Their Will, Their Way

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Pune has a story similar to many other cities in India that grew exponentially without much warning. The unplanned development hit the water resources badly, increasing the city's dependence on groundwater. Now, the city experiences water scarcity every year, even when the monsoons have been plentiful. Although the authorities have assured the citizens of adequate water storage in the dams and fewer water cuts this year, long-term, sustainable solutions still evade all political discourses. The good news, however, is that the citizens and the housing societies have now started coming forward to work around the problem and advocate for changes at the policy level.

Resident evil

Depleting groundwater levels, acute water scarcity and inadequate and erratic municipal supply made the residents of Baner Pashan link road on the outskirts of Pune sit up and think of a permanent solution. Many residential complexes in the area were dependent on water tankers that supplied poor quality water and put a considerable economic burden on people. This is when the citizens decided to do something about it. Two key members of the Baner Pashan Link Road Vikas Samiti, Dr Vishram Rajhans and Ravindra Sinha reached out to expert hydrogeologists from

Groundwater Survey Development Agency (GSDA)

and

Advanced Centre for Water Resources Development and Management (ACWADAM)

. The experts, who visited the area to assess the situation, briefed them on the need for groundwater recharge to augment water resources and provided them with options to save water. Former deputy director (R&D) of GSDA, Dr Shashank Deshpande says, "We felt that it was important the citizens know the relevance of groundwater as a common property resource. GSDA conducted basic groundwater survey of the area and provided information on recharge and discharge areas." "Our main interest was to help citizens understand the science of groundwater in simple terms and introduce the idea of public participation in recharging aquifers," says hydrogeologist Dr Himanshu Kulkarni from ACWADAM. Catch water where it falls Most of the residential complexes were dependent on borewells. It was decided that they use rainwater to recharge these borewells and raise the water table. The complexes are located in the foothills of the mountains, some bordering the hilltops while others are further down on the slopes. The mechanisms for catching, storing and diverting rainwater to recharge borewells were planned depending on the location of the complexes.

The structure of the recharge pit. (Image Source: GSDA) Thus, at Kumar Sahwas, a residential complex located on the slopes, the downward slope of the area in front of the complex was used to divert all the rainwater flowing down from the roads to recharge borewells after passing the water through soak pits and sand filters. Rajhans says, "We were also the first society that started implementing rainwater harvesting (RWH). The water collected from the rooftops using pipes was filtered and then diverted to recharge borewells. We ensured that not a single drop of water was wasted." The situation was different in residential complexes such as Padmavilas and Kumar Peninsula that had around 85 to 120 flats. Since these complexes border hills which are also reserve forest areas, it was necessary to use ingenious means to capture and store water. Gulabrao Patil and Balkrishna Choudhary, both senior citizens from Kumar Peninsula with technical expertise, volunteered to tackle it. "We lacked mechanisms for rainwater harvesting in our residential complex before. Builders say they have installed RWH but do not follow any systematic procedures for that. They only do it for the sake of getting concessions like property tax discount," says Gulabrao Patil. He adds, "We realised that water could be obtained from three sources--roof tops, terraces and sloping roads." The flowing water from the hills was directed to the canals dug out to carry the water to the recharge pits for the borewells through a window fitted with a wire mesh on the walls bordering the hill. Additionally, holes were made on the walls so it doesn't come in the way of water from the hills reaching the canals. The water collected on the rooftops and terraces was also channelised into the canals. Stormwater lines within the premises were diverted into the borewell recharge pits. "People from the colonies donated money, and we hired labour to construct recharge borewells and also managed to keep the cost low," says Patil. *Dug out canals to direct rainwater flowing from the hills to recharge pits.* "This rainy season, not a drop of water was wasted," says Patil. "Forty-two societies and two builders came to see this effort. We ensure regular maintenance of recharge pits, stormwater lines as well as the canals. In the larger colonies that have two to four borewells, care is taken to see that only one or two of them are used for withdrawing water while others are used only as recharge structures. Some colonies have old dug wells and water from the rooftops is also used to recharge these dug wells". Inspired by the success of these residential complexes in conserving water, more than 60 other complexes in the area have taken up the effort. *Hills as recharge areas* The citizens did not stop at that. "Hills were identified as recharge areas by the hydrogeologists who visited us. We connected with an organisation named Vasundhara Swachata Abhiyan that was working on greening the hills and constructing contour trenches in the area," says Sinha. A plan was made to dig large trenches around the circumference of the hills (around 5 km) to help catch rainwater and the runoff from the hills and to dig recharge borewells at every 50 metres around the foot of the hills to help recharge groundwater. "When we tried to find out what we could do about it, we realised that it was an uphill task as different portions of the hills and forests were owned by different people or organisations like the forest department, corporations, or people. We were able to convince people who owned land around the hills to execute our plan but there was no way the government land could be used. The budget for this was also quite high at Rs 50 lakh. We have sent a proposal to the collector with this plan, but it is still lying with him," says Sinha.

Walls with holes to direct rainwater flowing from the hills to the dug out canals.

Advocating change Mission Groundwater, an NGO, was started as a part of this effort to spread this movement further to other societies. "We plan to visit other societies and advocate for the need to save, harness and recharge water," says Rajhans. Members of Mission Groundwater met the mayor recently along with organisations in the field and citizen groups to press for the need to include groundwater as an important concern in the smart city plans to be implemented in Pune. Their suggestions included the formation of a groundwater management cell in the civic body, creating a master plan for groundwater recharge zones and inviting expression of interest for new technology solutions for permeable roads and footpaths in the city. Attempts to increase awareness among citizens have been started with support from the Pune municipal corporation. "The groundwater forum, through such measures, is complying with the issue of mandatory RWH as per Section 9 (7) of the Maharashtra Groundwater (Development and Management) Act 2009," Deshpande says. "This is a great example of how groundwater resources in urban areas can be managed. Smart cities must consider groundwater as central to their developmental plans. Going ahead, planning groundwater use by balancing demand and supply of water, ensuring equity in distribution and sustainability of the resource by involving formal organisations and citizens need to be done on a larger scale in cities," he adds. Kulkarni says, "I look at this effort as growing organically and in the interests of the broader society. It would be fruitful to

build groundwater literacy side by side with actions on the ground. Public institutions like the municipality must collaborate with civil society to develop awareness, include science and processes of participation in developing and promoting the concept of participatory urban groundwater management of which strategic rainwater harvesting is an integral component." As these water warriors march ahead unflinchingly, we hope more and more people join this effort and carry forward this unique example of how a city and citizens can stand up for themselves in times of crisis. First published by *India Water Portal Portal* on 27 May 2017 Watch Mission Groundwater a video on this initiative. Citizens take part in process to chalk out Groundwater Act

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