

# SCIENCE & TECHNOLOGY AUSTRALIA

## POLICY SUBMISSION

14 JUNE 2024

### AUSTRALIA'S INTERNATIONAL EDUCATION AND SKILLS STRATEGIC FRAMEWORK

Science & Technology Australia thanks the Department of Education for the opportunity to respond to the [draft International Education and Skills Strategic Framework](#).

Science & Technology Australia is the peak body for the nation's science and technology sectors, representing more than 140 member organisations and 225,000 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.

#### Key points

- It is imperative to maintain Australia's reputation as a high-quality international education and research destination, and support sustainable growth in the sector.
- International students comprise around 10–50% of students studying STEM courses – these courses are essential to deliver Australia's future workforce.
- There are opportunities to develop targeted and effective migration pathways that harness international education to address critical skills gaps in Australia.
- Managed growth settings for international education should be developed with a deep understanding of how international graduates can help address skills gaps.
- International higher degree by research (HDR) students make a critical contribution to Australia's STEM research workforce, including in projects that support activities connected with commercialisation and the Future Made in Australia initiative.
- Managed growth settings or 'caps' on international students must exclude HDR students, including those on cotutelle arrangements (which play a critical role in science diplomacy).

#### Science & Technology Australia Recommendations

1. The Department of Home Affairs, Jobs and Skills Australia and the Department of Education should conduct deeper joint analysis and projections of Australia's workforce needs and how managed growth settings for international education can play in addressing critical skills and workforce gaps.
2. The Government conducts deeper analysis of international graduate transitions to post-study work visas (subclass 485) and skilled visas to understand student pathways and motivations.
3. Exempt international higher degree by research (HDR) students from any future caps or managed growth settings that limit enrolments.

#### Skills gaps in Australia's STEM workforce

Australia requires a strong STEM-skilled workforce to progress initiatives such as a [Future Made in Australia](#) and to work towards our net zero goals. Jobs and Skills Australia's [Clean Energy Generation report](#) highlights the extent of new jobs, skills and qualifications in this sector in the next 30 years. This sector currently relies on migration, with migrants comprising more than a quarter (26%) of the

existing clean energy workforce. There will be a pressing need to rapidly expand this workforce in the coming years.

A [Jobs and Skills Australia 2023](#) report outlined shortages in 54% of design, engineering, science and transport professional jobs. [AI](#), [robotics](#) and [cybersecurity](#) are also considered to be at critical risk of shortages.

An [Office of the Chief Scientist report](#) notes that 56% of Australia’s university qualified STEM workforce and 26% of our VET STEM workforce were born overseas. In key professions such as engineering, the overseas-born component of the workforce is [even higher, at 62.7%](#).

## International students in undergraduate STEM courses

At a time when Australia is experiencing significant gaps in its STEM workforce, it is important to understand how international graduates can contribute to filling those skills gaps – both now and in the future – should they wish to stay in Australia to work after graduating. International students comprise nearly half of Bachelor students studying IT, more than a quarter of students studying engineering, and significant proportions of other STEM fields (Table 1).

**Table 1. Bachelor enrolments in STEM, 2022**

	Natural and Physical Sciences	Information Technology	Engineering and Related Technologies	Agriculture, Environmental and Related Studies	Health	Total STEM
All	105,235	73,257	74,477	10,941	185,615	479,610
Domestic	87,159	38,245	54,631	9,930	160,182	374,247
International	18,076	35,012	19,846	1,011	25,433	105,363
<b>% International</b>	<b>17.2</b>	<b>47.8</b>	<b>26.6</b>	<b>9.2</b>	<b>13.7</b>	<b>22.0</b>

Source: Department of Education (2023), [Selected Higher Education Statistics – 2022 Student data](#)

The draft framework identifies the potential to align migration and skilled visa pathways to better address Australia’s skills shortages. While not all international students will want to stay in Australia to work following their studies, there is a clear opportunity to develop targeted and productive migration pathways that would be of mutual benefit to graduates wishing to stay in Australia, and the nation.

A clear starting point for such targeted work is aiming to fill the gaps in the STEM workforce. As shown in Table 1, considerable proportions of undergraduate students across the STEM fields that will be crucial for our future workforce are international. Deeper analysis of international graduates who transition to post-study visas (subclass 485) and/or to skilled visas following their studies would deliver essential understandings of the current level of interest for these graduates in staying in Australia to work to inform future policy settings.

### Science and Technology Australia Recommendation:

1. The Department of Home Affairs, Jobs and Skills Australia and the Department of Education should conduct deeper joint analysis and projections of Australia’s workforce needs and how managed growth settings for international education can play in addressing critical skills and workforce gaps.
2. The Government conducts deeper analysis of international graduate transitions to post-study work visas (subclass 485) and skilled visas to understand student pathways and motivations.



## International students in Australia’s research workforce

The draft framework outlines the Government’s intention to implement policy that will support ‘sustainable growth over time’, noting that this may include setting limits on enrolments at a provider or course level, or in specific locations. The framework paper also notes ‘International students in postgraduate research degrees add significant value to Australia’s broader innovation and skilled migration objectives’ and that the Government will consult further on any potential settings affecting postgraduate enrolments, including potentially exempting them from the new managed growth settings.

Science & Technology Australia strongly advocates for postgraduate research students (higher degree by research – HDR students) being exempted from any future ‘caps’ or managed growth settings. While HDR students are still exactly that – students – the key clue is in the rest of their title: higher degree by **research**. These HDR students comprise a significant proportion of Australia’s STEM research workforce – conducting breakthrough work that contributes to Australia’s high-quality research capabilities. They also make significant contributions to teaching and supporting all undergraduate students across our universities.

In 2022, more than half of PhD completions in STEM fields were international students (Table 2). In the field of IT – critical to maintain Australia’s capacity to remain globally relevant and competitive in areas such as artificial intelligence – two-thirds of PhD completions were international students. Similarly, two-thirds of engineering PhD completions were international – this is a field that will underpin Australia’s ability to develop the green technologies needed to drive the transition to a zero-emissions economy under the Future Made in Australia initiative.

**Table 2. PhD completions in STEM, 2022**

	Natural and Physical Sciences	Information Technology	Engineering and Related Technologies	Agriculture, Environmental and Related Studies	Health	Total STEM
Domestic	1210	141	523	177	1031	3082
International	1071	284	1031	215	440	3041
Total	2281	425	1554	392	1471	6123
<b>% International</b>	<b>47.0</b>	<b>66.8</b>	<b>66.3</b>	<b>54.8</b>	<b>29.9</b>	<b>49.7</b>

Source: Department of Education (2023), [Selected Higher Education Statistics – 2022 Student data](#)

Imposing caps on international HDR students has the potential to stymie Australia’s research – to the detriment of the nation.

### Science and Technology Australia Recommendation:

3. Exempt international higher degree by research (HDR) students from any future caps or managed growth settings that limit enrolments.

Please do not hesitate to contact Science & Technology Australia if we can help with further information or advice to the department.

**Professor Sharath Sriram**  
President  
Science & Technology Australia

**Ryan Winn**  
Chief Executive Officer  
Science & Technology Australia



