



Cooperative  
Research  
Australia

**CRA's submission to Diversity in  
STEM draft recommendations  
(September 2023)**

*Cooperative Research Australia acknowledges the traditional custodians of the land on which we operate, the Ngunnawal people. We also acknowledge the traditional custodians of the various lands across Australia upon which our members operate.*

*We pay our respects to Elders past, present and emerging and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to our lands and waters.*

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## Executive summary

Cooperative Research Australia (CRA) welcomes the opportunity to provide a response to the Department of Industry, Science and Resources consultation on its draft recommendations for a Pathway to Diversity in STEM.

CRA is the voice of industry-research collaboration and advocates for the translation of research into commercial, economic, social, and environmental outcomes that benefit all Australians. Our members are the lynchpin in the Australian innovation system and are focused on creating new products, services, industries, and value in our economy. CRA represents Cooperative Research Centres (CRCs) and their spinoff/successor entities, CRC – Projects grant participants, 30 universities and research institutions, as well as other industry-research collaboration entities, associated businesses, alumni and professionals.

Our contribution focuses on the significance of collaboration, and sustained efforts to achieve diversity and inclusion in STEM, advocating for comprehensive approaches that address the root causes of barriers faced by underrepresented groups in the STEM fields.

The highlights of CRA recommendations are:

- Inclusion of a collaborative and holistic approach, involving multiple stakeholders at all levels of the STEM system, to address biases, challenge stereotypes, and promote diversity effectively.
- An ecosystem approach that connects the different players of the innovation ecosystem to build a sustainable and rewarding STEM workforce.
- Demonstrating the value of diversity at various organizational levels and targeting awareness and education to address subtle forms of bullying and harassment.
- Recognizing industry's pivotal role in advancing STEM and fostering diversity, emphasizing the need for a stronger focus on promoting diverse backgrounds in top positions across various sectors.
- Investing in developing a diverse workforce by addressing financial barriers, including a review of PhD stipends, education loan programs and attractive/remunerative long-term career opportunities.
- Official guidelines and clear metrics along with an iterative and pilot-driven approach with a comprehensive evaluation program to effectively address barriers for diverse cohorts.

Cooperative Research Australia is committed to working collaboratively with the Australian Government to enable more opportunities in STEM and include all people from historically underrepresented backgrounds. We are committed to an inclusive and innovative future for all Australians, and -as such- we are open to facilitating a platform for further consultation and/or clarification on any of the recommendations.

## CRA welcomes the Panel's recommendations to build a pathway to Diversity in STEM

Cooperative Research Australia (CRA) welcomes the panel's recommendations as an important step toward fostering diversity and inclusivity in STEM fields.

There are two distinct yet interconnected challenges:

1. Attracting more individuals to STEM careers in the first place, and
2. Making these careers appealing and accessible to people from all backgrounds, with a focus on underrepresented groups.

To address these challenges, collaboration is essential, while simultaneously expanding and enriching the STEM learnings with diverse knowledge and perspectives.

## Leadership and Governance

Objective	Recommendation	Are the draft recommendations the right way to achieve the objectives?	How can the draft recommendations be improved to drive systemic change?
Improve the coordination, oversight and evidence base for diversity in STEM initiatives through governance and leadership	The Australian Government should set up an ongoing central office and independent council to maintain accountability, oversight and momentum of diversity in STEM initiatives.	CRA welcomes this recommendation. We agree that to effectively address diversity in STEM, a coordinating body should be independent and lead a holistic, system-wide approach that collaboratively tackles cultural and systemic obstacles. This approach should identify and target the specific barriers faced by various diverse groups.	
Embed long-term action on diversity across STEM sectors	Building on recommendations of this review, the Australian Government should create a national strategic approach to diversity in STEM initiatives.	CRA welcomes this recommendation. A strong coordination and a strategy are needed to bring together various existing initiatives aimed at enhancing diversity in STEM.	
	Government funding bodies and STEM-employing organisations should commit to the long-term success of diversity in STEM programs and initiatives.	CRA welcomes this recommendation. We encourage government funding bodies and STEM-employing organizations to commit to long-term support for diversity programs and initiatives within the STEM fields. Long-term change will come from sustained investment through grants, internal organizational initiatives, and sponsorship of external programs, coupled with the implementation of consistent evaluation frameworks.	The commitment to long-term support for diversity in STEM should extend beyond government bodies and STEM-employing organizations.
Government to incentivise better diversity and inclusion practices in STEM organisations	Government grant funding, investment and procurement for STEM-related programs should align with best practice	CRA welcomes this recommendation. We view this alignment as a critical step in promoting and sustaining diversity and inclusion efforts within the STEM sector. This would enhance the experience of diverse individuals in STEM while strengthening the	CRA recommends that transparency, accountability, and measurable outcomes should be made explicit in this process to ensure that diversity and inclusion translate into effective actions with tangible and meaningful goals. Furthermore, we stress that the private sector plays a significant role in the employment and career progression of STEM

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	guidelines for inclusion and diversity.	overall capabilities and innovative potential of STEM-related initiatives.	professionals, and by incentivizing industry to prioritize diversity and inclusion, the government can drive systemic change across the entire STEM landscape. T

### Other recommendations to consider

- The panel's recommendations for leadership and governance would be enhanced by recognizing the pivotal role of industry in elevating STEM, especially in fostering diversity and inclusion, with the private sector playing a vital role in both employing and advancing STEM professionals and benefiting from a diverse, skilled workforce that fuels global competitiveness and innovation.
- We recommend a stronger focus on encouraging and supporting organisations across various sectors to enhance their governance and leadership approaches by incorporating STEM and/or diverse backgrounds in leadership positions.

