

## INFRASTRUCTURE PROJECTS ARE IN DANGER OF BEING DELAYED BECAUSE OF A SHORTAGE OF ENGINEERS. ABOUT THE HOUSE LOOKS AT THE SOLUTIONS BEING DISCUSSED.

**T**hey are problem solvers. They use maths and science to design, create and invent solutions to our everyday needs. Without them we wouldn't have roads, bridges, buildings, aircraft, power lines, phones, refrigerators or computers.

But now engineers have their own problems to solve: not enough graduates; 50 per cent of people with engineering qualifications not working in the field; and an estimated 30,000 people set to retire from the profession in the next decade.

Megan Motto, chief executive for the Association of Consulting Engineers Australia, told federal parliament's Migration Committee the shortage of engineers was beginning to bite. She said many projects were in limbo and many firms were suffering.

"Some of the shortages are so critical that our members report that two-thirds of projects are being delayed either temporarily or permanently because they do not have the skilled labour to complete the projects," Ms Motto said.

"With around \$500 billion committed in government spending on infrastructure projects over the next few years, this is representing a significant barrier to our productivity in Australia."

The Migration Committee is investigating the use of temporary business visas, in particular 457 visas, which allow employers to bring in skilled workers from overseas.

Ms Motto told the committee while her association was working to alleviate the engineering shortage through awareness-raising and education

campaigns, temporary help provided by overseas workers was vital.

"The project-based nature of much of the engineering work and the very specialist skills sets required means that engineers often need to be brought onto projects in very short timeframes for short periods of time. That being the case, the 457 visa program is completely appropriate and well used in the engineering industry."

While Engineers Australia chief executive Peter Taylor agreed there is a place for the 457 visa scheme, he believes utilising migrant workers on a regular basis does not help solve the overall problem.

"Skilled migration is a good short-term measure but it can only be a short-term measure because just about everywhere I have been around

# BRIDGING

the world in the last few years there are skills shortages,” Mr Taylor said.

“Even China with five million engineers and graduating 500,000 a year has got engineering shortages. So sooner or later there is going to be so much competition between the countries that need engineers that we are not going to be able to attract them.

“I think the only reason we can attract people now is basically a lifestyle thing but how long will that last before somebody offers some other attraction? We have got to deal with the problem. We have got to look at the long term.”

Appearing before the inquiry in Canberra, Engineers Australia president Rolfe Hartley raised concerns about the lack of an assessment process for engineers under the 457 visa system.

“Engineers who enter Australia on a 457 visa—unlike many other professionals, including architects, doctors and lawyers—are not having their qualifications assessed by a registration or licensing scheme,” Mr Hartley said. “Other than in Queensland, skills assessment through registration for engineers is voluntary.

As a result many of the engineers entering the 457 visa system might not actually be competent to offer their skills to the Australian public.”

In their joint submission to the inquiry, Engineers Australia and the Association of Professional Engineers, Scientists and Managers Australia appealed for the 457 scheme to be used sparingly.

**An engineering degree is providing access to a range of different work opportunities, including in the financial services sector, project management and information technology.**

“It is vital that skilled migration is used only where skills are not presently available to the required degree. It is essential that skilled migration does not become a replacement for a reliable and valued Australian skill base. Skilled migration cannot be seen as an alternative to educating and training a highly skilled Australian workforce,” the submission stated.

Peter Taylor said one of the problems with attracting young people to engineering was that students were losing interest in maths and science at school.

“If you don’t have somebody who sparks an interest and builds an enthusiasm, and just teaches you the basics without really firing you up, then you are not developing that motivation for the kids to want to go on and study hard maths and hard science,” he said.

The mystery surrounding the engineering profession also does not help to attract students.

“The average member of the public probably does not know enough about what engineering is and so you then have the problem of teachers not knowing, career advisers not knowing, parents not knowing and so when the kids are making their choices they don’t really get a lot of information,” Mr Taylor said.

Megan Motto agreed, saying while most pupils understand what vets, doctors and lawyers do, they do not really understand what an engineer does. “They have a misperception that it is dark and

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# THE GAP

**“Two-thirds of projects are being delayed either temporarily or permanently because they do not have the skilled labour to complete the projects.”**

dirty, that it is a hard hat down a shaft,” she said.

Ms Motto indicated that an engineering degree is providing access to a range of different work opportunities, including in the financial services sector, project management and information technology. This ultimately means that the pool of engineers is being dispersed more widely.

Mr Taylor said the latest census conducted last year showed that of the 268,000 people who indicated their primary qualification as engineering, only half were actually working as engineers.

“We don’t have a real problem with it,” he said. “All it means is we have got to produce more engineers to fill the technical gaps that are left.”

More university places for domestic students would help alleviate some of the shortages. While figures show that there has been a significant increase in the number of engineering students at Australian universities over the past decade, Mr Taylor said the number of international students studying engineering had inflated this figure.

He indicated that the number of foreign students studying engineering in Australia had gone up by 320 per cent in a decade, compared with a 20 per cent increase for domestic students.

Ms Motto said engineering firms themselves were becoming more proactive in trying to encourage students to study engineering by visiting schools and running competitions such as bridge building, and in the recruitment process itself.

“Nowadays, they [engineering firms] are going straight into the universities, and not even at year four but at years two and three, to try to tap into the skills that are coming out of the universities.”

*For more information on the Migration Committee’s inquiry into temporary business visas, visit [www.](http://www.)*



# RECRUITING TOP GUN ENGINEERS

With a current workload including 215 projects worth over \$20 billion, the Defence Materiel Organisation (DMO) is a major employer of engineers in Australia. Of its 6,500 employees, 30 per cent are engineers.

"The number of people doing engineering is going down at a time when the number of people we need is going up," said Shireane McKinnie, head of the electronic and weapon systems division of DMO. "If we can't get the engineers we need, it is high risk."

DMO is responsible for the acquisition and sustainment of equipment for Australia's defence forces. It needs to employ 1,250 engineers and project managers in the next two years, with thousands more needed over the next 10 to 15 years as an estimated 80 per cent of the defence force's war-fighting assets need replacement, upgrading or improving.

As part of its efforts to recruit the engineering workforce it needs, DMO recently introduced a cadetship program targeting third and fourth year engineering students at university, as well as a traineeship program targeting school leavers and TAFE students.

"The sort of engineering we do in the DMO is really interesting and diverse. You have the opportunity to be exposed to lots of different technology, lots of different types of systems, and you can pretty much work anywhere in Australia," Ms McKinnie said.

An engineer herself, Ms McKinnie noted that employers who never used to take on university graduates are now seeking them, while employers who have already been accepting graduates are looking at cadetships and scholarships for school leavers.



"Our cadetship program targets engineering students at university in their final years of their degree and prepares them for our graduate program. We've attracted some pretty good people this way, but we need to do more, which is why we're also targeting talented school leavers," she said.

She's concerned the school system isn't producing enough people with adequate maths and science qualifications, but worries that engineering also has an image problem.

"Engineers are seen as geeks with calculators, but in reality a lot of engineering is innovative and highly creative."