



**Science & Technology** AUSTRALIA

---

## 2019-20 Pre-Budget Submission

**1 February 19**

To the Treasury,

Thank you for the opportunity to provide a submission to inform the 2019/2020 Federal Budget.

Science & Technology Australia (STA) is the peak representative body for more than 70,000 scientists and technologists in Australia through our member organisations, including associations and societies, research institutes, and research strategy bodies such as councils of deans. Our mission is to connect science and technology with governments, business, and the community, to enhance the role, reputation and impact of science.

Since the global financial crisis, both public and private investment in the science and technology sector have decreased, threatening Australia's capacity to flourish. The Mid Year Economic and Fiscal Outlook forecasts a return to surplus in 2019/2020 and a growing economy. Given this improving economic outlook, STA considers it to be an opportune time to intelligently invest to build a successful, healthy and prosperous future for Australia.

This successful and prosperous future, along with strong international leadership and relations, can be realised through long-term, strategic positioning for science and technology. Yet, as it currently stands, Australia is not ready to meet this new and exciting future with shrinking investment in R&D and the growth of STEM qualified workers being less than half what the Australian economy requires<sup>1</sup>. The 2019/2020 Federal Budget, combined with a national strategy focused on curiosity driven research, research translation, business investment, and investment in the future workforce must be the starting point for this future.

In this Federal Budget submission, STA is advocating for the following measures:

- The development and commitment of a 10-year strategic plan for Research & Development including a clear 5-year funding commitment.
- Long-term, balanced, and stable public investment in research through:
  - A new \$2.4billion Research Translation Future Fund
  - A commitment to increase Australia's overall research and development investment to a minimum of 3% of the national gross domestic product (GDP)
  - A commitment to increase budgets for the national funding agencies and government research institutes by 4% each year for the next 4-years
- Building cross-sectoral support for science and technology through:
  - A 20% research collaboration premium be introduced as part of the Research & Development Tax Incentive
  - The provision of funding for STEM related decision maker engagement grants.
- A commitment to improving STEM education at all levels by funding a national strategy that includes:

---

<sup>1</sup> ["Perspectives on Education and Training: Australians with qualification in science, technology, engineering and Maths"](#) Bureau of Statistics, 2015

- Reversal of cuts to the Research Block Grant
- A return to the Demand Driven System in higher education
- Fee waivers for undergraduate STEM students who enrol in education courses
- A commitment to ensure every school has sufficient resources to provide high quality science and maths education to all students
- Investment to improve diversity and inclusion within the STEM sector through:
  - Maintenance and expansion of the Science in Australia Gender Equity (SAGE) Program
  - Funding and policy support for the implementation of recommendations from the upcoming Women in STEM Decadal Plan
  - Establishment of grants to incentivise the Australian film industry to include characters that are female STEM professionals
  - Investment in an Australian Indigenous Science Network
  - The provision of support to STEM professional societies that are undertaking diversity and inclusion projects within their fields

With sound, long-term investment in science and technology, Australia will secure its prosperous future, its place in international leadership, sound environmental management, and better health, wealth and wellbeing for all Australians.

Kind regards,

Professor Emma Johnston  
President  
Science & Technology Australia

Kylie Walker  
CEO  
Science & Technology Australia

## Introduction

The critical role of science and technology in the growth and prosperity of the Australian economy is unarguable. Dramatic changes are on the horizon with the introduction of automation, AI and the digital economy. If Australia is to remain competitive globally, and meet the environmental, medical, social and economic challenges of the future, a strong science and technology sector is the answer.

The evidence is quite clear on the benefits to the economy of strong and stable public investment in scientific research and technological development. The calculated returns on investment for science and research are excellent, with a \$2.21 return shown in the US<sup>2</sup> on every \$1 of public investment in science, and a £1.50 return in the UK on every £1 of public investment in science, in perpetuity<sup>3</sup>. Medical research alone was shown to provide a \$3.90 return on the dollar, here in Australia<sup>4</sup>.

