Chapter Six

Water Security in Thar

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The Thar Desert region occupies 60% of land in the state of Rajasthan and houses a population of over 22 million people. This region has earned the distinction of being the most densely populated desert in the world. It is the ingenuity of the communities living here which has made it possible for them to survive and proliferate even in the extreme inhospitable conditions.

Scarce water access and availability is an indispensable aspect of the desert, which creates a drought situation every three years. Water availability is becoming an increasingly difficult issue in the rural areas of Thar. Ground water at most places in the desert is saline and is unfit for human consumption. Its level continues to fall due to various unsustainable practices such as mining and extraction of groundwater due to agribusiness. These practices have, in turn, led to the loss of the natural watersheds worsening the availability of water. The groundwater at certain places is as low as 1,000 ft.

Over the years, the indigenous communities of Thar have used their knowledge and experience to combat water scarcity issues. This experience has evolved into exemplary technologies for water conservation. Some of these innovative technologies include the man made village ponds locally know as “naadis”, shallow percolation wells called “beri” and small underground systems called “taankas.” These structures have a symbiotic relation with the local environmental conditions and have thus been sustainable for over centuries. These local technologies are still being used as the main water source in some rural areas of the desert. However, over the past few years GRAVIS has been successful in introducing better designs for these traditional structures.

Organisational Profile

The foundation for GRAVIS's strategy and approach to work has been influenced by two Gandhian philosophies. The first, sarvodaya, entails upward mobility across society with an emphasis on marginalized communities. The second principle places importance on swarajya, or empowering local governments beginning at the village level.

Gramin Vikas Vigyan Samiti (GRAVIS) or Center of People's Science for Rural Development was founded by a group of Gandhian development activists led by late Shri L.C.Tyagi and Smt. Shashi Tyagi in the small village of Jelu- Gagadi in 1983. The organisation was formed with the aim of implementing rural development activities in remote regions of the Thar Desert. At the beginning, GRAVIS worked with a mere cluster of 20 villages in the Jodhpur district of Rajasthan. Presently, GRAVIS works in more than 850 villages in 5 districts of Rajasthan.

GRAVIS's work extends to the Jodhpur, Bikaner, Barmer, Jaisalmer and Nagaur districts of western Rajasthan. The GRAVIS organization also includes an advocacy unit and a Health Environment Development Consortium (HEDCON) in Jaipur.

GRAVIS Interventions

Taanka

Taanka is a cylindrical, underground water storage tank with a capacity of approximately 20,000 litres. Some of these tanks have a built-in natural or artificial catchment that can be used for harvesting rainwater. When filled to capacity, the water in these tanks can be sufficient to sustain the drinking water needs of a family of up to six people for a period between five to six months.
Access to a taanka has been shown to have a positive impact on the health and hygiene of a family. The availability of taanka water significantly improves the condition of women in relation to household activities. Access to a taanka decreases the difficulty of women carrying water over long distances. It also increases the chances of girl children, who would otherwise have to help in fetching water, being enrolled in school.
The taankas constructed by GRAVIS are 10 ft x 10ft in size which provides a larger capacity of water than the traditional ones. To decrease the silt load they have also been provided with silt catchers and wire meshes. These new taankas are being built with an outlet to prevent the collapse of the superstructure in case of heavy rainfall.

Khadin

Is a low mound like structure, approximately 1.2 to 1.9 mts high, built on the lower three sides of an agricultural field. The low barrier collects water and allows it to spread on the agricultural filed. The percolation of water increases the soil moisture. This, in turn, increases the average crop yield.

Khadins constructed by the government are typically 8 ft in height and several mts in length and are only benefical to bug and owners. Khadins designed by GRAVIS specifically benefit mardinal farmers with small land holdings. The smaller khadins are 3.5-5 ft tall and 500-1500 ft in length. A built-in wastewier allows for an equitable distribution of water.

Beri

Beris are shallow, low diameter percolation wells. Beris act as a water source and a storage structure. Gravis helps in renovating old beris. This process involves a desiltation of the well and a construction of a concrete superstructure. The superstructures also feature silt catchers and covers, which decrease the silt load into the beri. Interventions have also been made to reduce the pressure of water on the walls, which prevents the beri from collapsing.

Naadis

Naadis are village ponds. The naadi or village pond is the most important waster source that serves the drinking needs of humans, lifestock, and wildlife in the Thar Desert. It comprises of a large size catchment, the down slope of which is dug into a big pit to store the runoff. The excavated earth is piled up as a semicircular bund along the edge of the pit in order to check the water flowing out of the pit. The dimensions of a naadi vary a great deal. Bigger naadis have a catchment of 100 to 500 hectares and its collecting pit is usually 200 meters across with its deepest point ranging from 4-6 meters. These bigger sized naadis have a capacity of 20,000 to 40,000 kiloliters or cubic meters. Smaller naadis may have a capacity of just 700 cubic meters and a catchment of a few hectares. A rainfall spell of 75 to 100 mm is sufficient to fill this kind of a naadi. GRAVIS helps in the desiltation processes as well as construction of naadis.

Sustainability and Replicability

These structures are simple, low cost and can be constructed by material available in the local market. They hardly require special skills, which enables local masons to construct them. The management of these assets lies fully with the community that uses them. Since these communities on a daily basis use these water contraptions, the people are vigilant in managing its upkeep and repair.