

# SCIENCE & TECHNOLOGY AUSTRALIA

## POLICY SUBMISSION

11 APRIL 2023

### AUSTRALIAN UNIVERSITIES ACCORD

Science & Technology Australia thanks the Accord Panel and the Department of Education for the opportunity to respond to the Australian Universities Accord discussion paper.

Science & Technology Australia is the peak body for the nation's science and technology sectors, representing 144 member organisations and more than 115,000 scientists and technologists. We connect science and technology with governments, business and the community to advance science's role in solving some of humanity's greatest challenges. Our membership spans the nation's university research and industry sectors, bringing a unique breadth of expertise to this submission.

First Nations knowledge is the impressive foundation of Australia's contemporary knowledge base. It incorporates vast Indigenous expertise in science, engineering, technology and maths across the continent. The Universities Accord should reflect the role of these knowledges in Australia's unique national identity, and set out a bold vision to elevate and invest in First Nations people, leadership and knowledge systems - including forging stronger First Nations STEM education and career pathways grounded in First Nations priorities and connected to community, culture and Country.

### A HIGH-STAKES RACE TO SECURE AUSTRALIA'S FUTURE

The development of the Universities Accord comes at a pivotal juncture for Australia.

We stand on the cusp of an era of scientific and technological development on a scale and pace unlike any before it in human history.

Powerful advances in science and technology (such as artificial intelligence, machine learning and quantum) will soon transform almost every aspect of human lives, our economy and our workforce.

In response, nations such as [China](#), the [UK](#) and [US](#) are dramatically escalating public investment in R&D to generate new research breakthroughs and grow their skilled STEM workforces.

Australia must do the same to secure our country's economic future.

The Albanese Government made a [2022 election pledge](#) to boost Australia's investment in research and development (R&D) closer to 3% of GDP. Australia's universities generate 90% of the nation's discovery research.

The case to ramp up investment in Australia's universities is clear and compelling.

The Accord process can be the vehicle to prepare our economy for this disruptive next era. An ambitious new level of public investment in Australian research breakthroughs should be at its heart.

The Accord can set out the conditions of that deeper investment, and what universities will deliver in return, through agreements forged between Government, universities, and the Australian people.

## KEY POINTS

### A BOLD VISION AT THE HEART OF THE ACCORD

- To avert a decline in Australian living standards in the next decade, we must use the Universities Accord to make a ‘once-in-a-generation investment in Australia itself’.
- At its heart, the Accord should state a bold ambition to ramp up our national investment in R&D and develop the specialised, STEM-skilled workforce we need to control our future.

### RESEARCH SUPPORT AND PERFORMANCE

- A major boost to the Australian Research Council and National Health and Medical Research grants budgets is urgently needed to drive seismic new Australian research breakthroughs.
- A related uplift to Research Block Grant funding is also needed to generate a new era of world-first Australian research breakthroughs, and secure our STEM talent.
- Amid a crisis in Australia’s research workforce driven by chronic levels of insecure work, these major new research investments should be tied to new funding conditions in the Accord that require universities to give researchers more employment certainty to thrive.
- The Accord should require major grants agencies to aim for most grants and fellowship schemes to award projects with longer-term timeframes, aiming for five, seven and ten year grants to enable deep pursuit of new breakthroughs without constant career interruptions.

### EDUCATION AND TRAINING

- The Accord should reverse the damaging cuts to STEM degree funding in the Job Ready Graduates legislation to grow Australia’s highly-skilled, specialised STEM workforce which we need to power advances in quantum, AI, deep tech, AUKUS and advanced manufacturing.

### ACCESS AND INCLUSION

- The HECS-HELP loan scheme is the bedrock of equity in Australia’s university system. The Accord should affirm its pivotal equity role, and reject calls for lifelong learner accounts.
- The single biggest deterrent to university for students from low SES backgrounds is the cost of supporting themselves through their study years. The Accord should recommend more generous student income support that is better targeted to those who need it most, to drive major gains in the proportion of disadvantaged students going to university.
- The Accord should boost Aboriginal and Torres Strait Islander enrolment rates by uncapping places for all Indigenous students nationwide.
- The Accord should make a commitment to more generous Indigenous Student Success Program (ISSP) payments with clearer objectives and accountability in return.
- The principle that university public funding is for public institutions with missions to advance the public good should underpin the Accord.

### RESEARCH COMMERCIALISATION AND PARTNERSHIPS

- To spur university research commercialisation, the Accord should recommend extra incentives and funding conditions to drive deeper engagement between universities and industry.



## SUMMARY OF SCIENCE & TECHNOLOGY AUSTRALIA'S RECOMMENDATIONS

1. The Accord should double the grants budget for the Australian Research Council over the next four years and lift Research Block Grant funding commensurately – with progressive increases each year across the four-year forward estimates.
2. The Accord should safeguard Australia's research funding investments by enshrining new protections in the *Australian Research Council Act 2001* and the *National Health and Medical Research Act 1992* that set a minimum funding envelope for each agency's overall grants budget. The legislation should stipulate that the minimum amount must be indexed to inflation and can never fall below the funding level of the previous year.
3. The Accord should amend the *Higher Education Support Act 2003* to enshrine in legislation a minimum amount for Research Block Grants. The legislation should stipulate that the minimum amount can not be less than the grant amount for the previous year, and be indexed to inflation.
4. Accord compacts and grant funding agreements should require universities to issue employment contracts to researchers funded by ARC and NHMRC projects that span the length of the grant, or a minimum of three years.
5. The Accord should require the major grants agencies to aim for most grants and fellowship schemes to award projects with longer-term timeframes, aiming for five, seven and ten year grants to enable the deep pursuit of new breakthroughs without constant career interruptions.
6. Boost the Research Training Program (RTP) component of the Research Block Grants to enable an increase in the minimum PhD stipend amount.

