



## India's Neglected Groundwater Crisis

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(The editorial is based on the article "India's neglected groundwater crisis" which appeared in Livemint on 31st October 2018. It analyses the groundwater crisis in the country.)

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.

**Since the 1960s, India's groundwater irrigation has increased dramatically, playing an important role in its economy and people's lives — supporting livelihoods of over 26 crore farmers and agricultural labourers who grow over a third of India's foodgrains.** Groundwater has helped India overcome food shortage in the 1960s by playing an instrumental role in ushering in the green revolution. These benefits came at the cost of increased pressure on groundwater reserves.

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

At present, **India faces a dual challenge:**

1. to regulate the growing demand for groundwater
2. to replenish its groundwater sources.

### Present Status of Groundwater

- **54% 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.**
- India uses an estimated 230 cubic kilometers of groundwater per year - **over a quarter of the global total.**
- [NITI Aayog Composite Water Management Index \(CWMI\) report](#) states that the majority of states have scored less than 50% in the source augmentation of groundwater resource index.
- The water situation in India is already dire, with nearly 600 million people facing high to extreme water stress in the country, according to the NITI Aayog report.

### Causes of Groundwater Depletion

- **Increased demand for water for domestic, industrial and agricultural needs and limited surface water resources** lead to the over-exploitation of groundwater resources.
- Groundwater depletion most commonly occurs because of the **frequent pumping of water from the ground without waiting for its replenishment.**
- **Subsidies on electricity** are also playing 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 for inefficient usage and excessive withdrawal of groundwater. On average, a 10% reduction in electricity subsidy generated a 6.7% decrease in groundwater extraction.
- **Intensive cultivation of water-intensive crops** leads to depletion of groundwater resources.
- **Increased minimum support prices (MSP)** for water-intensive crops encourages farmers to produce crops like rice and sugarcane which consume a lot of water.
- **Water contamination** as in the case of pollution by landfills, septic tanks, leaky underground gas tanks, and from

overuse of fertilizers and pesticides lead to damage and depletion of groundwater resources.

- **Inadequate regulation of groundwater laws** encourages the exhaustion of groundwater resources without any penalty.
- Deforestation, unscientific methods of agriculture, chemical effluents from industries, lack of sanitation also lead to pollution of groundwater, making it unusable.

## Effects of Groundwater Depletion

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- Groundwater depletion will force us to pump water from deeper within the Earth, which is an unsustainable practice.
- Large bodies of water such as rivers, lakes etc. will become shallower from groundwater depletion.
- Depletion of large aquifers will affect our food supply and biodiversity.
- Groundwater depletion may also lead to salt contamination in drinking water.

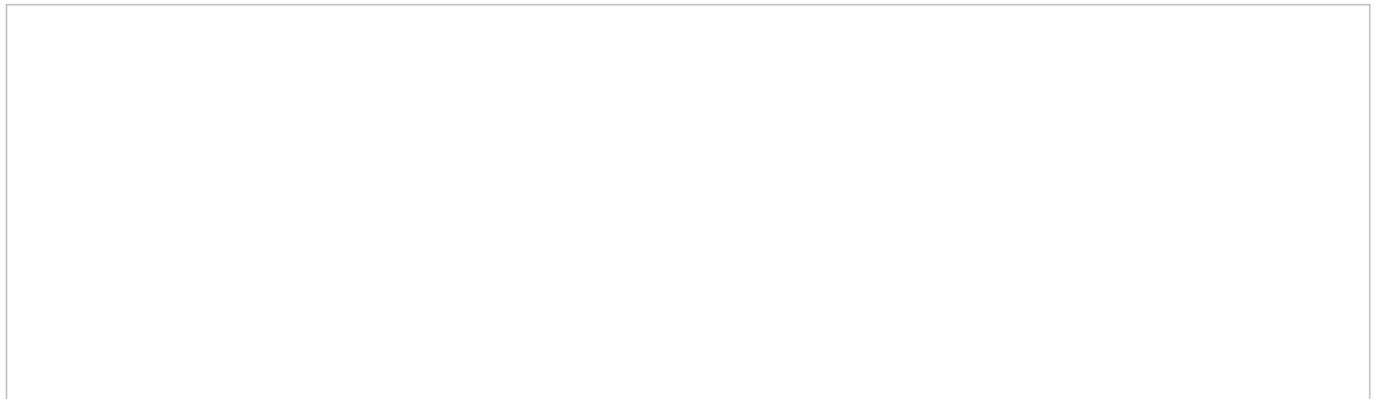
## Way Forward

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- Research and scientific evaluations should be done before forming any policy. Only with **proper data, highly effective solutions can be identified.**
- **Water depletion can be controlled by reducing electricity subsidies.**
- A possible way to overcome this subsidy challenge is by limiting the electricity subsidy offered to farmers and compensating them with a direct cash transfer for every unit they save.  
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.**
- Another way of efficiently using groundwater is by encouraging farmers to adopt **micro-irrigation techniques** such as drip irrigation and micro-sprinklers. According to the CWMI report, adopting micro-irrigation techniques can save roughly 20% of the groundwater used annually on irrigation in India.
- Bottom-up **approach** should be done by empowering the local community to become active participants in managing groundwater. Training community workers to carry out aquifer mapping and implement innovative ways to use groundwater conservatively with the local community should also be done.
- Creating **regulatory options at the community level** such as panchayat is also one among the feasible solutions. Traditional methods of water conservation should be encouraged to minimize the depletion of water resources.
- Technology should be used extensively for determining the relationship between surface hydrological units and hydrological units below the ground, identification of groundwater recharge areas, mapping of groundwater etc.
- Artificial recharge of tube wells, water reuse, afforestation, scientific methods of agriculture should also be done.

Read more: [Selected Best Practices In Water Management](#) (summary of report)

[National Groundwater Management Improvement Program](#)



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