

Media release

Call for action on global groundwater crisis

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International water scientists today issued a call for action over the growing threat to the world's groundwater supplies from over-extraction and pollution.

Water supplies will begin running out in critical regions where they support cities, industries and food production by 2030 unless urgent steps are taken to better manage the resource, they cautioned.

"The world has experienced a boom in groundwater use, more than doubling the rate of extraction between 1960 and 2000 – with usage continuing to soar up to the present," says Professor Craig Simmons, Director of Australia's National Centre for Groundwater Research and Training (NCGRT) and member of the UNESCO's global groundwater governance program.

A recent satellite study has revealed falling groundwater tables in the United States, North Africa, India, the Middle East and China, where expanding agriculture has increased water demand.

"Groundwater currently makes up about 97 per cent of all the available fresh water on the planet and presently accounts for about 40 per cent of our total water supply. It provides drinking water to cities, is needed to grow much of our food and sustains many industries – yet almost everywhere, there is clear evidence that water tables are falling," Professor Simmons says. "This means humanity is extracting groundwater much faster than it is naturally replaced."

"Not many people think of groundwater as a key driver of the global economy – yet it is. If it becomes depleted, entire industries may be forced to shut down or move. Whole regions could face acute water scarcity."

The groundwater crisis is driven by a competition for increasingly scarce water supplies between the megacities, the energy sector, manufacturing and farming. It has been hastened by an era of cheap pumps and relatively cheap energy, making it easy to extract.

"Over-extraction also has serious implications for the environment, especially when the climate is warming – as falling water tables can lead to emptying lakes and rivers and dying landscapes as the water they depended on is withdrawn," Professor Simmons says.

"The blunt fact is that most countries and local regions did not know the size of their water resources when they began extracting them, nor how long it took to recharge. In some cases this can take centuries or even millennia. As a result they are now extracting their water unsustainably."

Water is emerging as potentially one of the main limits to Chinese economic growth: groundwater supplies 40% of China's food and 70% of its drinking water – yet water levels in aquifers in some regions are sinking by a metre or more a year. 660 Chinese cities have polluted supplies or are water insecure.

In the Middle East, depleted aquifers have been a major driver of the relocation of agriculture to Africa and the so-called 'land-grab' by wealthy countries. In India the number of wells grew from less than one million in 1960 to 19 million by 2000. Water tables in the key foodbowl are sinking beyond the reach of many farmers' pumps.

"The crisis in global groundwater is chiefly one of poor governance, exacerbated by a lack of knowledge of the size and condition of the resource, rates of recharge, lack of transparent policy, lack of ownership, lack of price signals to users and a lack of political will to do anything," says Professor Simmons. "It's fixable – but it will take a lot of hard work and good science to do so."

The National Centre for Groundwater Research and Training is an Australian Government initiative, supported by the Australian Research Council and the National Water Commission.

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“Until recently this problem was on the world’s back-burner – but it is rapidly moving to the forefront.

Groundwater science has improved dramatically in the last decade, giving us the ability to measure and manage the resource – but governance has yet to catch up. Unless it does, we can expect serious problems in the future.”

Even advanced nations such as the United States face a crisis in their use of groundwater, says Law Professor Robert Glennon of the University of Arizona.

“Groundwater now comprises one-quarter of the US supply and more than half of all Americans rely on groundwater for drinking. Unconstrained drilling of new wells, as many as 800,000 per year, has put incredible strain on aquifers around the US,” he says.

“Plummeting groundwater tables have caused earth subsidence, fissures, and saltwater intrusion. It took millennia for this water to accumulate in aquifers, but humans are pumping it out in mere decades.”

The environmental costs of unsustainable groundwater pumping are staggering, says Glennon. Rivers and springs have dried up or been reduced to a trickle. In Arizona, pumping turned a healthy river, the Santa Cruz, into a desiccated sandbox. Even in humid regions, water bodies have suffered. In the Midwest, wells dug to produce spring water for the bottled water industry have compromised blue-ribbon trout streams. And in Florida, scores of lakes have dried up from intense well-field pumping.

The lack of sensible regulation has created incentives for unlimited access to a finite resource, according to Glennon. “An aquifer is like a milkshake glass and each well is the equivalent of a straw in the glass. What most countries permit is a limitless number of straws in the glass. This is a recipe for disaster,” he says.

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