## Culture, community, attitudes and values

Objective	Recommendation	Are the draft recommendations the right way to achieve the objectives?	How can the draft recommendations be improved to drive systemic change?
<p>Drive and expand understanding of, and engagement with, the meaning and value of STEM in Australian culture and communities, including the benefits of diversity in STEM</p>	<p>The Australian Government should develop and run a formal, long term and measurable national communication and advertising campaign relating to STEM.</p>	<p>CRA supports a government-led, long-term STEM communication campaign to highlight STEM's significance, including its role in driving innovation and the benefits of diversity, with a focus on measurable impact and inclusivity.</p>	
	<p>The Australian media and entertainment industry should work with relevant academies, STEM peak bodies and not-for-profit organisations to celebrate diversity in STEM. This would involve more accurately representing the diverse people and roles in STEM.</p>	<p>CRA supports this initiative, as it aligns with our consultations with Science and Technology Australia on STEM Career Pathways, where we underscored the profound impact of media on shaping personal career aspirations, especially for young people. There is a vital role of collaboration between the Australian media and entertainment industry, relevant academic institutions, STEM peak bodies, and non-profit organizations in celebrating diversity in STEM.</p>	
	<p>All STEM-related sectors should actively include diverse knowledges and representations of diversity in research, publications, education materials and scientific approaches.</p>	<p>CRA welcomes this recommendation. This inclusive approach not only enriches the field but also fosters a more equitable and innovative STEM community.</p>	<p>CRA has put forward the notion of communities of practice as a successful approach for a sharing and learning environment. We encourage the panel to consider this alternative as a means to foster a cohesive and inclusive approach to STEM.</p>

## Life-Long Learning

Objective	Recommendation	Are the draft recommendations the right way to achieve the objectives?	How can the draft recommendations be improved to drive systemic change?
Empower schools and educators to teach STEM thinking and skills, and support pathways to STEM careers for diverse students	Implementing the 2022 National Teacher Workforce Action Plan should incorporate a strong focus on teaching STEM thinking and skills pathways into STEM.	CRA supports empowering schools and educators to foster STEM thinking and skills.	
	Governments should partner with First Nations people and the education sector to reflect First Nations scientific knowledges in courses. This would include school curriculum support materials, teacher professional development, and vocational and higher education courses.	CRA advocates for the incorporation of First Nations scientific knowledge into educational materials, including school curricula, teacher training, and higher education courses. This collaborative effort fosters a more inclusive and culturally diverse learning environment while recognizing and valuing the contributions of First Nations to science and knowledge.	
Strengthen perceptions of vocational education and training STEM courses and careers	Vocational education and training (VET) providers, industry and other education providers (like schools and universities) should increase collaboration to promote VET-based STEM offerings. This includes promoting streamlined pathways to STEM careers or university STEM qualifications. These communications should reach parents to address parental perceptions of STEM VET education.	CRA welcomes this recommendation. In our submissions to the Australian Universities Accord, we have advocated for increasing outreach, more targeted financial support and scholarships, and more flexible and accessible pathways to higher education through vocational education and training (VET) and other alternative pathways.	



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Build STEM workforce capability through industry training and diverse engagement	Industry and government should increase horizon-scanning exercises to inform STEM workforce development.	CRA strongly endorses initiatives that aim at building a STEM workforce. Working together with other programs such as the Jobs and Skills Council is crucial.	We believe a holistic approach would enrich this recommendation. There are a number of initiatives that enhance a collaborative effort to target this objective. The Jobs and Skills Council is one, but the considerations in the Universities Accord, the National Reconstruction Fund, as well as existing programs aimed at this objective could leverage improved results. An ecosystem approach that connects the different players of the innovation ecosystem has the potential to drive systemic change to building a sustainable and rewarding STEM workforce. Stakeholders to consider in this collaborative effort include the Australian Research Council and NHMRC programs, the National Collaborative Research Infrastructure Strategy, Growth Centres, Cooperative Research Centres, University Research Commercialisation, CSIRO Missions, incubator hubs, entrepreneurs' programs, different levels of Government, industry partners, start-ups, etc. In addition, to drive meaningful change, we need to address this issue at its core. This entails increasing stipends and revising the education loan program guided by the principles of accessibility, affordability, and equity, to incentivise more students joining the STEM workforce, especially amid the current Cost-of-Living crisis.
Support pathways for diverse cohorts into university STEM education	Governments and Australian universities should work together towards equity in access, participation and attainment of STEM higher education.	CRA endorses this recommendation. This is consistent with our response to the Universities Accord Interim Report. We believe access should be underpinned by the principles of accessibility, affordability, and equity.	

