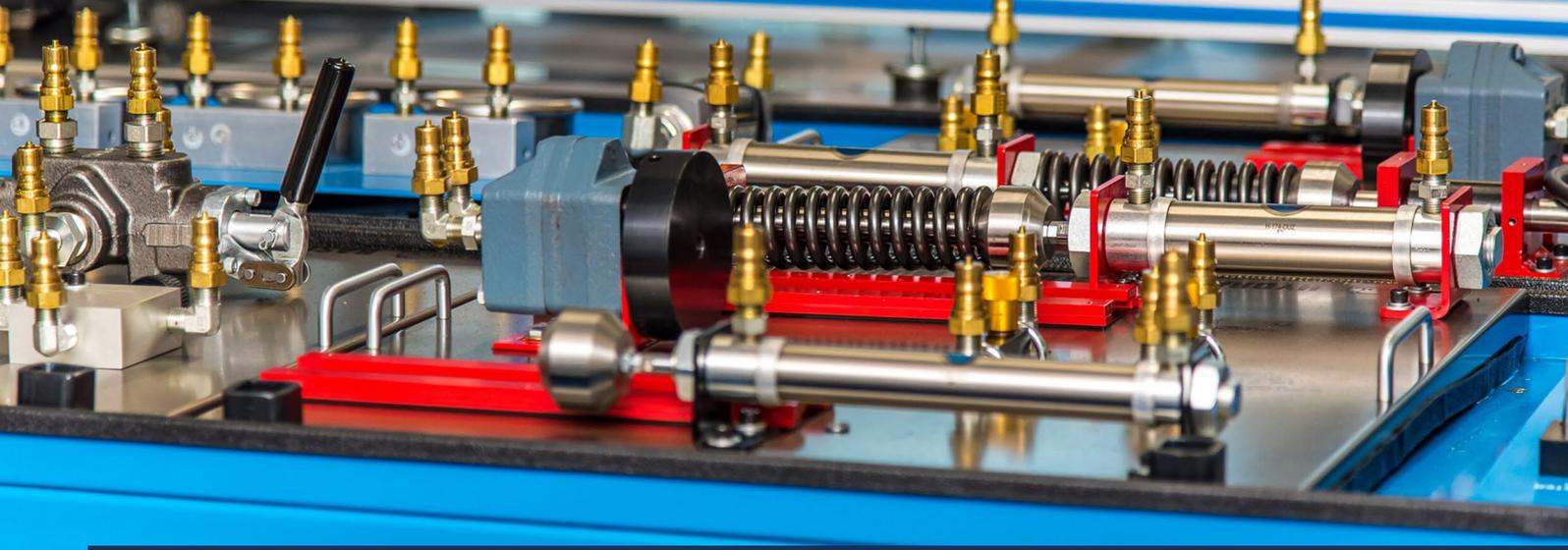




## **SUBMISSION REGARDING THE PATHWAY TO DIVERSITY IN STEM REVIEW: DRAFT RECOMMENDATIONS**

08 SEPTEMBER 2023



## ABOUT REGIONAL UNIVERSITIES NETWORK

The Regional Universities Network (RUN) welcomes the opportunity to make a submission regarding the Pathway to Diversity in STEM Review Draft Recommendations.

RUN is a national collaborative group of seven regional Australian universities: Charles Sturt University, CQUniversity Australia, Federation University Australia, Southern Cross University, University of New England, University of Southern Queensland, and University of the Sunshine Coast.

This submission reflects the positions of RUN institutions, and in doing so, also aims to represent the views of those students and communities which RUN universities serve; the one-third of Australians who live outside of metropolitan centres in Regional, Rural and Remote locations.

## OVERVIEW

RUN and our members are all committed to and strive for greater diversity in STEM. We strongly agree that improving diversity and inclusion is only possible through a coordinated effort across sectors.

