



# A great time to be an engineer?

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**In the developed world, the early part of the 21st Century is fast becoming characterised by the re-emergence of the understanding that engineering is perhaps the most critical discipline to progress. Turn on the TV or open a newspaper and you are likely to be greeted by media reports on such issues as climate change, energy and water – putting engineering back in the public eye and entrenching its place on the political agenda. However, while demand for engineers is increasing, New Zealand's graduate numbers are not meeting the need – does this indicate that now is not the time to be an engineer?**

As recently as the 1960s and 1970s New Zealanders celebrated engineering success. The country made huge gains on the back of relatively high risk but exciting projects such as DC power links through Cook Strait and the building of a string of new power stations in difficult geographic locations. Yet through the 1980s and 1990s circumstances changed, and by the year 2000 a view had emerged that whilst engineers might do things technically right, their role was not so important any more.

In the last seven years those perceptions have changed. The national neglect of basic infrastructure (against the advice of the engineering profession) has resulted in headline grabbing occurrences, and consequently heightened awareness amongst the general public of the need to maintain such critical networks. With increased awareness came the realisation that the most substantive environmental challenges would not be solved by reverting to hair shirts, but instead by transformational technology change and increasing recognition that high technology exports would be needed to pay for the quality of health and social care we desire. While the roading and electricity sectors still pose real challenges – engineers are often perceived as the bad people who build more roads and worsen global warming. The engineering profession has realised that the soft skills to equip engineers to consult with affected communities to overcome such perceptions are now every bit as important as the hard technical skills. Together such changes have led to rethinking the role of engineers in our society, particularly by the thought leaders.

They are now seeing that strong engineering is a vitally important part of business, and that strong general business skills alone will never enable us to sell new things overseas. There also needs to be a technology-based competitive advantage. New Zealand also has needs specific to its bio-physical economy; with a difficult geography our infrastructure needs are complex and our farm industries rely heavily on mechanisation.

Considering such wide-ranging needs, it is alarming that amongst OECD countries New Zealand has the lowest proportion of its university graduates in engineering. Compounding the demand for engineering graduates is both the recently reviewed research and development tax incentives, which will increase the likelihood that manufacturers will want to employ many more engineering developers, and increased access to many highly paid opportunities overseas to

further their career, or at the very least pay back their student loan.

Whilst these things are very much on the minds of the thought leaders, the attitudes in the wider population have to catch up once again as many parents and caregivers are still lukewarm if their teenager comes home and announces an intention to move into engineering. Yet in spite of burgeoning demand, the growth in the proportion of New Zealanders choosing study at tertiary level in engineering has at best been modest, and we now face a significant skills shortage. This shortage puts at risk the desired growth in labour productivity (earnings per hour worked by New Zealanders), and that in turn makes it harder to bring New Zealanders the best in health and other social services.

The good news includes renewed Government support for the Futureintech project which puts working engineers and technologists alongside teachers and school students. The project aims to change attitudes in the longer term, and steer future students into a range of engineering-based industries which have far-sighted plans to build their workforce capacity and capability, particularly in the infrastructure area.

Also important has been leadership by the Institution of Professional Engineers New Zealand to maximise the potential of what are known as the International Engineering Agreements which provide for internationally-benchmarked competence registers, assisting the evaluation of the skills of engineering migrants to this country.

The other good news is that while there are problems and issues out there, these bring out the best in the engineering profession – creative problem solving and innovation. The biggest challenge is for engineering activity to step out from the backroom, and be seen in our communities so that engineering is valued and celebrated once again. Engineers also need to persuade communities that they are not only doing things right, but doing the right things for the right reasons – in service of society. The old definition of engineering “harnessing the power of nature for the benefit of humanity” needs to be true not just in a technical sense, but also from the environmental and social perspective held by non-technical people. When we celebrate our projects in that way, young people will again be inspired into careers in business, based on engineering qualifications.

So it is a time of huge challenges for the engineering profession – new skill needs, shortages of staff, negative perceptions in the wider community to overcome. However, history says that at times of adversity the greatest innovation is likely, so to the young people commencing engineering we say – it is a great time to be an engineer. ●