

Miracle in Rajasthan: Traditional Practice of Rainwater Harvesting

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The people of the semi-arid region of Alwar, in Rajasthan, India, were in desperate need of water for domestic use as well as for irrigating their farmland. Despite average annual rainfall of 600 mm per annum, the landscape was dry and the ground water was almost nonexistent. This article explains how the landscape was changed for good by adopting the traditional system of rainwater harvesting, which brought life to several dead rivers. This transformation was possible through dedicated efforts of Rajendra Singh and his friends from Tarun Bharat Sangh (TBS; Young India Association).

Alwar, India is one of the poorest districts in the State of Rajasthan, at the foot of Aravalli mountain range in northeastern Rajasthan. In the past it had no water, and some of the worst living conditions in India. Most of the district's young people had left in search of a better life. The temperature in Alwar fluctuates from 0°C in winter to 49°C in summer. Over time, the water table had receded below critical levels and rivers and wells dried up. Due to the excessive drawing of ground water for crop production, the shallow water aquifers dwindled to very low levels of about 100 to 120 meters. Deep confined aquifers, sometimes about 300 meters deep, are either salty or too deep to pump.

About 11% of the land of Alwar district was left under single cropping, and only 3% was under double cropping. The forest cover in the area, including the famous Ariska Tiger Reserve, was reduced to about 7%. As very little farming was possible, very little land was left as pasture lands for grazing the cattle, and no forest regeneration was taking place, people were deserting their villages to earn a skimpy living elsewhere. The farmers of the region could not grow enough food, nor fodder or pasture, and there was no fuelwood. The harsh desert climate was becoming unbearable due to complete exhaustion of ground water.

The reason for this was because of the local prince had plundered the Aravalli mountain range, which had in the past protected northeastern Rajasthan from the heat of the Thar desert, feared that the *Jagirdars* and the royalty would lose their properties after Indian Independence. The prince auctioned off huge blocks of forest, which were subsequently denuded of their trees by miners and loggers. With the forests gone, rainwater ran down hills and valleys, eroding the fertile topsoil, instead of seeping into the earth. Hence, over time, the land became infertile. This was the situation of Alwar district until 1985, when Rajendra Singh, a graduate of ayurvedic medicine, visited the district together with his fellow members of the TBS.

Singh opened an ayurvedic practice in a village

Gopalpura, while his four friends were engaged encouraging people to send their daughters to school. A sixty-year-old man, Mangu Lal Patel, advised Singh that village people are not interested in their social works but, instead, the villagers would like their help to build a *johad*. Based on traditional wisdom and practices that had been forgotten for various reasons, the *johad* is an earthen water pond designed to retain rainwater by the construction of a small dam across the waterways. Though none of them was an engineer or knew much about water, they had a firm commitment to work as required by the villagers.

Gopalpura was called “dark zone” because it had been without groundwater for five years; but under Patel's direction, Singh helped to dig a *johad*. The government was not willing to repair the check-dams that had deteriorated along the Arvari rivulet, nor was it inclined to help the Rajendra Singh in his mission. So Singh organized young men of the village, who returned to work in the fields when the monsoon came, to rebuild a neglected check-dam's earthen wall and scrape the silt off the *johad*, moving the rich topsoil to the fields. The pond began to fill with water in the monsoon, which then seeped into the ground and recharged the water table. The result was that the wells, which had been dry for years, began to fill with water. Following traditional practices, Singh succeeded in building a *johad* for water harvesting.

More people from other nearby villages were invited to see the revived *johad* so that they could be inspired to replicate it in their communities. In 1986, a march for water (*padyatra*, or walkathon) was launched to spread the benefits of building *johads* and promote the ideas of water harvesting and water management among riverside communities. People from Bhaonta-Kolyala, a village 20 km away, learned that Gopalpura now had



Mr. Rajendra Singh showing a water harvesting structure

water in its wells year round, as the *padayatra* passed by. People from the village then asked for the help to build their own *johads*. This was accepted, with certain rules to be followed: (a) the villagers had to organize an assembly, or *Gram Sabha*, (b) incorporating a representative from each household, which would (c) decide the sites for the *johads* and the amount of work each family would contribute. (d) The people also had to regenerate and protect the forest to stop soil erosion and silting, as the catchment areas were completely degraded.

