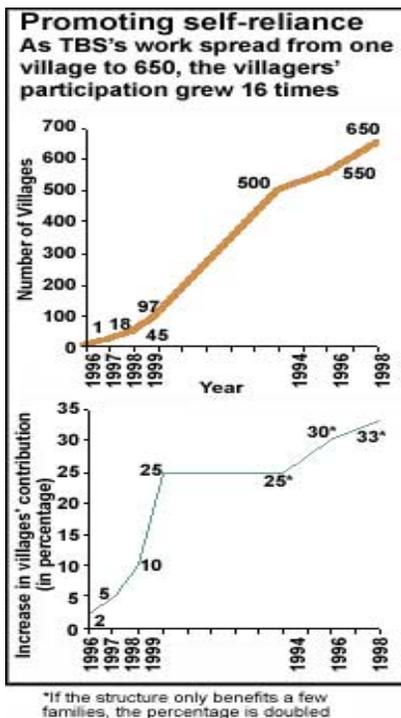


## To hell and Back

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How TBS helped communities revive the rural environment



-- Ask anyone in the 650 villages in Alwar where tbs has worked in the past 13 years. The story of the later part of this century will follow the same course. Lack of vegetation led to land degradation. Monsoon run-off washed away the top soil. Crops failed regularly and agriculture was fast slipping into memory. The work-force migrated to cities to make ends meet. Women trudged long distances to fetch a mere pot-full of water. Life was difficult, and it seemed endless.

"Nange pahad dur daraj" (naked hills all around). That was how Rajendra Singh saw the hills of the Aravalli range in Alwar in 1985. The region, which was once sustained by the ecosystem of the Aravalli, looked war-ravaged. It was rare to find people in the age group of 17-37 years. All of them fled their villages to urban centres such as Delhi and Ahmedabad in search of employment. In 1985-87, 80 per cent of the men were migrating from the Thanagazi block. "For years the villagers remained 'all-women villages'," remembers the 80-year-old Dhanua Baba of Koylala village (see box on p40: The seeker).

"There was not a single blade of grass for grazing cattle. One could stumble upon carcasses of cattle," Rajendra Singh remembers. Crop yields were less than paltry. Barely three per cent of all cultivable area was irrigated. This was alarming as about 90 per cent of villagers were marginal farmers with their

own land. "For years I cultivated my one hectare of land. I had to spend Rs 10,000 and the return was some Rs 500. I was caught in a debt trap. In 1984, I migrated to Ahmedabad to pay back the loan," says Ram Singh of Toda village. "In the seven years that I took to clear the debt, my land had become barren."

That was the fate of the entire region. "The richest and the poorest of the village were the same as far as the economic condition was concerned. There was not a bucket of water for irrigation. The wells were dry. Like the agricultural lands the villages were also dried of life," says Mangu Ram Patel. In Gopalpura village, even the zamindar (landlord) and his son migrated in search of work.

"Ecological destruction was causing economic and social degradation," says Rajendra Singh. The illiteracy rate in the Thanagazi block in the mid-1980s was 85 per cent. Attendance in schools was as low as two to three per cent.

When mountains erode

Rainfall here is quite low (600 millimetre, of which 500 mm falls during the monsoon). The arid slopes of the Aravalli are not suitable for intensive cultivation. The food security of the area also depends on forests, grasslands and wildlife, which traditionally had common property status. They were managed through a set of rules decided by the villagers.

S S Dhabariya, former head of the remote sensing division of the Birla Science and Technology Centre, Jaipur, observes: "The Aravalli hill region had thick forest cover during earlier decades. It helped in protecting the soil cover and water aquifers and provided favourable conditions for the regeneration of tree-stock and pasture."

"The hills, as far as the eye could see, were full of trees, leopards and tigers. Now, after some 60 years, all that has vanished. Not a single bird nests here. There are rocks all around," says Sunder Bai, an 80-year-old woman of Bhaonta village. In 1985-86, a mere six per cent of the Alwar district's total area was under forest cover.

