

# SCIENCE & TECHNOLOGY AUSTRALIA

## POLICY SUBMISSION

16 DECEMBER 2022

### AUSTRALIAN UNIVERSITIES ACCORD

Science & Technology Australia thanks the Accord Panel and Department of Education for the opportunity to offer input on priorities for the Universities Accord.

Science & Technology Australia is the peak body for the nation's science and technology sectors, representing 120 member organisations and more than 105,000 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.

### 1. MEETING AUSTRALIA'S KNOWLEDGE AND SKILLS NEEDS, NOW AND IN THE FUTURE

*Enhance the delivery of quality education that meets the needs of students across all stages of lifelong learning and develops the skills needed now, and in the future. This will include recommendations for new targets and reforms recognising that more than nine in ten new jobs will require post-school qualifications, and fifty per cent of new jobs are expected to require a bachelor's degree or higher.*

Australia's future workforce will require a strong pipeline of diverse and highly skilled graduates in science, technology, engineering and mathematics to meet the challenges facing our nation – and seize new economic opportunities for our country.

Graduates with a strong foundation in fundamental STEM knowledge and skills will also have the agility, adaptability and problem-solving capabilities that will be essential to meet the changing needs of Australia's future economy.

Support for STEM degrees will be especially important, given the Government's goal of building Australia's tech sector to achieve 1.2 million tech jobs by 2030.

The refreshed National Science and Research Priorities should guide further development and investments in these key capabilities to secure Australia's future.

The Universities Accord process should consider:

- How Australian university degrees equip students to be effective members of the workforce.
- How Australia can meet workforce challenges such as shortages in critical areas including teaching, nursing and engineering; and critical technology capabilities such as cybersecurity, AI and robotics.



- How the university system supports the STEM disciplines that create foundational knowledge we need to meet future challenges (maths is critical to quantum, AI and cyber security; basic geology and chemistry are critical to develop the critical minerals capabilities Australia will need for the clean energy transition; and philosophy, critical thinking and scientific literacy are essential as we navigate the regulation and ethics of new technologies).
- How best to support industry engagement at all degree levels.
- How to incentivise collaboration and cooperation across the university sector. There are two strong drivers for enhanced collaboration across the university sector:
  - The challenges Australia will face over the coming decade will require a national approach – with a strong national focus augmented by collective collaborative efforts from universities.
  - Collaboration also reduces/eliminates inefficiencies and duplication of capabilities and expertise.

## 2. ACCESS AND OPPORTUNITY

*Improve access to higher education, across teaching, learning and research. This will include recommendations for new targets and reforms to support greater access and participation for students from underrepresented backgrounds (including First Nations Australians, those from low socio-economic backgrounds, people with disability, and regional and rural Australians).*

Education is the great enabler.

Our university system must be accessible to Australians from all walks of life and every one of our diverse communities. We must eliminate barriers to participation, and support students to complete university degrees that equip them with knowledge, skills and experience that set them up for life.

The Universities Accord process should consider:

- Whether current supports for students – Youth Allowance and Austudy – adequately support students to meet their living costs while studying (given these payments have not kept pace with the cost of living in recent years).
- How do universities engage with the broader education system (early learning, schools and VET) to ensure Indigenous students receive a quality education and have the opportunity to consider university – as well as the appropriate preparation and supportive pathways to get there.
- The support services needed to ensure Indigenous students are best supported to complete their degree.
- The support services needed to ensure students from under-represented, disadvantaged and minority backgrounds are best supported to complete their degree.
- Whether the funding to universities through IRLSAF has been used effectively and achieved desired results.
- Whether Aboriginal and Torres Strait Islander university staff – professional and academic – are adequately supported throughout their university careers.



- How Indigenous Knowledges can be best promoted and reflected in culturally-capable university teaching and research.
- How to promote gender equity and elevate successful initiatives to embed them as best practice across all universities.
- What measures need to be taken to support students in regional areas – are current initiatives meeting the policy intent?

### 3. INVESTMENT AND AFFORDABILITY

*Explore funding and contribution arrangements that deliver equity, access, quality and longer-term investments to meet priorities in teaching, research, workforce and infrastructure. This will include a review of the Job-ready Graduates Package.*

The Job Ready Graduates package dramatically changed the funding formulas for Australian universities – and the students, families and communities they serve.

In 2024, the full impact of these changes will be felt, when the transitional buffer funding ends.

The new funding formulas – which took effect from 2021 – cut total funding for each student enrolled in a university degree in the pivotal future skills of science, engineering, technology and maths.

Anecdotal evidence from the sector suggests this may have led to significant changes in student STEM enrolments, staff numbers in STEM faculties, and support for STEM research infrastructure.

