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4 states drawing too much groundwater

Punjab, Rajasthan, Haryana and Delhi are depleting at least 30% more of their groundwater resources than previously estimated by the government

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New Delhi: Four north Indian states — Punjab, Rajasthan, Haryana and Delhi — are depleting at least 30% more of their groundwater resources than previously estimated by the government, a new report from the US National Aeronautical and Space Administration, or Nasa, says.

The study, conducted by a team of Nasa scientists is being published in Friday's edition of *Nature*, a peer-reviewed scientific journal.



Unequal sharing: While only 58% of the country's groundwater is recharged every year, Rajasthan, Punjab and Haryana are the only three states digging beyond the dynamic zone for groundwater. Ramesh Pathania / Mint

estimates of 13.2 bcm in the same period.

They conclude that groundwater depletion in the region was equivalent to a net, irreplaceable loss of 109bcm, or nearly 20% of India's annual water consumption of 634bcm.

The four states account for almost 114 million people, or almost 10% of the country's population, and are dependent largely on irrigation for farming.

According to the Planning Commission, irrigation consumes 83% of the

The scientists used satellite imagery from the Gravity Recovery and Climate Experiment, a pair of satellites launched by the space agency in 2002, that has to-date monitored Antarctic ice and the sea-floor displacement that triggered the Indian Ocean tsunami of 2004.

The scientists report these states depleted on average 17.7 billion cu. m. (bcm) of water annually between August 2002 and October 2008, more than the government's

country's annual water budget.

"We computed the uncertainty in our estimate to be about plus/minus 4.5 km³ per year, so the two estimates are reasonably close, but based on our analysis the annual deficit is a bit larger than previously believed," Matthew Rodell, lead author of the study said in an email to *Mint*.

The authors of the study say that average rainfall was nearly the same during the period, thereby ruling out climate variability as the culprit for these depleting storage levels.

"The paper clearly says there's a plus/minus 4.5 bcm error in the estimate. So on the lower side, that's close to our estimate," said B. N. Jha, chairman of the Central Groundwater Board, which monitors groundwater levels, using a reliable method of measuring water levels in a national network of 15,000 wells.

"When you take satellite measurements over such a large area, as opposed to physical measurement, there are bound to be errors," Jha added.

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