Throughout this response, RUN will comment briefly on each of the objectives, considering how each recommendation can be utilised to make a difference to ensuring greater diversity. At the outset, RUN wish to acknowledge the broader question of the objectives taken as a whole. We believe that the draft recommendations are the appropriate way to achieve the objectives of the STEM Review.

RUN supports the systemic and holistic approach of the recommendations and commends the Panel for taking a comprehensive, top-level view. Diversity cannot be achieved through one part of Australia's education and industry ecosystem in isolation. To achieve sustainable change

and increased diversity, awareness of and aspirations for STEM need to occur across the entire educational life cycle, beginning at the earliest of educational engagement, all the way across the schooling, pre-tertiary, tertiary – both at an undergraduate and post-graduate level, and into industry itself. Such an approach will require focus from Government, education providers, industry, and community.

While these objectives and recommendations are positive steps in increasing diversity, the fundamental root causes that are limiting diversity in STEM will need to be addressed to ensure the objectives are achieved and Australia benefits from increased diversity in STEM.

For further information please contact RUN on 0408 482 736 or [execdir@run.edu.au](mailto:execdir@run.edu.au).

# LEADERSHIP AND GOVERNANCE

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## OBJECTIVE 1: IMPROVE THE COORDINATION, OVERSIGHT AND EVIDENCE BASE FOR DIVERSITY IN STEM INITIATIVES THROUGH GOVERNANCE AND LEADERSHIP

An ongoing central office to maintain accountability, oversight, and momentum of diversity in STEM initiatives would be a welcome step in improving diversity in STEM across Australia. RUN agrees that this office would have a vital role in:

- coordinating government policies and programs to ensure they connect and align with a more strategic and measurable approach to diversity in STEM initiatives
- building on, and extending, existing efforts and initiatives
- giving advice and guidance to support other STEM organisations to increase diversity and inclusion.

RUN believes however that there are two important considerations to ensuring the success of this objective.

First, the need to ensure that the central office is located within the appropriate Government Department. Diversity in STEM needs to be a whole of Government issue, embedded across both Commonwealth and State Governments. The issue of Government department responsibilities also needs to be considered. How will the central office work across the portfolio of Government departments who all need to address the issue of STEM diversity? The division between research and education is a prime example of the Departmental portfolio divide. Without an answer to this problem, simply establishing a central office will not improve coordination, oversight and the evidence base for diversity in STEM.

Second, the office would need to ensure that the monitoring function would not significantly add to the administrative burden faced by universities. At present, it is estimated that

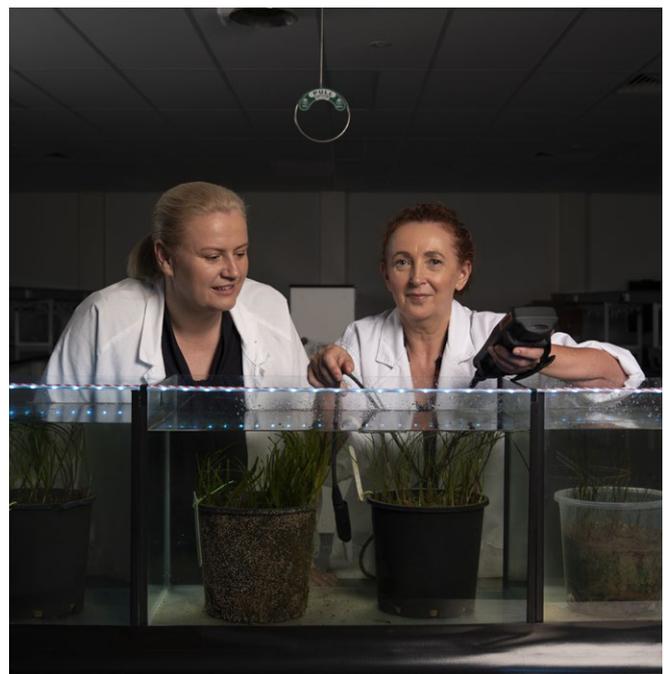
universities spend in excess of \$500 million per annum on compliance activities. If data collection and monitoring is not done in a light touch manner, minimising additional data collection, and utilising the data that is already collected, then such a central body may in fact tie up additional monies from the tertiary education sector that could have been better spent on scholarships of diversity in STEM initiatives.