Tarun Bharat Sangh (TBS; the Young India Association)

The TBS made strategies to involve people, mostly women, to dig the ponds by launching the programs like Food for Work. The TBS also ran technical training courses that lasted from six to nine months. Its motto is: *Do not expect others to do what you cannot do yourself*. It also performs close supervision and monitoring of the water-harvesting sites. Rajendra Singh manages and oversees the activities of the TBS, represents it at meetings, and links it with other agencies.

The TBS has helped the communities to support the water harnessing work by collecting donations from non-governmental organizations (NGOs), such as Churches Auxiliary for Social Action (CASA), Oxfam, ECCO-Netherlands, the Swiss Agency for Development and Cooperation (SDC), and the Swedish International Development Cooperation Agency (SIDA). It is also supported by the UN, USAID, and The World Bank. The TBS has 45 full time and 230 part time employees. Last year about 35000 people visited the TBS office to enquire about its activities. The TBS is careful with its fund. Not more than 10% of the funds are used for overhead costs, and salaries for full time staff are modest. There is no trained engineer in the TBS.

As more and more villages seek help from the TBS, it set up a principle that the work would not start until everyone was willing to contribute either money or labor. It never imposed its decision on the villagers but helped them to make their own decisions. Since the villagers were involved in every step of the work from identification of needs, choosing and designing projects, purchasing and paying the bills, they embraced the *johads* as their own properties. Whenever the villagers consult with the TBS on any problem, the team helps find the solution from the villagers themselves, which in turn has helped the local people believe in themselves.

The TBS continues to receive requests from other villages to help them build water-harnessing structures. It has played a catalyzing role in the building of 8,600 *johads* in 1,058 villages spread over 6,500 sq. km. in the districts of Alwar, Jaipur, Dausa, Karoli, Sawai Madhopur, Udaipur and Jaisalmer. Out of these, 3,500 were built by the TBS, and the local communities were motivated to build the remaining 5,100 structures with technical help

from the TBS.

The TBS does not undertake a job unless the local community takes responsibility and raises about 25% of the cost for the works; whereas it is 50% in private land. The TBS's work has become the largest ever mobilization of the people for environmental regeneration. It also performs close supervision and monitoring of the water-harvesting sites.

Government Indifference

Not everyone was ecstatic about the breakthrough that had occurred. The difficulties started when the Irrigation Department ordered the communities to demolish the *johads* because they had been built on government owned lands. The department also denounced the *johads*, saying they would not survive the monsoon. But the *johads* proved all the arguments wrong when the monsoon came. They withstood the heavy rains, in comparison with a concrete dam that the government had commissioned to a contractor to build that broke in the middle.

The Forest Department also did not like the greening and forestation conservation work under taken by the TBS. In 1987, Rajendra Singh was banned from entering the forest of Sariska and cases were filed against 377 workers of the TBS.

And, after the rejuvenation of Arvari river, the Fisheries Department began to issue fishing contracts for commercial purpose to people from outside the area. The local villagers refused to let outsiders to take their fish.

The forest officers eventually became sympathetic with the villagers and together they formulated rules for the protection of forest and wildlife. The community began to construct *johads* in the protected areas for the animals, also. After some time, the government also acknowledged the works of the TBS and conceded that people's cooperation alone will make such work sustainable. The Irrigation Department, which had earlier denounced the water-harvesting structure as illegal and even threatened to demolish the *johads* at Gopalpura and Bhavta, now became a collaborator and began a project called the People's Action Watershed Development Initiative (PAWDI), a replication of the TBS work.

Community Work

Following the phenomenal revival of the Arvari river, in 1990 the people from the 72 villages along the river came together and organized the Arvari River *Sansad* (Parliament). After a contractor from Jaipur showed up with a license to fish (issues by the Rajasthan government), they realized that they, in the local communities, had to safeguard the river against intruders and to ensure the proper management of both their land and water resources. Due to the people's protest, the fish contractor eventually had to back off. Similarly, a beer company that had planned to exploit the abundance of barley and fresh water in the area to set up a brewery, had also to back off.

