UQ Submission: Strategic Examination of Research and Development

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Executive Summary

Australia has a research and development (R&D) capacity that it can be proud of, with breadth and quality that places us in the highest international strata. A major driver of this excellence has been R&D conducted in our universities, particularly our research-intensive institutions, who have invested heavily in both applied and discovery research.

The quality and returns of this investment are well documented. As the Strategic Examination of R&D Discussion Paper (the Discussion Paper) recognises, Australia produces 3% of the world's scientific publications, while having just 0.3% of the world's population.[1] For every $1 invested in business-university partnerships (whether by the university or the business) there's an average return of $4.47 to the business.[2]

The strong positive effect of R&D on productivity is well established. Innovations emerging from Australian R&D have driven technological development and the implementation of novel products and services. University-industry partnerships have delivered successful translation of novel therapeutics, reducing disease burdens, improving healthcare efficiency, and enhancing workforce wellbeing and productivity.

Australian renewable energy and sustainability research has transformed national and international energy production and markets, while research on agricultural and manufacturing advancements has improved crop yields, processing efficiencies, and resilience to climate change. The alignment of research expertise and teaching delivery in our universities is also a critical enabler of workforce skills development.

While our national ambitions are met in the quality of our research, there is a prevailing view that Australia underperforms in the translation and commercialisation of research. The Discussion Paper decries what it terms the 'old approach' of 'waiting on other nations to turn our ideas and discoveries into products and services that we then adopt at higher cost' (p.13). This was a position also stated in the 2021 University Research Commercialisation Consultation Paper and in the Australian Universities Accord Final Report (p.196). As a nation, we have rued the high-profile examples of Australian innovation picked up and capitalised by overseas investors and manufacturers.

The current Strategic Examination of R&D presents a different opportunity: To examine closely our successes in innovation and learn from their systemic features. Australia's R&D and innovation systems have unique features, including the large proportion of our R&D activity conducted in our universities, as well as the significant role of SMEs in our economy. While we should naturally look to our global context for strategic insights, there are also Australian solutions to be considered for the uniquely Australian challenges in R&D and knowledge translation.

UQ leads Australia's Group of Eight universities in commercialisation revenue received, the number of active start-ups and the value of equity held in start-ups formed from university IP.[3] Notable commercialisation successes, supported through UQ's UniQuest, include the blockbuster cervical cancer vaccine Gardasil® and start-up companies Spinifex Pharmaceuticals Inc and Inflazome Ltd, which were acquired in two of the largest university start-up exits in Australian history.

UQ is committed to enabling Australia's R&D success through education, research, and engagement with partners for the benefit of all. We commend the Government's initiation of a Strategic Examination of R&D and look forward to continued engagement with the Expert Panel as they gather insights into future opportunities.

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[1] InCites dataset, updated February 28, 2025. Includes Web of Science content indexed through January 31, 2025.
[2] Universities Australia. Clever Collaborations Report. 2020. https://universitiesaustralia.edu.au/wp-content/uploads/2020/04/Clever-Collaborations-stats.pdf
[3] Knowledge Commercialisation Australasia. Survey of Commercialisation Outcomes from Public Research. 2023. https://www.techtransfer.org.au/public/232/files/KCA_SCOPR_survey_report_20242023_data_HI-RES.pdf.

In responding to the Discussion Questions below, we provide the following recommendations:

1. 3% GDP investment in R&D should be a formal decadal target.

2. To reach 3% GDP investment, all sources of research funding must grow, or be maintained:

   a) Targeted government investment should be used to stimulate tri-partite solutions for priority-aligned R&D needs.

   b) Australian universities have invested heavily in R&D. University own funds were the funding source for 18% of the total national R&D expenditure for 2021-22. A systemic move towards 3% GDP investment in R&D will have to include revenue from international education as part of the total mix.

3. Government policy settings should focus on reducing complexity and providing funding stability to allow initiatives time to realise impact and return-on-investment (ROI).

4. By funding the full economic costs of research, the government can strengthen Australia's research capabilities, improve industry engagement capacity, and enhance Australia's attractiveness as a global research partner.

5. We must collectively ensure that sovereign IP can deliver optimal impact for Australia through a mature approach to IP licensing that moves beyond a simplistic focus on ownership.

6. An emphasis on productivity will help to engage the public focus on success in R&D and innovation, building upon existing high levels of trust among the general population in science and scientists.

7. Research infrastructure and sovereign capability, e.g. in clinical trials, will be key to attracting industry R&D spend. There is an opportunity to strengthen the national research infrastructure funding framework.

8. Support universities to invest in the capabilities needed to maximise engagements with businesses through funding the full economic costs of research.