### ■ RUN AGREES WITH:

*Recommendation 1a: The Australian Government should set up an ongoing central office and independent council to maintain accountability, oversight, and momentum of diversity in STEM initiatives.*

### ■ RUN RECOMMENDS:

*Ensuring the body is placed within the correct Department and through appropriate stakeholder engagement ensure that the monitoring and compliance functions are proportionate and light touch, minimising the data collection from universities and utilising existing data collections.*



# LEADERSHIP AND GOVERNANCE

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## OBJECTIVE 2: EMBED LONG-TERM ACTION ON DIVERSITY ACROSS STEM SECTORS

RUN fully supports the creation of a national strategic approach to diversity in STEM initiatives, especially where the strategic approach articulates and is designed with long-term policy objectives in mind. The setting of national priorities in a consolidated, long-term manner will be essential to the setting of meaningful and impactful goals, and the identification of where programs and existing initiatives are needed, and also where those currently in existence may not be aligned. A fundamental principle of this strategic approach will be the need to ensure the initiatives supporting the strategic approach have funding certainty. By ensuring consistent and reliable funding, these initiatives can be regularly reviewed and assessed to ensure they are achieving the outcomes they are designed for.

### ■ RUN AGREES WITH:

*Recommendation 2a: Building on recommendations of this review, the Australian Government should create a national strategic approach to diversity in STEM initiatives*

### ■ RUN AGREES WITH:

*Recommendation 2b: Government funding bodies and STEM-employing organisations should commit to the long-term success of diversity in STEM programs and initiatives.*

## OBJECTIVE 3: GOVERNMENT TO INCENTIVISE BETTER DIVERSITY AND INCLUSION PRACTICES IN STEM ORGANISATIONS

RUN absolutely agrees that Government grant funding, investment and procurement for STEM-related programs should align with best practice guidelines for inclusion and diversity. Simply put, there is no point in creating a central office to provide a focus,

and a leadership exemplar if best practice guidelines for STEM diversity are not included and followed. The leadership role that can be played by the central office in demonstrating to all stakeholders best practices will be an important in improving diversity in STEM.

RUN agrees with all the minimum guidelines as outlined below:

- data collection and demographics to better understand diversity of participation and long-term outcomes in programs
- long-term monitoring and evaluation built in from the start to inform continuous improvement and impact assessment
- grant recipients ensuring fair working conditions that do not perpetuate job insecurity
- tailored programs that address the nuanced barriers of different and intersectional cohorts in accessing support
- grant opportunities actively encouraging and valuing the breadth of skills and perspectives of diverse applicants
- transparency around organisations chosen for additional auditing requirements
- meeting commitments of all governments under the Priority Reforms of the National Agreement on Closing the Gap. This includes implementing policies that preference funding for Aboriginal and Torres Strait Islander owned and run organisations to deliver initiatives that support First Nations people and grow First Nations businesses
- funding and delivery support for other diverse cohorts, recognising and considering intersectionality.

### ■ RUN RECOMMENDS:

*Government grant funding, investment and procurement for STEM-related programs should align with best practice guidelines for inclusion and diversity*

# CULTURE, COMMUNITY ATTITUDES AND VALUE

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## OBJECTIVE 4: 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

RUN agrees that the attitudes to including more diverse communities in STEM education, workforce, and leadership start with biases that exist in Australian society and that broadening understanding of STEM and challenging stereotypes about who can, or should be, a STEM professional is central to addressing inequities in STEM education and careers. While we agree that Government has a role to play in amplifying this, to overcome the biases that exist require more than just Government amplification. This will require industry, schools, universities, Governments (at all levels) and communities.

While we support the recommendation, RUN reserves concern that a campaign in isolation will not address the fundamental issues resulting in a less diverse STEM ecosystem. It would be vital that this campaign be monitored and evaluated to determine success at frequent intervals.