The parliament has been meeting twice a year to discuss the problems and strategies and has also set rules for the protection of the river and the land. Self-discipline has succeeded without any outside intervention. The *Sansad* has framed a set of Comprehensive Rules as a code of conduct for water use, grazing, selling of land, water tax, growing non water guzzling crops, etc.

The villagers, together with the construction of *johads* and dams, also focused on the problems of soil erosion and regeneration of the forests. They declared 12 square kilometers of the adjoining forest area as a public wildlife sanctuary. They called it the Bahironath Public Wildlife Sanctuary, which is said to be the first such sanctuary in India. It is already attracting wildlife from nearby forests. The restoration of the forests by the people was a victory for the community, which had been deprived of their forest rights since 1888. The forest, which had been ravaged since it was taken over by the Forest Department of the state of Alwar, now turned green again. Rajendra Singh mobilized the villagers for the community work in afforestation and protection of their local resources.

Success Story

Other success stories have also been noted in other villages. In 1987, a TBS volunteer climbed to the Mala Tolawas village on the ridge in the Sariska Hills, where the first tributary of the 90 km long Ruparel river trickles down. The TBS volunteer motivated two women, the only inhabitants left in the village, to dig a pond. Over a period of four months, they did as the TBS volunteer suggested, and the villagers downstream did the same, so that a total of 350 ponds and check-dams were built on the Ruparel basin and the river came alive again.

Another success story comes from Nimbi village near Jaipur, which was being overtaken by shifting sand from the Thar Desert for a hundred years. In 1996, at the request of the people, TBS volunteers came to help. A tank that had been constructed two hundred years ago and had long since silted over was de-silted and repaired, and when monsoon came, people were ready with a reservoir. This has literally pulled the village out of acute poverty. Until five years ago, Nimbi had nothing to sell except its labor; but today, it exports vegetables and fruits worth millions of rupees and supplies Nimbi milk regularly to the Jaipur dairy.

The people from the Bhaonta-Kolyala and the adjacent villages were organized together and started mapping the natural drainage system to choose the sites for the new *johads*, while also repairing the old ones. The villagers went on constructing more *johads* and today they have 15 water-harvesting structures, the most ambitious being a 244 m long, seven meter tall concrete dam in the Aravalli hills. Taking their support, people in the other villages along the Arvari River began to repair and build

their own *johads*. In 1990, work on a big dam across the Arvari river started to catch the flowing water and allow percolation, and to their surprise, a small stream emerged and disappeared after a few weeks. After that, the Arvari began to flow every year, each time for a longer period and by 1995 it had become a perennial river. Another huge dam has been built in Agar village, site of the second source of the Arvari river. Water then began to flow in Arvari river which had been dry for more than about 80 years.

The increasing number of water harvesting structures, *johads*, has resulted in increased recharge to ground water aquifer. These water harvesting works have resulted in bringing dead rivers to life, including the Ruparel, Arvari, Sarsa, Bhagani and Jahajwali.

Conclusion

Rajendra Singh and the TBS's work together are a success story. They not only made water available to the area, but also organized the villagers for the community work, making the works sustainable through people's



A Johad

participation. Success of traditional rainwater harvesting works in Alwar and other areas of Rajasthan has given lessons to the people of water stressed areas, and has encouraged them to replicate the system. The example from Rajasthan through the techniques of rainwater harvesting (i.e., the collecting of rainwater in a pond so that percolated water finds its way to the groundwater aquifer), is also suitable for water scarce areas of Nepal such as Kathmandu city.

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Notes

Sources: www.ecoindia.com/education/water-man-of-rajasthan.html (published in Manushi, n.123 at free.speech.org/manushi/123/rajendra.html); www.hinduonnet.com/fline/fl1817/18170810.htm; www.rmaf.org.ph/Awardees/Biography/pdfbio/RajendraSingh.pdf; www.sahra.arizona.edu/unesco/allepo/CaseAlwar2.pdf; pdf.usaid.gov/pdf_docs/PDABS790.pdf; cgwb.gov.in/documents/papers/incidpapers/Paper%205%20-%20Rajendra%20Singh.pdf; and <http://www.tarunbharatsangh.org/about/rs.htm>.