

Investing in Australia's STEM capability

- A vibrant and sustainable STEM (science, technology, engineering and mathematics) workforce is essential to virtually every goal we have as a nation.
- Attraction of the next generation to STEM courses is a key demographic challenge – will the supply of STEM graduates be sufficient for our science and technology needs in the future?
- Under-investment in STEM is false economy.
- Reducing our investment in STEM reduces our potential for economic growth.

The link between STEM, innovation, productivity and quality of life

Australia's STEM capability is fundamental to not only driving productivity improvement, supporting innovation and maintaining global competitiveness, but also to safeguarding standards across the Australian community, protecting the environment, improving human welfare and quality of life.

STEM education

Addressing the failures in quality and reach of STEM education is complex and requires long-term planning and commitment.

A strong supply of STEM graduates ready to work directly in core-STEM areas as well as in occupations which benefit from STEM-related competencies is essential to building our innovative capability.

The number of students studying STEM subjects at secondary and tertiary level are declining. While China and India build bigger and better knowledge-intensive economies based on increasing numbers of STEM graduates, the proportion of Australian students going into Year 12 physics, chemistry and biology have halved over the last 30 years – and the proportion of Australians graduating from universities in mathematics and statistics is less than half the OECD average.

STEM-based employment

ATSE estimates suggest that 75 per cent of the fastest-growing occupations require well-developed STEM skills and knowledge – and STEM skills are critical not only for core-STEM occupations or those who ACOLA describe as the “high-skill group capable in research commercialisable innovation and effective response to technological change” but also for ensuring tertiary graduates are able to meet the demands of increasingly technology-intensive roles across industry.

ATSE's projections also show that STEM-based employment will grow at almost twice the pace of other occupations, and that currently 26 per cent of employers have difficulty recruiting STEM skilled professionals and managers.

In Australia roughly half of all professional occupations with identified skills shortages are in core-STEM areas such as engineering, and most of the rest are in the related area of health.

The way forward ...

STEM education is fundamental to Australia's future. A committed, coordinated and strategic approach to investing in our science, engineering and technology capability, STEM education and our STEM workforce are critical issues for Australia as we look to our future as a modern knowledge-based economy.