

Bengaluru water crisis: Gain from rain

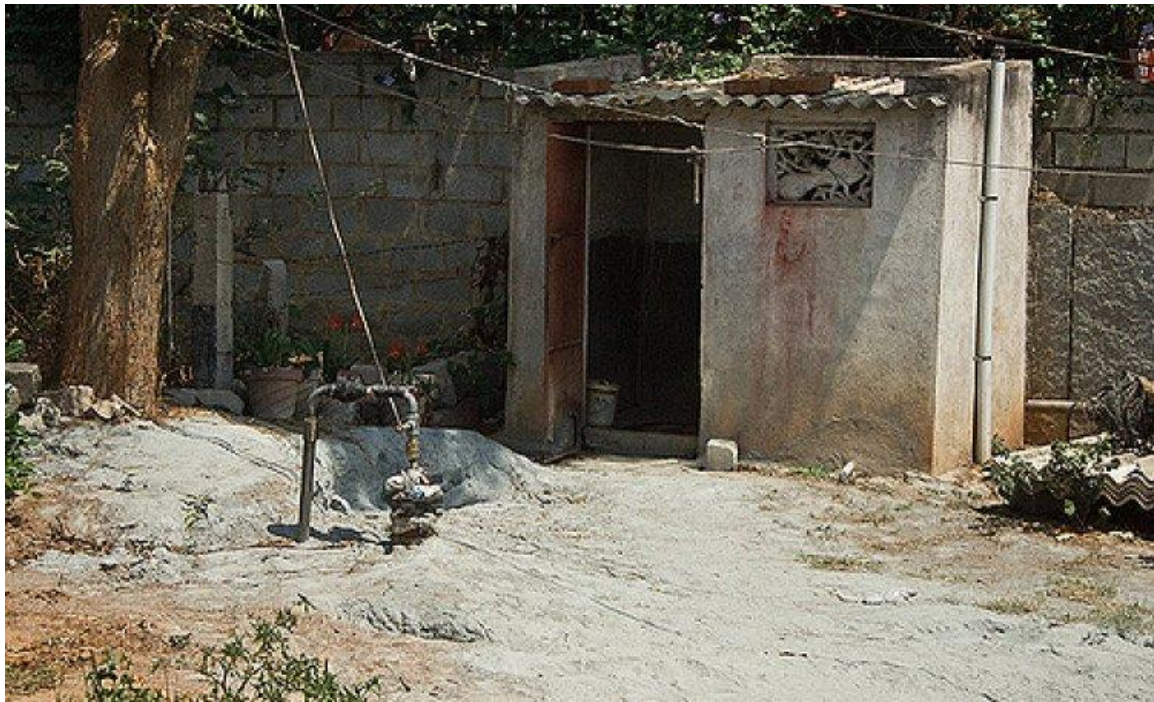
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Karnataka, especially Bengaluru, is facing severe water crisis this summer. Rainwater harvesting is the way forward, believe experts.

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A hand pump in Bangalore

The next big war is said to be for water and it might happen sooner than we think. If the current water scenario across Karnataka and most parts of India is anything to go by, we might just be the generation to start this war.

The situation in several parts of Karnataka is a dismal one, to put it mildly. The intense heat coupled with inadequate to no water at all leaves us dreading the long harsh summer that is ahead of us. Without water, life simply comes to a standstill. And it has, for many.

According to S. Vishwanath, advisor, Arghyam (<http://www.arghyam.org>), there are 160 to 174 drought-affected areas in Karnataka alone. This means that people living in these areas have little or no water for their

daily requirements including drinking. Reports coming in from various places suggest that farmers are struggling because there is no water for their crops or home or cattle. The various species of wildlife are left with barely any resources to survive. Considering this is just the beginning of this blazing summer, what is worse and absolutely terrifying is that this is only going to intensify as days go by.

Is the crisis for real? Do we have no water at all or have we failed to efficiently manage water?

It might come as a surprise to many that we are facing this crisis despite the fact that there is more than enough water provided by nature. Let's take Bengaluru for example. The reality is that the city receives enough rainfall annually to meet more than half of the water requirements. According to Dr T. V. Ramachandra of the Energy and Wetlands Research Group at the Indian Institute of Science (IISc) who has coauthored the report titled Water situation in Bengaluru (https://www.researchgate.net/publication/308970543_WATER_SITUATION_IN_BENGALURU) published in October 2016, 70 percent of the city's water needs can be met by rainfall alone. This is not a small number and neither is it a statement we can afford to ignore anymore.

"Bangalore requires an average of 18 to 20 TMC (1000 million cubic feet) of water annually. Of this, rainfall has the potential to meet at least 15 TMC while the remaining can be sourced from the treatment of sewage. Rooftop harvesting will cater to household requirements whereas groundwater recharge through rejuvenation of lakes can go a long way in meeting this requirement for the entire city. With the city receiving an average of 750-800 mm of rainfall in a year, efficient watershed programmes across the city can generate at least 15 TMC of water. Treatment of wastewater can generate another 16 TMC. Together, these can generate over 30 TMC of water annually which is far more than the city's requirement. So where is the question of shortage?" asks Dr Ramachandra.

