Regional Universities Network
REGIONAL STRENGTH. NATIONAL SUCCESS.

STRATEGIC EXAMINATION OF R&D
APRIL 2025

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ABOUT THE REGIONAL UNIVERSITIES NETWORK

The Regional Universities Network (RUN) welcomes the opportunity to contribute to the consultation on the Australian Government's Strategic Examination of R&D Discussion Paper.

RUN is a national collaborative group of seven regional Australian universities: Charles Sturt University, CQUniversity Australia, Federation University Australia, Southern Cross University, University of New England, University of Southern Queensland, and University of the Sunshine Coast.

This submission reflects the positions of RUN institutions, and in doing so, also aims to represent the views of those students and communities which RUN universities serve; the one-third of Australians who live outside of metropolitan centres in Regional, Rural and Remote locations.

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OVERVIEW

In an increasingly competitive and volatile global environment, Australia's growing metropolitan concentration of research effort away from the regions represents a vulnerability in the diversity, accessibility, and culture of Australia's research ecosystem.

RUN holds the view that the lack of acknowledgement of these national vulnerabilities in the Strategic Examination of R&D Discussion Paper represents a critical oversight in the planning for Australia's R&D future. Put simply, without a concentrated focus on building up research capability, research capacity and research ecosystems in Australia's regions, it is extremely unlikely that Australia will maximise the value of R&D, strengthen linkages between research and industry, support the achievement of national priorities, drive great investment, and uplift Australia's overall R&D intensity.

As found in the Australian Universities Accord there is significant national interest in redistributing the weight of Australia's university services more equitably towards regional Australians[1]. It found that Australia's future prosperity lies within the untapped academic potential of regional Australians.

Similarly, there must be an equal focus upon the national interest of a more strategic distribution of Australia's research capabilities, research infrastructure, and research-trained workforces towards the regions. Australia's R&D mindset has not followed the growth path of our regions, nor the economic heavy lifting our regions perform.

It is in Australia's interests for regional universities to be more involved in the nation's cutting-edge research, clinical trials, and new knowledge and innovation opportunities. Historically though, regional universities and communities have been disproportionately underrepresented in Australia's sovereign stocks of R&D workforces, infrastructure and activity.

In seeking to maximise the national interest benefits arising from Australia's R&D landscape, RUN argues the importance of building regional R&D capabilities and workforces by diversifying the current metro-centric concentrations of Australia's R&D base.

Regional universities host critically important pockets of highly successful collaborative research clusters recognised as 'at', 'above' or 'well above world standard' in many key national interest areas, such as engineering, environmental science, agriculture, healthcare, astronomy and space sciences, geology, oceanography, technology and neurosciences.

RUN research activity and their subsequent impacts are typically targeted and highly applied to meet the distinct economic, social, cultural, and environmental needs of the diverse regional communities they serve. RUN universities recognise the importance of place-based research and responsive engagement with key industry and community sectors.

Australia's most pressing sovereign R&D challenges and opportunities of the 21st century are primarily place-based within regional Australia: for instance, the national R&D imperatives linked to food, soil and water security; mineral, resource and energy security; climate change; natural disasters and disaster resilience; border and bio security; defence assets and capabilities; Australia's transition to net-zero emissions, and our Closing the Gap targets. In the regions, many of these challenges co-exist with the industries and business that constitute Australia's majority share of export wealth and activity.

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Australia's regions at a glance[2]

Australia's regions are a powerhouse of economic activity and growth. Australia's regions host :

- 33+ per cent of Australia's total workforce
- Two-thirds of national export wealth
- Over one-third of total national economic output
- More than 36 per cent of Australia's total population (6.3 per cent growth since 2019)
- Regional Australia leads productivity (output per worker) in seven of the 19 industry categories recorded by the ABS.

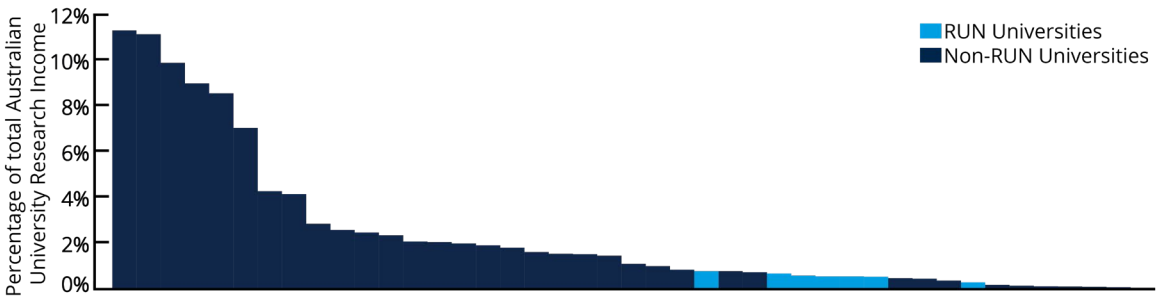
Regional Australia is a major driver to national prosperity and sits on the frontline to so much of Australia's future opportunities and challenges.

