

Rain Water Harvesting

Dr. Mrs. A. Jesintha Vilveena

M.A., M.Phil., Ph.D., Associate Professor, P.G & Research Department of History,
Jayaraj Annapackiam College for Women (Autonomous), Periyakulam

Abstract: Water is one of the most important components of the life on our planet. It is natural process of any progressive society that the demand of water increases day by day. Rain water harvesting occupies an important position. This technique implies the collection and storage of rain water at the surface or in subsurface aquifers before it last at surface runoff. A statement often made is that under the Indian Constitution water is a State subject. The state governments are encouraged to formulate and develop water resource projects for irrigation, flood control, hydro-power generation, drinking water supply, industrial and other miscellaneous uses.

Keywords: Rain Water, Technique Implies, Harvesting Occupies.

1. INTRODUCTION

Water is the very basis of life and is the foundation for human survival and development. Water is the elixir of life. It is part of a larger ecological system and vital to the essential environment for sustaining all life forms. It of the constituent of the hydrosphere that consists of the oceans, seas, rivers, streams, glaciers, lakes, reservoirs, polar ice caps and shallow ground water bodies etc.. Capacity of natural water is tremendous but it is not infinite. Rain water harvesting is the accumulating and storing of rain water for reuse before it reaches aquifer. It has been used to provide drinking water, water for livestock, water for irrigation as well as other typical uses. Rain water collected from the roofs of houses and local institutions can make an important contribution to the availability of drinking water. Rain water harvesting can be used for groundwater recharge where the runoff on the ground is collected and allowed to be absorbed adding to the groundwater.

2. EARLY ERA

Rain water harvesting and utilization system have been used since ancient times and evidence of roof catchment systems date back to early roman times. Roman villas and even whole cities were designed to take advantage of rain water as the principal water source for drinking and domestic purposes since at least 2000 B.C. in the Negev desert in Israel, tanks for storing runoff from hill sides for domestic and agricultural purposes have allowed habitation and cultivation in areas with as little as 100mm of rain per year. The earliest known evidence of the use of the techno logy in Africa comes from northern Egypt, were tanks ranging from 200-2000 m³ have been used for at least 2000 years-many are still operational today. In Asia rain water collection practices have been traced back almost 2000 years in Thailand. The world's largest rain water tank is probably that Yerebatan Sarayi in Istanbul, Turkey. This was constructed during the rule of Caesar Justinian. It measures 140m by 70m has a capacity of 80000 cubic metres.

India is a sub continent surrounded by the Arabian Sea on the West, the Indian Ocean in the South, the Bay of Bengal in the East and the Himalayas in the North. About 85% of the available water is used for agricultural purposes, 8% for domestic purposes and 5% for industry. In many cases rain water harvesting initiatives involved the revival of age-old tradition, but it is not true in all cases. While the repair of johads in Rajasthan and the rehabilitation of tank system in South India may be instances of the revival of old traditions, the concept of water harvesting appeared to be fairly new in some parts of Mathya Pradesh where draught propelled the need for it.

Around third century B.C, farming communities in Baluchistan and Kutch used rain water harvesting for irrigation. In ancient Tamilnadu, India, rain water harvesting was done by Chola kings. Rain water from Brahadeeswarar Temple was collected in Sivaganga tank. During the later chola period, Veeranam tank was built in Cuddalore district of Tamilnadu to store water for drinking and irrigation purposes. Veeranam is a 16-kilometre long tank with a storage capacity of 1465 mcft. In India rain water harvesting first introduced by Andhra Pradesh Ex Chief Minister Shri. N.Chandarababu Naidu. He made a rule that every house which is going to build in cities of that state must have a percolation pit/rain water harvesting system. This rule increased the ground water level in good phase. In Rajasthan, rain water harvesting has traditionally been practiced by the people of the Thar Desert. There are many ancient water harvesting systems in Rajasthan. In Pune, Maharashtra rain water harvesting compulsory for any new society to be registered. In Tamilnadu, rain water harvesting was made compulsory for every building to avoid ground water depletion. It proved excellent results within five years and every other state took it as role model.

