

A Study on VARSHA-Rainwater Harvesting Programme in Kerala

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Water security

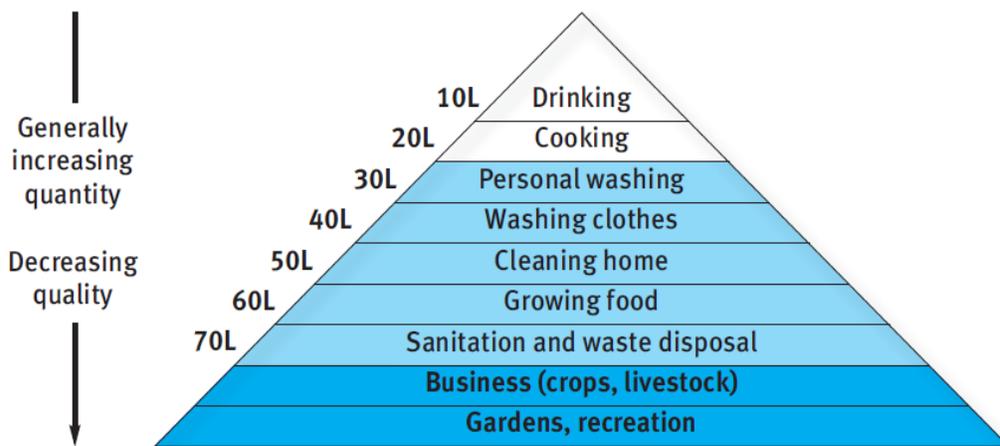
A number of individual securities must be needed to achieve human security: a good level of health and well-being, adequate and safe food, a secure and healthy environment, means to a secure livelihood, and protection and fulfilment of fundamental rights and liberties, among others (UNDP, 1994). Water is required for ensuring these securities to met. Many parts of the world face a water stress situation. The World Water Development Report 2015 says that around 748 million people do not have access to an improved source of drinking water. Access to safe water is a human right and entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses.

Water Aid defines water security as: 'Reliable access to water of sufficient quantity and quality for basic human needs, small-scale 'livelihoods and local ecosystem services, coupled with a well managed risk of water-related disasters.' Access to water means people can use water within a reasonable distance of their home, and without exclusion of race, tribe, religion, disability, gender or other cause. The quality of water should be such that there is no significant health risk arises from its use. It should be acceptable in appearance, taste and odour. To quantify water security, Asian Water Development Outlook 2016 this vision was developed into a water security framework with five interdependent key dimensions including Household Water Security.

Providing all people with reliable, safe water and sanitation for achieving household water security is an essential foundation for the efforts to eradicate poverty and support economic development. It is important to improving access to water for the basic human needs like drinking, cooking, bathing, sanitation and hygiene of the poorest people. Household water security is an essential foundation for efforts to eradicate poverty and support economic development.

The World Health Organisation (WHO) defines optimal quantity for domestic use as 100 litres per person per day. Various studies show that the amount actually collected from improved water sources for domestic use tends to be below these standards. An outline of different quantities of water for different purposes is as illustrated in figure

Water Requirement for Different Purposes (Litre/ Person/ Day)



Source: water security framework, water aid(2012)

Since the need and demand for this valuable water resource has been increasing over years, the necessity of scientific management of water resources is more important nowadays. Concern over the global implications of water problems was voiced as far back as the United Nations conference on the human development in Stockholm in 1972. The UN-sponsored conference on water at Mar del Plata, Argentina, in 1977 was seminal in the formation of the new approach and in promoting the importance of water and water management to world governments. Rainwater harvesting is an alternative for supplying water in the face of increasing water scarcity and escalating water demand. It is the deliberate collection and storage of rainwater that runs off a natural or manmade catchment surface like rooftop, compounds, rocky surfaces, or hill slopes, or artificially prepared land surfaces. Water harvesting can be practiced in both urban and rural areas, by the rich and poor, and by industrialised and developing countries. There are two main systems of rainwater harvesting; storage for future use, artificial recharge to ground water.