However, regional Australia's ability to meet these growing challenges and economic opportunities while participating more fully in the national R&D ecosystem is limited by the inconsistent availability of research infrastructure, research-trained workforces, research cultures and scaled research capabilities located outside of our largest capital cities. Historically, Australia's R&D workforces, infrastructure and funded activity have become ever-increasingly concentrated within the CBDs of our three largest capital cities. In 2023, just five of Australia's 42 universities – universities located in Sydney, Melbourne and Brisbane – received 50 per cent of Australia's total research income. Conversely, 26 universities – including all RUN universities – received less than 15 per cent combined of Australia's total research income[3].

Australia's training of our national research workforces is similarly skewed towards our largest cities, and away from our regions. RUN universities enrol less than six per cent of Australia's domestic research students. Conversely, almost half of all postgraduate research students attend just eight metropolitan universities. This is not due to any lack of research talent, aspiration, or employment outcomes in the regions, rather the phenomenon can be attributed to disproportionately fewer research training and progression opportunities at regional universities.

Despite regional universities hosting many pockets of research regarded as world class and above, regional institutions have historically been underrepresented in research grant success due to a lack of research infrastructure and/or critical researcher workforces, but are equally unable to build infrastructure and/or human capital due to lack of research grant funding. As such, emerging regional research talent are often compelled to relocate to cities to expedite their

Figure 1. Percentage of research income, 2023



OVERVIEW

research careers, and their long-term loss to regional workforces is almost inevitable. This perpetuating cycle is entrenching a national R&D imbalance that limits regional Australia's ability to develop the research workforces, capabilities and infrastructure required to respond to vital matters of national interest.

Australia's R&D future not only requires greater diversification, but increased investment prioritisation as a national interest imperative. As the discussion paper highlights, Australian investment in R&D has declined over 15 years from a peak of 2.24 per cent of GDP in 2009 to around 1.7 per cent of GDP today, which falls short of the current OECD average of 2.7 per cent[4]. Australia's retreating prioritisation of R&D investment as a proportion of GDP over the past 15 years is characterised by falling Government and Business contributions, despite rising investments made by higher education providers. The growth in higher education contributions towards national R&D investments during this period has been largely driven by the benefits arising from a robust and growing international student market. Here, a small number of larger higher education institutions have acquired significant market shares of international enrolments, while a larger number of smaller and/or regional institutions operate modest international student operations by comparison.

Much of the discussion paper focuses on the complex challenge of securing greater R&D investments from Government and Business, however there is enormous potential in considering the national R&D impact of supporting smaller and/or regional universities to host greater volumes of international students. This would inevitably lead to three net positive outcomes:

1. A greater diversification and placement of international student cohorts around Australia.
2. A surge in resultant R&D investment from a greater number of higher education providers, to offset lagging R&D investments from Government and Business.
3. A more robust geographic diversification of R&D activity and culture beyond metropolitan centres.

As such, RUN advocates a national policy and resourcing focus towards supporting Australia's smaller and/or regional universities hosting greater numbers of international students, to yield greater national R&D diversity and dividends. This must occur alongside a pivoting of Australia's R&D investment towards the regions.

RUN RECOMMENDS

Diversifying the current metro-centric concentrations of Australia's R&D base.

QUESTIONS

Q1: What should an integrated, sustainable, dynamic and impactful Australian R&D system look like?

Australia should righty be proud of its reputation as a highly regarded global research nation. Despite accounting for just 0.3 per cent of the global population, Australia undertakes 3 per cent of the world's research[5]. It is a credit to Australia's university system that 90 per cent of its research is rated as world class or higher[6]. World class research can be found at every university in Australia, including the small yet critically important pockets of research excellence nurtured by regional universities.

However, Australia's university research system reflects a legacy of Australia's past needs and priorities. Increasingly, Australia's university R&D capabilities are becoming more concentrated within Australia's few largest cities, and between the largest universities. As a result, Australia's R&D cultures, capabilities, and workforces are becoming less diversified, and more reliant on the sustained fortunes of a small handful of institutions. The anticipated reduction in international student numbers will likely be a sobering reminder of the vulnerabilities that accompany Australia's sustained approach to less diversified R&D investments.

The metropolitan-skewed concentration of research effort and the dilution of balance diminishes diversity, accessibility, and culture of Australia's research ecosystem. RUN universities have long recognised the importance of place-based research and responsive engagement with key industry and community sectors. It is important to acknowledge that Australia's most pressing sovereign R&D challenges and opportunities of the 21st century are primarily place-based within regional Australia. Many of these challenges co-exist with the major regional industries and business that constitute Australia's majority share of export wealth and activity.