Despite the proven return, public investment in science and technology is at a four-decade low<sup>5</sup>. As stakeholders across the research sector have regularly stated, steady, long-term investment and planning is crucial if we are to undertake the best research and encourage innovation.

Since the National Innovation and Science Agenda<sup>6</sup> and the National Science Statement<sup>7</sup> released in 2015 and 2017 respectively, strategic leadership and new investment in the STEM sector has been restricted to medical research translation and research infrastructure. With a budget surplus on the horizon and favourable economic outlook, now is the perfect time to show strong leadership across the STEM sector.

There has been significant progress towards a national, long-term plan in medical research, with strong leadership shown through the establishment of the Medical Research Future Fund (MRFF)<sup>8</sup>. The sector was also grateful for long-term vision for research infrastructure and secure investment through the Research Infrastructure Investment Plan<sup>9</sup>. STA strongly advocates for the continuation of both the MRFF and Infrastructure Investment Plan.

STA calls for a similar emphasis on the remaining areas of scientific research funding that are yet to experience the benefits of this visionary, strategic direction; and a whole-of-government plan that provides a united strategic vision for all work done in science, technology, engineering and mathematics research in Australia.

---

<sup>2</sup> [“Science economics: What science is really worth”](#) Colin Macilwain, Nature 2010

<sup>3</sup> [“Rates of return to investment in science and innovation”](#) Frontier Economics, 2014

<sup>4</sup> [“Australian medical research delivers outstanding returns on investment”](#) Association of Australian Medical Research Institutes, 2018

<sup>5</sup> [“Funding cuts risk life-changing research: AS R&D spend plunges”](#) Universities Australia, 2018

<sup>6</sup> [“National Innovation and Science Agenda Report”](#) Department of Industry, Innovation and Science, 2015

<sup>7</sup> [“Australia’s National Science Statement”](#) Department of Industry, Innovation and Science, 2017

<sup>8</sup> [“Medical Research Future Fund”](#) Department of Health, Accessed January 2019

<sup>9</sup> [“Research infrastructure investment plan”](#) Department of Education and Training, 2018

STA calls for a funding commitment to establish a 10-year Strategic Plan for research and development, underpinned by a clear 5-year funding plan. These should build on the successes of the National Innovation and Science Agenda and the National Science Statement.

**STA Recommends:** The development and commitment of a 10-year strategic plan for Research & Development including a concrete 5-year funding commitment.

Within this budget submission STA has outline a series of initiatives that will help create the strong Australian science & technology sector that is needed now, and into the future. This includes a focus on:

- Research investment;
- Business investment in research;
- Investment in STEM education; and
- Investment in a strong workforce through improving equity, diversity and inclusion in STEM.

## Research Investment

### Increasing research investment as a proportion of overall GDP

According to the OECD, countries including the US, UK, China, New Zealand, and Singapore<sup>10</sup> are reinvesting in science and technology following the Global Financial Crisis - Australia is lagging behind. With recent cuts to the research block grant, Australia is at its lowest level of direct public investment in research in decades (just 0.5% of GDP)<sup>11</sup>. Australia cannot compete globally if we do not provide long-term stable investment in research that stacks up against the rest of the world.

**STA Recommends:** That the federal government commits to increasing overall research and development investment to a minimum of 3% of the national GDP

### Long-term investment in research translation through a Research Translation Future Fund

One of the key challenges facing the Australian Research & Development sector has been encouraging industry to invest more in R&D. The primary mechanism to do so is through the Research & Development Tax Incentive. While this incentive is responsible for the largest proportion of spending on research, the results have failed to meet its intent, as business investment in research continues to fall (business expenditure on R&D dropping by 12% between 2013-14 and 2015-16<sup>12</sup>). The proposed changes to the Research & Development Tax Incentive reflect ongoing issues created by this policy mechanism.

