional pathways are acknowledged. Recognition of industry collaboration in grant criteria is essential to build a future-ready research workforce.

Recommendations:

- Industry PhD Programs: Develop structured industry PhD programs and talent exchange initiatives.
- Workforce Development Strategy: Create a high-level framework for research workforce development.

8. Elevating First Nations Knowledge and Leadership

First Nations peoples build vast knowledge that can improve Australia's sustainability, resilience, and innovation. There needs to be a pipeline that leads Indigenous students to become Indigenous PhDs, Early Career Researchers, and Research Leaders.

Recommendations:

- Indigenous Research Framework: Develop a clear framework for Indigenous research aligned with ethical guidelines and international declarations.
- Dedicated Funding: Provide dedicated funding for Indigenous PhD students and postdoctoral researchers.

9. Incentives for Business Leaders

Business needs an easy way into universities. The success of ANU's Innovation Institutes presents excellent examples of how multi-disciplinary research capability and expertise can drive collaborative research.

Recommendations:

- R&D Tax Credit: Incentivize collaboration with universities through the R&D tax credit.
- Equity or Debt Finance Incentive: Offer additional incentives from the National Reconstruction Fund for businesses that collaborate with research institutions.

10. Measuring the Value and Impact of R&D Investments

All metrics to measure the success of programs need to be tied to the intent of the program. The Australian Government should move beyond traditional metrics and measure economic, social, and environmental outcomes.

Recommendations:

- Comprehensive Metrics: Implement comprehensive innovation metrics that include economic, social, and environmental impacts.
- Case Studies: Use case studies to describe the diverse benefits of R&D to the broader Australian community.

By adopting these recommendations, Australia can build a world-class innovation ecosystem that drives economic growth, supports industry transformation, and delivers real benefits for society. ANU is committed to fostering innovation, research translation, and entrepreneurship, and looks forward to contributing to a sustainable and impactful R&D system for Australia.

4. What types of funding sources, models and/or infrastructure are currently missing or should be expanded for Australian R&D?

Australian R&D needs mission-based funding that rewards collaboration, draws in top talent, resources, investment and infrastructure from across both industry and academia for sustained effort directed at national and global priorities. Long term funding sources that address complex challenges and are tied to the delivery of outputs and outcomes of national significance are needed are needed. Examples include Horizon Europe and the UK Government's Resilience Framework. Horizon Europe, the world's largest multinational funding program achieves political objectives such as spurring the economy or improving the health and well-being of citizens by requiring large collaborations that work across borders. A scheme like this might tempt big business to engage with Australian research institutions.

Australia's National Science and Research priorities are about managing current risks to our nation. The UK Government's Resilience Framework involves action plans to manage risk, responsibility and accountability, partnerships, communities, investments and skills. This program might provide a suitable example for the Australia Government to have Australia's National Science and Research Priorities addressed and managed in a real way rather than being used to justify interest driven research.

The Australian Government should implement a consistent procurement policy where they provide a consistent 50 cents in the dollar of indirect cost support for all research procured.

The Medical Research Future Fund (MRFF) has driven significant innovation and focus in medical research, aligned to government priorities. Similar funding for fields outside medical research would likely have a similar result for other areas of national priority.

NCRIS Beyond 2028

The NCRIS scheme allows coordinated and collaborative research infrastructure in Australia, and is vital to the creation of nationally significant assets. It also reduces duplication of infrastructure between universities, creating efficiency. The team at the ANU Agrifood Innovation Institute see that the current program that ends in 2028 has created infrastructure that enabled a step change in climate resilience, profitability and sustainability of the agricultural sector – very much aligned with our National Priorities.

The NCRIS Scheme must be extended beyond 2028. It should also be noted that reducing the support for smaller scale, investigator-led research infrastructure as proposed in the ARC NCGP review would put increased burden on NCRIS would likely undermine the potential large-scale achievements of NCRIS. The Federal Government needs to strengthen the alignment, planning and coordination between all infrastructure schemes, including NCRIS and other landmark-scale research infrastructure such as SKA, Synchrotron and HPC.

Proof of Concept (POC) Funding

Proof-of-concept (PoC) funding to bridge the "valley of death" between benchtop research and real-world application. This is critical to ensuring fundamental research leads to actionable breakthroughs and seamless transition to commercialisation.

Optimising Tax and Regulatory Support

Expand and modernise R&D tax incentives to better reflect how industry conducts R&D—especially in capital-intensive sectors. Simplify eligibility and reporting under the R&D Tax Incentive and reintroduce production tax credits to retain and commercialise IP domestically. Implement a R&D Premium Tax Credit for industry-university collaboration. The Premium Tax Credit would support whole of life cycle industry research and teaching engagement – where research-intensive business achieves credit for engaging with research, secondments, employing graduates, and creating placements.