Kerala has been showing decreasing availability of rain, lowering of surface and ground water and decreasing trend in per capita water availability. RWH is the most viable solutions for severe water problems, particularly in Kerala, the land of rain. It is important here to arrest and conserve as much rain as possible with suitable methods. Rain water harvesting is an effective process to utilize the natural gift. Kerala has an annual average rainfall of 3085 millimetres which is almost three times higher than the national average of 1194 mm. It is estimated that more than 90 per cent of the rainwater in Kerala is flowing into the sea within a day or two. Kerala has surplus water during the monsoon months but shortage of water during rest of the year. For the entire state, impounding the rainfall for 44 days would be enough to supply 250 lpcd to every person in Kerala for an entire year if it managed well.

State and local self government institutions are implementing a number of drinking water schemes to solve water scarcity, but many of the drinking water schemes does not serve the expected outcome. The KWA revealed that there are 32,568 drinking water schemes implemented in the state, and out of which 44.5% schemes don't serve the expected outcome. All these pointed towards the need for alternative as well as sustainable water management practices.

Rainwater harvesting

Rain is a primary source of water. There are two main techniques of rainwater harvesting:

- a) Storage of rainwater on surface for future use.
- b) Recharge to groundwater.

VARSHA-RWH scheme

VARSHA-the first community based rainwater scheme was undertaken by the Kerala Water Authority (KWA), govt. of Kerala through the construction of ferro-cement tanks in the Districts of Ernakulam, Alleppy, Kottayam, Thiruvananthapuram and Pathanamthitta, with the financial support of the Government of India under Rajiv Gandhi Drinking Water Mission. Considering the geographical feasibility of the coastal area, rainwater collected from the rooftop is directed and stored in the ferrocement tanks. Tanks with capacity of 10000 litres are constructed jointly for two households and ensure 5000 litres of water for each family, which is sufficient in summer months, at least for drinking and cooking purposes. The financial support is at 90:10 between government and households.

The study on RWHS and its impact is very important as it is related with water scarcity and the measures to overcome the scarcity. Unless efforts at augmenting the local water sources are made, sustainable water supply to rural households will remain a tough issue to handle. A study was conducted to assess the performance of RWH structures in Alleppy and Ernakulam districts of Kerala. A sample of 50 beneficiaries affiliated with ferro cement,tanks in each districts were surveyed. The study assess the success of RWH in relation with the rainfall, geographical suitability, socio- economic variables, proper construction and the maintenance of the tanks, availability of other water sources and use of harvested water.

Those who were experienced from severe water scarcity in the past found the structures highly beneficial. As the average annual rainfall of the state is above 3000 mm, it is geographically suitable in coastal areas to store rainwater in ferrocement. Since the programme demand low contribution cost from the beneficiaries, the middle income families with concrete terrace were installed the structures more in both the districts. As the tanks occupy the space in the courtyard, households with more than 5 cent land installed the structure.

As every RWH system is an individual household's asset, its operation and maintenance is the sole responsibility of the user household. Proper maintenance of the roof catchment, first- flush devices, overflow pipes and storage tanks was critical to ensure collection of clean water. Those who are

doing the management and maintenance activities in time, can use the stored water for drinking and cooking purposes and they feel the quality of the collected water is superior to other sources. The beneficiaries in Alleppy districts shows more interest in doing annual maintenance of the tanks as these structures are the main source of water for drinking and cooking. The beneficiaries in Ernakulam use RWH structure for domestic needs and they depend more on pipe water for drinking and cooking purposes. The reliability of the RWH system in providing safe drinking water depends on the technical soundness of its various components like the condition of roof and storage tanks. The cracks and leakages in the structures, restrict the households from its use.

Conclusion

Rainwater harvesting is one of the alternative technologies for delivering drinking water. In fact, through the ages, this has been a traditional way of enhancing domestic water supply. Due to increase in population, urbanisation and other factors means to recharge the ground water reduced drastically. In the changing scenario every drop of rainwater should be harvested and need for other conservation measures exist. The households can play major role in water harvesting by making use of wells for water harvesting, rejuvenation of ponds, and other water conservation measures, so these practice at home itself educate the people about its role.

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