

Conventional Water Conservation Methods In India

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Abstract

In India around 83% of available fresh water is used for agriculture. Rainfall being the primary source of fresh water, the concept behind conserving water is to harvest it when it falls and wherever it falls. The importance of storing rainwater through different techniques can be understood by an example of the desert city of Jaisalmer in Rajasthan which is water self-sufficient despite experiencing meager rainfall as against Cherrapunji, which is blessed with the highest rainfall in the world, but still faces water shortage due to lack of water conservation methods. Water conservation is a key element of any strategy that aims to alleviate the water scarcity crisis in India. With rainfall patterns changing almost every year, the Indian government has started looking at means to revive the traditional systems of water harvesting in the country. Given

that these methods are simple and eco-friendly for the most part, they are not just highly effective for the people who rely on them but they are also good for the environment .

1. Jhalara



Jhalaras are typically rectangular-shaped stepwells that have tiered steps on three or four sides. These stepwells collect the subterranean seepage of an upstream reservoir or a lake. Jhalaras were built to ensure easy and regular supply of water for religious rites, royal ceremonies and community use.

2. Talab/Bandhi



Talabs are reservoirs that store water for household consumption and drinking purposes. They may be natural, such as the pokhariyan ponds at Tikamgarh in the Bundelkhand region or man made, such as the lakes of Udaipur. A reservoir with an area less than five bighas is called a talai, a medium sized lake is called a bandhi and bigger lakes are called sagar or samand.

3. Bawari



Bawaris are unique stepwells that were once a part of the ancient networks of water storage in the cities of Rajasthan. The little rain that the region received would be diverted to man-made tanks through canals built on the hilly outskirts of cities. The water would then percolate into the ground, raising the water table and recharging a deep and intricate network of aquifers. water loss through evaporation, a series of layered steps were built around the reservoirs to narrow and deepen the wells.

4. Taanka



Taanka is a traditional rainwater harvesting technique indigenous to the Thar desert region of Rajasthan. A Taanka is a cylindrical paved underground pit into which rainwater from rooftops, courtyards or artificially prepared catchments flows. Once completely filled, the water stored in a taanka can last throughout the dry season and is sufficient for a family of 5-6 members. An important element of water security in these arid regions. taankas can save families from the everyday drudgery of fetching water from distant sources.

5. Ahar Pynes



Ahar Pynes are traditional floodwater harvesting systems indigenous to South Bihar. Ahars are reservoirs with embankments on three sides that are built at the end of diversion channels like pynes. Pynes are artificial rivulets led off from rivers to collect water in the ahars for irrigation in the dry months. Paddy cultivation in this relatively low rainfall area depends mostly on ahar pynes

6. Johads



Johads, one of the oldest systems used to conserve and recharge ground water, are small earthen check dams that capture and store rainwater. Constructed in an area with naturally high elevation on three sides, a storage pit is made by excavating the area, and excavated soil is used to create a wall on the fourth side. Sometimes, several johads are interconnected through deep channels, with a single outlet opening into a river or stream nearby. This prevents structural damage to the water pits that are also called madakas in Karnataka and pemphara in Odisha.

7. Panam Keni



The Kuruma tribe (a native tribe of Wayanad) uses a special type of well, called the panam keni, to store water. Wooden cylinders are made by soaking the stems of toddy palms in water for a long time so that the core rots away until only the hard outer layer remains. These cylinders, four feet in diameter as well as depth, are then immersed in groundwater springs located in fields and forests. This is the secret behind how these wells have abundant water even in the hottest summer months.

8. Khadin



Khadins are ingenious constructions designed to harvest surface runoff water for agriculture. The main feature of a khadin, also called dhora, is a long earthen embankment that is built across the hill slopes of gravelly uplands. Sluices and

spillways allow the excess water to drain off and the water saturated land is then used for crop production. First designed by the Paliwal Brahmins of Jaisalmer in the 15th century, this system is very similar to the irrigation methods of the people of ancient Ur (present Iraq).

9. Kund



A kund is a saucer-shaped catchment area that gently slope towards the central circular underground well. Its main purpose is to harvest rainwater for drinking. Kunds dot the sandier tracts of western Rajasthan and Gujarat. Traditionally, these well-pits were covered in disinfectant lime and ash, though many modern kunds have been constructed simply with cement. Raja Sur Singh is said to have built the earliest known kunds in the village of Vadi Ka Melan in the year 1607 AD.

10. Baoli



Built by the nobility for civic, strategic or philanthropic reasons, baolis were secular structures from which everyone could draw water. These beautiful stepwells typically have beautiful arches, carved motifs and sometimes, rooms on their sides. The locations of baolis often suggest the way in which they were used. Baolis within villages were mainly used for utilitarian purposes and social gatherings. Baolis on trade routes were often frequented as resting places. Stepwells used exclusively for agriculture had drainage systems that channelled water into the fields.

11. Nadi



Found near Jodhpur in Rajasthan, nadis are village ponds that store rainwater collected from adjoining natural catchment areas. The location of a nadi has a strong bearing on its storage capacity and hence the site of a nadi is chosen after careful deliberation of its catchment and runoff characteristics. Since nadis received their water supply from erratic torrential rainfall, large amounts of sandy sediments were regularly deposited in them, resulting in quick siltation. A local voluntary organisation, the Mewar Krishak Vikas Samiti (MKVS) has been adding systems like spillways and silt traps

to old nadis and promoting afforestation of their drainage basin to prevent siltation.

12. Bhandara Phad



Phad, a community-managed irrigation system, probably came into existence a few centuries ago. The system starts with a bhandhara (check dam) built across a river, from which kalvas (canals) branch out to carry water into the fields in the phad (agricultural block). Sandams (escapes outlets) ensure that the excess water is removed from the canals by charis (distributaries) and sarangs (field channels). The Phad system is operated on three rivers in the Tapi basin - Panjhra, Mosam and Aram - in the Dhule and Nasik districts of Maharashtra.

13. Bamboo Drip Irrigation



Bamboo Drip irrigation System is an ingenious system of efficient water management that has been practised for over two centuries in northeast India. The tribal farmers of the region have developed a system for irrigation in which water from perennial springs is diverted to the terrace fields using varying sizes and shapes of bamboo pipes. Best suited for crops requiring less water, the system ensures that small drops of water are delivered directly to the roots of the plants. This ancient system is used by the farmers of Khasi and Jaintia hills to drip-irrigate their black pepper cultivation.

14. Sand Borer



Sand bores provide a safe alternative for farm irrigation without affecting groundwater. This technique uses the concept of extracting water retained by sand particles. Sand particles act as great water filters by retaining the salt content at bottom and gushing pure water out. White sand is believed to yield water clean enough for drinking too. Sand deposits (as high as 15-30 feet) left along banks of rivers is dug using a manual soil cutter. Casing PVC pipes is inserted to act as filter and an electric or diesel motor is used to pump sweet water out.

The entire set-up costs around INR5.000 -7.000 and requires less maintenance when sand deposits are fine and clean. The sand bore technique has been used in Karnataka since decades. The only drawback is that it can only be practiced in coastal areas or in areas with high sand deposits. The adjoining picture shows farmers preparing the PVC pipe filter with holes.

Sources

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2. www.thebetterindia.com> *Rural India*