

# Water Crisis Grows Worse as India Gets Richer

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The quest for water can drive a woman mad. Ask Ritu Prasher. Every day, Prasher, a homemaker in a middle-class neighborhood of the capital, rises at 6:30 a.m. and begins fretting about water.

It is a rare morning when water trickles through the pipes. More often, not a drop will come. So Prasher will have to call a private water tanker, wait for it to show up, call again, wait some more and worry about whether there are enough buckets filled in the bathroom in case no water arrives.

"Your whole day goes just planning how you'll get water," Prasher, 45, recounted one morning this summer, cell phone in hand and ready to press redial for the water tanker. "You become so edgy all the time."

In the richest city in India, with the nation's economy marching ahead at an enviable clip, middle-class people like Prasher are reduced to foraging for water. Their predicament testifies to the government's astonishing inability to deliver the most basic services to its citizens at a time when India asserts itself as a global power.

The crisis, decades in the making, has grown as fast as India in recent years. A soaring population, the warp-speed sprawl of its cities, and a vast and thirsty farm belt have all put new strains on a feeble, ill-kept water and sanitation network.



The combination has left water all too scarce in some places, contaminated in others and in cursed surfeit for millions who are flooded each year. Today the problems threaten to stand in the way of India's ability to fortify its sagging farms, sustain its economic growth and make its cities healthy and habitable. At stake are not only its economic ambitions, but also its very image as the world's largest democracy.

"If we become rich or poor as a nation, it's because of water," said Sunita Narain, director of the Center for Science and Environment, in Delhi.

Conflicts over water mirror the most vexing changes facing the country: the competing demands of urban and rural areas, the stubborn divide between rich and poor, and the balance between the needs of a thriving economy and a fragile environment.

Delhi's water woes are typical of many of India's cities. Nationwide, the urban water distribution network is in such disrepair that no city can provide water from the public tap for more than a few hours each day.

An even bigger problem than demand is disposal. In Delhi's case, the city can neither quench its thirst nor adequately get rid of the ever-bigger heaps of sewage that it produces. About 45 percent of the population is not hooked up to the public sewage system at all.



Those issues are amplified across the country. More than 700 million Indians, or about two-thirds of the population, do not have adequate sanitation. Largely for lack of clean water, 2.1 million children under the age of 5 die each year, the United Nations has reported.

The government says that 9 out of 10 Indians have access to public water supply, but that may include sources that are going dry or have been contaminated.

The World Bank, in rare agreement with Narain, who has been a staunch opponent, warned in a report published last October that India stood on the edge of "an era of severe water scarcity."

"Unless dramatic changes are made - and made soon - in the way in which government manages water," the World Bank report concluded, "India will have neither the cash to maintain and build new infrastructure, nor the water required for the economy and for people."

The window to address these issues is closing, the World Bank said. Climate change is only expected to exacerbate the problems, heightening India's vulnerability to extreme bouts of weather - heat, deluge or drought.

The fabled Yamuna River, on whose banks this city was born more than 2,000 years ago, is a case study in the acute water management crisis confronting this country.

In Hindu mythology, the Yamuna is considered to be a river that fell from heaven to earth. Today, it is a foul portrait of crippled infrastructure - and yet, still worshiped. From the bridges that soar across the river, the faithful toss coins and sweets, lovingly wrapped in plastic. They scatter the ashes of their dead. In Delhi, the Yamuna itself is clinically dead.

As it enters the capital, still relatively clean from its 395-kilometer, or 245-mile, descent from the Himalayas, the city's public water agency, the Delhi Jal Board, extracts 229 million gallons every day, its largest single source of drinking water.

As it leaves the city, the river becomes the principal drain for Delhi's waste, as residents pour about 950 million gallons of sewage into it each day. Coursing through the capital, the river becomes a noxious black thread. Clumps of raw sewage float on top. Methane gas gurgles on the surface.

It is hardly safe for fish, let alone bathing or drinking. A government audit found last year that the level of fecal coliform in the Yamuna, which is one measure of filth, was 100,000 times the safe limit for bathing.

In 1992, a retired Indian Navy officer who once sailed regattas on the Yamuna took his government to the Supreme Court. The state, Sureshwar Sinha charged, had killed the Yamuna and violated his constitutional right, as a practicing Hindu, to perform ritual baths in the river. Since then, the court has ordered the city's water authority to treat all sewage flowing into the river and improve water quality. Sixteen years later that command is still unmet.

Delhi's population, now put at 16 million people, has expanded by about 41 percent in 15 years, officials estimate. As the number of people living - and defecating - in the city soars, on average less than half of the sewage they pour into the river is treated.

A government audit last year indicted the Jal Board for having spent \$200 million and yielding "very little value." The construction of new sewage treatment plants has done little to stanch the flow, in part because sewage lines are badly clogged or because power failures leave them inoperable for hours at a time.

"It has not improved at all because the quantity of sewage is constantly increasing," said R.C. Trivedi, a director of the Central Pollution Control Board, which monitors the river quality. "The gap is continually widening." Making matters worse, many Delhi neighborhoods, like Janata Colony - or People's Colony, in Hindi - are not connected to sewage pipes. Open sewers hem the narrow lanes of the slum. Every alley carries their stench.