While STA accepts that the Research and Development Tax Incentive may encourage large businesses to engage more in R&D, the strategy would benefit from a multi-pronged approach to encouraging small-to-medium businesses to

<sup>10</sup> "[Gross domestic spending on R&D](#)" OECD Date, Accessed 2019

<sup>11</sup> "[Budget ram raid on university research](#)" Universities Australia, 2018

<sup>12</sup> "[Australia's spending on research plummets far below OECD average](#)" The Guardian, 2018

also invest more in research<sup>13</sup>. It is also worth considering more direct approaches such as that used in Germany where public investment in research translation is in the form of direct funding of peer reviewed collaborative projects. It is time to reconsider the role of Australian public funding in supporting translational research<sup>14</sup>. Australia has already proven that public investment in research translation can be used to leverage business investment, with the immediate success of the Medical Research Future Fund. Although this Fund is yet to reach its full target expenditure, funds have already been used to complement basic research funded by National Health and Medical Research Council (NHMRC). This translational research is already showing returns on investment of 4.1%<sup>15</sup>.

A similar non-medical fund aimed at complementing the curiosity-driven scientific research supported by the Australian Research Council (ARC) is likely to show the same level of success and should be explored. This fund could be built using the savings garnered from efficiencies and improvements to the Research & Development Tax Incentive scheme. It would provide direct funding to translational research in a similar way to that done successfully in Germany, the US, and the UK, and also have the benefit of encouraging business investment through leveraging co-investment of initiatives, making the fund ultimately self-sustaining.

Like the MRFF, which assigns funding based on a set of national priorities, these principles rely on, and encourage co-investment from both industry and philanthropic investment. A research translation fund could potentially be used to ensure that Australian translational research is incorporating both Australian business investment and research resources in the most efficient and effective fashion.

**STA Recommends:** A non-medical Research translation fund be created using the savings from the changes to the Research & Development Tax Incentive

**Investment:** \$2.4 billion over the forward estimates

### Investing in Australia's research agencies and funding bodies

Important national agencies including the Bureau of Meteorology, CSIRO, Geoscience Australia, the Australian Bureau of Statistics, and many other scientific and research organisations have faced efficiency dividends, which limits their ability to undertake independent research that benefits the nation. For example, the Australian Bureau of Statistics is being forced to reduce staff and key statistical surveys as a result of a 10% cut to appropriations over three years<sup>16</sup>.

---

<sup>13</sup> ["Inquiry into the Treasury laws amendment \(making sure multinationals pay their fair share of tax in Australia and other measures\) Bill 2018"](#) Science & Technology Australia, 2018

<sup>14</sup> ["Business doesn't spend enough on R&D"](#) Australian Financial Review, 2018

<sup>15</sup> ["Is the Medical Research Future Fund fulfilling its mission as promised"](#) Dr Lesley Russell, Croaky, 2019

<sup>16</sup> ["Australian Bureau of Statistics to cut staff by 17% and axe some key surveys that explain the economy"](#) Business Insider Australia, 2017

In 2018, legislation was passed to guarantee increases in investment for the ARC to match the consumer price index<sup>17</sup>. This indexation should be the standard for every Federal Budget, and STA believes all research funds and institutes should have similar increases enshrined in legislation. Without this protection, public research agencies and research funding agencies are required to reduce costs rather than focusing on expanding and enhancing Australia's ability to create and translate knowledge.

Long-term investment in these research institutions and funding agencies is a key component to ensure a balanced approach to research. Investing in translational research may be considered more cost effective in the short-term, when quick outputs are desired, but research translation requires a foundation of blue-sky research to be successful. The "eureka moment" that comes from translation research is achieved thanks to decades of blue-sky research. Because national research institutions and funding agencies are funded through public investment, they are able to undertake blue-sky research free from conflict and ulterior motives; this can then be used to develop great Australian innovations. For example, the research regularly undertaken by the Bureau of Meteorology is vital to almost all agriculture related translational research being undertaken in Australia.

It is essential that investment in these research agencies along with investment in the national funding bodies is restored and costs from rising inflation are met.