Regional Australia's ability to meet these growing challenges however is limited by the inconsistent availability of research infrastructure, research-trained workforces, research cultures, and scaled research capabilities located outside of our largest capital cities. An integrated, sustainable, dynamic, and impactful Australian R&D system would therefore be better serviced via a stronger and more diversified base of research

QUESTIONS

capabilities. This system would proactively encourage business, government, and university collaboration.

RUN RECOMMENDS

Australia develops a stronger and more diversified base of research capabilities, focussing on regional and smaller universities.

Australia's future R&D system will not only require a sustained investment from universities, but also greater investments from Government and the business sector. There is a role here for government in ensuring two important settings are achieved:

1. That Government develops the requisite national R&D priorities, policy frameworks and tax incentives to encourage greater business investment. This includes a setting of national R&D priorities and government R&D funding schemes that are meaningful, accessible, and aligned to our R&D ecosystem.
2. That when the business sector invests in Australian R&D, they are met with a highly diversified, well-resourced, and collaborative university sector, primed for partnership opportunities.

Australia's R&D system should also promote better collaboration and human capital mobility between the three core R&D sectors of government, business (including SMEs), and universities. Governments, for instance, can gain sharper insights towards tertiary research dynamics by seeking university researchers towards government roles, while universities can better understand the needs of business by being encouraged towards industry appointments. Likewise, industry can gain deeper understanding about the operations of universities and the research ecosystem.

RUN RECOMMENDS

Ensuring the appropriate mechanisms are in place to actively encourage researcher mobility between government, industry, and universities.

QUESTIONS

Q2: What government, university and business policy settings inhibit R&D and innovation why?

At the most fundamental level, Australia's university R&D system lacks diversity and capability dispersal. Businesses seeking university R&D partners are met with these limitations when choosing from a relatively small number of providers who can sustainably host requisite pools of research workforces, research capacity, and research infrastructure. There is a national interest imperative to diversify our research potential via greater investments in the R&D capabilities of smaller/ regional universities.

Australia's R&D workforces, infrastructure, and funded activity have become ever-increasingly concentrated. In 2023, five of Australia's 42 universities received 50 per cent of Australia's research income, while 26 universities received less than 15 per cent combined of Australia's total research income[7]. This is despite regional Australia driving the majority share of Australia's key export industries and export wealth, while hosting over one-third of Australia's total population, workforce and national economic output.

Australia's training of research workforces is also disproportionately skewed towards our largest cities, despite critical shortages of research-trained workers required by the major industries of our regions. This is due to the overwhelmingly disproportionate concentration of research training opportunities (via institutional infrastructure and activity) being based outside of the regions.

In an increasingly competitive and volatile global environment, the growing concentration of research effort and the dilution of balance represents a vulnerability in the diversity, accessibility, and culture of Australia's research ecosystem. This also raises serious questions about how equipped regional Australia will be over coming years as major sovereign research priorities swing towards the regions –the transition to net zero emissions, our national Closing the Gap targets, defence and border security, and issues relating to food, water, energy, and climate security, are all predominantly place-based challenges in Australia's regions.

Australia requires a more balanced and proportionately resourced research ecosystem that can quickly respond to the changing needs of industry, and to the emerging placed-based issues of national interest, wherever they occur. Essentially, Australia needs to grow these capabilities beyond our three largest cities, and into Australia's regions. Regional Australia hosts many world-class universities that have demonstrated a tremendous ability to develop pockets of research excellence attuned to regional and industrial need despite their historic underrepresentation in national research activity.

RUN RECOMMENDS

The evolution of a national R&D system that is less concentrated, and exhibits greater diversity, collaboration and capacity dispersal beyond that of our few largest cities.

Greater collaboration between universities, and the business sector, is vital. Australia's university sector endures a legacy of fragmentation in its approach to R&D collaboration. Universities compete to win research income, establish their prestige and attract students. While universities generally recognise the broader benefits of R&D collaboration – and indeed espouse many successful case studies of collaboration – the highly-competitive nature of the university student and R&D landscape will tend to act as an obstacle to greater collaboration. To counter this, public funding for research should be prioritised towards collaborative projects – not just between industry and university, but between universities themselves, to build greater national capabilities and scale in R&D.

A greater realisation of national research diversity, capabilities, and infrastructure can be

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realised via collaborations that involve regional partners.

RUN RECOMMENDS

A greater realisation of national research diversity, capabilities, and infrastructure, in particular for regional and smaller universities.

Reliance on short-term funding can also create significant challenges. This is especially true for smaller and/or regional universities who lack the scaled operations to sustain research focus and resourcing between periods of short-term research funding. This has a limiting effect on the scope of institutional research that can be achieved, disrupts research continuity, creates challenges for talent development and retention, reduces opportunities for collaboration, and dampens confidence in research infrastructure investment. Cross-community communication and collaboration between the academic, private and public sectors is also a significant driver to R&D and innovation. It is crucial for these three sectors to find new ways to work together more effectively, with a longer runway to respond to the requirements and priorities assigned to Government grant processes.