9. Australia should continue to support discovery research through the national research funding councils, whose processes of selection should continue to be underpinned by rigorous peer review without political interference.

10. To attract, develop and retain an R&D workforce suitable for Australia's future needs we should focus on specific cohorts: PhD candidates, early and mid-career researchers and research infrastructure specialists.

11. Elevating First Nations peoples in our R&D system can deliver sustainable development opportunities. Indigenous-led programs and initiatives will have the most profound impact.

12. To further incentivise business investment in R&D, the government should consider

    1. A Small Business Technology Transfer Program to support early-stage innovation.

    2. Government-backed equity or debt financing via the National Reconstruction Fund for businesses claiming the R&D Tax Incentive.

    3. Support for university-led venture capital funds to bridge the gap between research and commercialisation.

    4. Collaboration with state and local governments to develop priority innovation precincts that drive industry growth.

13. R&D investments should be evaluated using metrics aligned with the diverse research priorities within the system. This includes indicators appropriate for discovery, applied, and translational research. Linked data could improve the measurement of research impact across the sector.

Response to the discussion questions

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

Recommendation 1: 3% GDP investment in R&D should be a formal decadal target

UQ endorses the Go8 call for a formal decadal target of 3% of GDP invested in R&D by 2035, implemented as a metric in the *Measuring What Matters Framework*.[4] This level of research intensity will be necessary for Australia to meet its innovation and productivity goals.

> *While economic growth based solely on physical inputs cannot go on forever, human ingenuity is inexhaustible – Productivity Commission*[5]

A formal target will allow consistent reporting and monitoring in relation to our national research intensity, as well as meaningful review of policies and programs aimed at increasing investment in R&D. A decadal timeframe will allow initiatives to be implemented, and for their ROI to be considered at a meaningful interval.

Recommendation 2: To reach 3% GDP investment, all sources of research funding must grow, or be maintained

With Australia's current level of R&D intensity at 1.66% GDP, the only realistic path to a 3% target is through growth in investment across the sector.

> *Projections suggest an R&D intensity target of 3% of GDP can be achieved over a 10 year period **if we can return to strong R&D investment across all sectors** – Go8*[6]

As outlined in the Discussion Paper, business should be encouraged to invest more in R&D, however, business investment alone cannot meet a funding shortfall of $31.9 billion. Higher Education institutions have been significant investors in R&D, financed largely through international student fee revenue, however this is a source of funds that is subject to both government regulation and a competitive international marketplace. Aside from international student fee revenue, universities have very few discretionary funds to invest in research. Governments too, must manage competing demands for public investment. There is no single part of the system that is in a position to lift R&D investment to a 3% GDP target unilaterally, and the impact of such a unilateral spend would be unlikely to address critical national needs.

Instead, UQ urges the Strategic Examination to consider opportunities to drive R&D investment and intensity through *coordinated* investment in tri-partite initiatives.

Recommendation 2a: Targeted government investment should be used to stimulate tri-partite solutions for priority-aligned R&D needs.

Tri-partite approaches to R&D draw upon the relative strengths of public, private and university sectors. By addressing research challenges through multi-party agreements or initiatives, tri-partite research investment can increase the potential for research impact, leading to more innovative research outcomes. Collaboration across sectors at the R&D stage can also pave the way for accelerated knowledge translation, including commercialisation but also policy impacts, evolving clinical practices, or reforming service models and delivery.

An integrated, sustainable, dynamic and impactful Australian R&D system is one in which collaboration is key. Where multiple partners from industry, government and universities come together to pool resources, leverage unique strengths and amplify potential benefits.

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[4] Group of Eight. Australia's Research and Development (R&D) Intensity: A Decadal Roadmap to 3% of GDP. 2024. https://go8.edu.au/wp-content/uploads/2024/07/Australias-RD-Intensity-A-Decadal-Roadmap-to-3_-of-GDP.pdf
[5] Australian Productivity Commission. 5-Year Productivity Inquiry: The Key to Prosperity, Interim Report. 2022. https://www.pc.gov.au/inquiries/completed/productivity/report.
[6] Group of Eight, Australia's Research and Development (R&D) Intensity.

UQ has pioneered new models of collaboration that demonstrate the power and potential of tri-partite solutions. These solutions begin with specific challenges or opportunities, connect multiple partners with shared interest. and combine public and private investment to maximise impact. For example, the Translational Science Hub (TSH), established in 2022, is a $280 million partnership between Sanofi, the Queensland Government, Griffith University and UQ. It connects world-class researchers in Queensland with Sanofi scientists in France and the USA, in a first of its kind global scientific community. Another example is the Boggo Road Innovation Precinct, which is a major knowledge-economy hub encompassing public, private and university activities. The Precinct contributes more than $1.3 billion in value to the Queensland economy and supports more than 3,500 workers. The TSH and Boggo Road are practical examples of tri-partite solutions in action. They demonstrate the potential to attract global investment through smart and coordinated action by universities, governments and businesses.

