



# Engineering and the inclusion and diversity imperative

A call for urgent action to improve  
Australia's engineering workforce



# Foreword

There is no longer a dispute of the value an inclusive and diverse team provides. The Diversity Council of Australia's *2021–22 Inclusion@Work Index*<sup>1</sup> found that workers in inclusive teams are 10 times more likely to be innovative and 11 times more likely to be more effective.

But diversity remains a challenge for engineering in Australia. Overseas-born engineers experience higher unemployment rates than Australian-born engineers do<sup>2</sup> and whilst women make up 48% of the workforce, only 13% of our working engineers are women and 16% of engineering graduates are women.<sup>3</sup> This is occurring against a backdrop of high demand for engineering resources with a *2021 Infrastructure Australia report*<sup>4</sup> predicting that major public infrastructure activity would double over three years creating a significant deficit in the labour required and calling out the need for improved front-end engineering and design to improve investment decision making and manage risk.

In a survey<sup>5</sup> conducted of attendees of the 2022 Engineers Australia and KPMG event series "The Future of Engineering: Why inclusion and diversity matter", 84% of respondents identified that their organisation considered creating an inclusive and diverse workplace as a moderate, high or essential priority and 68% of respondents felt that their organisation had been moderately or highly effective in creating a diverse and inclusive engineering workplace.

These numbers show a contradiction where organisations feel that their workplace has the right strategy and environment, but this hasn't translated to achieving a measurable difference in the diversity of our engineering workforce. In a world where we need more engineers to solve more complex problems in more innovative ways, is it time to focus on tangible actions that will change each workplace and our industry?

1 [https://www.dca.org.au/sites/default/files/infographic\\_2021-22\\_inclusionwork\\_0.pdf](https://www.dca.org.au/sites/default/files/infographic_2021-22_inclusionwork_0.pdf)

2 [https://www.engineersaustralia.org.au/sites/default/files/Australia%E2%80%99s Engineering Capability - digital - 20190207.pdf](https://www.engineersaustralia.org.au/sites/default/files/Australia%E2%80%99s%20Engineering%20Capability%20-%20digital%20-%2020190207.pdf)

3 <https://engineersaustralia.org.au/sites/default/files/women-in-engineering-report-june-2022.pdf>

4 <https://www.infrastructureaustralia.gov.au/listing/media-release/first-infrastructure-market-capacity-report-reveals-surge-demand-skills-labour-plant-and-materials>

5 Survey of attendees of Engineers Australia and KPMG national event series, October 2022. n = 168

# Why does it matter?

Engineering plays a vital role in the prosperity of Australia, improving the quality of life of our communities, increasing social and health outcomes, improving public safety, enabling the energy transition and growing the economy.

It stands to reason that our engineering workforce should represent and be a reflection of that community, ensuring we deliver engineering solutions that advance our country.

The value of a diverse engineering workforce is highlighted by UNESCO in their publication *Engineering for Sustainable Development*.<sup>6</sup> They argue that a diverse workforce will address the UN's Sustainable Development Goals more effectively, with an interdisciplinary approach and inclusive mindset providing more creative solutions and ones that avoid bias and discrimination, while at the same time tackling social injustice.



