

Hydropower engineers: what's next?

New Zealand has an important legacy in hydropower, but with little recent large scale hydropower development, how can we ensure expertise in this sector into the future?

New Zealand has a long and proud history in hydropower, going back to the 1880s when the first schemes were built in Central Otago. Significant development throughout the South Island in the 1960s and 1970s. This major programme of consistent large-scale development resulted in a highly competent, experienced workforce across all engineering disciplines within the field of hydropower. This legacy was then exported all over the world. However, with little large-scale hydropower development here since the construction of the Clyde Dam in the 1980s, how will New Zealand make sure the next generation of Kiwi-trained hydropower engineers are given the same opportunities as previous generations?

My hydropower training in the United Kingdom (UK) coincided with the Renewable Obligation Certificates (or ROCs) and the UK Government Feed-in Tariff for renewables which stimulated the development of new projects. From no development in the 1990s, suddenly there was a burst of activity in all renewables, particularly small hydro. This gave me, as a young civil engineer, the opportunity to learn at the start of my career, taking jobs from feasibility to design and construction.

Looming skills shortage?

New Zealand has had no such stimulus, and projects have had to be funded

purely on the revenue, ie standing on their own feet. This, combined with the challenges of consenting large water infrastructure projects, has made the development of new projects almost too hard and risky. Larger schemes have

Potential industry stimulation

predominately seek overseas over the past opportunities for refurbishment. This will also be required in New Zealand's

However, it isn't just about building "mega" projects. To meet the 100 percent

renewable target, more intermittent

renewables, such as using wind, will

need to be constructed, increasing the

need for highly flexible, fast-responding

power generation sources, of which

hydropower is perfect. As has been seen

in North America and Europe, where they

have installed large numbers of wind

and solar farms over the past 15 years,

having hydropower operate differently

than originally designed has opened up

opportunities for refurbishment. This

will also be required in New Zealand's

hydropower fleet.

We are fortunate to have fantastic resources and higher education facilities

that produce high-calibre students with

the background needed for hydropower

engineering, from hydrologists to

electrical, mechanical, geological and

civil engineers, to name a few. It's also

essential we share learnings across

disciplines, so we've established the

Hydropower Technical Interest Group as a

forum to share knowledge, experience and

learnings, maximising the opportunity for

a "green recovery" from Covid-19.