Tri-partite R&D investment offers Government a particularly significant opportunity in relation to priority-driven research, such as that aligned with the National Science and Research Priorities, National Reconstruction Fund Priority Areas or Defence needs. Stimulating cooperation across sectors in response to specific R&D challenges sets us up for success as a nation.

Recommendation 2b: Australian universities have invested heavily in R&D. A systemic move towards 3% GDP investment in R&D will have to include revenue from international education as part of the total mix.

The TSH and Boggo Road examples detail the transformational outcomes that can be targeted through tri-partite investment in R&D. In order for universities to bring in-kind and/or financial contributions to such agreements, they must be set upon sufficient financial bases to invest in research.

The Discussion Paper acknowledges that the 15-year decline in Australian investment in R&D has been driven by falling business and government R&D expenditure. In contrast, from 1995 to 2022, universities have grown their investment in R&D from 0.37% of GDP to 0.56%, with a significant proportion of this dedicated to applied research expenditure (Discussion Paper, p18). Figure 11 in the Discussion Paper shows that for 2021-22 over half (51.4%) of all Higher Education Expenditure on R&D (HERD) ($14.0B) was funded through Higher Education own funds ($7.2B). University own funds were the funding source for 18% of the *total* national R&D expenditure for that period.

International education is part of the solution, not part of the problem

Australian universities have been able to invest in R&D activity largely thanks to international student fee revenues. There is a persistent tension in the political discourse in relation to our international student cohorts, and UQ fully acknowledges that this is not a single-department, or single-agenda policy matter. While this submission does not seek to debate international education policy as such, it cannot be glossed over as a major contributor to our R&D system.

Within this debate, there is surely a positive conclusion to be drawn from how research-intensive universities have grown a world-class, quality-driven service export industry, and have invested the financial returns of that into improved education and research outcomes for Australia. It is largely these 'own funds' that have supported universities to participate in tri-partite research initiatives of national significance.

There is no realistic alternative to international education as a source of revenue for universities to deploy in this way. A systemic move towards 3% GDP investment in R&D will have to include revenue from international education as part of the total mix. Given the many other national benefits of a quality-driven international education sector - economic, social and diplomatic to name a few – we urge the Strategic Examination panel to consider international education as a positive component of the R&D mix.

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

Recommendation 3: Government policy settings should focus on reducing complexity and providing funding stability to allow initiatives time to realise impact and return-on-investment (ROI).

The Discussion Paper proposes that "Despite the Australian Government's initiatives to promote research translation and commercialisation (Department of Education, 2022), significant challenges persist in aligning the requisite skills and capabilities for achieving effective impact. [p.35]. However – the initiative cited, the University Research Commercialisation Action Plan, has been only partially implemented. Those parts that *were* implemented (one round of Trailblazer; AEA, PhD Internships) have not yet had the opportunity to fully demonstrate their intended return on investment.

Research and innovation-focused policy initiatives must be given time to prove their worth and their impact. Notable changes in R&D workforce demographics or commercialisation outcomes, for example, will not happen in any meaningful sense over timeframes of anything less than 5-10 years. We note the international R&D reform examples provided in the Discussion Paper [pp.37-39], and point out that these initiatives had timeframes for implementation and evaluation that would be better measured over decades.

Additionally, the consistent re-prioritisation, defunding, and reform to R&D- and innovation-enabling programs will certainly contribute toward any perceived lack of efficacy or their lack of validity. With respect to facilitating directed activity within the higher education sector, we highlight the difference in focus across significant federal-level initiatives including the:

- University Research Commercialisation Action Plan - encouraging university-industry research partnerships

- Future Made in Australian Plan - primarily focused on universities training/upskilling workers

- National Reconstruction Fund (NRF) - research and workforce uplift.

The fragmentation of policy interventions will continue to be one of the largest inhibiting factors for R&D and innovation. In its submission to the NRF implementation consultation, the University noted that a consolidated, cross-jurisdictional approach was critical to ensuring its success, a sentiment reflected by the Go8.[7] [8]

UQ strongly encourages a whole-of-government approach to an integrated uplift of Australia's R&D system, aligning innovation-centric efforts across Industry, Infrastructure, Innovation, Health, Education, Environment and other portfolios. It is imperative that the design of our R&D system considers the role that universities will play in this agenda as enablers and drivers of innovation, including the constraints, noted herein, that will curtail that involvement.

