

Renewing Traditional water harvesting system : Mitigating water Scarcity in INDIA

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Abstract

India is facing fresh water crises due to increasing population, Global warming, Water pollution, Industrial waste, Increasing Automobiles pollution cutting plants, Degenerating Hills and Mining and many other reasons. India has Himalayas in North, Aravallis in West, Bay of Bengal, Indian Ocean and Arabian Sea in east, South and West. Rajasthan has

***semi-arid** and arid climate, specially adapted to survive in the dry waterless region of the state.*

Water problem is the great problem of Rajasthan and INDIA. Due to Scarcity of Rains

Interlinking of Rivers like Indira Gandhi canal and Luni River and Banas River can solve the water scarcity problem of Rajasthan.

Key words : Traditional water harvesting, India.

Introduction

Ajmer is located in the center of Rajasthan (INDIA) between $25^{\circ} 38''$ and $26^{\circ} 58''$ north

$75^{\circ} 22''$ east longitude covering a geographical area of about 8481sq

km hemmed in all sides by Aravalli hills. About 7 miles from the city is Pushkar lake created

by the touch of lord Brahma. The Dargah of khawaja Moinuddin chisti is holiest shrine next to Mecca in the world. Ajmer is abode of certain flora and fauna that are particularly endemic to **semi-arid** and are specially adapted to survive in the dry waterless region of the state.

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Observation and Results

Improving Rural as well as urban life

More than 70 % Indias population lives in villages. And most population depend for livelihood on agriculture. If water resources are proper and manageable ther will be good grain production and improve the life of rural population.

Hydropower 34000 will be generated. These will create employment also.

But there are also adverse impacts of ILR.

Danger of seismic hazard in Himalayas due to ILR transfer of river pollution will also be there.

Traditional water harvesting systems

1. Jhalara

These are square stepwells and have steps on four sides collect subterranean percolating water of lake. Jhalaras have regular supply of water . water can be used for household works, religious purposes, ceremonies and all purpose use. Jhalaras are there in many parts of Rajasthan specially in Jodhpur & Jhalaras are there. Mahamandir jhal is oldest one.



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2. Talab

Talabs are stockpile to store water.They can be used for drinking and household works. Pokhariyan is natural talab and Tikamgarh in Bundelkhand is man made as lakes in Udaipur. The receptacle in less than 5 bighas is Talai, medium sized is Bandhi and biggest is Sagar or Samand.



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3.Tanka

Tanka is traditional water storage system of Jaisalmer. It is not natural water storage system it is made artificially.

Tank is water storage system of Jaisalmer. It is oval (Cylindrical) underground well in which Rainwater is stored. Once made Tanka stores water for 6-7 persons for summers. The members of families have not to go far to fetch water .

4.Ahar Pynes

Ahar Pynes are made in Bihar to store overflowing flood water.

These are made to store water with barriers on 3 sides. Rice fields are deluge with Ahar pynes during dry months (Summers). Pynes are artificial channels from Ganges river

Or Falgu river in South Bihar.

5.Johads

Johads are small fictile dams to store rain water. Johads are connected with water channels these are very old rain water harvesting systems. Called Madak in Karnataka, johad in Rajasthan, and Pemghara (Odhisia).

6.Panam keni

These are water harvesting system in Wayanad Kuruma tribe store water in this way. Cylindrical, 4-5 feet in diameter and 4-5 feet in depth in groundwater. Wooden cylinders are made by toddy palm stem. These wells have water in May june months also.

7.Khadin dhana (Dhora)

Paliwal Brahmins of Jaisalmer use these Khadin water harvesting systems. These water harvesting systems are also used in Iraq (Ur).(15th century). Long earth bank on slope Land is gravel. These are excellent traditionl water harvesting system.

8.Kund

These are found in Gujarat. Raja Sur Singh (1607 AD)made first Kund in Vadi ka Melan village.This is bowl shaped area and underground well is there in center. Covered with lime and ash (disinfectant).

9. Bawari

These are stepwells which were used to store water in ancient water scarce Rajasthan cities. These will also increase groundwater. Steps minimize loss of water.The region receive very low rain. Man made tanks are also connected .

10. Baoli

Made for philanthropic reasons. These are built in Rajasthan

These are Stepwells, used during social gatherings. Were also found on trade routes.

Water can also be used for drinking and household works.

11. Nadi

Found in Jodhpur (Rajasthan) used to conserve rainwater. Mewar Krishi Vikas Samiti are cleaning these Nadis to avoid siltation. These have large water storage capacity.