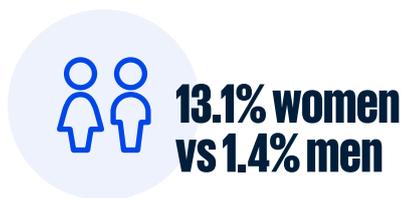
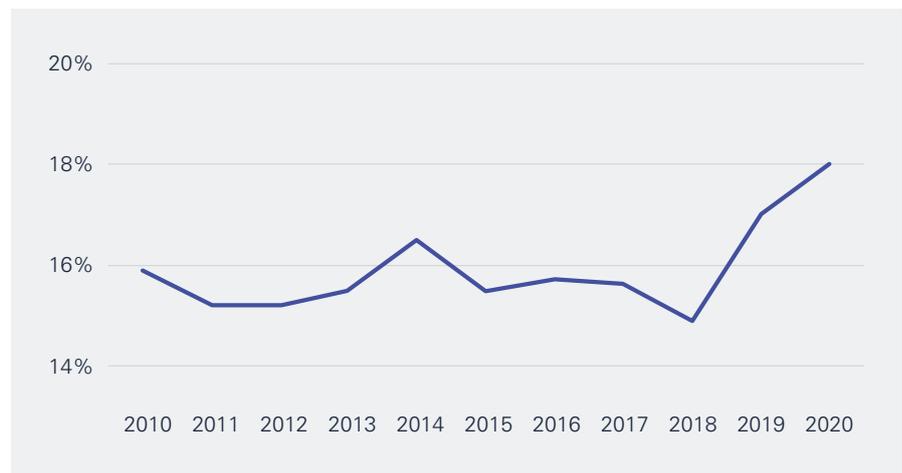
6

<https://unesdoc.unesco.org/ark:/48223/pf0000375644.locale=en>

# What are the barriers today?

## % DOMESTIC GRADUATES FEMALE

The low numbers of women choosing to study engineering in Australia has long been acknowledged as a major impediment to achieving a gender diverse engineering workforce. Statistics from the Australian Council of Engineering Deans<sup>7</sup> released in 2022 show the percentage of domestic female graduates remains stubbornly low, between 15% and 18% over the period of 2010 to 2020. These rates are significantly lower than overall STEM university course completion rates for females which have sat around 37% between 2015 and 2020.<sup>8</sup>



Female engineers aged 20–39 are overrepresented in leaving the industry

Whilst this points to a need to increase female participation in STEM at school and university levels, what is less comfortable for engineering organisations to acknowledge is the number of women leaving engineering and the number of skilled migrants experiencing longer periods of unemployment in an environment where there is a shortage of engineers.

Similar results were found in the latest *Women in Engineering Report from Engineers Australia*<sup>10</sup>, where only 55% of female engineers feel they have equal opportunities to men and nearly 1 in 5 say there is bullying or exclusion of women in their workplace.



of migrants actively seeking engineering work are unemployed

The *2017 Professional Engineers Employment and Remuneration Survey*<sup>9</sup> conducted by Professionals Australia found 13.1 percent of the female engineering workforce dropped out between the 20–29 and 30–39 age brackets, compared with a drop of only 1.4 percent for the male workforce. 47.1% of female respondents reported that they had experienced discrimination on the basis of gender.

Research<sup>11</sup> conducted by Engineers Australia in 2021 found that 47% of migrants actively seeking a job as an engineer are currently unemployed and overseas-born female engineers have almost three times the unemployment rate of Australian-born female engineers. And it's not just unemployment that is an issue, but also underemployment, with one in three migrant engineers believing that they should be in a more senior role. Of those that felt they were underemployed, 62% said their international experience isn't valued.

7 [http://www.aced.edu.au/downloads/ACED\\_Engineering\\_Statistics\\_Mar\\_2020.pdf](http://www.aced.edu.au/downloads/ACED_Engineering_Statistics_Mar_2020.pdf)

8 <https://www.industry.gov.au/publications/stem-equity-monitor/higher-education-data/university-enrolment-and-completion-stem-and-other-fields>

9 <https://www.agec.org.au/wp-content/uploads/2018/09/Women-in-Engineering-Realising-Productivity-and-Innovation-Through-Diversity-2017.pdf>

10 <https://www.engineersaustralia.org.au/sites/default/files/women-in-engineering-report-june-2022.pdf>

11 <https://www.engineersaustralia.org.au/sites/default/files/2022-06/barriers-employment-migrant-engineers.pdf>

# Calling for action

In 2022 KPMG partnered with Engineers Australia to host “The Future of Engineering: Why inclusion and diversity matter”, a series of events held over five cities and attended by over 400 people. Leading thinkers across industry, education and government explored the challenges of improving diversity within engineering organisations.