Some canals are so clogged with trash and sludge that they are no more than green-black ribbons of murk. It is a mosquitoes' paradise. Malaria and dengue fever are regular visitors. Not long ago, a 2-year-old boy named Arman Mustakeem fell into one such canal and drowned. His parents said they found him floating in the open sewer in front of their home.

These canals empty out into a wide storm drain. That line in turn courses through the eastern edges of the city, raking in more sewage and cascades of trash, before it merges with effluent from two sewage treatment plants and, finally, enters the Yamuna.

Carrying the capital's waste on its back, the Yamuna meanders south to other cities like Mathura and Agra, home to the Taj Mahal. It is their principal source of drinking water, too. Delhi's downstream neighbors are forced to treat it heavily, hiking up the cost.

With Delhi slated to hold the Commonwealth Games in 2010, the government proposes to remake this riverfront with a sports and recreation complex. In the meantime, the Yamuna, vital and befouled as it is, bears the weight of Delhi's ambitions.

At dawn each morning, men sink into the still, black waters to retrieve whatever can be bartered or sold: rings from a dead man's finger, coins dropped by the faithful, the remnants of rubber sandals, plastic water bottles.

The dhobis, who launder clothes, line up along one stretch of riverbank, pounding saris and bedsheets on stone tablets. A man shovels sand from the river bottom: Every bullock cart he fills for a cement maker will fetch him a coveted \$5.50. Men and boys bathe.

"This river is worshiped," said a bewildered Sunny Verma, 24. "Is this the right way of worshiping it?" So shaken was Verma on his first visit to the Yamuna this year that he now works full time to shake up others. He joined an environmental group called "We for Yamuna." "If you want to worship the river, you should give it more respect," he said. "You should treat it the right way. You should question the government. You should ask the state to actually do something for the river."

Prasher has the misfortune of living in a neighborhood on Delhi's poorly served southern fringe. As the city's water supply runs through an 8,960-kilometer network of battered public pipes, an estimated 25 to 40 percent leaks out. By the time it reaches Prasher, there is hardly enough. On average, she gets no more than 13 gallons a month from the tap and a water bill that fluctuates from \$6 to \$20, at its whimsy, she complains, since there is never a meter reading anyway.

That means she has to look for other sources, scrimp and scavenge to meet her family's water needs. She buys 265 gallons from private tankers, for about \$20 a month. On top of that she pays \$2.50 toward the worker who pipes water from a private tube-well she and other residents of her apartment block have installed in the courtyard.

Nearly a fourth of Delhi households, according to the government-commissioned Delhi Human Development Report, rely at least in some part on such wells. It is one of the principal reasons why groundwater in Delhi is drying up faster than virtually anywhere in the country: 78 percent of it is considered overexploited.

Still, the new posh apartment buildings sprouting across Delhi and its suburbs sell themselves by ensuring a 24-hour water supply - usually by drilling wells deep underground. "Imagine never being thirsty for water," boasts a newspaper ad for one new development.

Warning of "an unparalleled water crisis," the study released in August found that a quarter of Delhi households had no access to piped water, and that 27 percent got water for less than three hours a day. Nearly two million households, the report found, had no toilet.

The daily Delhi hustle for water only adds to the strains on the public system. A few years ago, for instance, to compensate for the low water pressure in the public pipeline, Prasher and her neighbors began tapping directly into the public water main with so-called booster pumps, each one sucking out as much water as possible.

It was a me-first approach to a limited and unreliable public resource, and it proliferated across this me-first city, each booster pump further draining the city water supply.

The situation for Delhi, and all of India, is only expected to grow worse. India now needs an estimated 634 billion cubic meters, or 23 trillion cubic feet, of water every year. But its water needs are growing by leaps. By 2050, official projections indicate, demand will more than double, and exceed the one-trillion cubic meters that India has at its disposal.

Yet the most telling paradox of the city's water crisis is that Delhi, overall, is not entirely lacking in water. The problem is distribution, hampered by a feeble infrastructure and a lack of resources, said Arun Mathur, the Jal Board's chief executive officer.

The Jal Board estimates that consumers pay no more than 40 percent of the actual cost of water. Raising the rates is unrealistic for now, as Mathur well knows. "It would be easier to ask people to pay up more if we can make water abundantly available," he said. A proposal to privatize water supply in some neighborhoods met with stiff opposition last year and was dropped.

So the city's pipe network remains a punctured mess. That means, like most everything else in this country, some people have more than enough and others have too little.

The slums built higgledy-piggledy behind Prasher's neighborhood have no public pipes at all. The Jal board sends tankers instead. The women here waste their days waiting for water, and its arrival sets off desperate wrestling in the streets.

Kamal Krishnan had to quit her job for the sake of securing her share. Five days a week, she would clean offices next door in Vasant Kunj. Five nights a week, she would come home to find no water at home. The buckets would stand empty. Finally, her husband ordered her to quit. And wait. "I want to work, but I can't," Krishnan said glumly. "I go mad waiting for water."

Elsewhere, in the central city, where the nation's top politicians have their official homes, the average daily water supply is three times what it is even in Prasher's neighborhood.

Prasher rations her water day to day as if Delhi were a desert. She uses the leftover water from the dog bowl to water the plants. She recycles soapy water from the laundry to mop the balcony.

And even when she gets it, the quality is another question altogether. Her well water has long turned salty. The water from the private tanker is mucky brown. Still, Prasher said, she can hardly afford to reject it.

"Beggars can't be choosers," she said. "It's water."