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)

Maharashtra

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. Zings

Ladakh small tanks known as Zings collect unfreezing snow on Himalayan mountains. Passage

of water are made to collect melting water from snow which is collected in small tanks. The small tributary is formed by melting water. The water staff members distribute water equally in dry regions. The passage is channeled into farms.

14.Kuhls

Himachal Pradesh (Kangra) harvest water through Kuhls. These collect water which melts from snow covered mountains of Himachal Pradesh. This water is carried to fields. There are 750 big Kuhls and 2600 small Kuhls in Himachal Pradesh. These provide water to 35,000 hectares of land for irrigation. Kohli maintains the water level in Kuhls.

15.Zabo (Ruza)

Rainwater which falls on hills is collected in puddles. And later it is used for forests, Farms, and agriculture. Tranquilled water is also used for cattles, fishes, for medicinal plants, Birds. Zabo or Ruza collect runoff water for use in fields, Plants, Animals, Cattles, Birds, Fishes and for human use.

16.Bamboo drip irrigation

This water conservation system is extremely useful in Asam, Meghalaya, Mizorum, Manipur, Nagaland, Tripura, Sikkim and Arunachal Pradesh.

Water is passaged from springs to fields using various bamboo pipes. Drops of water are passaged to plant roots. Used by Khasi and Jaintia hills to black pepper fields.

17.Ramtek network

Maharashtra uses Ramtek rainwater harvesting system. Tanks are made by Malguzars (landowners), which are connected by groundwater and surface water. Chain of surface water and groundwater is made and network is made from hills to plains. Once the tank is filled the next tank will be filled. Conserves 70-80% runoff water.

18.Jackwells

In Nicobar pits (Jackwells) are made for water surrounded by bunds made by plantwood and

logs. In the center large Jackwell is there which is surrounded by small Jackwells. All jackwells are interconnected by long strip bamboos. This is the best way to conserve water in Nicobar region .

19.Pat system

Madhya Pradesh (Bhitada and Jhabua and nearby villages), uses this method to conserve water. Bunds are made near streams by stones and lined with leaves. These are passaged into deep diches. Stored water is used in fields , by animals, plants, birds etc.

20.Eri (Tank).

These are some traditional methods for conservation of water. Eri Tank (Tamil Nadu), Keres (Central Karnataka), Cheruvus (Andhra Pradesh) , Dongs (Asam), India' s annual water needs can be satisfied by Rainwater harvesting, Percolation skill.

These tanks also control floods and used at the time of drought or water scarcity.

Tanks also control soil erosion, recharge ground water. These are very helpful in cereal cultivation. Sometimes these tanks are interconnected.

Fresh water is becoming scarce in whole world. Global warming is also cause of water scarcity.

Ajmer (Rajasthan) Aravalis are exploited and weather is unpredictable so these water

harvesting systems are extremely useful. Urbanization , water pollution, Increasing human

population , Industrialization , warm climate , water conservation is single answer to all problems.



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1. Jhalara

Image 2. Talab /Bandhi



Image 3.Tanka



Image 4. Ahar Pynes



Image 5. Johads



Image 6. Panam Keni



Image 7. Khadin



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Image 8. Kund



Image 11.Nadi



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Image 12. Bhandara Phad



Image 13. Zing



Image 14. Kuhls



Image 15. Zabo



Image 16. Bamboo Drip Irrigation



Image 18. Jackwells



Image 17. Ramtek Model



Image19. Pat System



Image 20.. Eri



Talai , Bandhi , Chauka , Sagar , Samand are other water harvesting systems.

Due to global warming uncertainty of weather some places are flooded in India and others are facing the problem of drought. So with the help of these Traditional water conservation systems we can regenerate our exhausting water resources.

Rainwater harvesting

To stop extra water flow into river or sewage systems.

Desalination

Removal of salt from hard water is another solution for the problem but hard water is

also not available in Ajmer. Desert is spreading rapidly due to cutting of Aravallis and mining activities. Desert is spreading.

Cloud seeding

Intentional rains and weather changing. amount and type of precipitation change. Orice nuclei cloud condensation. This is done to increase precipitation.

Criteria for Interlinking rivers

Surplus water should be there in donor rivers. So other canals like Indira Gandhi canal should be developed and interlinked to solved water problem of Rajasthan.

Conclusion

These ILR (Inter linking River) are extremely useful for India and specially Rajasthan Reliable projects should be made for Interlinking rivers. Each village and town should be made responsible for its own water conservation.

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