### ■ RUN AGREES WITH:

*Recommendation 4a: The Australian Government should develop and run a formal, long-term and measurable national communication and advertising campaign relating to STEM.*

### ■ RUN RECOMMENDS:

*The campaign is monitored at frequent intervals to ensure it is achieving its aims.*

While RUN believes there is merit in the Australian media and entertainment industry working with academies, STEM peak bodies and not-for-profit organisations to celebrate

diversity in STEM, RUN are unclear on the mechanisms which are being proposed and how this activity would be monitored, tracked, and reported on. RUN is equally unclear on the mechanism to entice the Australian media and entertainment industry to conduct this work.

RUN also cautions that the celebration of diversity in STEM does not detract from either the work being conducted in STEM, nor the focus on increasing diversity.

### ■ RUN AGREES WITH:

*Recommendation 4b: 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.*

### ■ RUN RECOMMENDS:

*Recommendation 4b be further developed.*

RUN agrees that all STEM-related sectors should actively include diverse knowledges and representations of diversity in research, publications, education materials and scientific approaches. This is an admirable goal, however it is unclear to RUN the mechanism through which this would be achieved.

### ■ RUN AGREES WITH:

*Recommendation 4c: All STEM-related sectors should actively include diverse knowledges and representations of diversity in research, publications, education materials and scientific approaches.*

### ■ RUN RECOMMENDS:

*Recommendation 4c be further developed especially around research and publications as it is not immediately clear how this would be achieved.*

# LIFE-LONG LEARNING

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## OBJECTIVE 5: EMPOWER SCHOOLS AND EDUCATORS TO TEACH STEM THINKING AND SKILLS, AND SUPPORT PATHWAYS TO STEM CAREERS FOR DIVERSE STUDENTS

RUN endorse the emphasis on life-long learning and embedding STEM education at all levels of learning. As acknowledged within the Draft Recommendations, early anxieties around math and technology can become a barrier for learners throughout their lifetime. If pre-tertiary education does not enthuse students about STEM they are less likely to choose a STEM pathway post-school. There is a need to ensure that a student's introduction is positive and encourages learning and curiosity, as well as ensuring that people at all levels have an accessible path to re-engage with STEM education.

RUN is broadly supportive of the actions highlighted in the Plan, including those around attracting and keeping teachers – particularly First Nations teachers – and new approaches to reduce teacher workloads. RUN support the approach of more purposefully integrating STEM into teacher training and education, to ensure that it is not seen as an 'add-on' and that digital literacy is embedded across learning. RUN is also supportive of better incorporating First Nations people and scientific knowledge in STEM as well as across curriculum, research and training and recognise there is a need to complement and build on existing efforts.

One of the major barriers to STEM integration is resourcing. Technology such as 3D printers, drones, virtual reality, and robotics kits are expensive to purchase and maintain. RUN recommends exploring funding options to incentivise collaboration and resource sharing through shared innovation and STEM hubs or initiatives such as 'tech libraries'. A collaborative approach between schools and universities would ensure that expensive resources are more consistently available and are better utilised. The collaborative approach

could also see increased collaborative professional training and ignite innovation. Collaborative hubs may also better enable access to STEM learning for distance education students who cannot otherwise access resources locally.

### ■ RUN AGREES WITH:

*Recommendation 5a: Implementing the 2022 National Teacher Workforce Action Plan should incorporate a strong focus on teaching STEM thinking and skills pathways into STEM.*

### ■ RUN AGREES WITH:

*Recommendation 5b: 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.*

### ■ RUN RECOMMENDS:

*Incentivising school and university partnerships through shared innovation and STEM hubs.*



# LIFE-LONG LEARNING

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## OBJECTIVE 6: STRENGTHEN PERCEPTIONS OF VOCATIONAL EDUCATION AND TRAINING STEM COURSES AND CAREERS

RUN firmly believes that all tertiary education and all Australians will benefit from increased pathways between higher education provider types. Likewise, strengthening perceptions of the Vocational Education and Training sector although with the perceptions pertaining to all universities will increase the attractiveness of study and theoretically increase the chances for improving diversity in STEM.