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	Each Australian university should address the barriers to access for diverse cohorts for its STEM courses.	CRA welcomes this recommendation and suggest it is strengthened by ensuring that universities have the right support to achieve this, mainly by cohesive and official guidelines and clear metrics of success resulting from this report.	
	The Australian Government should consider opportunities to broaden existing successful initiatives that support gender diversity in university STEM education to other underrepresented cohorts.	CRA supports this recommendation. We echo the importance of building upon existing successes to create a more inclusive and equitable STEM educational landscape, ultimately contributing to a stronger and more diverse STEM workforce.	Expansion of successful initiatives to support diversity in STEM education would benefit from an iterative and pilot-driven approach. Furthermore, we recommend establishing a comprehensive evaluation program from the outset.

### Other recommendations to consider

- An ecosystem approach that connects the different players of the innovation ecosystem has the potential to drive systemic change to building a sustainable and rewarding STEM workforce.
- Addressing financial barriers to developing a STEM and diverse workforce is critical, including a review of PhD stipends, education loan programs and attractive/remunerative long-term career opportunities.
- The benefits of life-long STEM learning need to be better understood, so that they are communicated effectively. This is why, we believe that success is achievable through an iterative and pilot-driven approach with a comprehensive evaluation program from the outset.
- As per our submission to the Universities Accord, we believe that an important aspect of life-long training is its ability to offer upskilling and training in emerging domains, in addition to flexible learning models and funding support.

## Workplace

Objective	Recommendation	Are the draft recommendations the right way to achieve the objectives?	How can the draft recommendations be improved to drive systemic change?
Implement incentives and accountability mechanisms in STEM-employing organisations to increase diversity and inclusion	STEM-employing organisations and governments should apply policies like anti bullying and harassment, flexible work and pay transparency to create safe and inclusive environments. They should invest in programs to accelerate progress for underrepresented groups, like career development, fellowships, job customisation or mentoring.	CRA welcomes this recommendation and encourages its implementation beyond STEM-employing organisations.	Innovation and inclusivity should also be fostered by demonstrating the value of diversity at various organizational levels where individuals from underrepresented backgrounds are encouraged to showcase their unique approaches and perspectives, shifting from a "learn to do it our way" mindset to "show us how you would do it." It is also essential to address subtle forms of bullying and harassment and we recommend that organisations (beyond STEM-employing organisations) prioritise awareness and education to help individuals recognise and address these issues.
	STEM-employing organisations and governments should adopt or strengthen accountability mechanisms for middle and senior leaders to effectively implement policies and programs that accelerate change and inclusion.	CRA supports this initiative, with a comprehensive strategy that combines education with accountability measures. We encourage a multi-phase and flexible approach for its implementation.	
Support career pathways for diverse cohorts and recognise efforts to advance inclusion and diversity	All STEM-employing organisations should develop a recruitment and promotion system for STEM positions that attracts, retains and promotes employees from underrepresented, including intersectional, cohorts.	We welcome this recommendation as it aligns with CRA's commitment to promoting diversity and inclusivity within STEM.	
	The Australian Government should do a detailed analysis of how overseas STEM qualifications are recognised in Australia.	CRA endorses this recommendation, emphasising the importance of a thorough examination to ensure that individuals with international qualifications have a fair and equitable pathway to contribute to the Australian STEM workforce.	Attracting diverse international talent through financial support and incentives is crucial for leveraging on the benefits of fostering innovation, knowledge exchange, and international connections for Australia.
Improve recognition systems and job security to attract and reward	Australia should follow the lead of other countries, such as the Netherlands and the UK, to	CRA welcomes this recommendation. We support the need for a research metric system that reflects current needs of diversification inside and outside the	We recommend engaging in more extensive stakeholder consultations to gain a comprehensive understanding of the non-university and university-adjacent research workforce. Examining

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diverse STEM researchers in academia	change the recognition, reward and research systems we use to assess the performance of STEM researchers.	academic environment, and incentivises innovation through an industry-led research focus.	Cooperative Research Centres (CRCs) could serve as a valuable case study for improving recommendations related to long-term contracts, promotion, remuneration, and mobility.

### Other recommendations to consider

- A strategic effort should be made to attract high-skilled talent from across the world through increased investment in international collaboration, streamlined visa processes, and financial incentives for international researchers to work in Australia. This dual approach not only ensures the fair recognition of overseas qualifications but also actively promotes the integration of diverse global talent into Australia's STEM landscape, fostering innovation, knowledge exchange, and international partnerships for the nation's benefit.
- It is essential to involve underrepresented groups in the design and implementation of initiatives. This ensures that the programs are tailored to the needs of the communities they aim to serve and can have a meaningful impact on increasing diversity in STEM.
- We endorse collaboration as an essential catalyst for achieving enduring change and gaining deeper insights into the barriers and constraints within the STEM system. Drawing from our experience, one effective avenue to realize this collaborative effort is through the establishment of Communities of Practice, where participants facilitate mutual learning.