RUN RECOMMENDS

The establishment of longer-term secure funding R&D streams.

Competitive and block funding opportunities for universities – whether intentional or not by design – have historically tended to favour the more established and well-endowed metropolitan universities, while de-prioritising the potential of smaller or emerging university research capabilities. The current discussion paper proposing a redesigned Nationally Competitive Grants Program, for instance, would seem to indicate a strong willingness to reinforce such an R&D ecosystem amongst Australia's universities. RUN would urge greater consideration to how competitive and block funding opportunities can contribute to greater diversity and capability dispersal amongst Australia's universities.

RUN RECOMMENDS

Greater consideration to how competitive and block funding opportunities can contribute to greater diversity and capability dispersal amongst Australia's universities.

RUN universities acknowledge the Government's desire to translate more R&D to commercial outcomes. However, in terms of universities and the resourcing of university research, the valued outcomes are citations and grant projects, more so than commercialisation. In any case, commercialisation can be an incredibly complex and resource-intensive process requiring specialised business and legal expertise, which creates challenges for Australia's smaller and/or regional universities due to their unique operating environments characterised by their geographic multi-campus dispersal throughout thinner regional student markets. Policy settings that support the commercial-potential of Australia's leading research – wherever it occurs, should be a consideration of this review process.

RUN RECOMMENDS

Development of policy settings that support the commercial-potential of Australia's leading research.

QUESTIONS

Q3: 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?

Australia already plays host to strong cultures of innovation excellence, where there is a genuine public focus on R&D success. However, these cultures and public focus tend to be pocketed around the small handful of research institutions where Australia's national R&D activities are most concentrated.

Australia lacks a nation-wide culture of innovation excellence and public engagement in R&D because most Australians are not exposed to its activity, nor have equitable access to opportunities to engage in research or research training. Regional universities and communities have been disproportionately underrepresented in Australia's sovereign stocks of R&D workforces, infrastructure and activity. This disparity reinforces systemic inequalities, placing regional universities at a disadvantage in securing grants, research investments, and research infrastructure. With smaller domestic and international student bases, limited existing research infrastructure, and fewer specialised research staff, regional universities face steeper challenges in expanding their research capabilities, retaining their research workforces from institutional poaching, and elevating the culture of R&D excellence and success amongst the diverse regional communities they serve.

If Australia seeks to elevate the national attitude towards innovation and R&D, then our national R&D machinery needs to be more visible and accessible to more Australians, not just those living in Sydney, Melbourne and Brisbane. Regional universities can play a particularly effective role in national R&D culture-setting within the non-metropolitan communities they serve. Unlike larger metropolitan institutions, regional universities operate within smaller, more interconnected communities. This positioning enables regional universities to be more engaged with their regions and more attuned to the distinct research needs of their local industries and communities. The benefits of R&D culture-setting via greater investments in regional research infrastructure, activity, and research-trained workforce development can be multiplied and dispersed more effectively in regional settings.

RUN RECOMMENDS

Increasing the visibility and accessibility of the national R&D machinery to all Australians, not just those living in metropolitan locations.

An important national R&D culture-setting tool is the celebration of research impact and accolade, when and where it occurs. Regional universities elevate the status of research culture within the communities they serve by highlighting the areas of institutional R&D outputs ranked as world class or above. Regional communities take great pride from those pockets of world class research being conducted by their local institutions. It has been some time since Australia last conducted institutional evaluations based upon research impact, which has diminished the opportunity to celebrate local research achievement and contribute to broader culture-setting objectives. RUN urges the resumption of a national system of institutional research assessment, as a replacement to the former Excellence in Research for Australia process, that wholistically assesses the economic, social, environmental and cultural impact of research outputs. Consideration should be given towards the value of public campaigns that promote the benefits of Australia's R&D activity, and building R&D career aspirations, targeting the communities of Australia where R&D culture and visibility is weakest.

RUN RECOMMENDS

The resumption of a national system of institutional research assessment

RUN RECOMMENDS

The creation of a of public campaign that promotes the benefits of Australia's R&D activity, and in building R&D career aspirations, targeting non-metropolitan communities.

QUESTIONS

Q4: What types of funding sources, models and/or infrastructure are currently missing or should be expanded for Australian R&D?

Australia needs much stronger regional research capabilities to meet the predominantly regional place-based challenges of the 21st century.

The Australian Universities Accord highlighted the national interest in redistributing the weight of Australia's university services more equitably to regional Australians. It found that Australia's future prosperity relies within the untapped academic potential of regional Australians. Similarly, there must be an equal focus upon the national interest of a more strategic distribution of Australia's research capabilities, infrastructure, and research-trained workforces towards the regions[8].