Recommendation 4: By funding the full economic costs of research, the government can strengthen Australia's research capabilities, improve industry engagement capacity, and enhance Australia's attractiveness as a global research partner.

Government-funded research, particularly that administered through the national research councils, plays a critical role in driving innovation and knowledge creation. However, these grants do not cover the full economic costs of research, with the Research Support Program intended to meet some of the 'indirect costs' that fall outside typical grant inclusions. These can include critical capabilities such as infrastructure, equipment and compliance supports (ethics, contracting, foreign interference etc.).

The capped pool of the research support program provided to universities to fund indirect costs has not kept pace with the growth in linked research funding.

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[7] UQ Submission to the NRF Implementation Consultation. https://consult.industry.gov.au/national-reconstruction-fund/submission/view/121
[8] Go8 Submission to the NRF Implementation Consultation. https://consult.industry.gov.au/national-reconstruction-fund/submission/view/202
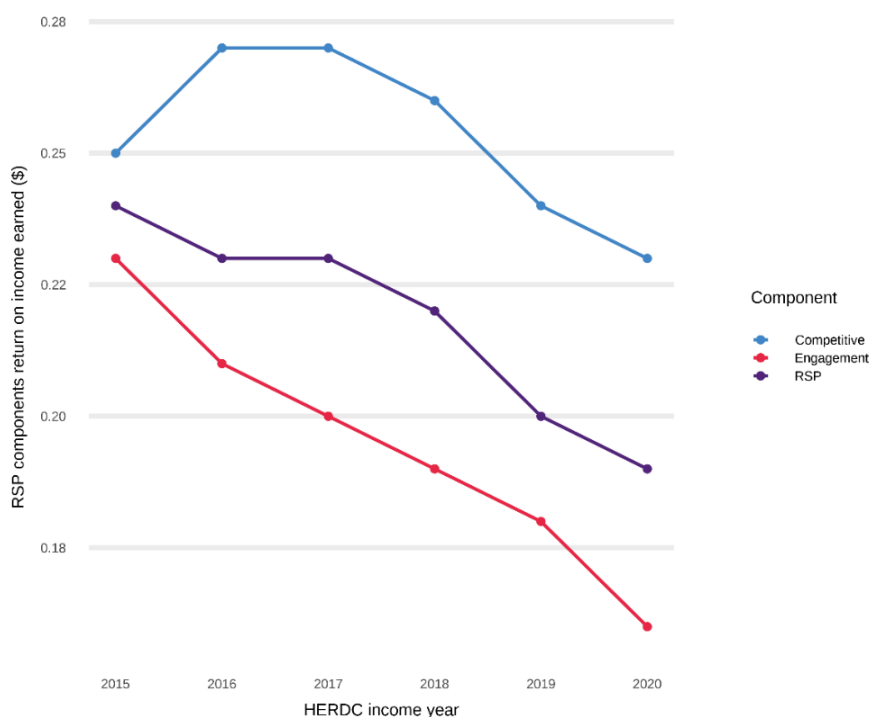
Figure 1 National decline in RSP returns from HERDC income earned

The RSP is currently capped, and therefore rewards universities' relative performance. In 2015, the block grant provided universities with approximately 24 cents for every dollar of reported research income, while in 2020 this had declined to just 19 cents (Figure 1.).

This funding gap means that institutions must cross-subsidise research using other revenue sources. Fully funding the economic costs of research would ensure that institutions can maintain world-class research infrastructure, support skilled technical staff, and provide the necessary administrative and compliance support without diverting resources from other essential activities.

Underfunding research places Australian institutions at a competitive disadvantage compared to global counterparts, where government research funding more comprehensively covers indirect costs. Without adequate funding, researchers face barriers to collaboration, commercialisation, and long-term project sustainability. By fully covering the economic costs of research, the government would strengthen Australia's research capabilities, improve industry engagement capacity, and enhance Australia's attractiveness as a global research partner, fostering more international collaboration and positioning the nation as a leader in research and innovation.

In alignment with our response to the Universities Accord Discussion Paper, UQ proposes two reforms to the RSP:

- Remove the cap on the RSP to reward absolute research performance rather than relative performance; and,
- Tie the RSP specifically to Category 1 research only, designating it to fund indirect costs and a pre-determined rate per dollar.

Uncapping the RSP would require the Government to set an amount per dollar of research income that would be returned through the RSP. Although the full economic cost of research is estimated to be about $1.20 per $1 of research income, it is appreciated that a sudden increase to this level may not be feasible44. By restricting RSP to only Category 1, it is suggested that an initial setting of the indirect cost rate to approximately 55c would be more feasible.