Simplify the RTP formula to ensure funding is appropriately targeted to properly support PhD candidates.

Restructure Australia's PhD funding system to classify PhD candidates as junior research workforce employees, with the equivalent employee benefits and conditions.

7. The Accord should renew a ten-year investment commitment for NCRIS and lift base funding for each NCRIS facility to also cover operational and capital expenditure.
8. The Accord should include a research infrastructure workforce plan that clearly articulates the specialist nature of the roles of research infrastructure operators and technicians, and requires university employment agreements to deliver better job security for them.
9. The Accord should reverse the cuts to funding for STEM places in the Job-Ready Graduates legislation and restore the incentive for universities to enrol more students in STEM degrees.
10. The Accord should amend the Higher Education Support Act 2003 to enshrine in legislation:
  - indexation on universities' maximum basic grant amounts to ensure university funding keeps pace with increases in CPI;
  - adopt - and legislate - a base growth factor to keep up with population growth and increases in student and employer demand; and
  - allow for additional growth to be negotiated through compacts/funding agreements to ensure that individual universities can adapt to relevant changes in their regions and communities and continue to deliver on their missions.



11. The Accord should require universities to improve equity and security in their workforces, minimising casual roles in professional and research areas and substituting with fixed-term/part-time contracts while separately reporting sessional teaching and delivery roles in timely and public release of data.
12. The Universities Accord should set out a goal to inspire many more Australians to acquire advanced skills in STEM to meet the explosion of skills needs across the next decade, along with strategies for the nation's universities to play a leading role in this work.
13. The Accord should propose a new stream of Government funding for universities to upskill the high school teachers across Australia who are currently teaching maths and science subjects without any specialist STEM training.
14. The Accord Panel should affirm the powerful equity design of Australia's world-leading HECS-HELP loan scheme, and reject calls for a new system of lifelong skills accounts or trusts.
15. Lift the minimum threshold amount when HECS-HELP loan repayments start, and the subsequent progressive repayment thresholds.
16. To give graduates paying off loans protection in times of unusually high CPI increases, cap the indexation rate applied to HECS-HELP loan debts at no more than 3%. Alternatively, link HELP indexation to the wage price index rather than CPI.

The Government should lift the rate of Youth Allowance payments to full-time students and target such assistance to those most in need to minimise the budget impact of this important boost to supporting equity and student wellbeing.

17. The Accord should extend demand-driven funding to all Indigenous students (expanding the current access for regional Aboriginal and Torres Strait Islander students to include Indigenous students living in major cities).  
  
The Accord should enshrine in legislation a dedicated funding minimum for the Indigenous Student Support Program to enable universities to deliver strong Indigenous student support services.
18. The Accord Panel should adopt a powerful principle in its blueprint for the future: public funding for universities is intended for public institutions whose mission is to advance the public good.
19. The Accord should recommend that current regulatory settings in the Provider Category Standards be maintained, to ensure all universities remain comprehensive in both research and teaching so that all Australians - regardless of geography - have access to a world-class, research-informed education.
20. To deepen university–industry collaboration, Research & Development Tax Incentive eligibility should be restricted to businesses that host university student placements, internships, joint PhD programs or research projects.
21. Create a funding stream to support collaborative, multidisciplinary university research projects that combine expertise across different institutions to address the challenges to be set out in the National Science and Research Priorities.
22. To create a meaningful STEM future with First Nations people, we recommend the Accord adopts the following design principles:



- **Show first Nations youth a future in STEM:** invest in pre-service and in-service teacher professional training that connects the teaching and learning of STEM with First Nations knowledges;
- **Invest in First Nations people to become teachers** in STEM;
- **Ensure bilingual education in First Nations languages** is an integral part of the Australian education system and ensure national education initiatives like NAPLAN can cater for students in this type of education;
- **Develop clear educational pathways for all First Nations students to go to university** regardless of where they come from i.e. rural, remote and urban;
- **Invest in the development of a National First Nations STEM Network** for First Nations people who are working or being educated in STEM;
- **Require universities to develop relationships with Indigenous communities** to develop programs in Indigenous-led, community-driven research where benefits of the research flow back to community;
- **Create dedicated funding streams:** The ARC and NHMRC should create funding streams to forge meaningful relationships with First Nations communities, promote Indigenous-led and community-driven research, protect Indigenous intellectual property and develop potential business/employment opportunities on Country to strengthen Country; and
- **Create First Nations STEM careers:** that support the values of First Nations Communities and work towards a sustainable future for all Australians.



## RESEARCH SUPPORT AND PERFORMANCE

### University research's critical role in driving Australian prosperity

*Australia must invest more deeply in university research to generate the nation's future prosperity*

National prosperity and productivity is driven by a highly-skilled workforce and a sophisticated research and development capability. It is generated by deep investment in research as the primary driver of new knowledge, innovation and productivity gains.

To secure Australia's future prosperity, we must invest more deeply in research and development. The Government's [2022 election promise](#) is to boost Australia's investment in R&D closer to 3% of GDP. Australia's investment currently sits at a deeply alarming low level of 1.78% of GDP.

Australia's universities do nearly 90% of the nation's discovery research<sup>1</sup>. This is the frontier work that leads to seismic breakthroughs in knowledge capable of generating whole new industries for Australia and enabling us to keep pace with rapid global advances driven by science and technology.

