

**LESSONS FOR THE REGION**

# India's groundwater crisis invisible — and getting worse

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India's water mismanagement is enough to make one drown in despair.

Today, all rivers and lakes within and near population centres are grossly polluted with organic and hazardous pollutants. Not a single Indian

city can provide potable tap water.

Interstate water disputes over river water allocations are becoming intense and widespread. And there are no signs that the situation will improve in the near future.

The reasons are many. They include decades of incompetence and indifference at central, state and municipal levels, a population expected to grow to 1.7 billion by 2050, and a mushrooming middle class eating a more protein-rich diet requiring significantly more water to produce. Laws and regulations are rarely enforced and there appears to be little appetite for better technologies.

The last truly competent water minister was K L Rao, an engineering professor who built irrigation infrastructure to improve agriculture when he was in office more than half a century ago.

If surface water conditions in the country are bad, the groundwater situation is even worse. Groundwater extraction — in other words, digging wells into aquifers (bodies of permeable rock that can contain or transmit groundwater) to collect water mainly for irrigation — has become increasingly unsustainable in the past five decades.

In many parts of India, groundwater levels are declining, some by more than 1m a year. A lack of proper wastewater treatment from domestic, industrial and mining sources have meant that groundwater is being progressively contaminated, increasing the potential health risks to humans and ecosystems. Intensive groundwater extractions will continue at least over the medium term.

The current situation has already contributed to serious economic, social, political and environmental problems. There is a rising number of river conflicts. Recurrent droughts have led to more violence, political turmoil and water rivalries between the states, the latest of which has been on the river Cauvery, between Karnataka and Tamil Nadu. Both states fall under the "semi-critical" groundwater extraction category.

The Ravi-Beas dispute between Punjab and Haryana is another example, with both states in the "over-exploited" category. Also, declining groundwater levels in the Indus Basin will most likely fan rising tensions between India and Pakistan over water.

In order to develop policies for sustainable groundwater use, it is essential to have reliable and systematically collected data on groundwater availability, quality and use.

Sadly, Indian politicians and bureaucrats turn a blind eye to it when they can do much more to manage this important resource.

Take the monitoring of groundwater, for instance. Despite having four separate central bodies regulating groundwater, there is no single groundwater database for the entire country.

In 2016, the Standing Committee

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on Water Resources of the Indian Parliament finally recommended the creation of a national groundwater database that could be updated every two years. However, when this will actually happen is anybody's guess.

Data on groundwater availability, use and quality are patchy and unreliable.

It is estimated that India uses 230–250 cubic kilometres of groundwater each year, or about one-quarter of the global groundwater use — more than the United States and China combined. More than 60 per cent of irrigated agriculture and 85 per cent of domestic water use now depend on groundwater.

This expansion in groundwater use has been mostly due to a government policy of providing free electricity to farmers, irrespective of their income levels and needs. The policy has its roots in earlier conditions set in the 1970s by foreign donors in return for loans for several agricultural development projects.

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This increased food production in the short term. But it led to serious groundwater depletion and heavy losses for various State Electricity Boards in the longer term.

In 2009, the National Aeronautics and Space Administration (Nasa) reported that the Indus Basin is the second-most-overstressed aquifer in the world. This basin includes the states of Punjab and Haryana, which constitute India's granaries. Nasa also noted the rate of depletion of groundwater levels in North India is about 1m every three years, 20 per cent higher than an earlier assessment by the Indian Water Ministry.

In coastal aquifers, declining levels are adding to seawater intrusion. In several states, serious health risks have arisen due to various types of geogenic contamination, including by fluoride and arsenic.

Unless urgent steps are taken to manage groundwater scientifically, India's food, water, energy, environment and health sectors are under threat.

Nearly half of India's employment is now in the agricultural sector.

If the current trends continue, by 2030, nearly 60 per cent of Indian aquifers will be in critical condition. Some 25 per cent of agriculture production will be at risk, along with farm jobs.

In Singapore, there have been recent efforts to determine if there are reasonable quantities of ground-

water that could be sustainably used. Even under the most optimistic scenario, it is highly unlikely that enough groundwater may be available to make an appreciable difference to Singapore's quest for water security.

For Malaysia, the situation is very different. It has undoubtedly huge groundwater potential. At present, only Kelantan uses 70 per cent groundwater in its water supply. For the coun-

try as a whole, less than 5 per cent of supply comes from this resource.

However, this is changing. Johor, for example, under its Bluewater Plan, is now mapping groundwater availability. It also proposes developing a plan for conjunctive use of surface and groundwater. As urbanisation intensifies and industrialisation accelerates, Malaysia will be using more groundwater. It is thus imperative that the

country learns from India and does not repeat the same errors.

The root of the English word “rival” is from the Latin word *rivalis*, which means one using the same river as another. Unless India improves its groundwater management, states will be rivals for water. This does not bode well for the most populous country in the world in the post-2025 period.

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