

Asia, US plains facing water extraction crisis

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Corn plants struggle to survive in a drought-stricken farm field on August 7, in Collins, Iowa. Heavily-populated regions of Asia, the arid Middle East and parts of the US corn belt are dangerously over-exploiting their underground water supplies, according to a study published on Wednesday in the journal *Nature*.

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"The countries that are overusing [groundwater](#) most significantly are the United States, India, China, Pakistan, Iran, Saudi Arabia and Mexico, and the highest number of people that are impacted by this live in India and China," Canadian hydrologist Tom Gleeson told AFP.

"Over a quarter of the world's population live in these regions where groundwater is being overused," he said in a phone interview.

Many places are rapidly pumping out "fossil" water, or water that was laid down sometimes thousands of years ago and cannot be replaced on a human timescale.

Seeking a yardstick of sustainability, the study creates a measure called the groundwater footprint.

It calculates the area of land sustained by extracted water and compares this to the size of the aquifer beneath.

The global groundwater footprint is a whopping 3.5 times the size of the world's aquifers, the study found.

However, this stress is accounted for by a small number of countries.

For instance, in the South Caspian region of northern Iran, the footprint is 98 times the size of the aquifer; in the Upper Ganges in India and Pakistan, it is 54; while in the US High Plains, the figure is nine.

"Humans are over-exploiting groundwater in many large aquifers that are crucial to agriculture, especially in North America and Asia," said Gleeson.

"Irrigation for agriculture is largely causing the problem but it is already impacting in some regions the ability to use groundwater for irrigation, so it is almost like a self-reinforcing problem."

The study aims at adding a new analytical tool to help policymakers cope with the world's intensifying water problems.

In March, the UN warned in its Fourth World Water Report that water problems in many parts of the world were chronic, and without a crackdown on wastage would worsen as demand for food rises and

climate change intensifies.

By 2050, agricultural use of water will rise by nearly 20 percent, on the basis of current farming methods, to meet food demands from a population set to rise from seven billion today more than nine billion.

Gleeson, a specialist at McGill University in Montreal, Canada, used a computer model in collaboration with scientists at Utrecht University in the Netherlands and crunched national statistics on water use. The next step will be to use satellite data, which should be a more reliable source, he said.

Water from surface sources -- rivers and lakes -- is well documented, but use of aquifers is poorly understood.

According to the UN report, extraction from aquifers has tripled in the past 50 years and now accounts for nearly half of all drinking [water](#) today. But how this use breaks down in finer detail, notably its impact on the watersheds that feed rivers, is less well known.

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