The setting of a government rate for the indirect cost of research would also provide universities with a direct price signal that can be passed on to Industry funded research as a minimum cost recovery rate. At present, universities set an indirect cost to research at various levels, but often these costs are waived in an attempt to attract industry funding into the university to gain access to more RSP. his creates a non-virtuous cycle, where government is effectively subsidising more and more industry research. A government set rate would enable universities to hold the line with Industry funders that wish to use government funded infrastructure and expertise in universities, as there would be no incentive to waive such costs.

Recommendation 5: We must collectively ensure that sovereign IP can deliver optimal impact for Australia through a mature approach to IP licensing that moves beyond a simplistic focus on ownership.

A key principle underpinning technology transfer is that industry requires access to IP from Australia's research sector and does not necessarily need ownership. This principle means that universities and other research organisations attuned to the needs of industry and with the capability to appropriately protect IP are best placed to benefit financially and generate economic and social outcomes from their research. Having a commercialisation workforce skilled in protection of IP and negotiation of licensing agreements is critical to a successful Australian innovation ecosystem. A leading example in Australian biomed sector is the HPV vaccine Gardasil®, where the patents are owned by the University of Queensland, and CSL and Merck access the technology and exploit it commercially under a licence and sub-licence structure.

The implementation of this principle in universities is often mis-characterised. Like many Australian universities, UQ's Intellectual Property Policy asserts ownership of all IP developed, created, authored or otherwise contributed to by University staff, higher degree by research candidates, and title holders in the course of their employment, enrolment, or engagement with the University.

Ownership of intellectual property in projects involving third parties is determined by third-party agreement with those parties to the project. In particular, variation from the principle of University ownership of IP may occur where an external party engages UQ in contract research and fully funds the research costs.

This approach ensures that IP generated from public funds is protected for the nation. Through this approach, UQ and other universities seek to foster a research culture in which technology transfer and entrepreneurial endeavour are valued and rewarded, and in which sovereign IP can deliver optimal impact for Australia. This approach recognises the importance of protecting IP in the creation of commercial and practical benefits for the community and its partners.

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?

Recommendation 6: An emphasis on productivity will help to engage the public focus on success in R&D and innovation, building upon existing high levels of trust among the general population in science and scientists.

Australia is well-placed to engage public focus on success in R&D and innovation. We have a very high level of trust among the general population in science and scientists, as demonstrated in a study of more than 71,000 people from 68 countries published in 2025.[9] With these existing high confidence levels in science, it is up to participants in the R&D sector – governments, universities, research organisations and businesses – to communicate clearly the productivity potential of a strong national research endeavour.

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[9] Cologna, V., N. G. Mede, S. Berger, et al. "Trust in Scientists and Their Role in Society Across 68 Countries." Nature Human Behaviour (2025). https://doi.org/10.1038/s41562-024-02090-5.

"for every 1% in R&D, Australia's productivity rises by 0.13% points" - Universities Australia[10]

To build a national culture of innovation excellence, Australia must strengthen public engagement, showcase success stories, and provide clear pathways for participation in R&D-driven progress. A well-informed public that recognises the tangible benefits of innovation – such as medical breakthroughs, new technologies, and economic growth – is more likely to support investment in R&D and advocate for its expansion.

Governments, universities, and industry must also work together to foster a more innovation-driven mindset across all sectors. Embedding entrepreneurship in education – as UQ does through its Ventures program – ensures that innovation is a visible and viable career path.

Finally, the policy and funding environment must incentivise long-term investment in R&D. Nations that lead in innovation success, such as Germany and South Korea, benefit from sustained and predictable research funding. Australia must follow suit, ensuring that its research ecosystem is not only supported but strategically positioned to drive national prosperity.

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

Recommendation 7: Research infrastructure and sovereign capability will be key to attracting industry R&D spend. There is an opportunity to strengthen the national research infrastructure funding framework.

Research infrastructure provides a very real opportunity to help drive industry engagement with universities, offering a unique set of capabilities unlikely to be matched in the private sector. High-end equipment and technology, aligned with an expert workforce to capitalise on it, provides industry with a tangible example of what might come to fruition through a research collaboration with a university.

Therapeutic Innovation Australia's Pipeline Accelerator scheme is a prime example of how industry can be integrated into the research infrastructure ecosystem. The voucher-based scheme allows industry, primarily SMEs, to access critical infrastructure needed for medical research across the discovery and translation spectrum. The rapid expansion and uplift of this program across other NCRIS projects would bolster the overall impact of our investments in NRI by way of further bringing industry into the ecosystem

UQ strongly supports the proposal made in the Universities Accord to move the National Collaborative Research Infrastructure Scheme (NCRIS) to sustainable, ongoing Australian Government funding. This should include a component of longer-term operational funding for NCRIS projects to provide ongoing employment for the expert RI workforce.