Driving Innovation Through Procurement

Shift government procurement towards outcome-based models that value innovation. Enable startups and spin-outs to participate, fostering broader collaboration and incentivising creative, cost-effective R&D solutions.

A National Long-Term R&D Funding Model

A consistent, long term (decadal), bipartisan, all of government R&D strategy funding and investment model is needed—one that targets 3% of GDP, consolidates national priorities, and supports large-scale, high-impact investments. Ensuring funding certainty will enable strategic, risk-tolerant innovation over the long term.

5. What changes are needed to enhance the role of research institutions and businesses (including startups, small businesses, medium businesses and large organisations) in Australia's R&D system?

Long term dependable funding that is fully funded and isn't tied to election cycles is crucial to giving research institutions and businesses the confidence to invest in innovation that might not pay immediate dividends.

Federal Government must work with States/Territories and local government to coordinate existing programs to incentivise development of knowledge precincts through co-location of Australian universities and businesses. The Monash University-Moderna initiative is an example.

The Australian Government should also build on the success of the current Business Research and Innovation Initiative (BRII) program under the Industry, Science, and Resources portfolio by introducing a Small Business Technology Transfer (STTR) type program to incentivise SMEs to engage with Australian research institutions on R&D collaboration.

6. How should Australia support basic or 'discovery' research?

Basic research needs to be supported through long term, fully funded programs. Political interference in basic research must be stopped, especially when considering artifacts such as the National Interest Test (NIT) as required by the ARC. The language of NITs often "dumbs down" research to the point of being nonsensical to allow non-experts to be able to decide the value of the research. Political interference also reduces the potential for risky research that is likely to produce higher returns.

7. What should we do to attract, develop and retain an R&D workforce suitable for Australia's future needs?

Australian universities could offer structured industry PhD programs, where non-traditional pathways are acknowledged. Recognition of industry collaboration in grant criteria are essential to build a future-ready research workforce.

Bigger, mission-based funding could support student engagement with Industry, making the divide between the two more permeable.

The Government might also boost Australia's R&D workforce through skilled migration:

- Under the new Skills in Demand visa as part of the Migration Strategy, provide direct and expedited permanent residency for international students obtaining a PhD at an Australian university.
- Through the new National Innovation visa, develop a national strategy to actively attract and retain high-quality international researchers.

8. How can First Nations knowledge and leadership be elevated throughout Australia's R&D system?

First Nations peoples build vast knowledge that can improve Australia's sustainability, resilience and innovation. Both the Accord and National R&D priorities state the importance of First Nations Knowledge, and it needs to be beyond access and inclusion. Australia needs a pipeline that leads Indigenous students, to become Indigenous PhDs, to then become Indigenous Early Career Researchers and then Indigenous Research Leaders who can mentor and have their research fully-integrated into the R&D environment.

There has been no action on recommendations including establishment of a First Nations Council, a First Nations-led review of higher education, and dedicated funding for Indigenous PhD students and postdoctoral researchers. This funding also needs to value different pathways into higher education and research.

Again, short term funding schemes present a challenge. As ECRs, Indigenous researchers need time to develop their thinking, build a profile, develop research relationships. Continuity of funding is vital to ensuring they are able to build their research rather than apply for the next grant.

Managing intellectual property remains a big challenge. Australia needs a clear framework for Indigenous research, and this framework needs to align with both the AIATSIS Guidelines for Ethical Research in Australian Indigenous Studies and the United Nations Declaration on the Rights of Indigenous Peoples.

9. What incentives do business leaders need to recognise the value of R&D investment, and to build R&D activities in Australia?

Business needs an easy way in to Universities. The success of the Australian National University's Innovation Institutes present excellent examples of how multi-disciplinary research capability and expertise can be made available to drive collaborative research.

R&D tax credit needs to incentivise collaboration with Universities. It needs to be beyond developing software to supporting real collaborative R&D.

The Australian Government could leverage the Research and Development Tax Incentive (R&DTI) by offering an additional equity or debt finance incentive from the National Reconstruction Fund (NRF) to businesses that qualify for the R&DTI and enter into formal R&D collaboration with an Australian research institution.

The Government could also Facilitate the presence of additional intermediaries and aggregators (between superannuation funds as investors and early-stage enterprises as investees) to encourage R&D.

10. What should be measured to assess the value and impact of R&D investments?

All metrics to measure success of the programs need to be tied to the intent of the program. We encourage the Australian Government to move beyond simple traditional metrics such as patents or papers co-authored with industry and measure economic outcomes such as return on investment or revenue from new products, social outcomes including improvements in health, or environmental outcomes such as adoptions of green technology or improvements in

efficiency. Case studies that describe these outcomes would show the diverse benefits of R&D to the broader Australian community.