**STA Recommends:** an increase in the base funding of national research agencies and government research institutes of 4% each year for the next 4-years.

## Building cross-sectoral support for science and technology

### Research collaborations premiums

After the review into the Research and Development Tax Incentive was undertaken, the Federal government accepted a number of the recommendations outlined in the final report<sup>18</sup>. One that was not accepted was the call for tax incentive premiums to be placed on research collaboration between research institutions or universities and business, to encourage them to work together to undertake research and development<sup>19</sup>. The result of such collaborations has already been shown to be extremely profitable, with a report indicating that the current benefit to the economy of \$19.4 billion per year could be lifted to \$30 billion per year through increased research collaborations between business and universities<sup>20</sup>.

The introduction of a research collaboration premium may also allow more small and medium enterprises to partake in research and development. Traditionally unable to provide sufficient outlay to support the setup of internal research teams, small and medium enterprises are not empowered through the incentive

---

<sup>17</sup> "[Australian Research Council Amendment Bill 2018](#)" Parliament of Australia, 2018

<sup>18</sup> "[Review of the R&D tax incentive](#)" Department of Industry, Innovation and Science, 2016

<sup>19</sup> "[Australia 2030: Prosperity through Innovation](#)" Innovation and Science Australia, 2017

<sup>20</sup> "[Clever Collaborations](#)" Universities Australia, 2018

as it stands. As they are able to engage in arrangements with external research institutes and universities, a research collaboration premium would be an effective way to engage them in high quality research and development.

Encouraging collaboration between business and universities is also beneficial to the production of research itself. With access to a larger pool of talent than 'in-house' research programs would allow, business is able to reach innovative ideas faster<sup>21</sup>. The linking of business to universities also increases the likelihood of an innovative breakthrough in research<sup>22</sup>. Such benefits, along with the economic advantages, reveal just how important it is to foster collaboration.

**STA Recommends:** a 20% research premium for collaborations between industry and registered public research agencies be placed on the Research & Development Tax Incentive

**Investment:** \$305 million over the forward estimates

### **Bridging the cultural divide between science and decision makers**

Since 2010 successive Federal Governments have recognised the importance of science engagement with business, decision makers, and the public. Events such as National Science Week, Science meets Parliament and the Prime Ministers' Prizes for science are examples of this engagement. The result of increased engagement has been improved application of science and technology in both Australian society<sup>23</sup> and in decision-making for our national leaders<sup>24</sup>.

Improved engagement with the science and technology sector has can also help to improve research & development in the business sector. A barrier to business investment in research is the cultural divide that exists between the business and research sectors. This issue is known to both sectors and there are a number of initiatives underway to increase collaborative opportunities between the two.

The barriers to effective industry and research collaboration can be addressed by looking at four key factors<sup>25</sup>. They are:

- Misaligned incentives;
- Differing priorities between university and industry;
- IP ownership and commercialisation issues; and
- Issues of scale and size.

Of these four factors, the first three can be addressed through better understanding and communication between business and research. We must provide more opportunities for leaders in each sector to come together to discuss shared goal and opportunities to work together, STA strongly advocates for a continuation of Federal support for programs like the Industry Growth

<sup>21</sup> "[Australian Industry Report 2015](#)" Office of the Chief Economist, 2015

<sup>22</sup> "[R&D Tax incentives: Evidence on design, incidence and impact](#)" OECD, 2016

<sup>23</sup> "Household Use of Information Technology, Australia 2016-17)" Australian Bureau of Statistics, 2018

<sup>24</sup> "[Australia's Tech Future](#)" Department of Industry, Innovation and Science, 2018

<sup>25</sup> "[Innovate and Prosper: Ensuring Australia's Future Competitiveness through university-Industry Collaboration](#)" Australian Technology Network of Universities, 2015



Centres, the Cooperative Research Centres, Rural Research and Development Corporations, events like Science meets Business, and other initiatives to deepen mutual understanding and encourage collaboration across sectoral barriers, such as APR Interns.