RUN universities undertake impactful research in collaboration with industry, government, and international partners, and consistently demonstrate the ability to conduct highly-applied, regionally-responsive world class research. Despite this growing track record, regional university research capabilities remain modest at the national level, which is a sovereign vulnerability. Currently, RUN universities capture less than 4 per cent of national research funding. Regional universities are often not able to attract research grants due to a lack of infrastructure and/or the quantum of research trained workforces but are equally unable to build infrastructure and/or human capital due to lack of research grant funding.

The Australian Universities Accord also found that the distinct social missions of regional universities – typically characterised by their geographically dispersed campus networks servicing high rates of traditionally underrepresented student cohorts in low-density markets, and modest shares of international student cohorts – leaves regional providers with considerably less capacity to build or improve their physical infrastructure, including critical research infrastructure[9].

> *"Without adequate investment in new, maintained and replacement infrastructure, there will likely be an exacerbation of the existing financial pressures felt by regional universities as well as further erosion of student load in regional areas. To support overall system growth and greater participation of regional and remote students, the specific infrastructure needs of regional universities have to be addressed.... The Review has also heard of critical infrastructure needs that warrant consideration of direct and more urgent funding, including significant maintenance backlogs affecting regional universities and their ability to deliver and attract students, staff and research funding."*[10]

This perpetuating cycle is entrenching a national R&D imbalance that limits regional Australia's ability to improve the research services relied upon by their major industries and communities. Australia's largest metropolitan universities have been able to successfully develop deep concentrations of research infrastructure, activity, and research workforces. Australia's robust international student industry has enabled all universities to grow their R&D investments as a share of GDP, during a prolonged period of retreating government and industry investment.

As such, there is significant potential in considering the national R&D impact of supporting smaller and/or regional universities to host greater volumes of international students, which would inevitably lead to:

- A greater diversification and placement of international student cohorts around Australia.
- A surge in resultant R&D investment from a greater number of higher education providers, to offset lagging R&D investments from government and business.
- A more robust geographic diversification of R&D activity and culture beyond

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metropolitan centres.

There are several responses that can be made to ensure regional Australian R&D capabilities are strengthened and better positioned to meet Australia's national interests:

- Policy and resources focussed towards supporting Australia's smaller and/or regional universities to host greater numbers of international students, to drive R&D investments from institutions with emerging research capabilities.
- Establishing a dedicated new research funding stream, or a dedicated funding round of an existing research program, for the exclusive purpose of building the research capabilities, outputs and research-trained workforces hosted by regional Australia.
- Reestablish a higher education infrastructure fund with a dedicated stream that supports regional universities to develop critical new research infrastructure.
- Consideration of developing an international R&D strategy that could explore opportunities such as Australia joining the Horizon Europe Research and Innovation Funding Programme, to reveal additional investment streams into Australia's R&D base.
- Develop differentiated tax incentives for businesses that partner with regional universities to invest in regionally-placed R&D activities, with minimised administrative/regulatory imposition.
- Increase Government funding for research and development, irrespective of what business does.
- The resumption of a national system of institutional research assessments that enables regional universities to promote the economic, social, environmental and cultural impact of their research outputs.

RUN RECOMMENDS

The re-establishment of a dedicated research infrastructure fund alongside dedicated regional university research funding allocations.

QUESTIONS

Q5: 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?

The need to incentivise business investment in Australia's R&D systems is evident. There are few levers available for policy makers but at a basic, principled level, it would be difficult to expect industry to increase R&D investment if the government is unwilling to do so itself. The government's investment in R&D as a percentage of GDP expenditure has fallen from 0.33 per cent at the turn of the century, to just 0.16 per cent today[11].

Falling government investment in R&D as a proportion of GDP has been offset by increased investments made by the Higher Education sector, largely driven by growth in international student enrolments. The small handful of large metropolitan universities conducting the majority share of Australian university research also host some of Australia's largest concentrations of international students. Shifting social and (bipartisan) political attitudes towards the quantum of international students means that these same research-intensive universities are unlikely to continue enrolling international students at similar levels to recent years. As a result, a reduction in future research outputs is possible. Without policy intervention a decline in R&D investments from the higher education sector is likely. Consideration should therefore be made to the national R&D investment impact that could be realised by supporting regional universities to host greater volumes of international students than the relatively modest numbers they currently enrol. This would help to offset the foreseeable decline in R&D investments otherwise being made by our largest and most research-intensive metropolitan universities as their international student enrolments inevitably retreat. It would also result in a greater diversification and a more sustainable placement of international student cohorts around Australia, while generating a more robust geographic diversification of R&D activity and culture beyond our metropolitan centres.

Research institutions and businesses also rely upon a consistency of conditions – be it national research strategy, funding and incentives, or operational conditions – to make informed and confident decisions. Changing government and national research priorities are often a source of uncertainty that causes hesitation and overtly cautious decision-making amongst business and research institutions.

