

SCIENCE & TECHNOLOGY AUSTRALIA

POLICY SUBMISSION

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Five Pillars of Productivity Inquiries

Science & Technology Australia thanks the Productivity Commission for the opportunity to respond to the [Five Pillars of Productivity Inquiries](#) interim reports.

Science & Technology Australia is the peak body for the nation's science and technology sectors, representing 150 member organisations and more than 235,000 scientists and technologists.

Key points

- Australia must increasingly transition to a knowledge-based economy to drive productivity and ensure a prosperous future.
- A genuine and comprehensive conversation about productivity must include R&D. The innovation that comes from R&D is the only way to deliver high economic returns, jobs, and new industries as well as solutions to the critical challenges facing the nation.
- A deep and sustained R&D capability is essential to all five pillars of productivity identified in the Productivity Commission's report.

As noted in the interim reports' cover note, [Growth mindset: how to boost Australia's productivity](#), productivity growth will primarily come from new technologies, improvements in human capital (education and skills) and physical capital (investment). Importantly, it also notes that what makes improvements in both human and physical capital 'hugely important' is their 'correlation with new ideas, which are the feedstock of growth.' And yet, R&D was deliberately placed out of scope for these reports. This is a lost opportunity.

The reason provided for this – that the Australian Government is currently conducting the Strategic Examination of R&D (SERD) – is actually **a prime reason that R&D should have been in scope**. Given the SERD's primary goal is to boost business investment in R&D, complementary insights from the Productivity Commission's work on productivity would be invaluable to suggest ways to boost business activity and productivity in Australia.

Further, each of the five pillars the Productivity Commission has identified has deep requirements for a strong R&D capability. Ignoring the R&D foundation underlying these sectors overlooks the very basis for a knowledge-driven economy and innovation-driven prosperity.

Science & Technology Australia Recommendation:

1. The Productivity Commission should acknowledge the critical role R&D plays in driving innovation and subsequent productivity across the entire economy, and embed R&D in the Government's strategic productivity agenda, while noting the detailed work the SERD process is undertaking.

Creating a more dynamic and resilient economy

Australia needs a robust R&D capability to generate the 'feedstock of growth' – the new ideas and knowledge that drive innovation, which in turn drives new industries and builds a more complex economy.

The proposal to lower the company tax rate could potentially support R&D commercialisation and SME stability. Other more targeted measures could include:

- Introducing a payroll tax concession for companies employing recent PhD graduates – data indicates Australian startups employing a recent PhD graduate are 9 times more likely than the average new firm to file and be granted patents.
- Restructuring the R&D Tax Incentive (RDTI):
 - Restructure the RDTI to be a tax credit, rather than a tax offset, which companies would be required to re-invest in further R&D.
 - Implement a premium RDTI rate for companies working with universities and SMEs to drive greater collaboration across Australia's innovation system.
 - Establish a premium RDTI rate for companies working in R&D in strategically important areas, such as those aligned with the national science and research priorities.
 - Remove the cap on company revenue for claiming RDTI, but tighten areas and categories that are eligible
- Implement a competitive tax concession on profits derived from newly patented Australian IP. This would encourage businesses stay onshore and help build new Australian industries. Eligibility could be aligned with the NRF or other strategic priorities to boost sovereign domestic capability and support economic resilience.

Science & Technology Australia Recommendation:

2. The Productivity Commission should consider targeted tax reform measures to support greater business investment in R&D that would drive productivity. These include:
 - a. payroll tax concessions to businesses employing new PhD graduates
 - b. reform the RDTI to ensure the scheme delivers maximum benefit – including potential premiums to incentivise collaboration or R&D in critical strategic areas
 - c. a competitive tax concession for companies developing and commercialising Australian IP.

Investing in cheaper, cleaner energy and the net zero transformation

One of the biggest current threats to Australia's productivity is ecosystem degradation and the increasing impacts of climate change – including extreme weather events that are increasing in frequency and intensity. These are threatening Australian's health and wellbeing, our agricultural systems and our broader ecosystems and biodiversity. Additionally, increasing insurance premiums – as a result of issues like flooding, extreme events and poor health – place pressure on individual, family and business budgets.

Ensuring our economy – and populations – can effectively adapt and remain resilient in the face of increasing impacts of climate change is essential to securing Australia's future productivity. As noted in the interim report, the Australian Government spends an estimated \$1.6 billion per year on disaster recovery – while only budgeting \$215 million. This is a significant drain on the Australian economy, not to mention the downstream productivity losses, including long-lasting impacts on people's health and wellbeing. Ensuring Australia has deep capability to predict, mitigate, respond and adapt to natural disasters and the increasing impacts of climate change requires deep environmental and climate research expertise and capability.

Australia has the potential to be a world-leader in clean energy technologies – but without clean energy tech and engineering R&D, we will squander this opportunity. Additionally, we will not be able to deliver affordable and clean energy, nor deliver on net zero goals.

The Productivity Commission's call for environmental law reform to expedite clean energy approvals – while better protecting the environment – is sensible. These reforms should also be informed by environmental and energy research expertise to ensure the best outcomes for both the environment and the development of a strong clean energy sector.