For A. R. Shivakumar, senior scientist, Karnataka State Council for Science and Technology (KSCST), IISc, the current water situation is alarming. He says, "The usual sources of water collected and stored in lakes, dams and tanks are below average. In the last two decades, we have indiscriminately extracted and abused groundwater and reversing that, although not an easy task, has to be done. We have to judiciously use every drop of water to tide over this crisis."

Land use analysis of Bangalore city, according to the scientific report by researchers at the Centre for Ecological Sciences at IISc, shows a 1005 percent increase (from 8.0 percent to 77 percent) in the urban (built-up) area between 1973 and 2016. This has led to a decrease in vegetation in catchments areas by 88 percent and water bodies by 79 percent. The number of lakes (that maintained and recharged the groundwater) has drastically reduced and along with unplanned urbanisation, encroachment of lakes and stormwater drains there has been a decline in groundwater tables.

"Due to rapid urbanisation, infiltration of rainwater into the subsoil has decreased drastically and recharging of groundwater has diminished," adds Shivakumar.

Harvest rain, reap the result

We often take for granted those things that come easy to us. Rain is one such resource that we have always enjoyed but never captured for the future. Most of it simply washes away during the monsoons and our lack of initiative, both as citizens and government, leads us to be left high and quite literally, dry during the summers.

Rainwater harvesting is not just a solution but the only solution if we need to secure the future of water in both urban and rural areas, says S. Vishwanath. "Karnataka is dependent on groundwater resources obtained from rain. We are dependent on it and how we manage rain will help us with soil management as well. The state has 36,000 tanks and it makes sense to be equipped to refuel these tanks for uniform distribution of water," he added.

According to KSCST, the potential for rainwater harvesting in urban areas is huge. They take a residential site of 40 x 60 feet (an area of 2,400 sq.ft. or 223 sq.mts.) to explain how much rainwater can be harvested. In an area of this size, around 2,23,000 litres of rainwater can be captured in a location where the rainfall is around 1,000 mm.

There is good potential and if more and more households can adopt this, shortage of water will hardly exist. Vishwanath doesn't believe that the responsibility lies solely with the government. "Citizens need to become a part of the solution. There are communities across residential areas in the city that work towards lake

rejuvenation in their locality. They adopt lakes and persevere them. We need active citizenship," he adds.

The citizens too agree with this. "It's important for every household and company to take it (rainwater harvesting) up and that's the only sensible way towards preserving and consuming water apart from recycling grey and black water. I haven't done it yet but this year before the rains, I do plan to install a few drums everywhere that will catch water through gravity from the roof and every other outlet possible," says resident Achala Paani.

Another resident Saina Jayapal agrees. "The policy for rainwater harvesting exists in Bangalore but there is no implementation. It is an eyewash here with people taking no effort at all and the government not caring about this issue. It has to be a government policy with strict implementation but also an initiative taken by the people of this city and the state," she says.

Decentralised, sustainable projects are also the need of the hour, feels Shivakumar whose home runs entirely on rainwater with absolutely no dependency on water from the government agency. He offers basic solutions that every household can adopt to increase self-sufficiency and reduce the burden on the one resource we currently rely on for our water needs.

The IISc report outlines what the city needs when it states that lakes are the optimal means of rainwater harvesting at the community level. "Rejuvenating lakes and undertaking large-scale watershed programmes that involve both the maintenance of catchment areas as well as retaining water in the lake are what can enable the city to overcome this issue of water shortage," says Dr Ramachandra who emphasises on the 5Rs--retain, rejuvenate, recycle, reuse and responsible citizens--for a solution.

The future of water

Land use prediction using Agent-Based Modelling, according to the IISc report, has shown that the built-up area in Bangalore would increase to 93.3 percent by 2020 and will be almost on the verge of saturation. This is also an indication of the lack of natural resources that will be available to people residing here.

But this is not what the government is concerned about. The utter disregard of the authorities to conserve the environment and its resources is appalling. The aggressiveness to push for large-scale projects such as the steel flyover while completely ignoring the most basic concern of water simply goes to show where the interests of the government lie. The IISc report says that the effective model of "decentralised harvesting of water and reuse of treated sewage is not an attractive proposition for the current breed of decision makers with the colonial style of functioning/mind-set". The report goes on to say that the financial gain is much higher in the case of mega projects compared to these decentralised models and a reason for the local administrators to degrade decentralised water harvesting structures and alienate the local community. The main reason for the deliberate inefficient management of water resources, according to the report, is to maximise the net return for the ruling class themselves than the overall growth of the region with water security.

Maybe we can prevent this war for water from happening by being responsible and altruistic and with cooperation from the government. Till that happens, those who are reeling under water shortage have a long and painful wait before getting any respite.

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