If universities don't do this discovery research, nobody else will.

Despite this crucial importance to our future national income, Australian university research funding is underdone and insecure. A deeper – and protected – investment in university research is the logical and effective place to start to push Australia's R&D investment closer to the 3% of GDP goal.

The nation's two major granting agencies – the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) distribute discovery and applied research funding. Australian universities' capability to conduct world-class research is deeply dependent on secure funding from these two agencies. A significant uplift to these agencies' budgets would be a game-changer for Australia's research – with a boost to the ARC budget being an urgent priority.

While NHMRC funding sits in the health portfolio and the Accord process in the education portfolio, the importance – and urgency – of the need to secure Australia's university capability, warrants a whole-of-government approach. The benefits of university research span virtually the entirety of government portfolios – with support being a shared responsibility.

The Research Block Grants, administered by the Department of Education, give foundational support to universities' research capabilities. This funding is allocated in two parts - as the Research Support Program (RSP) and Research Training Program (RTP). The RSP is intended to cover the indirect costs of research – funding labs, support staff, electricity, etc – which are generally not covered by funding from ARC or NHMRC competitive grants. The RSP is an invaluable source of support, but at current levels it falls well short of covering those costs. A boost to this funding is needed to secure universities' ability to support research into the future.

Given the RSP supports the indirect costs of ARC and NHMRC funded research, it's essential that the RSP amount increases with any increase to ARC or NHMRC funding. Otherwise, an increase in competitive grant funding dilutes the support delivered through the RSP and leaves large research projects significantly underfunded. In effect, such dilutions make it harder to keep the lights on in the labs where the grant-funded research is meant to be done.

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<sup>1</sup><https://www.universitiesaustralia.edu.au/wp-content/uploads/2022/04/UA-submission-to-Productivity-Commission-inquiry-into-productivity.pdf>



### Science & Technology Australia recommendation 1:

- The Accord should double the grants budget for the Australian Research Council over the next four years and lift Research Block Grant funding commensurately – with progressive increases each year across the four-year forward estimates.

### Science & Technology Australia recommendation 2:

- The Accord should safeguard Australia’s research funding investments by enshrining new protections in the *Australian Research Council Act 2001* and the *National Health and Medical Research Act 1992* that **set a minimum funding envelope for each agency’s overall grants budget**. The legislation should stipulate that the minimum amount must be indexed to inflation and can never fall below the funding level of the previous year

### Science & Technology Australia recommendation 3:

- The Accord should amend the *Higher Education Support Act 2003* to **enshrine in legislation a minimum amount for Research Block Grants**. The legislation should stipulate that the minimum amount can not be less than the grant amount for the previous year, and be indexed to inflation.

## Talent as a key competitive asset: securing Australia’s research workforce

*Australia’s research talent is our greatest asset.*

Stronger funding for university research is just one component of securing Australia’s future national income by being first to major breakthroughs. The other critical piece of the puzzle is securing our research workforce – the highly skilled specialist researchers who drive university research advances.

Too many of Australia’s best and brightest researchers are currently stuck in brutal cycles of repeated short-term employment contracts – with no certainty or job security. Many are forced to spend vast amounts of time at regular intervals writing onerously long grant applications to essentially reapply for their own jobs. This is time that takes them away from the lab bench working on research breakthroughs for Australia. Talented researchers are leaving Australia for more secure opportunities overseas, or quitting research altogether. And this precarious employment landscape makes it extremely hard to tackle the under-representation of women in STEM research careers.

This insecure system of work for Australia’s researchers is a productivity-destroying ‘own goal’ for Australia - one that should deeply concern economic agencies like the Treasury and the Productivity Commission.

To fix this productivity haemorrhage, a major funding boost for Australian university research as the centrepiece of the Accord should be conditional on universities delivering more secure research employment conditions. Researchers – particularly early- and mid-career researchers – need certainty of employment to plan their projects – and their lives. Significant life events like starting a family or buying a home often occur at these critical early career stages.

At a minimum, ARC and NHMRC grants could stipulate that researchers are hired on employment contracts that span the length of the grant.

Australia’s ability to secure our best research talent is also being undermined by the current short length of many grants and fellowships compared to best schemes in other nations – who are always vying to recruit Australia’s research talent. The UK and US both have decade-long Fellowships. The Accord should require the major grants agencies to aim for most grants and fellowship schemes to award projects with



longer-term timeframes, aiming for five, seven and ten year grants to enable the deep pursuit of new breakthroughs without constant career interruptions.

**Science & Technology Australia recommendation 4:**

- Accord compacts and grant funding agreements should require universities to issue employment contracts to researchers funded by ARC and NHMRC projects that span the length of the grant, or a minimum of three years.

**Science & Technology Australia recommendation 5:**

- The Accord should require the major grants agencies to aim for most grants and fellowship schemes to award projects with longer-term timeframes, aiming for five, seven and ten year grants to enable the deep pursuit of new breakthroughs without constant career interruptions.

**Better support for PhD candidates: the backbone of Australia's research workforce**

*Australia must deliver better financial support and conditions to PhD candidates*

Australia's PhD scholars play a crucial role in Australia's university research – they are 55% of Australia's university research workforce<sup>2</sup>. Yet scholarship stipends are set at a level not much above the poverty line. There is an urgent case to boost the minimum stipend amount for PhD candidates.

The RTP component of the research block grants covers the costs of course fees and student stipends for higher degrees by research. The minimum student stipend in 2023 is \$29,823<sup>3</sup> (and the poverty line is \$25,428 according to ACOSS). While this is tax free, this amount is well below minimum wage, compares very poorly to pay rates for apprentices aged over 21, and does not include superannuation. It also is uncompetitive with PhD support rates in other countries.

