

Groundwater pumping could 'devastate' river systems

October 2 2019, by Patrick Galey



Billions of people rely on food grown using extracted groundwater

Rampant and unsustainable extraction of groundwater reserves crucial for food production will "critically impact" rivers, lakes and wetlands in half of Earth's drainage basins by mid-century, researchers warned

Wednesday.

Found underground in cracks in soil, sand and rock, groundwater is the largest useable source of freshwater on the planet and more than two billion people rely on it to drink or irrigate crops.

But reserves are already under pressure as the [global population](#) explodes and crop production rises in tandem.

An international team of researchers studied the rate at which existing groundwater was feeding into rivers, lakes and wetlands across the planet and how pumping for farming effected that process, known as streamflow.

They found that in around 20 percent of drainage basins the tipping point had already been reached where extraction outpaced streamflow.

They also used [climate change](#) models to predict how streamflow will diminish in future and found that between 42 and 79 percent of the world's groundwater sites will be unable to sustain [aquatic ecosystems](#) by 2050.

Inge de Graaf, chair of environmental hydrological systems at the University of Freiburg, Germany, said this could have a devastating impact.

"It's pretty clear that if there's no water in your stream anymore that your fish and plants are going to die," de Graaf told AFP.

"About half of irrigated crops rely on groundwater. That's a lot (to lose)."

The study, published in *Nature*, said regions heavily reliant on

groundwater for crop production, including Mexico and the Ganges and Indus basins, were already experiencing declining river and stream flows due to overextraction.

And as the demand for groundwater increases, areas of Africa and southern Europe will also see severe water disruption in the decades to come, the team predicted.

In August the Intergovernmental Panel on Climate Change issued a major assessment on how land can be used to fight [global warming](#), arguing for more sustainable water use in agriculture as the world's population ticks towards 10 billion by 2050.

De Graaf said some farming techniques showed promise in reducing groundwater use, such as parts of the Mekong Delta in southeast Asia, where coconut palms are replacing water-intense rice fields in several pilot projects.

British researchers this year warned that future generations faced a groundwater "time bomb" as underground systems would take decades to replenish.

More information: Inge E. M. de Graaf et al. Environmental flow limits to global groundwater pumping, *Nature* (2019). [DOI: 10.1038/s41586-019-1594-4](https://doi.org/10.1038/s41586-019-1594-4)

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