**But the lack of a real-time current public dataset has prevented public visibility of this impact.**

If STEM enrolments have dropped, that would mean the package has had the opposite effect to its stated aim of encouraging more Australian students to enrol in STEM degrees.

The equipment and facilities required to teach many STEM courses are expensive and complex – meaning funding for STEM degrees must cover those infrastructure costs.

**We propose the Accord Panel commission data and analysis of the impact of the major changes of the past few years on funding, enrolments and employment numbers to inform its work.**

**An up-to-date shared large-scale dataset – made publicly available to the sector to conduct additional analysis – would enable the Accord Panel to understand the trends of the recent years and make an informed set of recommendations to the Government.**

**We propose the Department of Education produce a comprehensive dataset including course costs and student enrolment numbers by discipline for the past 10 years and make this data available to the sector to inform their submissions to the Accord process.**

The Accord process should consider how the Job Ready Graduates package affected:

- STEM enrolments and whether it achieved the policy intent of boosting enrolments in each of the STEM fields;
- the level and number of staff in STEM faculties to support those students and pursue world-leading STEM research breakthroughs; and
- the capacity of universities to deliver high-quality STEM education (including infrastructure) to equip their graduates with crucial STEM skills required for our evolving economy.



#### 4. GOVERNANCE, ACCOUNTABILITY AND COMMUNITY

*Enhance regulatory and workplace relations settings to support universities to meet their obligations to both staff and students.*

*Explore the contribution that higher education makes to the Australian community, national security, and sovereign capability.*

Universities deliver vast returns to our economy and the community. They are the beating heart of local communities and regional economies, create a vast array of new jobs, provide essential community facilities, and drive industry engagement, collaboration and development.

These benefits are not restricted to local communities – international research connections and university partnerships help Australia forge stronger links and diplomatic ties with the world.

Amid a global race for scientific and technological advantage, one of the most pressing challenges for Australia is to safeguard the talent we need to build STEM industries.

To achieve this, we urgently need to tackle the large scale of insecure and precarious work in our university system to create the conditions for researchers to thrive to create Australia's .

The Accord process should consider:

- How to strengthen job security in Australia's science and research workforce – to end the rolling cycles of repeated short-term contracts particularly for early and mid career talent.
- How to create the conditions for academics to do great teaching - interacting with students, engaging them on concepts, and ensuring the latest content in teaching materials - rather than overloading academic staff with vast course coordination and administration duties.
- How to reflect and support the teaching-research nexus – exploring the ways world-class research capabilities support teaching and learning.
- How best to promote community engagement so local communities and industries can benefit fully from having a local university.
- How universities and university researchers work to promote global collaborations and strengthen Australia's international connections and diplomacy.

#### 5. THE CONNECTION BETWEEN THE VOCATIONAL EDUCATION AND TRAINING AND HIGHER EDUCATION SYSTEMS

*Explore possible opportunities to support greater engagement and alignment between the vocational education and training (VET) and higher education systems. In particular, the panel will have regard to the experience of students in navigating these systems and ensuring a cohesive and connected tertiary education system.*

Universities will play a key role to equip our future workforce as people seek extra qualifications and skills to support their career pathways. Microcredentials will be an important tool for workers to build specialised expertise in rapidly evolving fields.

As the Australian economy transitions to clean energy technologies, we need a vocational education system that keeps up with the advances in technology and produces a trained workforce capable of supporting the transition.



The Accord process should consider:

- How university level microcredential offerings should and already interact with vocational education and training offerings.
- How VET providers can tap into university expertise to build quality training programs and the offerings needed to maintain a skilled and challenge-ready workforce.
- How universities can implement nimble approaches to upskill graduates with specialised capabilities amid rapidly changing technologies, and rapidly changing workforce needs.

## 6. QUALITY AND SUSTAINABILITY

*Examine the challenges faced by domestic and international students and staff due to the COVID-19 pandemic and the temporary and permanent impacts on the way the higher education sector works.*

*Support a competitive and resilient international education sector, reflecting the important role international students play in our society and economy, and Australia's interest in deepening partnerships abroad.*

Australian universities are enriched by the diversity, perspectives and experiences of international students - and the vibrant contributions they make to our university and local communities.

International education is a powerful vehicle for Australia to build strong bonds of affection, knowledge and shared interests with the next generations of leaders from all over the world.

The Accord process should consider:

- How best to support universities to provide quality services essential to a positive international student experience.
- How Australia's visa and migration settings can best support international education to provide a skilled workforce pipeline, especially in areas of critical skills shortages.