In addition, STA recommends support for initiatives that create skills and opportunities for deeper engagement for people in the science and technology sector with leading business, decision-makers and the public. This will allow for the growth of new relationships and support well-established relationships to continue to aid the Australian economy for many years to come.

**STA Recommends:** A continuation of federal support for formal cross-sector science collaboration mechanisms, and events which deepen understanding and connection between science and business leaders.

**Investment:** \$1.25 million over the forward estimates to maintain the Decision Makers Engagement Grant, and a further \$1.75 million to expand on its success.

## STEM Education Investment

### Restoring funding to the Commonwealth Support Grants and the Research Block Grant

Over the past five years, there have been regular freezes or cuts to two important mechanisms that support students at Australian universities. The Commonwealth Support Grants provide funding for undergraduate students, and the Research Support Program provides funding for both research and the training of research students. Cuts to these areas have flow on effects for the Australian economy more generally - it is estimated that freezing the demand driven system will cost \$6.9 billion to Australia's GDP<sup>26</sup>; and cuts to the Research Support Program are limiting universities' ability to train and prepare research students to be global researchers and STEM-qualified workforce leaders of tomorrow.

In spite of these cuts, the higher education sector remains the third largest sector in Australia, a major export industry and the single largest services sector. Based on the most recent analysis of Australia's Group of Eight universities, the economy gains \$66.4 billion each year from their work, and an extra \$19 billion through their contributions as major employers nation-wide<sup>27</sup>. This is not to mention the social and cultural benefits that come from the education and research provided by higher education institutions. If Australia is to maintain these economic, social and research-born benefits, the university sector needs long-term and stable investment.

The higher education sector plays a critical part in preparing the science and technology-qualified workforce of the future. It is estimated that Australia is creating STEM jobs at 1.5 times the rate of non-STEM jobs, while the growth of

---

<sup>26</sup> ["Graduate Contributions and the impacts of the funding freeze"](#) Cadence Economics, 2018

<sup>27</sup> ["The economic impact of Group of Eight universities"](#) London Economics, 2018

STEM qualified workers is only increasing by 15%/year (the number of non-STEM qualified workers are growing at 26%/year)<sup>28</sup>. If this remains unchanged, universities will be unable to fuel the jobs of the future, and as the demand driven system is frozen, universities are likely to focus on enrolling students in “cheaper” courses outside the STEM disciplines to make savings<sup>29</sup>.

Australia is at risk of not meeting the growing demand for STEM qualified workers, and this could have serious ramifications on the nation’s prosperity into the future.

**STA Recommends:** That the cuts to the Research Block Grant be reversed.

**Investment (Research Block Grants):** \$328.5 million over the forward estimates

**STA Recommends:** A return to the Demand Driven System for Commonwealth Support Grants

**Investment (Demand Driven System):** \$2 billion over the forward estimates

#### **Fee-offsets for STEM undergraduates to undertake teaching courses during their study**

One of the major issues facing STEM education in Australia is the level of out-of-field-teaching that occurs in the areas of maths and science. According to the Australian Mathematical Sciences Institute, there is a 76% chance that a student in years 7-10 will be taught by an out-of-field teacher<sup>30</sup>. This has direct impacts on student outcomes, as teachers who are out-of-field tend to be anxious and have negative effects students’ willingness to participate in such subjects<sup>31</sup>.

A number of solutions to the issue of out-of-field teaching have been examined internationally. One of the most successful approaches is to encourage STEM enrolled students at university level to consider taking up education courses during their study. While there are already incentives available to graduates with STEM degrees to undertake education courses these are being shown to be insufficient to encourage graduates that have already graduated and are looking to a STEM career. What is needed is to encourage STEM undergraduates to view education as a viable and enjoyable career option, to achieve this an opportunity to study education before graduating should be encouraged through fee reductions or waivers for those who take up education electives as part of their STEM degree<sup>32</sup>.