In addition to stabilising and extending federal funding for NCRIS, there is a need for federal, state and territory governments to co-operate on a national NCRIS framework to support stability, collaboration, and scale in sovereign RI. The current NCRIS model requires institutions to negotiate co-funding with state/territory governments every five years, aligned with the periodic implementations of new NRI Roadmaps. However, the Department is moving towards phased funding, leading to overlapping cycles and challenges due to varying government budget timeframes and priorities. This has strained relationships between universities and state governments and could be improved through development and implementation of an NCRIS funding framework, with agreed co-contributions.

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[10] Universities Australia. Research and Innovation. n.d. https://www.universitiesaustralia.edu.au/research-innovation/.

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?

Recommendation 8: Support universities to invest in the capabilities needed to maximise engagements with businesses through funding the full economic costs of research.

A unique set of capabilities are needed in our university research institutions in order to maximise engagements with businesses. We acknowledge that universities have not always been optimum partners for industry, presenting challenges in their complexity, internal silos and processing times (e.g. contracting). Universities have struggled to invest at scale in the specific capabilities needed to improve upon these transactional experiences for partners. Setting a national pathway to funding the full economic cost of basic research would have a positive flow-on effect in relation to university capacity to invest in such specialist research commercial management, partnering and knowledge translation capabilities.

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

Recommendation 9: Australia should continue to support discovery research through the national research funding councils, whose processes of selection should continue to be underpinned by rigorous peer review without political interference.

Australia's funding agencies should be funded at a level commensurate with our strategic R&D ambitions and, as discussed above, the funding provided through these agencies should be complemented by a revised RSP that moves towards funding the full economic cost of research.

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

Recommendation 10: To attract, develop and retain an R&D workforce suitable for Australia's future needs we should focus on specific cohorts: PhD candidates, early and mid-career researchers and research infrastructure specialists.

Higher degree by research (HDR) candidates

Higher degrees by research, such as a PhD or Masters by Research, play a crucial role in developing an R&D workforce that meets Australia's future needs by equipping graduates with advanced research skills, critical thinking, and problem-solving abilities. A 2019 joint report by CSIRO and the Australian Mathematical Sciences Institute, drawing upon LinkedIn and survey data, found that around 51% of PhD students hope to enter business or the public sector, while many PhD employers are 'aligned with the nation's growth sectors related to medicine, pharmaceuticals, advanced manufacturing, mining and finance'.[11]

According to figures published by Universities Australia, universities employ the majority of Australia's research workforce, with 81,090 FTE out of a total workforce of 180,540 FTE (45%) in 2020. Of this university R&D workforce, postgraduate students make up 57%.

An important recent report from Universities Australia highlights recent declines in domestic PhD enrolment, posing a risk to the research workforce pipeline. After an increase in in domestic PhD completions of 41% from 2000 to 2023, enrolments in PhDs declined by 8% from 2018 to 2023. Universities Australia highlights

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[11] McCarthy, Paul X., and Maaike Wienk. Advancing Australia's Knowledge Economy. CSIRO, Data61, Ribit, and AMSI, 2019. https://s3-ap-southeast-2.amazonaws.com/production-ribit-wordpress/wordpress/wp-content/uploads/2019/Advancing_Australia%E2%80%99s_Knowledge_Economy.pdf?utm_source=user_employer&utm_medium=email&utm_campaign=20190501_REPORT%20DOWNLOAD&utm_content=blog, p. 3.

the changing demographics of the typical PhD candidate (the average commencement age is now 34), along with cost-of-living pressures as likely drivers of this decreasing enrolment.

To secure the future of Australia's research workforce, Universities Australia recommends the following urgent reforms, which UQ endorses:

1. Financial support and equity measures for domestic PhD candidates — $300 million over four years

   a. increase the minimum stipend to a sustainable level aligned with the cost of living, with regular indexation.

   b. expand the RTP funding pool to cover the increased stipend while maintaining the number of domestic candidates.

   c. extend eligibility for government-funded parental leave to PhD candidates.

   d. remove taxation on part-time stipend scholarships to ease financial burdens.

