

A Geographical Study to Develop Solapur District in Water Planning Methods from Historical Times to the Present Day

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Article Info	ABSTRACT
Article History: Received: 18th Sep 2025 Accepted: 02nd Oct 2025 Published: 17th Oct 2025 Keywords: Water Scarcity, Rainwater Harvesting, Water Conservation	Solapur district is facing one of the worst droughts of the year 2011. Union Agriculture Minister Sharad Pawar has said that, this drought is worst drought than the one in 1972, which was termed as a 'famine'. Water is a major constituent of all living beings. The population in Solapur district is increasing day by day. Consequently, the growing concern about water scarcity challenges to Solapur district is to think of alternative solution to avoid the current problem of water scarcity. The rainwater harvesting techniques methods have been developed which ensure availability of water for agriculture and domestic purposes, and the roof top rainwater harvesting measures provide water for domestic consumption which, are often suggested as a solution for overcoming water shortage in drought prone area of Solapur district. Therefore, it is an urgent need to adopt innovative and scientific techniques and methodology to overcome the present burning issue of water scarcity in the region under study. This chapter covers all those aspects related to traditional and modern methods of rainwater harvesting systems to sort out the problem of water scarcity.

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1) Introduction

Water is an inseparable entity within life support system, access to water or required quality and quantity is fundamental for all human animal and plant life along with most economic activities but only a tiny fraction of the planet's abundant water is available to use as fresh water. About 97.5% of total water is found in the oceans. Which is not useful for drinking, irrigation and industry ? The experts saw the emerging global water resources picture as critical. At its closing session, the Conference adopted this Dublin Statement and the Conference Report. The problems highlighted are not speculative in nature; nor are they likely to affect our planet only in the distant future. They are here and they affect humanity now. The future survival of many millions of people demands immediate and effective action.

Rising population, growing industrialization, and expanding husbandry have pushed up the demand for water. Sweats have been made to collect water structure heads and budgets and digging well's. The country has also tried to reclaim and desalinate (remove mariners) water. Water conservation has come the need of the day. The idea of ground water recharging by water operation is gaining significance in India.

2. Hypotheses:

1. India has lower fresh water coffers in comparisons to it's total demand population
2. important of the water is wasted by run off
3. There's need to arrest water for the fulfilment of the demand of people.
4. In India used to exercise water operation system since ancient period.

3. Objectives:

- 1) To understand the water conservation in Rural and Urban Area in India.
- 2) To understand the vacuity of water.
- 3) To understand the pattern of changing water operation of ancient to ultramodern Age.
- 4) To understand styles of water operation with special references to rainwater harvesting.

4. Database and methodology:

Present exploration work is grounded on the secondary data. Data is collected from the following sources. Research source, Research Journal, References Book's, Socio- Economic Abstract of India, website's.

5. Significance of rainwater harvesting in India:

rainwater harvesting in India Water vacuity per capita has been on the decline in India. Two reasons have been the adding demand for water and the adding population. The amount of water available to the country being fixed the adding demand reduces per capita water vacuity. Due to rapid-fire urbanization, percolation of rain water into the sub-soil has dropped drastically and recharging of ground d water has lowered Ground water sources are decreasingly getting depleted or are getting defiled. Bore wells are moreover silting up, getting short of water or are

drawing weakened water. Agriculture continues to be the single largest consumer of water still artificial demand for water shows the fastest growth.