Through this conversation and data collected via attendee surveys, three focus areas emerged as needing urgent attention by engineering organisations:

#01

## Create an inclusive culture that values diversity

Panellists and attendees called for deep culture change and leadership with leaders in engineering organisations leading from the front on diversity, clearly articulating why it is an imperative for the success of the organisation and how it will drive innovation and deliver better results. This is occurring in the context of high demand for engineering in Australia – we simply cannot achieve the infrastructure needs of our country if we cannot build and retain our engineering workforce.

This means we need to acknowledge that the culture of our engineering organisations needs to change.

We need to embrace uncomfortable conversations on diversity – helping us all to understand the lived experience of minorities in our organisation; being curious about the impact of our own behaviours and creating an open environment where we don’t shy away from conversations for fear of saying the wrong thing. We need to be proud of our organisations’ efforts to value a diverse future workforce through initiatives that may be seen to benefit a few over the majority.

Leaders have the power to establish an environment that values diversity and encourages learning in a constructive and respectful way.

## BARRIERS TO ACHIEVING A MORE DIVERSE WORKFORCE:\*



Organisational Culture



Leadership Capability

**“Not only is inclusion and diversity the right thing to do, it also makes business sense.”**

**ANDREW YATES**  
CEO, KPMG Australia

\*Survey of attendees of *The Future of Engineering: Why inclusion and diversity matter*, Engineers Australia and KPMG event series October 2022.

#02

## Modernise HR practices to enable diversity

Event series participants shared deeply personal experiences – being overlooked for jobs or promotions; needing to act like ‘one of the boys’ to fit in; the challenge of re-entering the workforce after parental leave, having a lack of diverse role models in the organisation or having your qualifications questioned with assumptions that you got in simply because you are a ‘diversity hire’. But people also talked about the hopes they had for their children to be in a more equitable world when they joined the workforce.

The role of human resource practices in organisations to combat these challenges and create a more inclusive and diverse environment was explored at length, with calls from industry experts to take action on:

- + Investing in unconscious bias and inclusion and diversity training for the existing workforce to drive greater awareness of personal and systemic bias
- + Ensuring that recruitment panels are diverse to ensure new perspectives are considered in the recruitment process
- + Investing in talent management programs with a focus on inclusivity
- + Implementing flexible working practices including improved parental leave and return to work programs to stem the loss of mid-career female employees
- + Broadening the scope of ‘internships’ from focussing on students and providing access to these programs to skilled migrants as well as considering ‘returnships’ to attract people to re-enter the engineering workforce.

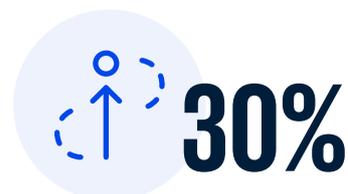
### BARRIERS TO ACHIEVING A MORE DIVERSE WORKFORCE:\*



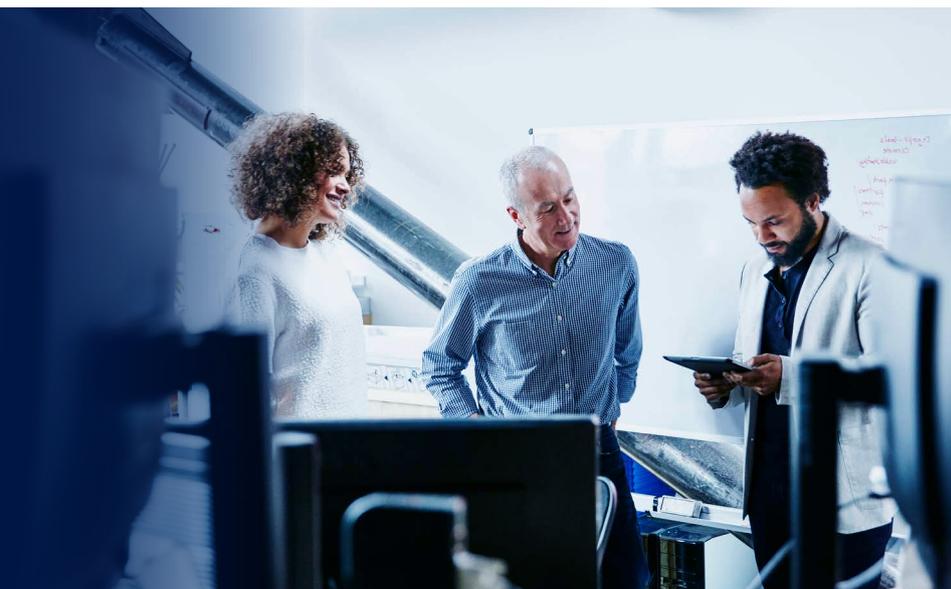
Talent management and career progression