RUN RECOMMENDS

RUN recommends the identification and development of long-term national research priorities that carry bipartisan support.

One welcomed development on this front was safeguarding the ARC Board's independence from political interference, ensuring that research priorities were no longer swayed by changing political leadership and ideologies that otherwise introduce political imperative to national interest assessments. The implementation of greater board independence from the ARC Review is undoubtably enhancing the accountability, transparency, excellence, and integrity of Australia's world-leading research ecosystem. Given the ARC's critical role as the primary funder of basic and applied research across all disciplines, an independent Board will provide Australians with confidence in the robustness of governance arrangements that safeguard the nation's research future.

QUESTIONS

Q6: How should Australia support basic or 'discovery' research?

The importance of basic or 'discovery' research is often underestimated, despite it frequently being the catalyst for subsequent applied and commercialised research outcomes. Therefore, increased funding of, and a greater risk tolerance towards basic or discovery research needs to be adopted from both government and industry to ensure a consistent pipeline of domestic innovation towards applied research. There is also value in providing funding for longer-term basic research projects, and encouraging greater cross-disciplinary research activity.

RUN RECOMMENDS

Providing funding for longer-term basic research projects, and encouraging greater cross-disciplinary research activity.

Many basic research endeavours are undertaken by early career researchers, the support of whom are critical for our continued prosperity as an advanced, highly-skilled nation. Notwithstanding the proposed changes outlined in the Policy Review of the National Competitive Grants Program, the existing Discovery Early Career Researcher Award (DECRA) has been beneficial to smaller and/or regional universities in their development of emerging early career research talent. DECRA recognised the resource limitations of regional universities, allowing them to overcome the financial risk of trailing a peer-reviewed, promising early career researcher under a longer-term (three year) trial before tenured appointment considerations could be made. Over many years DECRA has supported RUN universities to conduct many basic/discovery research projects that are important to the communities and industries they serve, while developing emerging research talent within Australia's regions. The shorter (two year) funding duration of the proposed replacement of DECRA – the Initiate scheme – will unfortunately erode the ability of RUN universities to maintain their support of emerging regional research talent, with opportunities likely to fall instead to larger metropolitan universities who hold the resources to take higher risks and offer greater job security to their emerging research talent.

RUN RECOMMENDS

Providing funding for more, and longer-term basic research projects, particularly those that support the development of early career research talent in regional areas.

QUESTIONS

Q7: What should we do to attract, develop and retain an R&D workforce suitable for Australia's future needs?

Institutions and businesses seeking to build new research-trained (PhD) workforces/ employees are often hampered by the significant time and cost challenges involved in developing these workforces.

Currently, the stipend rates for PhD scholarships cannot compete with industry wages (or even basic cost of living pressures), which continues to act as a key handbrake to more individuals undertaking PhDs. For those individuals that can overcome the cost-pressures of a full-time PhD, a four-year timeframe (atop of years of full-time prerequisite study) is expected. This results in a workforce development process with exceedingly long lead-times, occurring at high personal cost to the individual. It also results in metropolitan-centric research trained workforces, given PhD students in metropolitan areas tend to be younger and not already in the workforce, compared to regional PhD cohorts who tend to be older with additional employment and caregiver responsibilities that compete with successful completion.

The alternative approach of workplace/ industry-embedded PhDs at least overcome many of the personal cost pressures upon the individual, enabling them to earn while learning. However there then lies the significant disincentive to business and industry in waiting six to eight years for a part-time PhD completion, with no guarantee of long-term employee retention.

Combined, these time and cost pressures contribute to talented individuals and pace-driven industries being disillusioned and disinterested in engaging with research and research-trained skill sets, despite the growing need for these specific workforces. This may go some way to explaining why most PhD holders follow university/academic career pathways, rather than industry pathways. As such, consideration should be made to initiatives that enhance the value proposition of supporting PhD candidates, or hiring PhD graduates, for Australian businesses.

RUN recommends further investigation into how the R&D Tax Incentive might be better utilised to incentivise the take-up of industry-embedded PhDs, and the incentivisation of PhD hiring practices amongst the business sector.

If Australia wants a research-trained workforce to arrive at a similar pace to the way other critical areas of skills shortage are developed, then Australia may need to innovate different ways to accelerate the process. The rapid emergence of Artificial Intelligence, and its potential to displace many labour-intensive research tasks, provides an opportunity to reimagine the research training and research qualification landscape to something that can be more responsive to critical skills shortage. Here, the prospect of alternative, complimentary research qualification(s) within the AQF may be worthy of further consideration.

