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NAMMA BENGALURU BENGALURU

Bengaluru misses the opportunity to capitalise on record rains



STAFF REPORTER

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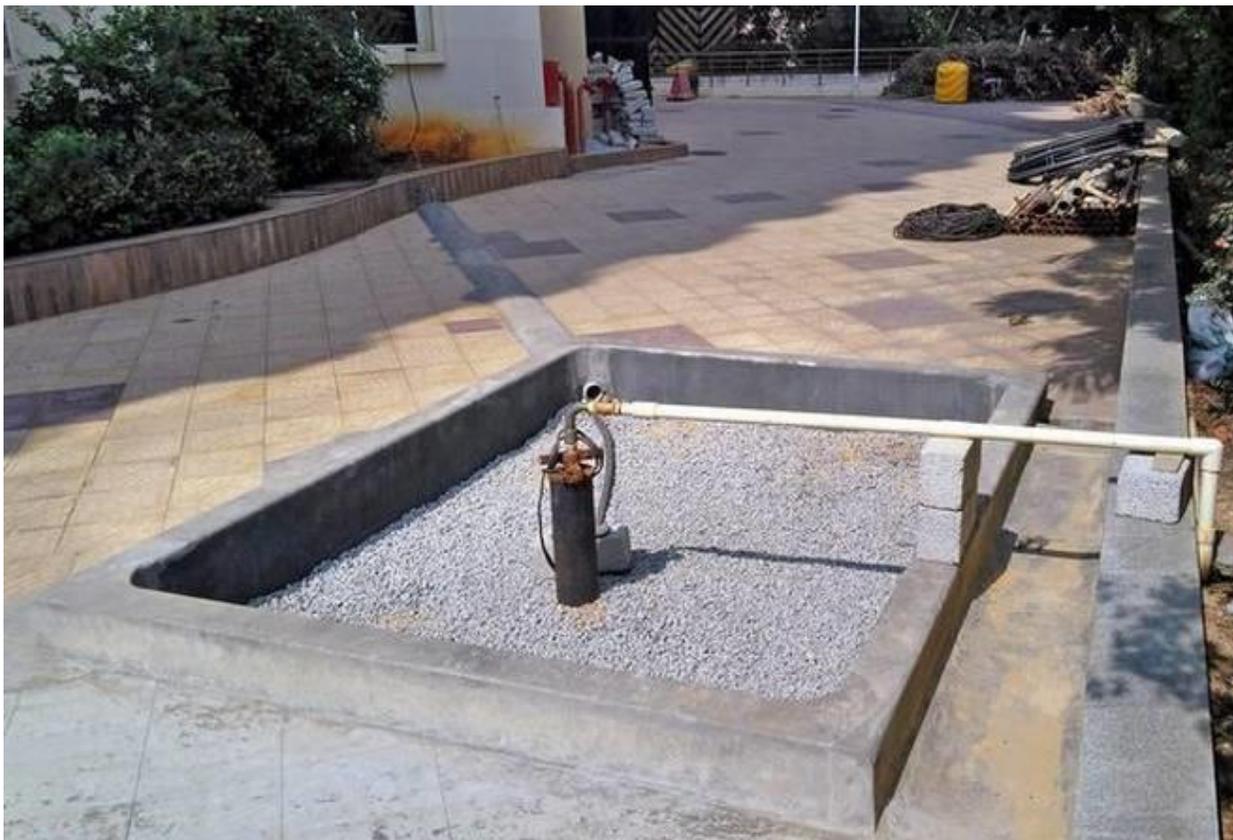
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Unlike in the agrarian landscape where more than half of the rainfall percolates through fields, open valleys and into tanks, the concrete landscape sees an estimated 80% run-off when water does not percolate and instead runs into concrete storm water canals and gets contaminated with sewage and debris. But what if the city and its citizens could have stored some of the immense 1,700 mm of rainfall?

To imagine this 'wastage' of water, researchers at Indian Institute of Science (IISc) tabulated the amount of water received in the Koramangala-Challaghatta valley – which includes the severely-polluted Bellandur and Varthur lakes – using rainfall and catchment characteristics data. The first spells of rains saw the valley receiving 3 tmcft (thousand million cubic feet), while September and October added another 2.2 tmcft.

“All of this has just flowed to Tamil Nadu (through the Dakshina Pinakini) as the lakes were filled with silt and sewage. We failed to store 5.2 tmcft (which could cater to the entire city's water demand for at least four months),” said T.V. Ramachandra, Centre for Ecological Sciences, IISc, who says even in an average rainfall year, over 70% of the city's water requirement could be obtained just by storing rainwater.