The RTP is a set amount of funding, currently allocated between the universities according to a formula based on universities' competitive grants income, industry income and PhD completions.

Within this fixed budget, universities strive to maximise their benefit from the formula. This can incentivise perverse outcomes. With a large portion of the formula relying on PhD completions, this potentially incentivises universities to expedite PhD completions.

Additionally, a bonus 'weighting' is assigned to PhD completions that included an industry internship. While deeper industry engagement is a positive goal, manipulating the RTP is not the best way to support it, and distorts the RTP.

To deliver more secure and consistent conditions for Australia's PhD candidates, the Accord should adopt the approach used in many other countries, where PhD candidates are classified as junior employees of universities. They are paid an entry-level wage and employee benefits such as leave entitlements and superannuation.

This would create a more secure and professional context for Australia's PhD workforce and provide better conditions for the very early stages of research careers.

If Australia wanted to maintain the current number of PhD candidates being trained, these changes would have to be accompanied by a boost to the RTP, tied to higher support for PhD candidates. This could be paid by universities as a wage to PhD candidates on their books and funded from the RTP.

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<sup>2</sup> <https://www.abs.gov.au/statistics/industry/technology-and-innovation/research-and-experimental-development-higher-education-organisations-australia/latest-release#data-download>

<sup>3</sup> <https://www.education.gov.au/research-block-grants/research-training-program>





### Science & Technology Australia recommendation 6:

- Boost the Research Training Component of the Research Block Grants to enable an increase in the minimum PhD stipend amount.
- Simplify the RTP formula to ensure funding is appropriately targeted to properly support PhD candidates.
- Restructure Australia's PhD funding system to classify PhD candidates as junior research workforce employees, with the equivalent employee benefits and conditions.

### Research infrastructure

*The Accord should secure the critical research infrastructure on which university research relies*

Australia's large-scale research infrastructure powers Australia's research success. An array of high-cost specialist facilities and state-of-the-art equipment currently powers bold breakthroughs in everything from health and medical research to environment and bushfire management.

This infrastructure includes facilities that enable vast amounts of data to be processed in ultra-rapid timeframes compared to past eras – such as the beamlines at the Australian Synchrotron in Melbourne, our two world-class Australian supercomputers – Pawsey in Perth and the NCI in Canberra – and the powerful new astronomy infrastructure being built in the WA desert for the Square Kilometre Array.

The backbone of Australian research infrastructure is a network of complex shared specialist facilities funded under the National Collaborative Research Infrastructure Strategy (NCRIS). This network of 24 highly-sophisticated research-enabling centres enables Australia to make major advances in complex medical, genomic and biodiversity research; drives data advances; powers crucial climate and earth modelling; equips Australia's geoscience exploration on land and at sea; develops advanced manufacturing prototypes for industrial advances; and prepares Australia to prevent future pandemics – among its wide array of essential capabilities.

These specialist facilities must be properly resourced – with secure, long-term and growing funding for both equipment and the highly-skilled specialist staff who run these complex facilities. When funding to the scheme was threatened last decade, and an outcry ensued, a forward commitment was made to fund the overall Budget envelope for NCRIS for a decade. However the rollover and renewal of the most recent investment plans for each NCRIS facility in 2022 took significantly longer than it should have. This caused significant uncertainty in the system, risking the loss of skilled specialist staff, and re-funding the facilities at a lower level of baseline funding than is needed to continue operations at proper scale.

The Accord should secure the future of Australia's research infrastructure facilities - and the highly-skilled specialist technicians who run them.

### Science & Technology Australia recommendation 7:

- The Accord should renew a ten-year investment commitment for NCRIS and lift base funding for each NCRIS facility to cover both operational and capital costs.

### Science & Technology Australia recommendation 8:

- The Accord should include a research infrastructure workforce plan that clearly articulates the specialist nature of the roles of research infrastructure operators and technicians, and requires university employment agreements to deliver better job security for them.



## EDUCATION AND TRAINING

### Job-Ready Graduates

*To deliver the STEM-skilled graduates Australia needs, the Job Ready Graduates cuts to STEM degree funding cuts must be reversed.*

In late 2021, the Job Ready Graduates legislation cut funding for STEM degrees – the very degrees we need more of to supply the STEM-skilled workforce we need to secure Australia’s high-tech future.

It makes no sense to give less funding to universities to deliver graduates equipped with the STEM skills and knowledge we need to navigate a new economic era driven by science and technology.

To deliver the STEM-skilled graduates Australia needs to drive this future productivity, universities should be funded to do so – not forced to offer more places for students for the same total funding.

Some promised features of Job-Ready Graduates package – indexation of aggregate funding for university places (‘maximum basic grant amounts’) and the growth factor that would drive real growth (on top of indexation) - were not included in the legislated amendments<sup>4</sup> to the *Higher Education Support Act 2003*.

Unless these elements are protected expressly in legislation, they are at risk.

#### Science & Technology Australia recommendation 9:

- The Accord should reverse the cuts to undergraduate STEM funding in the Job-Ready Graduates legislation and restore the incentive for universities to enrol more students in STEM degrees.

#### Science & Technology Australia recommendation 10:

- The Accord should amend the *Higher Education Support Act 2003* to enshrine in legislation:
  - indexation on universities’ maximum basic grant amounts to ensure university funding keeps pace with increases in CPI;
  - adopt - and legislate - a base growth factor to keep up with population growth and increases in student and employer demand; and
  - Allow for additional growth to be negotiated through compacts/funding agreements to ensure that individual universities can adapt to relevant changes in their regions and communities and continue to deliver on their missions.

