

# Rain Water Harvesting in Delhi-Role of Civil Society

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Declining ground water level is one of the major concerns of urban India. Among them, Delhi is one of the water-stressed cities of the world and is going to become a water scarce city in due course. This scarcity of water in the city gets accentuated by many factors. The growing population, coupled with ever-increasing pollution, increasing demand from industrial and commercial water along with the leakage in the supply systems and wasteful consumption practices pose major challenges for the City Administrators.

In the last 70 years, the population of city has grown by almost 12 times. In absolute terms, the population of city has increased from 14.61 lakh in 1951 to 1.68 crores in 2011 and as per the estimates of UN World Population Prospects; Delhi population in 2021 will be 3.05 crores. In case of water supply, the city is greatly dependent on external water resources, having little of its own. The total area of Delhi is only 1483 sq. km and except a small sub-basin of the Yamuna River, the city has very limited surface water resources (i.e., rivers, lakes, and canals). Hence Delhi is largely dependent on supplies from distant basins of Yamuna, Ganga, Bhakra Beas River. At present neighboring states are supplying nearly 50 per cent of Delhi's water needs. Consequently, the groundwater resource of Delhi is coming under immense pressure and it is adversely affecting Delhi's water supply condition. As per the Central Ground Water Board (CGWB) the annual groundwater extraction in Delhi was more than 100 per cent during 2017.

The annual rainfall in Delhi is about 62 cm. In the past this limited amount of rain water was able to pound on the forest floor, infiltrate into the soil and converted to groundwater, to be utilised by people. Since last few decades the area of impervious surfaces, like roads, and buildings has increased manifold in the city, which ultimately prevents rain water from infiltrating, or soaking, into the ground. Therefore, a large amount of rain water over Delhi translates into surface runoff and empties into the nearby storm drains. Point of concern is that the intensity of urbanisation in Delhi is increasing day by day and as a result the runoff generation will continue to increase in the years to come. Till now, Delhi is somehow managing its water demand, however, is

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likely to face increasing water crisis if the government doesn't take any concrete steps.

In view of that, Delhi has no options other than to look for multi-faceted and a long-term water resource management planning in order to meet its future water demand. The efficient utilisation of water and rainwater harvesting is an important method to improve the ground water level in Delhi. A large amount of storm water runoff is being generated from a number of constructed zones including residential areas, commercial and industrial areas, roads, highways and bridges. So tapping of storm water from the localised catchment surfaces such as roofs of housing colonies, educational institutions, official buildings, and open areas surfaces, etc is a good option either to recharge the groundwater aquifers or storing it for direct use.

Basically, rainwater harvesting can be done at individual household level and at community level in both urban as well as rural areas. At household level, harvesting can be done through roof catchments, and at community level through ground catchments. In case of Delhi, there are a large number of housing societies, industrial premises, commercial and institutional establishments which have huge surface areas.

Realising the huge potential of Rain Water Harvesting (RWH), Ministry of Urban Development and Poverty Alleviation, Government of India has made Rain Water Harvesting mandatory for all new buildings on plots 100 sq m and above in 2001 and asked states governments to make modifications in building bye laws. Accordingly in 2002, the Delhi government had implemented a financial assistance scheme to support installation of RWH structures. Under the scheme, grants-in-aid up to 50 per cent of the total cost of RWH structure or INR 50,000, whichever is less, was given to eligible groups, such as registered Resident Welfare Associations (RWAs), Cooperative Group Housing Societies, recognised private and government schools, hospitals, charitable institutions, and NGOs.

Recently, Ministry of Housing and Urban Affairs, Government of India has issued new guidelines for Urban Water Conservation under Jal Shakti Abhiyan. Thrust areas include Rain Water Harvesting (RWH), Reuse of Treated Waste Water, Rejuvenation of Water Bodies and Plantation. As per the above guidelines it is the responsibility of Urban Local Bodies (ULBs) to ensure that all government buildings (Central/ State/ULB) must have RWH structures as per building bye laws, and same should be checked before issuing Occupancy-cum-Completion Certificate (OCC).

Accordingly, the Delhi government has revised the building

byelaws for Delhi and Delhi Water & Sewer (Tariff and Metering) Regulations in 2019. It has made RWH mandatory in Delhi in new buildings for measuring at least 100 sq ft or more to improve the water table falling alarmingly across the city. To encourage and ensure installation of rooftop RWH in houses and buildings over 100 sq m, the Delhi Government now gives financial assistance of up to Rs. 50,000 depending on the size of the projects (Table 1) and a rebate of 10 per cent on water bills. However, provision has been made that if the RWH system is found non-functional, rebate for RWH may be withdrawn and those who fail to install the system will have to pay 1.5 times the bill amount. Recently, the last date for compulsory installation has also been extended to December, 2021. To facilitate this RWH scheme, the Delhi Jal Board has roped in its 12 Jal Shakti Kendras, located in every District.

TABLE 1: CRITERIA FOR DISBURSEMENT OF FINANCIAL ASSISTANCE

S. No.	Size of Plot	Financial Assistance
1.	100 sq m and above up to 199.99 sq m	50% of the total cost of RWH structure or Rs. 10,000 wherever is less
2.	200 sq m and above up to 299.99 sq m	50% of the total cost of RWH structure or Rs. 20,000 wherever is less
3.	300 sq m and above up to 399.99 sq m	50% of the total cost of RWH structure or Rs. 30,000 wherever is less
4.	400 sq m and above up to 499.99 sq m	50% of the total cost of RWH structure or Rs. 40,000 wherever is less
5.	500 sq m and above	50% of the total cost of RWH structure or Rs. 50,000 wherever is less

Source: Delhi Jal Board, 2021

To make the RWH system cost-effective, the Delhi Government has decided to adopt the Durgarpur model, also known as inline RWH system. This system does not require a complex setup. It channels the rain water directly to a bore well, instead of a regular rainwater-harvesting pit. While setting up a conventional RWH system costs Rs 75,000-100 000, the Durgarpur model can be set up for as little as Rs 16,000.

## CONCLUSION

Studies have shown that Rainwater Harvesting is one of a viable long-term strategy to tackle the increasing pressure on freshwater resources of our country. However its success is dependent on how scheme is well implemented on ground. In case of Delhi, the data from

Delhi Jal Board shows that till date, 4,124 schools and colleges of Delhi have installed RWH systems, while installation in the remaining 407 eligible institutions will be done in a phased manner. Similarly, 3,705 government buildings have installed RWH and in case of private buildings, RWH system has been implemented in just 1,869 buildings till date. It can be expected that with greater awareness among the people, more and more individuals, communities and institutions will be involved in RWH practices.