In 1980-82, only 1.7 per cent of the area specified as forest in Rajasthan had actual green cover. Remote-sensing data showed that the Aravalli was brown in colour. In 1984, only 28.6 per cent of the notified forest area on the Aravalli was green -- the National Forest Policy specifies that 60 per cent area in hills should be under forest. From 1970s to 1980s, the Aravalli lost around 40 per cent of its forests. Every year, four per cent of Aravalli was becoming a wasteland, according to Dhabariya.

#### Forests: the disappearing Acts

Forests in Alwar were owned by the community till late into the 19th century. For the sake of protection, forest areas were classified and different uses assigned to each category. Kankar Bani, Rakhat Bani, Dev Bani and Rundh Bani were all such categories. Rakhat Bani could only be used in times of drought. That, too, after a specific community decision. The state or the officials could not interfere, except in case of Rundh Bani.

But things changed. The Alwar Rajya Forest Act, 1888, promulgated by the then maharaja of Alwar, was the first step to minimise the community's ownership of forests. Then came the Alwar Rundh Act, 1938, a legislation which paved the way for commercial use of forests. This was influenced by the British. It divested the community of all rights over forests. The king gave away the earmarked forests to respective zamindars of villages, alienating the community from its traditional livelihood. A tax was also imposed for use of the forest. Between 1888 and 1938, many forests managed by communities were declared hunting reserves of the king, debarring the villagers from these.

The forest was then exploited to the hilt. By the time the forest department owned by the princely state of Alwar took over, the die had been cast. The Aravalli was severely degraded and portents were ominous. Large-scale deforestation started in the 1930s, lasting for almost 15 years. "Villagers witnessed the 'abuse' of forest. For us it was just the 'use' -- fodder, grass and fuelwood," remembers Dhanua Baba of Koylala village.

In the 1940s, the king earmarked the virgin and dense forests to be given to charcoal contractors. "Contractors would descend upon the forest, put some chemicals into trees, and then within days hundreds and hundreds of trees would dry," remembers Sunder Bai, adding, "sath mein hamari rozi roti bhi chali gayi (that stripped us off our livelihood, too)." Villagers were reduced to mere spectators to the ecological destruction. In 1947, the Alwar State merged with the Indian Union. The king was replaced by the bureaucracy, setting in the last phase of ecological mismanagement. The people remained alienated from the local environment.

#### Adverse consequences

The denuded hills could not hold rainwater. Run-off washed away the fertile top soil and brought pebbles to agricultural lands. It also meant that the groundwater was not getting recharged. Wells dried up. High run-off also led to formation of ravines. "In my agricultural land I got deep drains. I almost lost half my lands," says Chita Meena, a resident of Bishnoi. "It choked the livelihood of some 500,000 people in 600 villages," recalls Rajendra Singh.

Monsoon became erratic. The duration of the rainy season shrunk from 101 days in 1973 to only 64 days in 1985, and finally to 55 days in 1987. The duration has stabilised at 55-60 days from 1987 to 1997. Similarly, the total number of rainy days has declined to 18-30 days from 60-80 days in 1973.

Groundwater level fell by 60 metres. Water table levels dropped from 5-10 metres in the 1960s to 100-150 metres in the 1980s. The irrigation department declared Thanagazi block a 'dark zone', indicating absence of groundwater. "Even when we made the wells deeper there was no sign of water," says Dhanua.

TBS steps in

After the initial hesitation, people started accepting TBS and the 'bearded stranger', Rajendra Singh. He and his friends were given shelter in an abandoned house in Gopalpura. "The village did not have a class system. There was no exploitation of the poor by the rich. From the land-owners to the field labourers, everyone migrated for work leaving their barren lands behind," recalls Rajendra Singh. There was not a drop of water.