### ■ RUN AGREES WITH:

*Recommendation 6a: 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.*

## OBJECTIVE 7: BUILD STEM WORKFORCE CAPABILITY THROUGH INDUSTRY TRAINING AND DIVERSE ENGAGEMENT

The role of industry in ensuring diversity in STEM cannot be underestimated. A country can have all the high-quality training in the world, but without a vibrant, diverse, and sustainable STEM industry, that country will never achieve true diversity. While RUN agrees that horizon-scanning is vital in understanding the future skills needs, we do caution that 'picking winners' has largely been an ineffective exercise. Thematically horizon-scanning may be productive however narrowly trying to inform future directions of STEM could be a risky endeavour that misses the broader opportunities to increase diversity in STEM.

<sup>1</sup> Department of Education, Australian Universities Accord Panel Interim Report accessed at <https://www.education.gov.au/australian-universities-accord/resources/accord-interim-report> on 16 August 2023, p.60, Table 2.3-1.

<sup>2</sup> Department of Education, Higher Education Statistics, Section 11 – Equity Groups, accessed at <https://www.education.gov.au/higher-education-statistics/student-data/selected-higher-education-statistics-2021-student-data> on 21 March 2023

<sup>3</sup> Ibid.

### ■ RUN AGREES WITH:

*Recommendation 7a: Industry and government should increase horizon-scanning exercises to inform STEM workforce development.*

## OBJECTIVE 8: SUPPORT PATHWAYS FOR DIVERSE COHORTS INTO UNIVERSITY STEM EDUCATION

RUN members fully understand the challenges of increasing education diversity. The universities of RUN enrol the highest numbers of Indigenous Australians, of students from low socio-economic backgrounds, and students from regional, remote, and rural Australia. As a proportion of enrolments, the regional universities network is the only grouping of universities to exceed population parity of indigenous enrolments at 4 per cent of our enrolments being Indigenous students.<sup>1,2</sup>

To put it in to context:

- One in every four Indigenous undergraduate students in Australia is studying at a RUN university.
- RUN universities enrol over five and a half thousand indigenous students, more than double from a decade ago.
- One in every five students from a low socio-economic status background in Australia studies at a RUN university.
- And three in every 10 students from regional and remote Australia study at regional universities.<sup>3</sup>

One cannot be what one cannot see, and regional universities continue to work with their communities to increase educational attainment rates that are currently trailing the national and metropolitan attainment rates, to ensure that all potential students see themselves reflected in their student cohorts.

# LIFE-LONG LEARNING

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If regional Australia was its own country, we would rank 35 of 38 OECD countries for bachelor's level attainment amongst 25 to 34 year-olds, compared to metropolitan Australia who would occupy eight. Regional Australia would need to almost double its attainment rates just to meet the OECD average.<sup>4,5</sup> These statistics, while at a sectoral level, only highlight the diversity challenges that are also observed in STEM enrolments. It is for this reason that RUN is a strong proponent for the increased focus on growth through equity in the Interim Report of the Australian Universities Accord. The focus alone will not be enough however, ensuring institutions receive adequate funding to conduct vital outreach and aspiration raising activities, as well as supporting universities to provide additional student support will be essential in increasing student participation and success and thus increasing STEM diversity.

Currently, student support funding is distributed based on Equivalent Full-time Study Load (EFTSL) rather than on an individual head count. This approach works against the cohorts identified as having the most significant challenges to retention and completion, and who have likely been previously underserved in educational settings.