Types of Rain Water Harvesting Systems:

Rain water harvesting system consists of three basic elements: the collection system, the conveyance system and the storage system. Some of the systems are,

- The technology of roof top implies the collection and storage of rain water at the surface or in sub surface aquifers before it last at surface runoff. The augmented water resources can be harvested at the times of need. It involves the construction of recharge pits, recharges trenches and through existing tube wells in the urban area where as rain water harvesting technique in the rural area involves gully plucking, contour bunds, percolation tanks, check dams, cement plugs, nallah bunds, recharge shaft, dug well recharge and sub surface dykes. In regions of water scarcity new water supplies can be developed by capturing and storing a portion of the rain fall that is otherwise lost. The technology of roof top rain water harvesting involves the collection of rain water from the roof and sits storage by means of pipes connected with roof at one end and earth surface at the other end. Small bore has to be made at the surface where terminals ends of the pipes have been inserted. This helps in the storage of water in the ground and ultimately increases the ground water potential in the area.
- Larger systems are created for educational institutions, stadiums, air ports and others.
- In high-rise buildings, roofs can be designed for catchment purposes and the collected roof water can be kept in separate cisterns on the roofs for non-portable uses.
- Land surface catchments areas can be a simple way of collecting rain water. This technology can meet water demands dry periods. There is a possibility of high rates of water loss due to infiltration into the ground and because of the often marginal quality of the water collected, this technique is mainly suitable for storing water for agricultural purposes. The surface runoff collected in storm water ponds/reservoirs from urban areas is subject to a wide variety of contaminants. Keeping these catchments clean is of primary importance and hence the cost of water pollution control can be considerable.

Measures Taken by Government:

Water is one of the basic human needs which is increasingly becoming a scarce commodity all over the world rain water harvesting is becoming popular and is made mandatory in a few cities in the country. It is successfully applied in India. A statement often made is that under the Indian Constitution water is a state subject. The state governments are encouraged to formulate and develop water resources projects for irrigation, flood control, hydro-power generation, drinking water supply, industrial and other miscellaneous uses and a large number of dams, barrages, hydro-power structures, canal network were constructed all over the country in Five Year Plans. In Tamilnadu, there are 36 rivers, 39202 lakes and 89 dams. The average rain fall is 920mm. 48% of rain fall is got in the north east monsoon, 35% during south east monsoon, 14% during summer and 3% during winter season. The Tamilnadu District Municipalities Act, 1920 and Building Rules, 1973, have made it mandatory to provide rain water harvesting structures in all new buildings. To consolidate the gains, various measures have been taken up for rejuvenation of rain water harvesting structures created already in both public and private buildings, besides creating new ones. During 2001-2012, in order to give a fillip to these laudable programme, the Town Panchayat have undertaken the construction of new rain water harvesting structures and renovation of old water structures. The permanent housing scheme for Tsunami affected people included water harvesting in all houses. Some states have taken action to revive lakhs of water bodies of different types. They have also undertaken mini and micro

water shed irrigation schemes to improve ground water level in draught borne areas to preserve the local rain water for irrigation.

Advantages of Rain Water Harvesting:

- Rain water harvesting provides good supplement to other water sources.
- It increases the availability of water.
- It provides water supply in times of emergency or break down of the public water supply system, particularly during natural disaster.
- It raises underground water level.
- It improves the quality of groundwater by reducing salt content.
- It reduces storm drainage load and flooding in city streets.
- It prevents soil from being washed away by flowing rain water.
- It is an eco friendly method.

3. CONCLUSION

Water is essential for human survival. The central and state governments are taking necessary steps to save rain water. Even then, when there is a lack of rain, it is impossible to store water and further the ground water level may go down. The fast growing population and the need of more water for irrigation and industrial purposes are threatening to satisfy the need of the people.

REFERENCES

- [1] Chauhan. B.S., *Environmental Studies*, University Science Press, 2008, New Delhi, pp. 34, 39.
- [2] Daily Thanthi, Dated 5-1-2017, p.4.
- [3] en.wikipedia.org/wiki/rainwater_harvesting
- [4] en.wikipedia.org/National_Water_Policy
- [5] Gupta.K.R & Amita Gupta, *Concise Encyclopaedia of India*, Atlantic Publishers, 2006, New Delhi, p.638.
- [6] Gupta.K.R., *Water Crisis in India*, Atlantic Publishers, 2008, pp.70,203.
- [7] Kathpalia.G.N & Rakesh Kapoor, *Alternative Futures*, 2002, p.6.
- [8] Khalid Rayaz, *Management of Water Resources in Himalayam Eco System: A Case Study*, Book Well, New Delhi, pp. 257-260.
- [9] Phillipe Cullet & Joyeeta Gupta, *Evolution of Water Law and Policy in India*, Springer Academic Publishers, 2009, pp. 159,160.
- [10] Radha Kant Bharathi, *Interlinking of Indian Rivers*, Lotus Press, New Delhi, pp. 33,34.
- [11] Ramaswamy.R.Iyer, *WATER, Peerspectives, Issues, Concerns*, Sage Publications, New Delhi, 2008, p. 342.
- [12] Sondge.S.K, *Hydrology, Ground Water and Water Conservation*, Nisha Publications, New Delhi, pp.278,280,282.
- [13] www.gdrg/uen/water/rainwater/introduction
- [14] www.in-govt.in/virtual_direlong/dtp_rainwater