Science & Technology Australia Recommendation:

3. The Productivity Commission should acknowledge that the ultimate basis of Australia's future productivity is a healthy and resilient environment.
4. The Australian Government should invest in the deep R&D capabilities required across:
 - a. environmental and climate science to ensure Australia has the capacity to respond and adapt to the increasing impacts of climate change, and
 - b. clean energy tech and engineering required to make Australia a world-leader in clean energy technology development and deployment.

Harnessing data and digital technology

The Productivity Commission's recommended review to identify AI legislative gaps is sensible, but this review should remain open to the consideration that AI may require dedicated legislation to ensure the potential productivity gains the technology offers – and is already delivering – are balanced with any risks. Additionally, any legislation must accommodate the rapid pace of change in AI developments. The recent [Australians for AI Safety report](#) found 80% of AI experts believe current regulations inadequately address general-purpose AI risks, with 20% expecting significant to catastrophic consequences within 5 years.

Australia should invest in sovereign AI capability to ensure systems are purpose-built, safe, and secure. This includes deep investment in the domestic AI workforce, sovereign data centres – powered through renewable energy – strong information security protocols and developing models that account for Australia's unique characteristics and don't introduce bias from offshore contexts. Given our unique environment, population and global context, developing our own sovereign AI capability is the only way Australia – and Australians – can be assured that AI will deliver maximum benefit to the nation.

Science & Technology Australia Recommendation:

5. The Australian Government must invest deeply in building Australia's sovereign AI capability – in addition to supporting business investment and uptake, the high-performance computing needed to power and the expert R&D workforce.

Building a skilled and adaptable workforce

Strong STEM education in schools is an essential underpinning component to meet Australia's future skilled workforce needs and drive productivity. STEM-skilled jobs are predicted to [grow by 14.2%](#) during the next 5 years, twice the rate of non-STEM jobs.

However, ensuring strong STEM training in schools is at risk. Due to large-scale teacher shortages, a large proportion of critical STEM teaching in schools across the country is being delivered by out-of-field teachers – i.e. teachers without specialist STEM knowledge.

Recent survey data indicates that two in five secondary maths teachers lack specialist maths qualifications, meaning that around 75% of Yrs 7–10 students will be taught maths by an out-of-field maths teacher at some point in their schooling. This directly undermines the mathematical literacy essential for a future economy driven by the AI, data science, mining, telecommunications, finance and logistics sectors – sectors that contribute hundreds of billions of dollars annually to Australia's economy. Anecdotal evidence indicates that out-of-field teaching is also widespread across other subjects, including science and even English. Australia's skills pipeline is under threat.

Strategies for addressing this are hampered by jurisdictional barriers and inefficiencies. Current teacher registration processes, managed by the states and territories, are such that we don't even know how many specialist teachers we have across the country. NSW is the only jurisdiction that collects this information systematically. A national strategy – that includes improved data collection and an upskilling program for out-of-field teachers – is needed to address this critical issue.



While off-the-shelf AI tools and a single lesson plan platform that teachers can draw on to assist their teaching are useful tools, they are insufficient to address this and are in no way a replacement for highly trained, expert teachers. No two classrooms are the same, and teachers must have deep expertise to underpin the flexible and tailored approaches needed to ensure the best student outcomes.

Science & Technology Australia Recommendation:

6. Governments, led by the Australian Government, should develop and implement a national strategy to address out-of-field teaching, including improved data collection and upskilling programs.

Delivering quality care more efficiently.

For obvious reasons, best practice healthcare is vital for long-term productivity in Australia – healthy people are productive people. The Productivity Commission’s 2024 [Advances in measuring healthcare productivity](#) found Australia’s healthcare spending between 2011–12 and 2017–18 delivered a productivity boost of 3% per annum. Quality improvements from medical advances, not cost reductions, were the big contributors to productivity growth – advances underpinned by health and medical R&D. Health and medical R&D transforms health practitioners’ capability to diagnose, prescribe and support patients effectively.

This includes research into health services and delivery. Research across [various healthcare systems](#) has found that 60% of care is conducted within guidelines, 30% of care is wasteful, duplicative or delivers little value, and 10% actually causes harm. In 2017–18, avoidable patient harm in Australian public hospitals [cost \\$4.1 billion](#).

Improved health services would deliver significant productivity and economic gains. Even simple interventions such as [sending gentle feedback letters](#) to doctors ordering excessive scans in Australia reduced imaging requests by 11%, resulting in 47,000 fewer scans and substantial MBS savings.

Other [health services research](#) found every \$1 spent on optimal supportive care services for lung cancer patients led to a \$9 return in combined savings within a one-year period, which accumulated to \$11 after 5 years.

Deeper efforts in health and medical research – both new advances and research into ways to optimise healthcare delivery – and its translation are critical to drive Australia’s future productivity.

Science & Technology Australia Recommendation:

7. The Australian Government should establish an early-mid stage translation fund to progress health services research and program implementation – and delivery of best practice healthcare.



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