Recruitment processes and systems



Pathways to entering or re-entering engineering



**“Change is uncomfortable with perceived winners and losers. We need greater transparency on the actions we are taking to create a diverse workplace so we can genuinely support each other through this transition.”**

**DR ANDREW O’CONNOR**  
Lead Partner, Engineering, Assets & Project Delivery, KPMG Australia

\*Survey of attendees of *The Future of Engineering: Why inclusion and diversity matter, Engineers Australia and KPMG event series October 2022.*

## #03

## Commit to action through targets and measurement

Panellists often reflected with dismay on the lack of progress that has been made to increase the gender diversity of the engineering workforce in Australia, with many sharing their feelings that not enough had changed since they graduated university themselves. Some reflected on the evolution of their own thinking towards organisational diversity targets, from not required or detrimental to essential to accelerate the speed of change.

Meeting a target may not be the ultimate objective, but without it we will continue to see diversity change at the glacial pace it has over the last 20 years. This is an important but complex debate, with panellists openly exploring the potential negative impact of targets such as being seen as tokenistic, disadvantaging recruitment of some candidates and creating negative views of the minority groups within the organisation.

**“We need targets and quotas to improve transparency and accountability in our organisations.”**

**ROMILLY MADEW AO**  
CEO, Engineers Australia

## Our commitment

As an industry, we know the value of diversity and we have made huge leaps in terms of recognising the problem and making diversity a priority. Engineering organisations are making commitments through inclusion and diversity strategies, but we are yet to see a significant change in the diversity of new entrants to the engineering workforce or a stemming of the tide of those leaving. KPMG Australia is committed to keeping the conversation going and looking at tangible actions that can accelerate change and have an impact now and for the next generation.



# Contact us

**Dr Andrew O'Connor**  
**Lead Partner, Engineering,  
Assets & Project Delivery  
KPMG Australia**  
T: +61 7 3225 6923  
E: aoconnor11@kpmg.com.au

**Wendell Fox**  
**Partner, Engineering,  
Assets & Project Delivery  
KPMG Australia**  
T: +61 2 9335 8955  
E: wfox2@kpmg.com.au

**Tammy Falconer**  
**Partner, Engineering,  
Assets & Project Delivery  
KPMG Australia**  
T: +61 2 9273 5825  
E: tfalconer@kpmg.com.au

**Dulani Van Den Broek**  
**Director, Engineering,  
Assets & Project Delivery  
KPMG Australia**  
T: +61 8 9413 7979  
E: dulani1@kpmg.com.au

**[KPMG.com.au](https://www.kpmg.com.au)**

The information contained in this document is of a general nature and is not intended to address the objectives, financial situation or needs of any particular individual or entity. It is provided for information purposes only and does not constitute, nor should it be regarded in any manner whatsoever, as advice and is not intended to influence a person in making a decision, including, if applicable, in relation to any financial product or an interest in a financial product. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

To the extent permissible by law, KPMG and its associated entities shall not be liable for any errors, omissions, defects or misrepresentations in the information or for any loss or damage suffered by persons who use or rely on such information (including for reasons of negligence, negligent misstatement or otherwise).

©2023 KPMG, an Australian partnership and a member firm of the KPMG global organisation of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organisation.

Liability limited by a scheme approved under Professional Standards Legislation.

February 2023. 1047833914IAP