Meeting Australia’s knowledge and skills needs, now and in the future Australia needs to address the shortage of domestic students undertaking advanced training in STEM areas. This shortage is particularly acute in STEM PhD training where the international market supplies approaching half of students. The full pipeline of domestic PhD students needs review. Funding for advanced STEM training is focused on the PhD end of the pipeline through the Government's Research Training Program (RTP) but RTP funding is not available to recruit students into early stage research training in Honours. A government STEM pre-PhD RTP stipend program should be established, especially focused on recruiting undergraduate (notably Honours) students in priority research areas, to make higher research training in STEM substantially more attractive at the completion of undergraduate degrees. PhD student stipends need to be increased in line with inflation, reflecting their critical role in advancing Australia's knowledge and that the lack of formalised inflationary increases has produced below-poverty-line incomes for our current PhD student cohort.

Access and opportunity

Racial diversity in senior academic roles in universities are yet to mirror the diversity of their early career academic cohorts. While the causes of this are likely different to that have caused lack of gender diversity, the results remain the same - a lack of diversity in senior leadership and hence role models for aspiring students or staff. The limited racial diversity is particularly striking given the cultural and racial diversity of wider Australian society. The sector should undertake a review should be undertaken into the extent and cause of this lack of diversity. The sector should consider a program that parallels the Science in Australia Gender Equity program to address the identified issues.

Investment and affordability

The full economic cost of research is not funded and this creates roadblocks to research and inefficiencies in research administration. This will require review within Universities as to the realism of in-kind contributions of staff and infrastructure.

Delivering new knowledge, innovation and capability

The Australian research effort in disciplines is, partly as a result of various funding mechanisms, fragmented across many Universities and Government organisations. In many cases this fragmentation produces independent thinking and new ideas and is to Australia's benefit. In a small number of cases the fragmentation results in below-critical-mass, creates barriers to collaboration, and results in perverse outcomes that work against the national interest. As it has done in the case of tropical marine science, funded in The Australian Institute of Marine Science, the Government should seek to identify and establish a very small number of centres of scale and excellence in research to fulfill particular, long-term research for national benefit and/or sovereign capability. These should be informed by review of national priority areas and address fragmented and short term funding cycles and funding split across multiple universities and Government departments.