Taking Mangu Lal's advice, tbs started mobilising villagers for reconstruction of a damaged johad in Gopalpura. The 426-metre-long dam was restored. "In the next monsoon, to our surprise, the dry wells of Gopalpura had water. We decided to work only on water harvesting, with people as our knowledge bank," Singh says. A very important consideration was that of technology. "tbs has a team of about 15 people selected out of the villages where they have worked. This team takes care of the all technological and engineering aspects of building johads. All the 3,000 water harvesting structures built in 650 villages stand testimony to their engineering ability. Yet, it should be noted, that hardly anyone in this team of engineers has completed matriculation," points out Anupam Mishra of the environment cell of Gandhi Peace Foundation, New Delhi, who is tbs's chairperson. The engineering excellence of structures built with tbs's help has already been studied and appreciated by experts (see box on p33: An engineer's evaluation).

While mobilising people to work for ecological restoration, tbs emphasises three aspects:

- Johads should be built to catch water;

- As the catchment areas are totally degraded, the forest has to be protected and regenerated to halt soil erosion; and

- There should be consensus within the community on the works to be taken up.

TBS's story spread by word of mouth. At a time when the region was totally degraded and drought had become chronic, the success story of Gopalpura came as soothing news. "The news spread like wildfire. The neighbouring village of Govindpura agreed to work with us immediately," remembers Narendra, one of the five young men who arrived in Kishori in 1985. An important way spreading the message of benefits johads has been the annual Pani Yatra (march for water), which tbs undertook in 1986. Of the 650 villages where tbs has worked, at least 500 were influenced by the Pani Yatra. The 1998 yatra covered 450 villages. Of these, 100 have already started working on johads and requests from 100 other villages are being processed.

In 1986 Gopalpura's residents volunteered labour and built two johads. And in 1987, Govindpura also started building a johad with community participation of 30 per cent -- the rest was provided by tbs. During the same year Gopalpura built four more dams and the village called back all its migrated residents. "My husband came back from Ahmedabad to work in the johads," grins Rukmani, 60, of Gopalpura. And within a year of starting work with the residents of Gopalpura, tbs was associated with 18 other villages, some of them 50 km away from Gopalpura.

As water harvesting traditions were not new to this region, it was easy to revive them. There were several water harvesting structures dating back to the time of the princely state. "So the effort was to remind people about their benefits and facilitating them to take up repairs," says G D Agrawal, former head of civil engineering at the Indian Institute of Technology, Kanpur, who has done an independent assessment of tbs's works.

When tbs expanded its reach, people were mobilised through numerous marches and meetings. "Water was made the focus of village life as scarcity of it caused all the ills the villagers were facing," says Sedu Ram, a volunteer with tbs who used to migrate earlier but settled down to regenerate his own village after hearing about tbs's efforts.

tbs has already organised more than 200 marches and countless meetings. "By any standard tbs's work in the 600-odd villages can be termed as the largest ever mobilisation of people for environmental regeneration," says Agrawal. "It is the effective village-level institutions that have made possible such a massive network managed entirely by the people," he adds.

Financial management

When tbs started work in Gopalpura, there was not enough to eat in the village. It tied up with a Christian organisation for food grains to be exchanged for labour. So, to start with, tbs's capital was 40,000 kg of wheat. As tbs's work has spread to more and more villages, community participation has grown: starting from three per cent in case of Gopalpura in 1986, it has now reached about 70 per cent (see graphs on p34: Promoting self reliance).

"It can be explained in the terms of people's understanding of the cost-benefit analysis of johads. The return from a small johad has made people contribute more to it. We have instances where the community is contributing 90 per cent of the cost," says Rajendra Singh. According to Ranjan Samantaray, coordinator of the United Nations-Inter Agency Working Group on Water and Environmental Sanitation, New Delhi, 2,500 structures were built with tbs's help in over 500 villages up to 1997-98. These came at the cost of Rs 15 crore, of which Rs 11 crore were contributed by the villagers in cash and kind.

