

COLUMNS

Why we must have water budgets



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If we run out of groundwater, millions of people will be left without any means to sustain themselves

The protest by farmers in Chikballapur recently, over the scarcity of drinking water, received extensive news coverage as it halted Bengaluru in its tracks after key highways were blocked. Interestingly, very little of that coverage was devoted to the groundwater crisis that underpins the problem in such regions.

Groundwater plays an important role in our lives and India's economy, but it is disappearing fast. There is mounting evidence that we are extracting more than can be naturally replenished. In the hard-rock aquifers of peninsular India, drilling 800 ft or deeper is becoming the norm. Groundwater-dependent towns and villages spend an increasing fraction of their budgets chasing the water table. Stories abound of farmers spending their life savings or taking loans to drill a borewell, but failing to find water. If we "run out" of groundwater, millions of people will be left without any means to sustain themselves.

Scientific evidence also points to over-exploitation. The Central Ground Water Board classifies all blocks in India based on the fraction of recharge that is extracted and trends in long-term groundwater levels. Since 2004, almost a third of blocks have been classified “over-exploited” or “semi-critical”. If we understand the problem and if the consequences are so severe, why are we unable to address it? The answer lies partly in politics, partly in the invisible nature of groundwater, and partly in our reliance on simple techno-economic fixes.

Flawed regulatory structure

Electricity is supplied to farmers free of cost. This policy made sense when groundwater was abundant in the 1980s. Indeed, it helped millions of farmers escape poverty. But today, where groundwater levels have fallen hundreds of feet below the ground, the subsidy is actually only utilised by the richest farmers who can afford to drill deep. And even so, not all are lucky enough to strike water. Access to groundwater in hard-rock regions has almost become a lottery. Yet in the absence of alternative water sources, charging farmers for electricity is seen as political suicide.

Groundwater is inherently difficult to monitor and control, in part because of its invisibility, which also perpetuates the illusion that each well is independent. The myth is enshrined in Indian groundwater law that allows landowners to extract as much as they want. In reality, not only is groundwater within an aquifer interconnected, but aquifers and rivers are also interconnected. So depleting groundwater means drying rivers. Despite this, groundwater and rivers are regulated by different agencies that do not properly account for the linkages between them, often double counting the quantum of the resource.

Much of the current action on the ground is through techno-economic fixes. These have clear benefits in terms of reducing pumping costs and using local aquifers instead of building big, expensive dams. But what they do not do is create “new” water.

Boosting recharge through rainwater harvesting structures such as small check dams is a popular measure. However, any water that recharges is water that does not flow downstream. Often users located near check dams simply extract more water, while users further downstream wonder why their rivers and tanks are drying up. Another technological solution is to improve efficiency through subsidised drip irrigation or energy-saving pumps. Again, these have often resulted in farmers increasing their irrigation area with no decrease in water extracted. And farmers are not alone; conscientious urban dwellers take pride in reusing wastewater for gardens and parks. But this could result in more wasteful water use, with the additional “wastewater” used in lawns or golf courses where none previously existed.

Science and fairness

Techno-economic fixes do not address the underlying “zero-sum game” nature of water resource use. Ultimately, the water management problem is that of allocating the water available each year among users – both people and the ecosystem. Without understanding how much water is available, how much is being used and by whom, solving India’s water crisis is going to be a non-starter.

The way forward is comprehensive water budgeting, simultaneously in each watershed and the river basin as a whole. Water budgets at the watershed level will inform communities about how much water they have, so it can be equitably shared within communities. Water budgets for the river basin will inform communities how much must be left for downstream users, ensuring that water resources are allocated between communities fairly and transparently.

Given the zero-sum nature of the game and the impossibility of creating “new” water, it is likely that we cannot restore the water balance in severely depleted regions without painful cuts in water use. However, there are some glimmers of hope. Water users everywhere are worried about the disappearing resource and willing to engage. The trick lies in combining technology (low-water-use crops, xeriscaping) and economic incentives that reduce actual water use (“cash-for-blue” schemes) without reducing productivity or quality of life. This needs a strong water governance system based on awareness building, science and a commitment to fairness and sustainability.

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