### World-class research-informed university teaching

*World-class research enables world-class teaching*

The dual focus on research and teaching in Australia’s university system achieves twin goals. It generates world class research, while enabling the knowledge it builds to feed into undergraduate teaching. Students benefit from engaging with world-class researchers – and course content includes the latest breakthroughs and cutting-edge knowledge.

Yet there is a delicate balance in ensuring researchers have the dedicated time to pursue research breakthroughs while also contributing to teaching. Currently, a weighty administrative and bureaucratic

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<sup>4</sup> <https://www.legislation.gov.au/Details/C2020A00093>



burden comes with teaching roles. A ‘red tape jungle’ has grown up around university teaching - with excessive requirements for lecturers to handle a vast array of course coordination and administration tasks. This administrative workload turns the joy and excitement of teaching into a burden and a drain on great researchers who also love to teach. Stronger and better structured administrative support for academics who run courses and classes would significantly improve the efficiency and efficacy of the research workforce being deployed into teaching.

Reassessment and formalisation of the roles of sessional (such as staff engaged to support a tutorial group for a term) and casual staff would also assist in creating a more equitable, secure and supported academic workforce. This would include proper assistance built into teaching roles, sessional staff being afforded the security – yet flexibility – they deserve, long-term casuals shifting to more secure fixed-term contracts, and casual contracts being used only for truly casual roles.

There are three main roles filled by casual staff – professional support, research support and sessional teaching. Professional support roles are usually more predictable and should be converted to part-time and/or fixed-term or continuing contracts wherever possible. Research support roles are often dependent on research funding, so it is difficult to convert to a continuing position but fixed-term contracts should be used where possible. It is often appropriate to fill sessional teaching roles on a casual basis, but where an ongoing teaching commitment is filled by the same person for an extended period – several years – a contract should be considered.

#### **Science & Technology Australia Recommendation 11:**

- The Accord should require universities to improve equity and security in their workforces, minimising casual roles in professional and research areas and substituting with fixed-term/part-time contracts while separately reporting sessional teaching and delivery roles in timely publicly-released data.

#### **STEM skills to underpin the future workforce**

*Fundamental STEM skills are critical for a resilient future workforce*

While ensuring students get a comprehensive university education that includes the chance to apply their new skills and knowledge in practical ways including through Work Integrated Learning (WIL) placements, a focus must be maintained on the core foundational skills that underpin the skills and jobs needed to face future challenges.

A STEM-skilled graduate must be equipped with the basic transferable skills that enable them to investigate and interrogate knowledge sources, apply data and evidence to real-world problems, and make inferences and predictions to explore new solutions to complex challenges. We need them to not just be ‘job-ready’, but also informed, adaptable and agile – career-ready and resilient to change in the economy and workforce.

The jobs of the future will require graduates with robust foundations in STEM knowledge. STA notes:

- maths is absolutely crucial to realise Australia’s ambitions in quantum, AI and cyber security;
- basic geology and chemistry are critical to develop the critical minerals capabilities Australia will need for the vast clean energy transition we must make; and
- philosophy, critical thinking and scientific literacy are essential as we navigate the regulation and ethics of new technologies.



For Australia to compete in the frontier technologies that will soon transform almost every aspect of human existence – such as quantum, artificial intelligence and machine learning – we particularly need to dramatically grow the numbers of Australians with advanced skills in STEM.

This is an urgent challenge for Australia. Without more home-grown talent acquiring the ambitions to develop such skills, we will have to rely even more heavily on skilled migration to fill this gap. Every other advanced economy in the world is also eyeing off this global talent pool. While skilled migration will always be a crucial component of our STEM workforce, and brings strong diversity benefits to Australia, we cannot ask it to do all of the heavy lifting to build the workforce we need.

Australia urgently needs a comprehensive new strategy to excite more young people in our own country about the power and wonder of maths, physics and technology, and build their confidence and ambitions to pursue study and careers in these fields. This includes delivering training and support to the significant percentage of Australia’s high school teachers without specialist maths and science education themselves who we currently ask to teach advanced maths and science to students in the latter years of high school. An Expert Panel review of Initial Teacher Education is also examining the related issues of teacher education degree content and pathways, and its recommendations should feed into the Accord.

#### **Science & Technology Australia recommendation 12:**

- The Universities Accord should set out a goal to inspire many more Australians to acquire advanced skills in STEM to meet the explosion of skills needs across the next decade, along with strategies for the nation’s universities to play a leading role in this work.

#### **Science & Technology Australia recommendation 13:**

- The Accord should propose a new stream of Government funding for universities to upskill the high school teachers across Australia who are currently teaching maths and science subjects without any specialist STEM training.

## **ACCESS AND INCLUSION**

Australia can only realise its full potential as a nation by investing in a highly-skilled workforce. In such a wealthy country, we must ensure that this wealth is shared and accessible to all, with the benefits – both individual and collective – a university education brings being open to all Australians.

### **HECS-HELP: the bedrock of Australian equity. Don’t break it.**

*The income-contingent HELP loan scheme fundamentally enables access to higher education.*

Australia’s income-contingent university student loan system is the envy of the world.

HECS-HELP is the cornerstone of Australia’s guarantee of equitable access to university. The ability of Australians to access a university education should not depend on a postcode – nor on family or personal wealth. Income-contingent loans effectively remove tuition costs as a barrier in prospective students’ decision making. Australia’s world-leading HECS-HELP system means that fees are not a barrier for students, regardless of their or their families’ means.