In 1989, tbs decided to start work only when the village agreed to contribute at least 25 per cent of the cost. Usually, the village provides labour and materials for construction. The costs of skilled labour and materials which have to be bought are borne by tbs. In 1997, tbs fixed the minimum participation of the community at 33 per cent. As the economic condition of people has improved, villagers now contribute in cash as well. The twin villages of Bhaonta-Koylala do not take help from tbs any more. The maintenance of their 14 water harvesting structures is the villagers' responsibility.

From 1994-95, tbs further stream-lined its funding: if the structure is beneficial to only a few families, then the community has to provide at least 50 per cent of the cost. At present, even this has been updated; the villages now have to contribute 67 per cent. The share in cost of each family is decided according to the benefit ensuing from the johad to each family. It is done by the gram sabha (the village assembly), which is at the core of tbs's ideology.

#### Institutional framework

Each family of the village is represented by one member in the gram sabha. The gram sabha is the central institution looking after all water conservation activities in the village. All other village-level institutions function under it.

Once a village agrees to work with tbs on water conservation, the first step is to form a gram sabha in a general meeting of the village. A head of the sabha is elected. Members can be recalled by villagers if they do not perform up to the expectations or if their conduct is not acceptable. The gram sabha meets every month on the amavasya (the no-moon night); it is a day set aside in the Hindu calendar for community works.

A resource committee is formed to prepare a clay demographic map of the village. Following a door-to-door meeting with the villagers, the committee assesses the village's problems and the community's views on the site and size of the johad. It then puts its report before the gram sabha, which deliberates and then marks the site on the clay map of the village, marking the start of the work.

The gram sabha forms five committees:

- the construction committee, which looks after all construction work and decides the villagers' participation;
- the forest committee, which enforces ban on felling and monitors regeneration of forest in the catchment area;
- the grazing committee, which prevents grazing on protected areas like regenerating forest;
- the water committee, which manages the water resources generated and monitors its sharing; and
- the women's association, a relatively new concept, which puts the views of women before the gram sabha.

But all crucial decisions, such as sharing of resources generated and enforcement of a social code like ban on liquor consumption, are taken by the gram sabha in its monthly meeting. The committees are just the implementing arms. All payments are made by the gram sabha; only a receipt comes to the tbs office for records.

"The beauty of it is that tbs just remains a facilitator," says Rajendra Singh.

#### Resistance from the administration

"Like our mlAs and mps, the panchayat is also a defunct institute. When people were dying for water, the panchayat, with all the power it is entrusted with, did not bother to dig a tank or to restore the ruined johads. So the conflict between the panchayat and tbs is basically that between a sleeping institution and the other waking it up," explains Roodamal Meena, a resident of Hamirpura.

TBS has always had to fight the panchayat and the state government. The conflict revolves around ownership of common lands over which johads are built, and the resources generated by these structures. When tbs began working inside the proposed Sariska National Park and the Tiger Reserve, the forest department opposed them, serving the notice of demolition of a dam in the core of the reserve. Ironically, this dam revived the Ruparel river. "I did not realise that making a dam, water from which will also be used by animals, would be such an illegal thing. They not only threatened us but also slapped false cases against us," remembers Nanak Ram of Haripura village in the core of the reserve.

"The essence of the conflict is the informal gram sabha which gets the support of the whole village. It virtually made the panchayat non-existent. It is the new power centre and representative of the village," feels Rajendra Singh. As all johads were constructed after the village's collective decision through the gram sabha, the stray opposition was marginalised. "The complaints we often receive from the panchayat is about by-passing the local body. But people say that the informal gram sabha is more useful than the complex government systems," says Rajendra Singh.

#### TBS's achievements

The efforts of the villages and tbs has regenerated 6,500 sq km of land in 650 villages. The Aravalli is getting green again. Villagers now protect forests and there is a ban on stray grazing. "The forest cover around the villages in the core area has really risen as people are now protecting it themselves," says none other than B M Sharma, the deputy project director of Sariska Tiger Reserve. Official documents say that the forest cover is 40 per cent now, a rise of 33 per cent in the past 15 years for the Aravalli. No less than 70 per cent is under green cover.