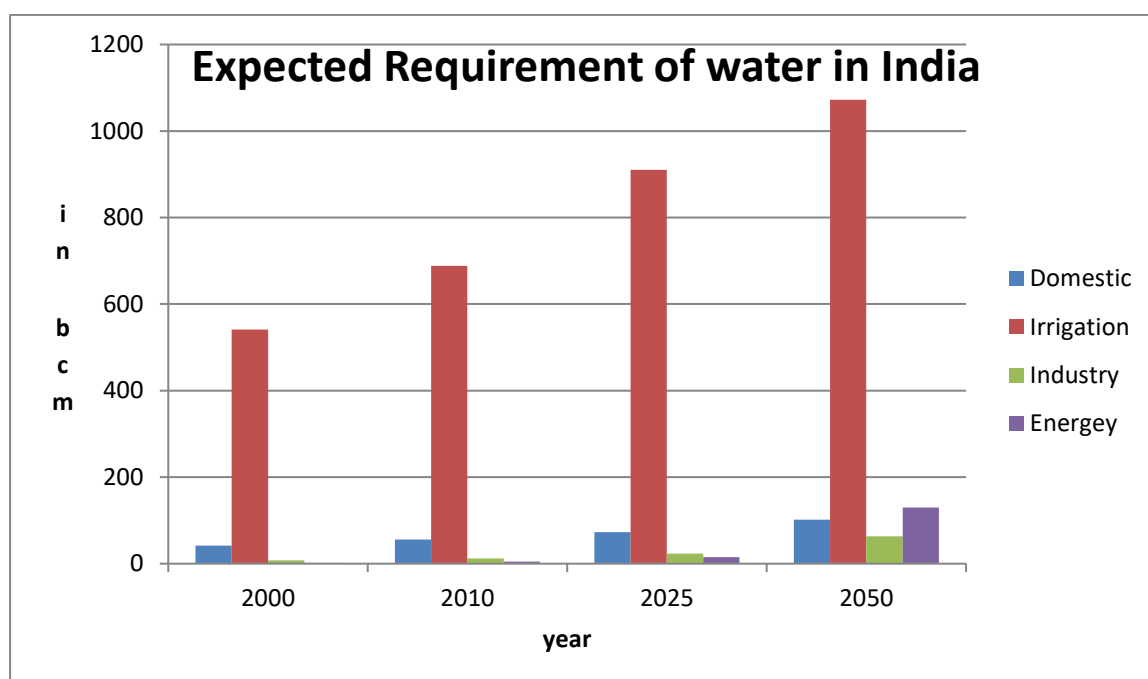
6. Water conservation ancient method's in rural and urban area:

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Table. 1: Expected Requirement of water in India (In Billion Cubic Meter)

Different use of water	2000 year	2010 year	2025 year	2050 year
Domestic	42	56	73	102
Irrigation	541	688	910	1072
Industry	05	12	23	63
Energy	02	05	15	130
Total	634	813	1093	1447

Source- Compendium of Argil. Statistics 2011



7. Savages styles of rainwater harvesting

A) Khadin/ Dhara First designed in Rajasthan in 15 the century. It us an ingenious construction designed to gather face runoff water for husbandry. It's erected across the lower hill slops lying below husky highlands aqueducts & sluiceways allow redundant water to drain off. This system used impregnated rainwater on far land which is used for crop product.

B) Bavadi/ vavdi They're traditional step wells in Gujarat India they were constructed in 8th to 11th century CE 11 to 12 century CE 13 to 15 Century CE. They were located within or at edge to the vill which were used for utilitarian purpose & cool place for social gathering.

C) Ahar/ Pynes It was flood tide water harvesting system set up in south Bhiar. Ahar is catchment receptacle amassed on three side, the fourth side the natural grade of the land itself, it was used to grow rabbi crops Pynes are artificial channels constructed to use swash water in agrarian fields 10 km to 20 km from swash. In 1995 Dhira Village youths in Bihar started Ahar pynes system which completed in 2000. It has integrated 80 million intimidators of land which was used to grow two cereal crops & vegetables every time.

D) Bengal's Inundation Channel Williams will cocks British irrigation expert has given distinct and houses of the region. Underground baked earthen pipes and coverts to maintain the inflow of water and to transports it to distant places, are still functional at Burhanpur Madhya Pradesh, Golkunda and Bijapur in Karnataka, and Aurangabad in Maharashtra. Features. Cuts in the banks of the conduits were closed when flood tide water was over.

E) Kohli tanks Group f townies tillers constructed 43,381 water tanks in the quarter of Bhandara (Maharashtra) before 25 time ago. The tanks of all sizes which bring water to door- step of townies. They're as I) Bhandaras II) Phad

8. Ultramodern system of rainwater harvesting

Percolation Ponds These are the most current structures in India as a measure to recharge the groundwater force both in alluvial as well as in hard gemstone conformations. The efficacy and feasibility of these structures is more in hard gemstone conformation where the jewels are largely shattered and weathered. Percolation tanks have been constructed in plenitude in the areas of basaltic lava inflow and crystalline jewels in the countries of Maharashtra, Andhra Pradesh, Madhya Pradesh, Karnataka and Gujarat. Percolation tanks are still also doable in mountain fronts. Percolation tanks with wells and shafts are also constructed to recharge deeper aquifers when shallow or superficial conformations are largely impermeable. A detailed analysis of downfall pattern, number of downfall days, dry spells and evaporation rate and detailed hydro

geological studies are useful to demarcate suitable percolation tank spots. Check heads Check heads are constructed across small aqueducts having gentle pitch and are doable both in hard gemstone as well as alluvial conformation. The point named for check levee should have sufficient consistence of passable bed or survived conformation to grease recharge of stored water within short span of time. The water stored in these structures is substantially confined to sluice course and the height is typically lower than 2 m. These are designed grounded on sluice range and redundant water is allowed to flow over the wall.