Under the HECS-HELP system, students do not start to repay their loans until their earnings reach a minimum threshold, after which they repay their debt gradually through the taxation system. This means Australian students aren’t faced with either upfront tuition fees, or commercial-style loans tied to real interest rates as in the US.

In the past decade, a few advocates have sporadically called for the creation of capped lifelong skills accounts that can be used to pay for courses at approved providers. Such a move would create what is



effectively lifelong learning trusts or a more privatised voucher system with none of the powerful equity design features of HECS-HELP loans. This would damage the equity of Australia's policy genius in designing HECS – a system that has been copied by other nations because of its equity strengths. **There is no need to create an alternate or additional system to HECS-HELP.**

Australia's HECS-HELP system enables students to access lifelong education at key stages across a career. There is a limit on total HELP borrowing, but this is rechargeable: once a graduate has paid back enough of their liability, they are able to borrow again as necessary.

#### **Science & Technology Australia recommendation 14:**

- The Accord Panel should affirm the powerful equity design of Australia's world-leading HECS-HELP loan scheme, and reject calls for a new system of lifelong skills accounts or trusts.

There has been significant recent media coverage of HELP debts and indexation, and a recent [Senate Committee inquiry](#) has looked into proposed legislation to abolish indexation and raise the minimum repayment income for student loans. These discussions have explored the issues of increasing student debt and the fact that with the current high rates of CPI, indexation on HELP debts is higher than in the past. The fundamental intent of HELP loans is to enable access to university, through a loan system that *only requires repayments when graduates can afford to make them*. With equity at its heart, this is an invaluable system that has enabled millions of Australians to attend university, and enjoy the benefits – and earnings premium – gained from a university education. Repayment amounts are set at a percentage of the graduate's income: they are not based on the size of the debt. HELP is a progressive system: people who earn more make higher compulsory repayments.

This key point – of making repayments only when people can afford to make them – is open to some debate given the current cost of living pressures being felt by all Australians. The minimum earnings threshold for HELP repayments for 2022–23 is \$48,361. Most graduates will earn above this threshold if they enter full-time employment following completion of their studies, meaning they are making repayments immediately. Raising the minimum threshold for repayment would give people a buffer in the early days of their career to build their savings.

HELP debts are indexed to maintain their real value over time. This is necessary, but indexing directly to CPI exposes the debts to significant increases in times of high inflation. This is an issue especially when prices are growing faster than wages, as they are at the moment. Capping HELP indexation would limit graduates' exposure to high inflation. Another approach would be to link HELP debt indexation to the wage price index – maintaining the real value of debts, but in the context of earnings, rather than CPI.

#### **Science & Technology Australia recommendation 15:**

- Lift the minimum threshold amount when HECS-HELP loan repayments start, and the subsequent progressive repayment thresholds.
- To give graduates paying off loans protection in times of unusually high CPI increases, cap the indexation rate applied to HECS-HELP loan debts at no more than 3%. Alternatively, link HELP indexation to the wage price index rather than CPI.

### **Student financial support: the most powerful equity lever we have**

*Boosting student income support is the key to drive stronger equity advances – and student success.*

The Government has expressed the admirable goal of getting more Australians into university, especially more students from lower socio-economic backgrounds. Australia needs these students not only to enrol in university, but to be supported to complete their degrees. Data clearly shows adequate financial



support is key to enable students to focus on their studies and thrive at university, rather than struggle to juggle competing demands of study and significant paid work in order to make ends meet.

Data on student income support and completion rates compiled by the Department of Education clearly demonstrates that receiving student income support is associated with higher completion rates for all but the most advantaged groups of students. The biggest gains are concentrated in the most disadvantaged groups<sup>5</sup>.

With increasing cost of living pressures affecting all Australians, it is crucial we ensure our current students – our future skilled workforce – are well supported. Australia’s university students need more generous income support that is properly targeted to the students who need it most.

The current maximum rate of Youth Allowance is \$562.80 per fortnight (for a student over 18, living away from home)<sup>6</sup>. If this student is also eligible for Rent Assistance, the maximum amount they will receive is \$157.20 per fortnight (if their rent is more than \$350), making a total of \$720 per fortnight. Without extra support, most often from parental assistance or paid work, it’s difficult to see how this amount of money can adequately support a student to concentrate on their studies and get the most from their degree – and make the most of the public investment the nation makes in their education.

#### **Science & Technology Recommendation 16:**

- The Government should lift the rate of Youth Allowance payments to full-time students and target such assistance to those most in need to minimise the budget impact of this important boost to supporting equity and student wellbeing.

#### **Culturally appropriate and dedicated support for Indigenous students**

*We must ensure Aboriginal and Torres Strait Islander people can see a clear pathway to university – and are properly supported throughout their studies.*

Amidst concerning lack of progress in many Closing the Gap targets, there is one statistic that is overwhelmingly positive – Aboriginal and Torres Strait Islander university graduates have higher employment rates than non-Indigenous graduates (81.5% compared to 78.5 %), and higher median graduate salaries (\$72,000 compared to \$68,000)<sup>7</sup>.

This is testament to the benefits of a university education. A clear way to improve employment rates for more Aboriginal and Torres Strait Islander people is to increase participation – and completion – rates at university. This is a twofold challenge of both improving access, and ensuring culturally appropriate support for students.

It is critical that universities engage more fully with the broader education system – spanning from early learning through to schools and VET – to ensure Indigenous students are supported right through the education system to receive the appropriate support and preparation to aspire to university, get to university and also to succeed once there.