"Birds have again started circling the hills as the old forest is regenerating. One can also hear a leopard roaring," says Rajnath Meena, 40, who is seeing green cover on the hills for the first time. According to tbs assessment, over 60 per cent of the 6,500-sq km-area in which it has worked is under forest cover, both regenerating and planted.

Thanagazi, a 'dark zone' in the 1980s, was recently declared a 'white zone' by the irrigation department, indicating the wealth of groundwater. Water tables are constantly rising. In Jaganathpura village, farmers are again restoring wells that had gone dry earlier. For the first time, Bishnu, a farmer in the village, felt tempted to cultivate his barren, two hectares of land. He has started digging an abandoned well, spending Rs 10,000. "I saw water oozing out of my totally dried up well," he says.

"There is a direct correlation between the works on johads and rise in groundwater table," feels G D Agrawal. According to him, each johad with a storage capacity of 1,000-1,500 cubic metre per hectare has raised annual average groundwater table by about six metres. All the 36 villages studied by Agrawal reported rise in water table by an average of about six metres (see graph on p35: Groundwater rising).

No villager can remember seeing water flow except during the monsoon in the five rivers -- Bhagani-Teldehe, Arvari, Jahajwali, Sarsa and Ruparel. "For the first time in my life, I heard a river flow," says Arjun Patel, a senior resident of Bhaonta village. In 1995, the five rivers became perennial. Now, 250 villages on the banks of these rivers have surplus water.

Devri, a village in the core of the tiger reserve, was once infamous for timber smuggling. Ten years ago, villagers participated in building a dam, which revived Jahajwali river. The conserved water has also greened the denuded hills. The villagers have protected the forest themselves.

## Economic change

In 1985 there were only 11 shops in the Alwar district that were selling milk-cake, a product for which this region is famous. Now there are 100 of them selling some 20,000 kg of milk-cake every year. "Milk production has gone up by ten times," claims Rajendra Singh.

Economic conditions of villagers have also improved. Agriculture has become productive and self-sustaining. Due to increased availability of fodder, cattle rearing has again picked up. "I sold my cattle and bought a buffalo as there is enough fodder now. Last year I earned Rs 15,000 from milk alone," says Jagdish of Gopalpura.

Higher water levels mean less money spent on diesel for pumpsets. Farmers who were spending Rs 1,500 per month on diesel are now spending a mere Rs 500 per month.

In 1985 the average rate of cultivation was 20 per cent of the total agricultural land of the villages. Now, it is 100 per cent. In many villages, people have started cultivating sugarcane and wheat, which are water-intensive. In the early 1990s the villagers from this side of the district sold their surplus grains in the market for the first time in recent past. According to Agrawal's study, the economic return of a johad is unprecedented. "An investment of Rs 100 per capita on johad raises the economic production in the village by as much as Rs 400 per capita per annum..." (see graph on p36: Small inputs, great returns).

## Social changes

"Today is the gram sabha day. I have to finish my home chores early," says Rupa Bai of Bhaonta, lifting her head scarf, the traditional attire of women here. "This is the social change in the villages. This is not due to any specific women empowerment drive but due to the change in the male villagers' attitude," explains Rajendra Singh. More and more women are attending the gram sabha. There are women's associations in some villages to collectively put their views in the gram sabha.

For the first time the Bishnoi village's girl children attended a school last year. The tbs has established 25 schools; children can attend these after finishing their household work. Inspired by the Education Guarantee Scheme of the Madhya Pradesh government, the villagers themselves decide the premises and the teacher. tbs just arranges for the training of the teacher and a salary of Rs 500 per month.

"The crime rate has gone down in villages as the economic condition has improved. Also, education and health consciousness have crept into them. Overall quality of life has improved," says Swati Shresth, a researcher of Kalpavriksha, a Pune-based non-governmental organisation.

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