Additionally, Australia's R&D workforces need to diversify beyond their current concentrations within the CBDs of Australia's largest cities. Many of Australia's future opportunities and challenges are primarily place-based within regional Australia, and a more geographically-dispersed and regionally-responsive R&D workforce should be an important national objective. Regional Australia's ability to develop and retain their research-trained workforces, however, is limited by the historic underrepresentation of research infrastructure and activity hosted by their universities. A more diverse and responsive national R&D workforce could therefor be developed more effectively via Australia's network of regional universities receiving greater support in growing their world class research capabilities.

QUESTIONS

Q8: How can First Nations knowledge and leadership be elevated throughout Australia's R&D system?

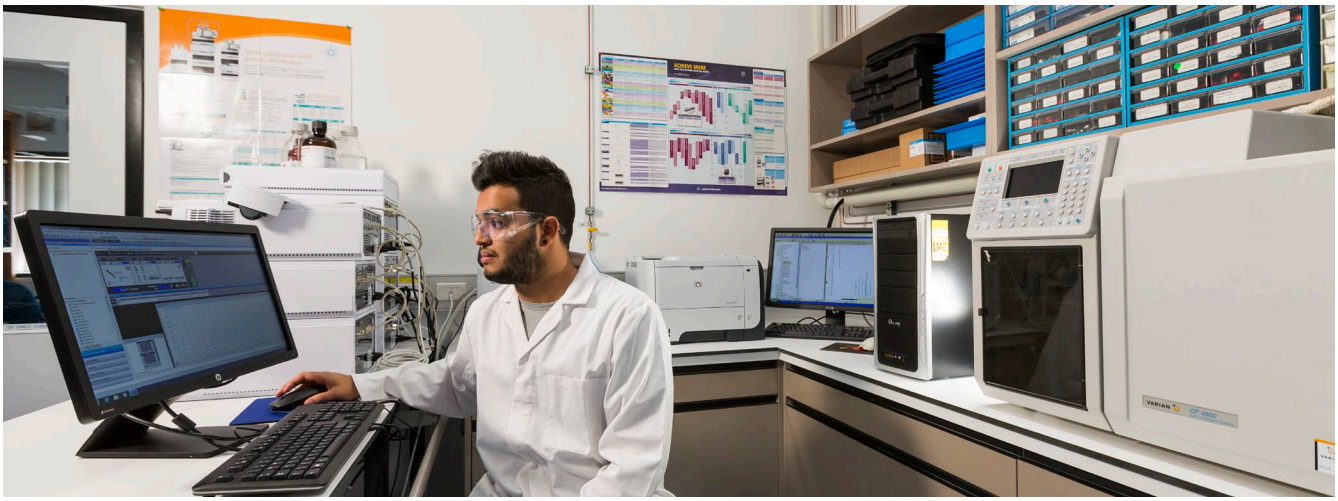
To elevate First Nations knowledge and leadership throughout Australia's R&D system, policies must be designed to meet First Nations Australians and First Nation communities where they are situated, ensuring that research opportunities are accessible, and grounded in place-based Indigenous perspectives. However, approximately 60 per cent of all First Nations Australians live outside of our capital cities[12], where research activity, infrastructure and career opportunities are weakest.

RUN supports and celebrates the research careers and achievements of First Nations Australians wherever they chose to apply their talents. However, a continuation of the drain of talent from the large First Nations population centres in regional Australia towards our largest cities, as a result of diminished local/ regional research opportunities, acts as a limitation to the critical integration of First Nations knowledge into place-based regional research critical to Australia's development.

First Nations knowledge and leadership can also be elevated throughout Australia's R&D system via:

- Embedding First Nations knowledge into National Science Priorities, ensuring that Indigenous-led research projects receive dedicated funding and institutional support.
- Encouraging the involvement of Indigenous communities in developing research programs and projects where appropriate.
- Promoting and encouraging partnerships between institutions and Indigenous communities as a means to foster collaboration and mutual respect.
- Stronger IP protection for First Nations Knowledge and implementing a dedicated Indigenous IP framework will prevent commercial exploitation without proper attribution or benefit-sharing.
- Expanding First Nations-led R&D ventures, including funding Indigenous-led science and innovation hubs that support the integration of traditional knowledge and new technologies.
- Providing funding to support Indigenous research students and researchers, along with targeted recruitment drives that guarantee infrastructure development and "return to community" incentives.

RUN recommends greater investments in regionally-based research programs that provide greater opportunities for First Nations leadership in R&D, ensuring that Indigenous knowledge is embedded in Australia's innovation landscape while strengthening research capacity in regional and remote areas, where the majority of Indigenous Australians reside.



QUESTIONS

Q9: What incentives do business leaders need to recognise the value of R&D investment, and to build R&D activities in Australia?

The need to incentivise business investment in Australia's R&D systems is evident. There are few levers available for policy makers but at a basic, principled level, it would be difficult to expect industry to increase R&D investment if the government is unwilling to do so itself. The government's investment in R&D as a percentage of GDP expenditure has fallen from 0.33 per cent at the turn of the century, to just 0.16 per cent today .

