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Australian Academy of Science submission on the Australian Universities Accord Terms of Reference

The Australian Academy of Science welcomes the opportunity to comment on the Terms of Reference for the Australian Universities Accord.

Fundamentally the review will need to engage with and articulate a considered view of the role and purpose of universities for Australia. All too often, the integrated but equal missions of the contemporary Australian university – advanced skills formation & knowledge creation – are underappreciated. Policymakers can fall prey to sloppy thinking focusing on the immediate outcomes of universities – such as the commercial returns of research – rather than understanding the university system’s essential role in long-term patient knowledge generation for a modern industrialised Australia.

The Terms of Reference emphasise collaboration between universities and industry and the opportunity to “drive greater commercial returns”. Where else in the world is this described as the purpose of the university system? Where else in the world is such a blunt instrument, used without serious rationale or even thinking, been imposed on a sector that has been involved and at the heart of the advancement of human civilisation over centuries?

The knowledge system should be managed as a continuum. Knowledge creation is as important as its application, and societal translation. However, translation is not the task of the university sector alone: it requires a partnership in which other elements of our society – government and industry in particular – must live up to their responsibilities.

The success of the Accord will be underpinned by its ability to chart a long-term direction for the Australian university system free of such momentary fashions and enthusiasms.

Australian research policy

The lack of coherence in Australian support for research is striking, debilitating and an indictment of the approaches that fundamentally imply knowledge is only important if it can be used to generate a commercial return. The present state of Australian policy for research is the consequence of vague strategic directions from the government, piecemeal interference from time to time over two decades, and *ad hoc* interventions that have demoralised researchers, minimised efficiency and disadvantaged the nation.

While this review of the Australian higher education system does not have the scope to consider science and research system issues, no review or recommendations concerning university research can occur in a vacuum. Changes to university research will invariably influence the operation of the broader science and research system – without addressing the central problem: 212 research funding programs across 12 Commonwealth Departments.

The Academy recommends that the Australian Government commissions an independent science and research system review without delay.

Noting the terms of reference for the review, the Academy highlights some cross-cutting areas that the Accord Panel should examine. The Academy has identified the following priority areas:

- Cluster funding rates
- Role of universities in driving fundamental research
- Knowledge brokering
- Developing the STEM skills pipeline
- Higher degree by research equity and access

This is not a comprehensive list, but a few priorities identified by Fellows and our National Committees of Science.

Recent Academy submissions relevant to the Review include:

- Submission to the [review of the Australian Research Council Act 2001](#) (December 2022)
- Submission on [the Employment White Paper](#) (November 2022)
- Submission to the [Productivity Commission](#) (November 2022)
- Submission to [Critical technologies List update](#) (October 2022)
- Submission [Research Block Grant Reform](#) (June 2022)
- Academy [election statement](#) (March 2022)
- Submission to [National Research Infrastructure Roadmap](#) (December 2021)
- Submission to [Economics References Committee inquiry into manufacturing](#) (September 2021)
- Submission on a [University Research Commercialisation Scheme](#) (June 2021)

Cluster funding rates

Legislated changes to undergraduate student cluster funding rates and student contributions in the *Higher Education Support Amendment (Job-Ready Graduates and Supporting Regional and Remote Students) Act 2020* are having a major impact on many sciences. As highlighted by the Academy's recent report [The mathematical sciences in Australia](#), overall funding was reduced for students in a range of STEM subject areas.

Cluster funding rates should be reviewed to ensure that declining funding per STEM student does not create a perverse incentive for universities to train fewer STEM students. Thus far, initial data suggests there have been imperceptible impacts from lower student fees (HELP loans) in STEM from the Job-ready Graduates Package on application and offer patterns. However, the reduced funding means that these changes have the potential and incentive to lower the supply of STEM in universities in the long term.

Role of universities in fundamental research

Adequate, patient investment in fundamental science is critical to realise the transformational benefits of Australian science. The majority of Australia's fundamental research takes place in our universities.

Research funding from the government does not cover the full cost of research. This gap was estimated to be approximately \$4.6 billion in 2018, which has been filled by funding from other sources, predominantly international education revenue. The gap has critical consequences on national research capability, putting at risk the scale and capacity of Australian research to serve the interests of the nation.

The COVID-19 pandemic has illustrated how unsustainable this funding model is.

Further, competitive research grants meet only a proportion of the total costs associated with undertaking that research. This is because competitive grants are limited in what they can pay for and generally do not contribute to many of the services and facilities which researchers use to undertake their work – that is, funding regimes do not adequately cover the indirect (or overhead) costs associated with research.

Knowledge brokering

Scientists are best when they are allowed to be scientists. Policy that seeks to make scientists into entrepreneurs almost always fails and is counterproductive to the job of exploring foundational knowledge and developing solutions

The pathway to engaging with small and medium enterprises must involve independent knowledge brokering, connecting organisations, industries, and researchers, and harmonising partnership enablers such as Intellectual Property arrangements and early-stage investment options.

[Interface in Scotland](#) provides a model for an independent organisation that specialises in brokering relationships between businesses and academics. It matches industry and university interests and harmonises collaborations through small grants and by addressing issues related to intellectual property, so they don't

become a barrier to collaboration. We should look at something like this in Australia – driving innovation and building national capability in research translation.

STEM skills pipeline

Ensuring that the next generation of Australian researchers is adequately trained with expertise crucial to our national interest and has access to the infrastructure needed to conduct research and secure employment will safeguard Australia's economic future.

There should be a focus on maintaining a flow of tertiary students into areas of study that are needed to meet pressing societal challenges.

An example of this is in earth sciences, where university departments are being threatened with closure due to insufficient student enrolments. Student numbers have dwindled despite the critical shortage of geoscience workers and the vital role for geoscience in Australia, including in addressing our changing climate, scarce sub-surface water resources, and the emerging need for critical metals for our decarbonised future.

The panel should also take note of the [Women in STEM Decadal Plan](#), developed by the Australian Academy of Science in collaboration with the Australian Academy of Technology and Engineering, which provides a guide to stakeholders as they identify and implement specific actions they must take to build the strongest STEM workforce possible to support Australia's prosperity.

Equity and access to a higher degree by research

Training for PhDs and other higher degrees is the pipeline to provide research skills into the future for Australia. Over 57% of our current university research workforce is post-graduate students.

With an access and opportunity lens, a base PhD stipend is \$29,500 for hours equal to or often longer than a full-time job, which is below the poverty line. PhD students on a stipend are restricted in how many extra hours they may work to keep their stipend, unable to bolster their income with additional employment.

Our current system is so dire that many PhD students are unable to afford necessities such as housing and healthcare. A PhD candidature has become an invitation to spend 3.5 years of struggling to survive with a wage under the poverty line.

This situation will increasingly make pursuing a research career inaccessible and drive further inequity in the research sector. This is a serious disincentive to maintaining and increasing the supply of skilled researchers into the Australian science environment and needs to be addressed as a matter of urgency.

To discuss or clarify any aspect of this submission, please contact Mr Chris Anderson, Director Science Policy at Chris.Anderson@science.org.au.