

National shortage of Australian groundwater experts

October 15 2021



Permanent waterholes in arid Australia are sustained by groundwater. Credit: [Curtin University](#)

Australia's future growth is closely aligned to good resources management, and water is top of the list. This is underpinning a growing shortage of groundwater scientists and engineers.

The demand is rising, with the National Centre for Groundwater Research and Training (NCGRT) reporting a recent spike in organizations across Australia reporting difficulties in recruiting groundwater scientists and engineers.

This skills shortage for hydrogeologists has been identified in the Australian Government's [June 2021 Skills Priority List](#).

"The concern is that the current shortage and ongoing demand for hydrogeologists occurs at the same time as an apparent drop in students studying this important subject," says Flinders University Professor Peter Cook of the NCGRT, adding anecdotal evidence suggests that the number of students studying hydrogeology is less than half of what it was 10 years ago.

Stuart Richardson, managing director and principal hydrogeologist at international engineering company CDM Smith, says: "Companies like ours work on numerous projects right across Australia that involve groundwater, both for government and for industry. We employ university graduates as well as more experienced staff, but it has never been so hard finding qualified hydrogeologists," Mr Richardson says.

Australia's reserves of groundwater contribute an estimated \$34 billion per year to the Australian economy by supporting industries including agriculture and mining (2013 Deloitte Access Economics report). As demand increases, the increase in competition for water could threaten economic development unless groundwater supplies are carefully managed.

There is already competition for water between upper and lower catchments, between surface water and groundwater users, competition between urban water needs and agriculture and mining, and competition between people and the environment. Water issues in the Murray Darling Basin are well known, but the demand for groundwater resources is occurring in all States and Territories. On top of this, [climate change](#) will mean less [surface water](#) available over much of Australia, and hence an increase in groundwater demand.

The job of a hydrogeologist is to determine how much groundwater is available to support irrigation and town water supplies; to predict and monitor impacts of groundwater pumping on rivers and vegetation; to identify potential sources of groundwater contamination before it is too late; and to locate groundwater supplies for mining developments in remote areas.

Anastasia Rastorgueva, who graduated from RMIT's environmental engineering program in 2018, says: "Since graduating and entering the industry, I have worked on a variety of groundwater related projects across Australia; ranging from legislation, emergency drought relief, remediation and water supply.

"I'm continuously amazed by the scale of impact we have as hydrogeologists and the role of groundwater in managing scarce resources in Australia."

"Hydrogeology combines sophisticated computer modeling and field data collection to predict future changes in water supplies," says Dr. Sarah Bourke of the University of Western Australia.

"To understand and manage our groundwater resources, we need people with backgrounds in chemistry, physics, maths, engineering, ecology, biology and geology, as well as traditional groundwater training," Dr. Harald Hofmann, Senior Lecturer in Earth Sciences at the University of Queensland explains.

"We are currently not able to meet the country's need for hydrogeologists to understand and manage our groundwater resources sustainably," says Associate Professor Matt Currell of RMIT University.

"Many of the current postgraduate students are already in the workplace. They are looking to increase their skill levels, and this is greatly needed.

But they are not new people, and so will not address the shortage."

Environmental issues are increasingly on the national and international agenda, and there is increased interest in these issues.

"Careers in science and engineering are the backbone of protecting the environment. Water scientists and engineers are critical for enabling mining and agricultural developments while simultaneously protecting our important ecosystems and Australia's biodiversity. We need students who are passionate about the environment to become our future [groundwater](#) scientists and managers," says Associate Professor Martin Andersen at UNSW.

Students that have graduated within the past few years are already making a difference. "It is good to be able to make an impact and influence government policy," says Temitope Adebowale, who graduated with an environmental engineering degree at RMIT University in 2017 and is now working for the Environment Protection Authority Victoria.

"You really can change the environment for the better."

Provided by Flinders University

Citation: National shortage of Australian groundwater experts (2021, October 15) retrieved 25 April 2024 from

<https://techxplore.com/news/2021-10-national-shortage-australian-groundwater-experts.html>

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