2. Enhanced support for international PhD candidates

   a. raise the RTP funding cap for international students from 10 per cent to 20 per cent, especially for regions with critical workforce needs (no cost to Government).

   b. increase the RTP funding pool to support additional international candidates without compromising the number of domestic candidates. (up to approx. $500 million over four years).[12]

Early and mid-career researchers (EMCRs)

Australian early and mid-career researchers (EMCRs) face significant challenges, including job insecurity, limited funding opportunities, and uncertain career progression. Short-term grants and casual or fixed-term contracts create instability, making it difficult for researchers to establish long-term projects or career trajectories. As has often been documented, this period of intense career instability is regularly aligned with individuals' increasing personal responsibilities and financial needs, through growing families, greater caring responsibilities, and other pressures. More particularly needs to be done to support a diverse and thriving EMCR workforce, lifting participation of under-represented groups such as First Nations researchers and women in STEMM.

Competition for research funding and positions is intense, with low success rates in grant applications, particularly for those in the early stages of their careers. For researchers seeking careers outside the academy, the transition from research training to industry remains difficult due to a lack of structured pathways, reducing opportunities for researchers to apply their expertise outside traditional university settings. Without targeted support, Australia is losing talented researchers to more stable career options abroad or in other sectors.

A more sustainable research workforce requires policies that support long-term career development and funding stability. Aligning research training with industry needs will create clearer pathways for researchers beyond academia, enhancing career prospects and strengthening collaboration between universities and industry. As recommended in the Universities Accord Final Report, increasing the proportion of competitive grants that run for five years or longer is essential to improving job security for EMCRs.[13] However, this must be accompanied by increased research council funding to prevent worsening already low grant success rates. Expanding postdoctoral opportunities through secure, longer-term funding and supporting pathways to industry engagement or industry employment will attract and retain talented researchers, ensuring Australia continues to train and develop its future innovation workforce.

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[12] Universities Australia. Investing in PhD Candidates in Australia: How PhD Candidates Are Crucial to Australia's Research and Innovation Landscape. 2025.

[13] Department of Education. Australian Universities Accord Final Report. 2024. https://www.education.gov.au/australian-universities-accord/resources/final-report.

Research infrastructure specialists

The national research infrastructure workforce – particularly that employed in NCRIS projects – are a powerful enabler of Australian research and innovation, providing critical sovereign capabilities for the national scientific effort. Unfortunately, the cyclical funding that underwrites this workforce has left many RI specialists with limited job security, with few opportunities for career development or mobility. In order for national research infrastructure to address the R&D needs of Australian government, business, and researchers, investment must be made in the specialists who work within it.

NCRIS must be able to incubate the next generation of its workforce across all of its disciplines, facilities, and projects (including emerging industries). This should allow the creation of meaningful career pathways that will promote the retention of staff and their expert skillsets. An example may include the establishment of NCRIS ECR Fellowships. Such Fellowships could be extended to highly skilled early-career staff whose expertise spans multiple facilities.

As suggested above, we also suggest that consideration is given to longer-term operational funding for NCRIS projects to support core staff through job security and career progression.

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

Recommendation 11: Elevating First Nations peoples in our R&D system can deliver sustainable development opportunities. Indigenous-led programs and initiatives will have the most profound impact.

UQ acknowledges the importance of elevating First Nations people in the nation's R&D system, not as a priority, but an imperative. It is essential for our collective journey towards reconciliation and meaningful, lasting progress towards closing the gap.

Recognising and enabling First Nations people to own and develop traditional knowledge is key to First Nations self-determination and prosperity. The University recognises that research is a tool of empowerment for First Nations peoples, communities, and organisations, and aims to nurture a robust program of Indigenous research by supporting our researchers and their projects.

Key to elevating First Nations knowledge within the sphere of the nation's R&D system is the acknowledgement of Indigenous knowledge systems and culture, and the subsequent co-design/co-creation of research projects with Indigenous researchers and communities.

The University highlights that policy and funding initiatives to support First Nations research must include:

- Support for Indigenous researchers to extend the scope, capacity, and scale of their projects

- Uplift in research fields that are closely interlinked with Indigenous knowledge and expertise, such as: language preservation, landscape and environmental management, traditional medicine, and community health initiatives

- Additional uplift across all other research disciplines, including pathways into STEM fields.

The University acknowledges the value and expertise that First Nations knowledge brings to the research and innovation endeavour and is proud to support, host and invest in a number of flagship Indigeous-led research initiatives, including:

- The recent establishment of the National Indigenous Science Translation Centre (NISTC), led by the Indjalandji-Dhidhanu people.

- The Centre of Excellence for Indigenous Futures, which aims to implement Indigenous-led knowledge development and innovation in social research to shape policy, programs, institutions, and communities.

- The First Nations Cancer & Wellbeing Research Program – an Aboriginal-led, multidisciplinary program focused on making a meaningful impact on the health and wellbeing of Aboriginal and Torres Strait Islander people.

