

Online submission

11 April 2023



Australian Academy of Science submission to the Australian Universities Accord Panel

The Australian Academy of Science (the Academy) welcomes the opportunity to provide advice to the Australian Universities Accord Panel

The Academy recommends that the panel looks for opportunities to be more ambitious than the incremental change implied in the discussion paper. Namely the Accord needs to:

- Value and defend expertise, knowledge and higher education and their role in transforming Australia to a country fit to prosper in the decades that remain in the 21st century
- Concentrate on fixing the ailing funding system for the research sector, and incoherent government policy around research – both fundamental and translation
- Articulate a joint value proposition for Australian public universities – the only institutions capable of collaborating at scale to address our grand challenges, provide the patient capital, invest in fundamental research and have international reach.

Nurturing Expertise.

Every country needs experts.

Experts are central to how a country can develop and use knowledge that is critical to its own needs; to the way knowledge developed elsewhere can be adapted to local issues; to the way a country can play its role as an effective global citizen grappling with issues that affect us all.

Australia is no different. As the driest inhabited continent with the 91st least differentiated economy in the world and facing a fractious globe ever hungrier for talent, Australia needs to develop its experts on a scale not before imagined.

It is our experts who will take us to places we haven't been but need to get to.

It is they who will build a future that is inclusive but different – value adding, making things, minimising sovereign risk, consciously playing our part in leading the world to a better place.

The scaffold we need to build our expertise is the education system.

The Australian attitude to education lags by comparison with countries which have had to make their way through the skills and the talent of their community. Countries that do not have the natural endowments that have favoured Australia.

In this country, frequent incremental changes to the rules, regulations and growing bureaucracy prevail. Add the raft of Ministers, each wanting to do something but most not staying long, and the result is a hotchpotch of band-aids, one on top of the other, without trying to fix the sore the first band-aid tried to cover.

The University Accord is an opportunity to establish the university sector as a key contributor to the development of Australia; to provide equitable access to Australians wherever they live and whatever the circumstances of their birth; to transform the economy; and to securing a future we will be proud to hand on to the coming generations.

This submission will focus on just three topics:

1. Universities, expertise and grand challenges
2. Universities and discovery: surviving a broken model
3. The international dimension of university education and research.

Universities, expertise and grand challenges

Universities have an inherent capacity to find solutions to some of the biggest challenges our nation and the world face – finding solutions for problems everyday Australians need fixed or understood.

Groups of universities have shown their ability to join forces to collaborate on big issues, like climate change. The ARC Centre of Excellence for Climate Extremes exists to transform our understanding of events such as heatwaves, droughts, and storms. This consortium studies the processes within the climate system that cause climate extremes and contribute to improving the models to predict them.

Universities can also be key partners for tackling societal challenges. The partnership between the University of Melbourne and The Royal Melbourne Hospital in creating the Doherty Institute, a place where scientists and clinicians collaborate on projects with the goal of improving human health.

James Cook University is a major centre comprehensively studying coral reefs – Australian and overseas - with international collaborators.

Universities can and do establish the means to investigate the big and complex challenges and draw on multiple disciplines to get there. However, they are unnecessarily hindered by short timeframes for results, lack of indirect funding for research, and increasing regulatory burden.

Universities and discovery: surviving a broken model.

As business leaders in the US reminded their then President (in 1995) in an open letter: *University research makes a tempting target because many people aren't aware of the critical role it plays..... History has shown that it is federally sponsored research that provides the truly "patient" capital needed to carry out basic research and create an environment for the inspired risk-taking that is essential to technological discovery.*

This attitude built on an even earlier but equally enlightened view. Vannevar Bush (an engineer and inventor who became the first presidential science adviser) reminded the world in 1945 that *new products and new processes do not appear full grown ... today it is truer than ever that basic research is the pacemaker of technological progress.*

For the United States, and other global R&D leaders, the implications of Bush's report – [Science, The Endless Frontier](#) – is that supporting basic research leads to new knowledge, and is the source of economic dynamism, social progress, and the common good . It's an attitude hard to find in Australia; indeed, the opposite is easier.

In Australia, expenditure on Research and Development has been in slow steady decline. It is now 1.79% of GDP. It was 2.25% in 2008.

The story behind the headline figure is graphic. Business expenditure has dropped from 1.3% to 0.92%, government expenditure has dropped from 0.27% to 0.17%, university expenditure has increased from 0.54% to 0.61%, an increase largely dependent on income from student fees.

It means that Australia's research capacity, the bulk of which is done in the universities, is reliant on their capacity to draw in student fees (mostly international).

Where are we now? Total investment in Australian R&D as a percentage of GDP

Universities and business are responsible for the vast bulk of R&D expenditure in Australia. In the past decade Universities have risen from 24% of national R&D to 35%.

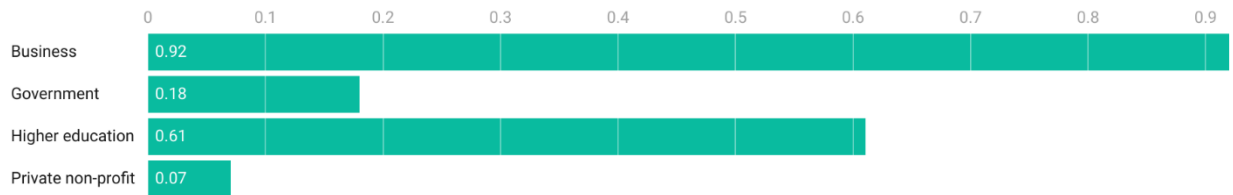


Chart: Australian Academy of Science • Source: ABS • Created with Datawrapper

Universities divert fee income to match research priorities, where they can, and to cover the decline in business and government contributions.

How is this a sensible, sustainable funding model? How is it building the strategic approach Australia needs even to keep pace with global change?

Add our failure to cover the full cost of research and the model is not just broken, it is destructive.

Factor in the 212 research funding programs across 13 Commonwealth Departments all tending their own patch; the fact that academic career paths are insecure; that grant funding is a lottery with low success rates and reduced budgets even when won.

Build in the implicit assumption that the lack of 'translation' of research into something 'useful' is the fault of the universities – add another band-aid, don't fix the underlying problem, just assume that it will fix itself.

How is all that designed to set Australia up as an advanced developed country with a flourishing economy, supporting a community secure in its place in the world?

The research system needs a thorough, root and branch, review.

Leaders in international collaboration and diplomacy

International engagement benefits Australia, and our science engagement benefits the world.

There are two benefits:

1. our engagement lets us take a 'seat at the table' where the big challenges are addressed and global strategies determined.
2. The advantages of 'soft diplomacy', developed as teachers and researchers from multiple countries work together and understand each other, cannot be over-estimated.

Australia's 2017 Foreign Policy White Paper states that *education, training and research exchanges ... build influence, and strengthen people-to-people links and mutual understanding*. To paraphrase Vannevar Bush, the benefits 'do not appear full grown.' They take effort, sensitivity, and alert good will.

In Australia it is Universities and the learned academies that do the heavy lifting in science and research diplomacy. Universities collectively have over 10,000 agreements globally with collaborators, forming a rich network that is invaluable when Australia needs it – such as at the start of the COVID-19 pandemic.

Australian researchers publish extensively with international collaborators: Always have, always should. It is not to say that researchers should not be unaware or unconcerned about 'foreign interference' – which should be comprehensively managed, not gratuitously targeted.

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