From a regional perspective, and in supporting the case already put forward by RUN to pursue a more strategic distribution of national R&D capabilities towards the regions, RUN would advocate for a system of additional/differential tax incentivisation for those businesses that partner with regional universities to invest in place-based research projects/students in regional Australia. It would also be important that any incentivisation scheme carries minimal regulatory/administrative burden upon users.

RUN also urges the consideration of additional/complimentary research training qualifications that fast track the otherwise costly and prolonged process of developing the research workforces available to industry and academia.

QUESTIONS

Q10: What should be measured to assess the value and impact of R&D investments?

RUN acknowledges the difficulties associated with accurately and consistently measuring the value and impact return on R&D investments. However, a formal system of impact assessment amongst the university sector has been lacking for too long, and there is now a widespread recognition that a new process is required without further delay. Any new system that is expected to be funded from within existing R&D program envelopes, however, would ultimately represent another administration and resourcing burden that falls disproportionately upon smaller and less resourced regional universities, further compromising their efforts to develop regional research capabilities.

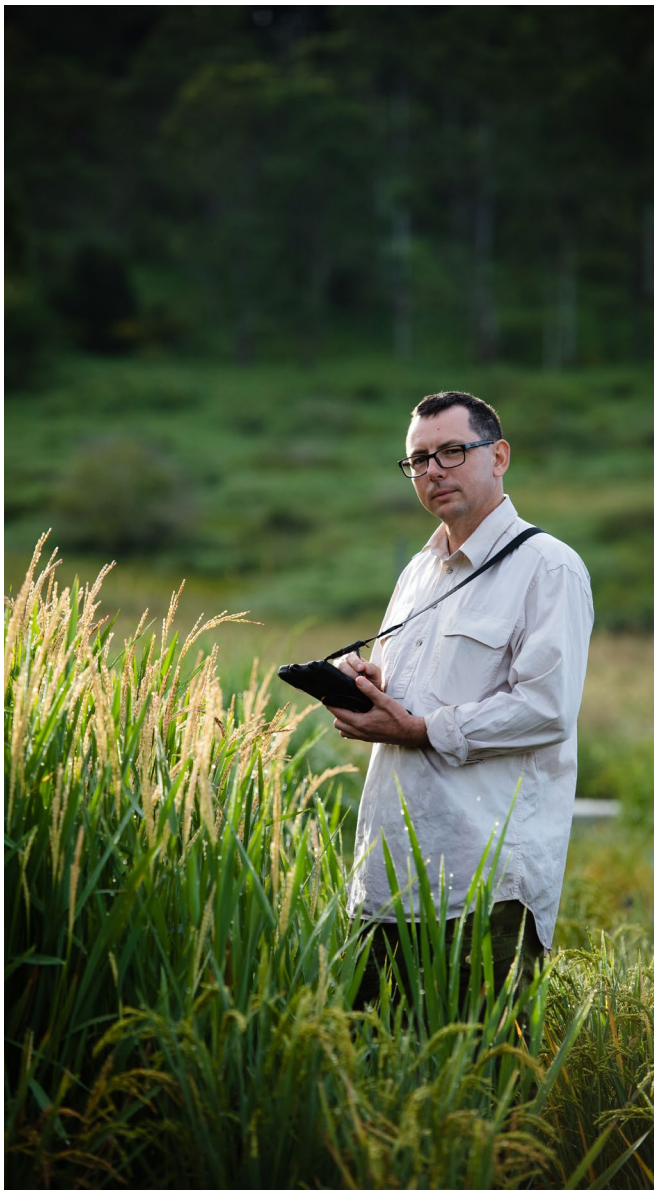
RUN RECOMMENDS

That any new system of measuring R&D impact must be funded in addition to existing R&D investments.

RUN is aware of many options being discussed as to how the value and impact of R&D may be determined. At a high level, RUN would be supportive of any system with simplicity and consistency at its core. It is also important that the value of commercialised outcomes are not overtly inflated. It is also important to recognise that many research outcomes deliver important social, cultural or environmental dividends, or contribute to knowledge stocks that result in longer-term national interest outcomes.

In addition to important quantitative metrics such as citations and publications, RUN would be supportive of a system that measured the value and impact of R&D investments based upon a holistic qualitative assessment of their economic, social, cultural, and environmental impacts. RUN would also like to see these considerations made against the social missions unique to each university, in terms of how effectively individual institutions are meeting the research needs of the different communities they serve.

RUN would also advocate that the assessment of impact be in-built to research projects and that additional funding is provided for the assessment process. This is because previous attempts to measure and assess R&D impact and assessments were done retrospectively causing a disruption for researchers who had already moved on to the next project/commitment/role. This would inherently reduce the administrative burden of conducting analysis retrospectively and ensure the timely relevance of assessment findings.



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