---

<sup>28</sup> [“Perspectives on Education and Training: Australians with qualification in science, technology, engineering and Maths”](#) Bureau of Statistics, 2015

<sup>29</sup> [“Budget update: universities fear Morrison’s freeze will cut student numbers”](#) The Australian, 2017

<sup>30</sup> [“Crunching the numbers on out-of-field teaching in maths”](#) Australian Mathematical Sciences Institute, 2018

<sup>31</sup> [“Maths Anxiety: Students, Pre- and In-services teachers, No. 4 – 2018”](#) Australian Mathematical Sciences Institute, 2018

<sup>32</sup> [“Status of the Teaching Profession”](#) Science & Technology Australia, 2018

If we are to encourage STEM graduates to then pursue a Diploma of Education to further expand their skills and move into a career as a science or maths teacher, further fee waivers and incentives must be explored.

Without investments and significant improvements to teacher education, it will take upwards of 10 years to train enough maths and science teachers to end out-of-field teaching. This shows Australia is facing a teaching crisis in maths and science.

**STA Recommends:** Fee waivers for undergraduate STEM students who enrol in education courses

#### **A commitment to better resourcing schools to teach maths and science with a particular focus on regional education**

Resourcing of Australia's schools continues to be a problem, particularly for regional Australia. While some inner city and private schools have access to science laboratories and top of the range digital resources, this is not the case for all schools. To equip our future workforce, it is essential that students are provided with the resources needed to foster and develop an enthusiasm for science and maths and comprehensive STEM skills.

There is some progress being made in providing resources to schools in the way of science laboratories and equipment. In Western Australia for example, 200 schools will be provided with science laboratories, resources and equipment by 2021 in a bid to improve science education in WA<sup>33</sup>. This is an initiative that STA believes should be embraced and encouraged at a national level, to ensure that no matter what school you attend, a sound foundation in science and maths is a priority.

Even more challenging is ensuring that students in regional and remote Australia are provided with a sound STEM education. The Federal government has put some effort into encouraging rural students to pursue higher education through regional study hubs and regional scholarships<sup>34</sup>, but this does not address the issues informing these students' choices of what to study. If regional and rural students are engaged in effective STEM education, we may see higher rates of STEM enrolments among this demographic.

To provide all students with the same opportunities, it will be important to also guarantee an adequate maths and science education for regional students.

**STA Recommends:** A funding commitment to ensure every school has a science lab and the resources needed to provide a science education to all students.

**Investment:** \$365 million over a 4-year infrastructure plan

---

<sup>33</sup> ["More primary schools to receive dedicated science labs"](#) Government of Western Australia, Department of Jobs, Tourism, Science and Innovation, 2018

<sup>34</sup> ["Access and Participation"](#) Department of Education and Training, Accessed January 2019

## Diversity and Inclusions in STEM

### Ongoing Funding for the Science in Australia Gender Equity Program (SAGE)

The Science in Australia Gender Equity Program has been a corner stone for improving gender equity within science, technology, engineering and mathematics. It is Australia's key gender equity program for institutions, working to support universities and research institutes to achieve internationally renowned Athena SWAN accreditation, and focused on inspiring systemic change within the STEM sector and the organisations that move within it<sup>35</sup>.

While 15 institutions have already received Athena SWAN Bronze accreditation<sup>36</sup>, this is the first step and there is still much more to be done to improve gender equity. The continuation of this vital program of reform is dependent on ongoing long-term funding at a Federal level.

**STA Recommends:** Funding to continue the work of the Science in Australia Gender Equity Program

**Investment:** \$18 million over 10-years to continue the national roll-out

### Funding the Women in Science Decadal Plan

For the first time, there will be a national, long-term Women in STEM Decadal Plan to ensure gender equity within science and technology. This Plan is currently in development by the Australian Academy of Science and has received bipartisan support during its development. However, while the development of this plan has received support from the current Minister for Industry, Science and Technology<sup>37</sup>, there has yet to be any commitment to acting on the recommendations that will arise.