Universities must foster not only inclusion – but a sense of true belonging for all students to feel at home at university and are supported to succeed.

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<sup>5</sup> Department of Education (2020), *Factors Affecting Higher Education Completions: Study Assistance*, Department of Education, <https://www.education.gov.au/higher-education-statistics/resources/study-assistance>

<sup>6</sup> <https://www.servicesaustralia.gov.au/how-much-youth-allowance-for-students-and-apprentices-you-can-get?context=43916>

<sup>7</sup> <https://qilt.edu.au/docs/default-source/default-document-library/2022-gos-national-report.pdf>



A critical component that contributes to this is the Indigenous student support centres established in many universities. These centres provide invaluable support to Indigenous students – creating a space and facilities on campus, building a community, and providing tailored support based on student needs. Many centres also offer appropriate academic skills and learning support. These centres often receive some of their funding from the Indigenous Student Success Program (ISSP) funding paid to universities.

The Job-Ready Graduates package combined the existing Higher Education Participation and Partnerships Program and regional loading funding into the Indigenous, Regional and Low-SES Attainment Fund (IRSLAF). The Department of Education website indicates the model for allocating IRLSAF funds will be implemented in 2024<sup>8</sup>. It is unclear if this model has been developed yet – it will be critical to ensure it retains sufficient funding to universities to deliver Indigenous student support services.

The Job Ready Graduates package restored demand-driven funding for Indigenous students from remote and regional locations. Science & Technology Australia urges the Accord Panel to recommend demand driven funding for all Indigenous students. This straight-forward action has the dual benefit of closing both the employment and the education gaps between Indigenous and non-Indigenous Australians.

Indigenous participation in higher education is still well below that of non-Indigenous students. Indigenous people comprise 2.1% of university enrolments – yet are 3.2% of Australia’s total population<sup>9</sup>.

The latest STEM workforce report from the Office of the Chief Scientist indicated only one in 200 Aboriginal and Torres Strait Islander people of working age had a STEM degree (compared to one in 20 for non-Indigenous people of working age)<sup>10</sup>. Opening demand driven funding to all Indigenous students would also help to close the employment gap.

#### **Science & Technology Australia Recommendation 17:**

- The Accord should extend demand-driven funding to all Indigenous students (expanding the current access for regional Aboriginal and Torres Strait Islander students to include Indigenous students living in major cities).
- The Accord should enshrine in legislation a dedicated funding minimum for the Indigenous Student Support Program to enable universities to deliver strong Indigenous student support services.

#### **The role of public funding**

*Public funding for universities is intended for public institutions working for the public good.*

One of the greatest strengths of Australia’s university system is that it is almost exclusively composed of large public universities whose mission is to serve the public good.

There is a different mission from the handful of private universities that operate in Australia, and from the larger number of private providers that are not universities. Many of those private institutions operate as for-profit entities - that is, to generate a return to shareholders, including shareholders overseas.

Of the nation’s 43 universities, 37 are public universities whose large size and scale by global standards delivers world class education and research. They are beacons that attract the world’s best and brightest

<sup>8</sup><https://www.education.gov.au/job-ready/more-regional-opportunities#toc-new-indigenous-regional-and-low-ses-attainment-fund>

<sup>9</sup> Department of Education (2022), *Higher Education Student Statistics Collection 2021*

<sup>10</sup> [https://www.chiefscientist.gov.au/sites/default/files/2020-07/australias\\_stem\\_workforce\\_-\\_final.pdf](https://www.chiefscientist.gov.au/sites/default/files/2020-07/australias_stem_workforce_-_final.pdf)



students and researchers to Australia. The Accord discussion paper notes some stakeholders have called for Commonwealth funding to be made “available to a wider group of providers to facilitate greater student choice” (p34).

As the Accord Panel considers future policy directions, we make a strong respectful counter-case against opening public funding sources to for-profit private higher education providers.

We invite the Accord Panel to adopt a powerful principle in its blueprint for the future: **public funding for universities is intended for public institutions whose mission is to advance the public good.**

With strong public universities in every state and territory, Australians from all walks of life have access to world-class higher education and world-leading research. Diluting and diverting more public funding to private institutions would be a serious policy mis-step.

In the United States, a dramatic expansion of for-profit higher education providers has led to a fractured and disjointed higher education landscape, with [almost 4,000 such institutions](#) now operating. A [series of investigations over the past decade](#) have probed for-profit providers for engaging in fraudulent behaviour on federal loans – with taxpayers picking up the bill to cancel debts for defrauded students.

This is a cautionary tale for Australia to heed.

#### **Science & Technology Australia Recommendation 18:**

- The Accord Panel should adopt a powerful principle in its blueprint for the future: public funding for universities is intended for public institutions whose mission is to advance the public good.

#### **Maintain comprehensive education offerings across the university system**

From time to time, a few commentators have asserted that Australia’s universities are too similar in their missions, with insufficient diversity across the system. This is a highly contestable view: there is a wide array of diverse cultures, missions and priorities across the nation’s universities.

Yet Australia’s university system is – quite deliberately – composed of universities that all meet a minimum set of requirements to deliver a comprehensive suite of teaching and research capabilities across the geography of our nation.

Coupled with the existing strong diversity in missions, strengths and priorities among Australian universities, it’s important to understand the vast majority of Australians do not move interstate to go to university. Access to a quality education should not depend on a student’s postcode, nor be prohibitive to people living in the regions. This means we need a university system that ensures core offerings of degrees in most major fields of study right across the geography of Australia. It is equally important that strong research capability continues to be a fundamental feature of all Australian universities. Provider Category Standards must continue to protect the comprehensiveness of Australia’s universities in both teaching and research.