One of the key ways of storing water is through lakes, but encroachment, sewage and silt has significantly reduced their capacity, said Mr. Ramachandra. If in the 19th century, 1,492 lakes and tanks in the current city limits stored up to 35 tmcft of water – or more than the current population's water needs, now, lakes store less than 5 tmcft in 196 lakes, with a further 7 tmcft possible if all the lakes were devoid of silt, he says.

S. Vishwanath, water expert, iterates that through bad management and planning, the city has “missed the opportunity” to sustain itself for another year at least. “All our lakes needed to be dredged and at least 5 lakh rainwater structures ought to be installed in the city. A dredged lake, after all, recharges as much as it stores. We not only missed the opportunity, but created problems of overflowing concrete drains and flooded roads,” he said.

Rainwater harvesting

While lakes and storm-water drains represent the failure of urban planners, **rainwater harvesting** (RWH) is a larger civic responsibility that has failed. Despite it being made mandatory more than eight years ago, only 76,892 of the estimated 20 lakh households have implemented the system.

Utilising the rains

Rainfall this year: 1,670 mm	Estimated 18-20 tmcft of water is received annually	80% is run-off (flows without percolation) in Bengaluru. This is 40% in rural areas	IISc models show that Koramangala-Challaghatta valley received 5.2 tmcft in water	Most of it flowed into Tamil Nadu through Hosur	Bengaluru's Cauvery water requirement: 1.2 tmcft per month	Storage through open wells Estimated open wells in the city: 10,000 An average open well can give up to 10,000 litres daily in the months after the monsoon and 4,000 litres daily in the months before the rainy season
Storage through rainwater harvesting			Storage through lakes			
Households with rainwater harvesting: 76,892. This is less than 10% of households in the city.			19th Century 1,452 lakes, 35 tmcft storage capacity			
Parks with rainwater harvesting: 631			21st Century 196 lakes, 5 tmcft storage			
On average, a 1,200 sq.foot house can save 25,000 litres per month during the monsoon. This leads to savings of 75,000 litres through the rains.			If dredged, another 6 tmcft can be stored			
If 5 lakh, out of 10 lakh houses install RWH, around 35 billion litres of water can be saved			Dredged lakes recharge groundwater by 20 litres per sq.m. With silt, recharge rate is nearly zero			

According to officials of the Bangalore [Water Supply](#) and Sewerage Board, the rainwater harvesting system can reduce water dependency, on an average, by 25,000 litres monthly over three months for a 1,200-sq.ft house. By rough calculations, this would mean a savings of over 75,000 litres per household. If the system was implemented in say 50% of the households, or around 5 lakh homes, the water savings would be up to 37.5 billion litres of water.

“Taking just August and September rains into account, one home could have saved 50,000 litres. Even if 5 lakh houses did this, we need not depend on Cauvery for nearly a month,” said Manjunath, an engineer with BWSSB in-charge of rainwater harvesting.

Open wells

For those with open wells, the recent rains filled the wells to the brim. Ramakrishna, a well-digger, said wells in Sadashivanagar had come up to 2 ft, when water could be reached only at 20 ft in the same earlier.

In Mathikere and Guttahalli where wells had gone dry, the water levels went up to 15 ft.

“In the months after rains, a house can get 10,000 litres through wells. Even during summers, these wells can give 4,000 litres of potable water,” says Mr. Ramakrishna.

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If 5 lakh , out of 10 lakh houses install RWH, around 35 billion litres of water can be saved			Dredged lakes recharge groundwater by 20 litres per sq.m. With silt, recharge rate is nearly zero			

S. Vishwanath, a water conservationist who is a proponent of open wells, says the city should have had over 10 lakh open wells. During the rains, this itself would have yielded 10,000 million litres of water. Open wells, he says, not only provide clean, reliable water, but also go a long way in recharging the dwindling water table of the city.

Groundwater not sustainably recharged

For the two months when dark clouds hovered over the city and water flowed on roads, long metal tubes of over 3.5 lakh borewells continued to tap deep into the subsurface of the earth to extract water.

While officials of the groundwater authority said the previous measurement showed significant improvement owing to the rains, the broad consensus was that sustained borewell use and lack of percolation has not seen a sustainable revival of the groundwater table.

With borewells continuing to be a part of the city's water source, an apartment complex at Hennur, where drinking water shortage is an oft-recurring problem, decided to adopt a percolation system to revive their borewell. In the summer, the water level dropped to 900 ft in their 950 ft deep borewell. More than half of the water needs for 100 dwelling units at Classic Royale Garden apartments was from this borewell.

"We created a small catchment area around the borewell that allows for diversion of rainwater into this pit from where it seeps into the area where our borewell is. It took barely any time to implement, and around ₹60,000. After the rains, water can now be found at 500 ft," said Vidya Mahadevan, a resident there. The hope was that with winter showers, the water level would rise to 100 ft.

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