9. Dug well Recharge

In alluvial as well as hard gemstone areas, there are thousands of dug wells which have moreover gone dry or the water situations have declined vastly. These dug wells can be used as structures to recharge the groundwater. The storehouse in the force, storm water, tank water, conduit water can be diverted into these structures to directly recharge the dry aquifer. In this process, the soil humidity losses during the normal process of artificial recharge are reduced. The quality of source water including the ground content should be similar that the quality of groundwater force is n't deteriorated.

10. Injection Wells

Injection wells are structures analogous to a tube well but with the purpose of accelerating the groundwater storehouse of a confined aquifer by pumping in treated face water under pressure. The injection wells are profitable when land is scarce. Hydraulically, the effectiveness of induction of water in injection well is determined by a.) Pumping rate b). Permeability of aquifer c). Distance from sluice d). Natural ground water grade e). Type of well.

11. Induced recharge

It's an circular system of artificial recharge involving pumping from aquifer that's hydraulically connected with face water to induce recharge to the groundwater force. When the cone of depression intercepts swash recharge boundary, a hydraulic connection gets established with face source which starts furnishing part of the pump age yield. In similar styles, there's actually no artificial figure- up of groundwater storehouse but only passage of face water to the pump through an aquifer. In this sense, it's further a pump age addition rather than artificial recharge measure.

In hard gemstone areas, the abandoned channels frequently give good spots for convinced recharge. Check block in sluice channel, at position up sluice of the channel bifurcation can help in high infiltration from face force to the abandoned channel when heavy pumping is carried out in wells located in the buried channel. Catchment In civic area the apartment system of In this apartment casing is most extensively used. system or indeed in the separate individual

bungalows system the rainwater can be cathead on cement concrete sundeck where directly rain falls.

Conduits are the channels that carry rainwater from catchment area to harvesting system
 First Flushing The first flush device is a evolve that flushes out first spell of weakened rain water.
 Filter It's a unit which contains filtering media like fiber coarse. Coarse- beach to sludge rainwater.
 Storage installation The storehouse tanks can be of spherical blockish & square shape. They can be of plastic are Meta

12. Recharge structure

Rain water can be used for recharging the ground water through dug wells; drag wells which can promote percolation of water through passage launch at shallower

Ways of harvesting rainwater; face runoff harvesting Urbanization increases face runoff, by creating further impervious face similar as pavement and structures that do n't allow percolation of the water down through the soil to the aquifer. It's rather forced directly into aqueducts or runoff rainspouts, where corrosion and siltation can be major problems, indeed when flooding is not. Increased runoff reduces groundwater recharge, therefore lowering the water table and making famines worse, especially for growers and others who depend on the water wells.

Roof top rainwater harvesting(RTRWH) It's a system of catching rainwater where it falls. In rooftop harvesting, the roof becomes the catchments, and the rainwater is collected from the roof of the house/ structure. It can either be stored in a tank or diverted to artificial recharge system. This system is less precious and veritably effective and if enforced duly helps in accelerating the ground water position of the area. The Main ideal of rooftop rain water harvesting is to make water available for unborn use. Landing and storing rain water for use is particularly important in dry land, hilly, civic and littoral areas' Step by step process for rainwater harvesting

13. Conclusion:

- 1) In highly populated agrarian country like India water crises is a serious problem.
- 2) Increasing demand and mismanagement of water is responsible for water crisis.
- 3) Water management is the need of the hour to attain food security, fight against global warming and poverty in India.
- 4) Rainwater harvesting is the best method of water management
- 5) Rainwater harvesting has been done in India since long. It is not a new concept.
- 6) Need of hour is to apply modern technology for rainwater harvesting for better water management
- 7) The solution for water crisis lies in better water management with social awareness.

- 8) Rainwater harvesting will help in attaining faster, sustainable and more inclusive growth and the approach of five year plans
- 9) Water is the most essential part of life, without it life is not possible
- 10) Hence, "SAVE WATER SAE LIFE"

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