livemint

Opinion | India's neglected groundwater crisis

Systematic analysis of groundwater conservation methods must be conducted to forestall the water crisis

Last Published: Wed, Oct 31 2018. 06 48 AM IST

Ashwin MB

Government encourages farmers to produce water-intensive crops like rice and sugarcane through increased minimum support prices. Photo: Mint

India's over-exploitation of groundwater is contributing to—as stated by NITI Aayog—"the worst water crisis in its history".

Groundwater is one of the most important water sources in India accounting for 63% of all irrigation water and over 80% of the rural and urban domestic water supplies. In fact, the

United Nations Educational, Scientific and Cultural Organization (UNESCO) **World Water Development Report** states that India is the largest extractor of groundwater in the world. Fifty-four percent of India's groundwater wells have declined over the past seven years, and 21 major cities are expected to **run out of groundwater by 2020**. Thus, India faces a dual challenge: to regulate the growing demand for groundwater while replenishing its sources.

Subsidies on electricity are thought to play a central role in the Indian groundwater crisis. The vast majority of groundwater pumps are unmetered, and if charged, are billed at a flat, non-volumetric, and **highly subsidized tariff** . This flat rate is responsible, at least in part, for inefficient usage and **excessive withdrawal of groundwater**.

In addition, the government encourages farmers to produce water-intensive crops like rice and sugarcane through increased minimum support prices (MSP).

Research indicates that although MSP has led to assured incomes, **it has also led to groundwater depletion, income inequality and unsustainable agriculture**. On the supply side, performance of state governments has not been satisfactory, with the NITI Aayog Composite Water Management Index (CWMI) report stating that the majority of states have scored less than 50% in the source augmentation of **groundwater resource index** .

Given this situation, we require policies that promote judicious use of groundwater. Although there are a number of potential interventions in the area of groundwater conservation, there are hardly any rigorous evaluations. In absence of rigorous research, such as randomized evaluations, which can establish the causal impact of an intervention, it is a challenge to identify solutions that are highly effective. However, researchers could draw lessons from existing solutions, and use them to design interventions that could later be rigorously evaluated.

One of the proposed ways to reduce groundwater extraction is by reducing electricity subsidies. An analysis of panel data across 370 districts in India found that a reduction in electricity subsidy was correlated with a **decrease in groundwater extraction** . On average, a 10% reduction in electricity subsidy generated a 6.7% decrease in groundwater extraction. However, reducing electricity subsidies for farmers could be politically unpopular.

One possible way to overcome this challenge is by limiting the electricity subsidy offered to farmers and compensating them with a direct cash transfer for every unit they save. This provides farmers an incentive to use groundwater judiciously without any additional cost to the government.

The government of Punjab has entered into a partnership with the Abdul Latif Jameel Poverty Action Lab (J-PAL) to conduct a **randomized evaluation to test this model**. Researchers will estimate the impact of this cash transfer intervention on farmers' power use, with the ultimate goal being to reduce groundwater extraction.