**STA Recommends:** Funding and policy support be allocated to applying the recommendations of the Women in STEM Decadal plan in preparation for its release

### Increasing women scientist presence in the media

The perceptions of a 'typical' scientist is developed at a young age and continues to be reinforced throughout a person's life. This perception is shaped by education, media, personal interactions and experiences, and the common view has been shown to be overwhelmingly that scientists are men<sup>38</sup>. Different strategies may be implemented to improve female participation in STEM, however the overall perception of scientists must change in the broader community to make the biggest impact.

---

<sup>35</sup> "[What Sage Does](#)" Science in Australia Gender Equity, Accessed January 2019

<sup>36</sup> "[Fifteen Australian Institutions have been recognised for efforts to improve gender equity and diversity, receiving the inaugural Athena SWAN Bronze Awards](#)" Science in Australia Gender Equity, 2018

<sup>37</sup> "A 10-year plan for women in STEM" Minister for Industry, Science and Technology, 2018

<sup>38</sup> "[Children drawing more women in science](#)" Mary Halton, BBC News, 2018

Many programs already exist to achieve better representation of women in STEM in the media, such as the Superstars of STEM program. However there remains a chronic under-representation in popular culture. Australian television programming has been shown to be extremely influential in altering the views of the broader public<sup>39</sup> and can be used to address these stereotypes.

STA, therefore, considers it important to include women scientists not just in news broadcasting, but through the portrayal of characters on television and in film. Through the provision of grants that specifically include women characters with STEM roles, the stereotypical view of a scientist can be altered to be more inclusive and equitable.

STA proposes that these grants be awarded through Screen Australia and go towards the salary of the female actors, playing the roles of scientists in the first year. The proposed grants will be awarded at a maximum of \$80,000 per awardee with a total of 5 grants awarded per year.

**STA Recommends:** Establishing a meaningful grant to provide incentives for Australian created television and movies to include characters that are women STEM professionals

**Investment:** \$1.6 million over the forward estimates

#### Investment in Indigenous networks for the STEM community

A significant challenge for the science, research and education sectors is engagement of the Aboriginal and Torres Strait Islander peoples. While some strategies are being implemented through Universities Australia<sup>40</sup> to increase the number of Indigenous students participating in universities, there is still room for more work to be done.

A major barrier to the participation of Aboriginal and Torres Strait Islanders is the racial and cultural divide that exists in universities<sup>41</sup>. To overcome feelings of division and isolation, there needs to be investment in developing networks of Indigenous STEM professionals. Through development of professional networks Aboriginal and Torres Strait Islanders can create more appropriate mentor relationships, have a better sense of place, and receive support for the unique challenges that they face.

The development of a professional Indigenous STEM network is already being considered however given the challenges face by setting up such a national network there will need to be investment from government so that such work can be realised.

Along with the development of a unique Aboriginal and Torres Strait Islander STEM network, the ability for STEM professional societies to undertake diversity

---

<sup>39</sup> [“Measuring the cultural value of Australia’s Screen sector”](#) Screen Australia, 2016

<sup>40</sup> [“Indigenous Strategy 2017-2020”](#) Universities Australia, 2017

<sup>41</sup> [“Why many high achieving indigenous students are shunning university”](#) Professor Jenny Gore, The Conversation, 2017

and inclusion projects should also be explored. These professional societies are central to the STEM sector and assist in developing policy, professional guidelines and help shape the careers of STEM professionals. As readily established, grass-roots organisations, driving change through them would provide a significant opportunity to improve diversity and inclusion within the STEM sector. In order for these societies to do so however, there needs to be support and incentives provided at a Federal level.

**STA Recommends:** Investment in an Australian Indigenous Science Network

**Investment:** \$4 million over the forward estimates

**STA Recommends:** Support to be provided to STEM professional societies that are undertaking diversity and inclusion projects within their field

**Investment:** \$260, 000 per year over the forward estimates