## **I RUN AGREES WITH:**

*Recommendation 8a: Governments and Australian universities should work together towards equity in access, participation, and attainment of STEM higher education.*

## **I RUN RECOMMENDS:**

*Universities be funded appropriately to provide the requisite support to students from traditionally underrepresented cohorts.*

While there is always more to do, RUN believes that universities in Australia are currently

operating a variety of schemes to increase diversity in their student cohorts. The matter of diversity in STEM is an issue prevalent in the school system and for many university graduates – especially those who are school leavers – the choices about field of study are already long decided. Universities in Australia have extensive pathway programs into all courses, and RUN remain cautious about admission standards being dictated to universities. Equity is not achieved through lowering academic standards, rather it is achieved through properly resourced, transparent, and accessible pathway programs.

## **I RUN AGREES WITH:**

*Recommendation 8b: Each Australian university should address the barriers to access for diverse cohorts for its STEM courses.*

RUN agrees that there is an important role for Government to play in broadening existing successful initiatives, especially those that support diversity in STEM and programs that are focussed on underrepresented cohorts. To achieve maximum impact in this, it must include initiatives funded outside the Industry, Science and Resources portfolio.

RUN is a proud supporter of Elevate and we firmly believe that the Australian Government should monitor outcomes of Elevate and if it continues to achieve positive outcomes, opportunities to expand the program through various funding models, including industry partnership should be explored.

## **I RUN AGREES WITH:**

*Recommendation 8c: The Australian Government should consider opportunities to broaden existing successful initiatives that support gender diversity in university STEM education to other underrepresented cohorts.*

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<sup>4</sup> OECD.Stat, Educational Attainment and Labour-Force Status [Data Set], accessed at <https://stats.oecd.org/> on 11 March 2023

<sup>5</sup> Australian Bureau of Statistics, Education and Work, Table 34 Australia, May 2022, accessed at <https://www.abs.gov.au/statistics/people/education/education-and-work-australia/latest-release#data-downloads> on 09 March 2023

# WORKPLACE

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## OBJECTIVE 9: IMPLEMENT INCENTIVES AND ACCOUNTABILITY MECHANISMS IN STEM-EMPLOYING ORGANISATIONS TO INCREASE DIVERSITY AND INCLUSION

RUN is in full support that all organisations should have and apply policies like anti-bullying and harassment, flexible work and pay transparency to create safe and inclusive environments. RUN members all have policies to make their places of employment and study inclusive and safe environments.

### ■ RUN AGREES WITH:

*Recommendation 9a: 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.*

### ■ RUN AGREES WITH:

*Recommendation 9b: 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.*

## OBJECTIVE 10: SUPPORT CAREER PATHWAYS FOR DIVERSE COHORTS AND RECOGNISE EFFORTS TO ADVANCE INCLUSION AND DIVERSITY

RUN agrees that barriers to recruitment and engagement in industry are real barriers to improving diversity in STEM. Therefore, any barriers that are restricting diversity – be that process, policy, or lack of awareness – should be overcome. This should include ensuring that overseas qualifications are recognised to enable the best and brightest from around the globe are able to work in Australia's STEM industries.

### ■ RUN AGREES WITH:

*Recommendation 10a: 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.*

### ■ RUN AGREES WITH:

*Recommendation 10b: The Australian Government should do a detailed analysis of how overseas STEM qualifications are recognised in Australia.*

## OBJECTIVE 11: IMPROVE RECOGNITION SYSTEMS AND JOB SECURITY TO ATTRACT AND REWARD DIVERSE STEM RESEARCHERS IN ACADEMIA

There is no doubt that job insecurity is a significant contributing factor in the current state of diversity in STEM. All steps to address issues impacting industry will have a flow on effect to aspirations for STEM careers. Students choose their subjects to study for a variety of reasons, and the influence on their career aspirations are many and varied, but most include the perception, real or otherwise, of what working in that career will be like. A career pathway with poor recognition systems, poor job security, and low diversity will be significant disincentive for those aspiring to careers in STEM.

### ■ RUN AGREES WITH:

*Recommendation 11a: Australia should follow the lead of other countries, such as the Netherlands and the UK, to change the recognition, reward and research systems we use to assess the performance of STEM researchers.*