## 7. DELIVERING NEW KNOWLEDGE, INNOVATION AND CAPABILITY

*Support a system of university research that delivers for Australia, securing the future of the Australian research pipeline, from basic and translational research to commercialisation. In doing so, the Accord will explore relevant initiatives and other opportunities and to further boost collaboration between universities and industry to drive greater commercial returns.*

*The review will synchronise with the ARC review and consider issues raised through that review and other areas of government that impact on the capacity of the higher education system to meet the nation's current and future needs.*

Research drives innovation, which in turn powers a thriving economy. Indicators like the global [Economic Complexity Index](#), the [Harvard Atlas of Economic Complexity](#) and the [Global Innovation Index](#) show strong connections between robust R&D funding and economic complexity and innovation. Investment in R&D is money well spent.

The stakes are high. The world is currently in a fierce race for scientific and technological breakthroughs. The countries that make those breakthroughs will seize the next waves of new jobs, industries and income. Unless we ramp up our investments in cutting-edge R&D, the risk for Australia



is that we consign ourselves to becoming a nation of consumers, rather than creators, of new technologies - eroding our sovereign capability and deepening our reliance on other nations.

Australia must swiftly start to lift our investment in R&D to compete globally and boost our sovereign capability. We need to back our world-class researchers to keep pushing boundaries, and seek the frontier knowledge that will lead to the innovation needed to drive our economy and productivity.

Australia's universities are the cornerstone of the nation's publicly funded research system. This review is an opportunity to examine the stresses in the research system and how increased funding would propel Australia towards the goal of becoming a research superstar, and boosting R&D investment towards 3 per cent of GDP.

Australia's universities' most important asset is their people. We need to provide secure and fulfilling workplace conditions to attract and retain top quality talent and expertise.

The Accord process should consider:

#### **Australia's level of investment in R&D**

- How adequate is Australia's current level of investment in research and development, especially compared to our major competitors and other advanced economies.
- What are the risks to Australia if we fail to keep pace with global competitors on R&D investment, breakthroughs and sovereign capabilities.
- Whether we need a system that funds university research properly in Australia rather than relying on a complex patchwork of cross-subsidies and income streams.

#### **How university research is funded and whether it is the best way to fund essential research**

- How should we safeguard the essential importance of discovery research – and ensure funding for discovery research is sufficient for Australia to keep pace globally.
- How does the Research Block Grants (RGB) funding scheme interact with Australian Research Council (ARC) and National Health and Medical Research Council (NHMRC) systems and the major National Competitive Grants Program (NCGP).

There are several fundamental questions that should be explored:

- Is the RGB scheme adequately supporting university research?
- Is the connection between the RGB and NCGP working as intended, or has the RGB scheme become distorted to try and meet multiple policy objectives?
- How university research is supported by teaching and international student income – while this provides a flexible funding source for universities to deploy according to their own priorities, is it really the best way to fund research?
- How best to cover the full costs of research – are the NCGP and RGB working in concert as intended to properly cover the direct and indirect costs of research?

#### **Support for research translation and commercialisation**

- Australia's Economic Accelerator is a great development, but what else should be done to drive stronger research translation and commercialisation success in Australia?
- What options should be explored to deepen research engagement with industry – to create a research community with more diverse characteristics and perspectives with vast potential to broaden research impact, translation and commercialisation opportunities.



#### Job security for the research workforce

- How do we address the challenge that too many of Australia's researchers are subjected to rolling cycles of short-term contracts - and give researchers longer-term security to thrive.
- How adequate is support for our PhD students and is it a liveable amount (with the current PhD stipend, while tax free, well below minimum wage).

#### Research infrastructure

- How can we ensure Australia has the top quality equipment and infrastructure required to produce top quality research.
- How should Australia enhance the National Collaborative Research Infrastructure Strategy (NCRIS) - an excellent scheme that supports the Australian research workforce.
  - Is NCRIS sufficiently funded to enable Australian research?
  - Is the structure of Roadmap → Investment Plan → funding guidelines the most efficient and effective way to develop the long-term, sustainable strategy and support for Australia's essential research infrastructure?
- How can Australia safeguard the workforce of highly skilled, highly specialised staff needed to operate and maintain highly specialised research infrastructure facilities.

We thank the Accord Panel and the Department of Education to offer input at this initial stage on the terms of reference. We look forward to making future submissions as the Accord work progresses.

In early 2023, Science & Technology Australia will be expanding our team to offer our services to deliver high-quality commissioned reports, data and analysis to assist policymakers to consider complex policy issues with more information.

STA would be delighted to assist the Panel and Department with commissioned research to support the Accord process if there is scope in its work plan for such support to augment the Department's in-house policy analysis capabilities.

Please let us know if we can assist with any additional information.

Yours faithfully,

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