Our current world-leading university system enables access to university for students outside of the major city centres.

#### **Science & Technology Australia recommendation 19:**

- The Accord should recommend that current regulatory settings in the Provider Category Standards be maintained, to ensure all universities remain comprehensive in both research and teaching so that all Australians - regardless of geography - have access to a world-class, research-informed education.





## RESEARCH COMMERCIALISATION AND PARTNERSHIPS

### Driving deeper university–industry collaboration

*Meaningful engagement is crucial to improving universities’ understanding of industry – and industry’s understanding of universities*

Science & Technology Australia has been a longstanding champion of initiatives to drive stronger university–industry collaboration in Australia. These include newer initiatives under the University Research Collaboration Action Plan – Australia’s Economic Accelerator, new ARC Industry Fellowships, and the Industry PhD Program. The early stages of these schemes deliver additional support to existing university–industry partnerships. As these schemes mature and evolve, the next stage should be to support new and burgeoning engagements – to get more university research out into the world of industry.

To deliver the skilled workforce we need for the future, students will benefit from participating in work integrated learning (WIL) in internships, placements or joint research projects or degrees. An effective incentive to encourage industry to interact more closely with universities would be to tie Research and Development Tax Incentive eligibility to facilitating student placement. This would spur serious and genuine engagement from industry with significant benefit to students as well as the industry partners, who would get better insight into the universities’ capabilities and the potential of collaboration.

#### Science & Technology Australia recommendation 20:

- To deepen university–industry collaboration, Research & Development Tax Incentive eligibility should be restricted to businesses that host university student placements, internships, joint PhD programs or research projects.

### Support stronger collaboration across the university sector

Australia’s research system is strong, with world-class capabilities, and different universities have different levels of expertise in specialist research areas. Yet our research capacity as a nation could be even more. Siloing and competition between universities often stymies great research and hampers Australia’s progress. A research funding system that is more supportive of collaboration and that more effectively incentivises cooperation, rather than unhealthy levels of competition, would see our country’s research workforce thrive – with all the cascading benefits of a strong research sector: innovation, productivity and economic security for the nation.

Science & Technology Australia’s submission to the Refresh of Australia’s National Science and Research Priorities and National Science Statement strongly advocated for a challenge-based approach to identify and solve the major challenges for Australia in the coming decades. These challenges are urgent and complex. They are multidisciplinary in nature and will require enhanced collaboration across discipline areas but also institutions. We will need the combined prowess of our university researchers to safeguard Australia’s future.

#### Science & Technology Australia recommendation 21:

- Create a funding stream to support collaborative, multidisciplinary university research projects that combine the expertise across different institutions to address the challenges to be set out in the National Science and Research Priorities.

### Elevating and investing in First Nations STEM expertise



One of the proposed new National Science and Research Priorities is to elevate and invest in First Nations perspectives on science and technology. This is an opportunity to ensure First Nations people, for the first time, are included in Australia's STEM future in a meaningful and productive way.

First Nations people of Australia are custodians of a knowledge system that has been developed and maintained for over 60,000 years. These knowledges are centred on understanding Australia as a complex system, where all the elements of the world are interconnected, and ensuring these interconnections are kept healthy and strong. In other words, First Nations knowledges are centred on a sustainable future - which is one of the biggest STEM challenges we face today.

STEM and STEM education in Australia has started to build connections with First Nations people and communities and build relationships between the two knowledge systems. This has been advanced through initiatives including:

- research grants, journals and publications centred on Indigenous knowledges in connection with a science discipline;
- ARC and NHMRC grants that focus on Indigenous research and increasing the numbers of Indigenous researchers;
- newly-established FoR codes in Indigenous research across all discipline areas,
- a Universities Australia push to ensure all universities have First Nations curriculum with clear learning outcomes across discipline areas; and
- the inclusion of the Aboriginal and Torres Strait Islander Histories and Culture Cross-Curriculum Priority in the national curriculum across all subject learning areas including science and mathematics.

Even though these are important steps forward, they do not necessarily secure a STEM future for First Nations people and communities. To date, these developments have been about equity and inclusion in the STEM system rather than creating a STEM future in relationship with First Nations Communities.

### Science & Technology Australia recommendation 22:

To create a meaningful STEM future with First Nations people, we recommend the Accord adopts the following design principles:

- **Show First Nations youth a future in STEM:** invest in pre-service and in-service teacher professional training that connects the teaching and learning of STEM with First Nations knowledges;
- **Invest in First Nations people to become teachers** in STEM;
- **Ensure bilingual education in First Nations languages** is an integral part of the Australian education system and ensure national education initiatives like NAPLAN can cater for students in this type of education;
- **Develop clear educational pathways for all First Nations students** to go to university regardless of where they come from i.e. rural, remote and urban;
- **Invest in the development of a National First Nations STEM Network** for First Nations people who are working or being educated in STEM;
- **Require universities to develop relationships with Indigenous communities** to develop programs in Indigenous-led, community-driven research where benefits of the research flow back to community;
- **Create dedicated funding streams:** The ARC and NHMRC should create funding streams to forge meaningful relationships with First Nations communities, promote Indigenous-led and community-driven research, protect Indigenous intellectual property and develop potential business/employment opportunities on Country to strengthen Country; and



- **Create First Nations STEM careers:** that support the values of First Nations Communities and work towards a sustainable future for all Australians.