- The NHMRC Centre of Research Excellence – Targeted Approaches to Improve Cancer Services for Aboriginal and Torres Strait Islander Australians. The CRE focuses on emerging priorities in cancer-related health services research and actively promotes the translation of research knowledge into Australian public health policy and practice. The CRE also focuses on building research capacity through training the next generation of researchers in cancer control.

- The UQ Poche Centre, part of the national Poche Indigenous Health Network, which provide national and international leadership in Indigenous health research and research workforce development to improve life expectancy and transform health inequities and injustices in Australia and other international settings.

Earlier this year, UQ adopted the University's first Stretch Reconciliation Action Plan (RAP). A comprehensive plan to deliver on UQ's aspiration to play a leading role in reconciliation as advocates with and for Aboriginal and Torres Strait Islander peoples and communities.

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

Recommendation 12: To further incentivise business investment in R&D, the government should consider:

- A Small Business Technology Transfer Program to support early-stage innovation.

- Government-backed equity or debt financing via the National Reconstruction Fund for businesses claiming the R&D Tax Incentive.

- Support for university-led venture capital funds to bridge the gap between research and commercialisation.

- Collaboration with state and local governments to develop priority innovation precincts that drive industry growth.

By implementing these measures, Australia can strengthen its R&D ecosystem, encourage greater industry participation, and drive long-term economic benefits.

Collaboration and alignment across sectors in R&D can be challenging, but it is far from impossible. UQ is committed to fostering accessible, collaborative, and performance-driven partnerships. Initiatives like the Food and Beverage Accelerator (FaBA)—established through the Trailblazer Universities Program—offer industry a clear entry point, streamlined IP terms, and aligned performance expectations. FaBA has also enhanced research commercialisation by providing training for researchers and hosting innovation workshops to accelerate the path from research to market.

Providing seed funding to small business to partner with public research organisations has been a successful model to drive innovation internationally. In the USA, both the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) competitive grants programs, aimed at boosting commercialisation of R&D by smaller firms and building sovereign manufacturing capability shine through as exemplars of best practice. The STTR program is intended to facilitate technology transfer from research institutions to small business. A nationwide, large scale STTR type program for Australia could assist technology "pull through" by smaller businesses and be a complementary initiative to the *Australian Economic Accelerator* program as well as the Industry Growth Program which limits eligibility to projects only in priority areas of the NRF. UniQuest has developed a model for a STTR type program for Australia that could be considered by the Australian Government in boosting SME research and innovation activity beyond the focus of existing programs.

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

Recommendation 13: R&D investments should be evaluated using metrics aligned with the diverse research priorities within the system. This includes indicators appropriate for discovery, applied, and translational research. Linked data could improve the measurement of research impact across the sector.

Assessing the value and impact of R&D investments

There is growing international momentum to reform how scholarly research is assessed, and UQ supports the principles of the San Francisco Declaration on Research Assessment (DORA).

To reflect our commitment to research excellence across a spectrum of activities, UQ has updated its Academic Performance Criteria to recognise R&D activities across various dimensions. At each academic level (A–E), research performance can be documented in relation to:

- Quality of research outputs
- Funding and external support
- Translation and impact
- Engagement
- Leadership

These criteria provide a holistic framework for evaluating R&D performance, recognising diverse contributions across research, industry engagement, knowledge translation, and leadership.

Challenges in measuring research impact

Measuring research impact is inherently complex. Knowledge Commercialisation Australasia's *Survey of Commercialisation Outcomes from Public Research* provides valuable insights into aggregate commercialisation metrics. However, the value and impact of R&D investments extend beyond commercialisation, influencing society in diverse ways—such as the development of new goods and services, increased economic complexity, improved quality of life, and enhanced national security. Each of these outcomes requires distinct measurement approaches, each with its own challenges.

One of the key issues is the lack of comprehensive data-tracking infrastructure to accurately link R&D investments to their outcomes. It remains difficult to determine which investments led to specific impacts—or whether those impacts would have occurred even with reduced or no investment. Establishing better tracking systems is a fundamental prerequisite to effectively assessing national R&D investment strategies.

Enhancing measurement through linked data

A potential solution is leveraging linked data to trace the path from investment (e.g., research grants) to impact proxies such as patents and policy documents. Many funders and publishers require grant reference numbers to be included in published research, which are then cited in patents and policy documents. However, this level of traceability does not extend to much of the R&D investment landscape—particularly industry-funded or university-funded research, which often lacks unique identifiers for tracking.

Introducing unique (but potentially non-public) investment identifiers would enable better tracking of outputs and associated funding. These could be used internally and aggregated for national reporting frameworks such as HERD/BERD without compromising commercial confidentiality.

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