

## Naadies & Khadins “Wisdom of Thar People

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### Abstract

In thar desert region the rural communities face acute problem of drinking water. Water is the main theme of perennial human interest. Many traditional technologies exist for water harvesting through taanka, Naadi and beris etc. But due to introduction of tap water these technologies are left behind in towns. But in rural area with innovations in the traditional systems and participation of community in water conservation programs, with initiatives of NGOs, PRIs and Government, the acceptability of the water harvesting systems is increasing. In this paper attempts are made to explain the traditional water resource management systems and the innovations such as catchment improvements, diversion bunds (Aad), masonry super structure “spillway” to allow excess water from farm field and protect to khadin bund, provision of outlet “Nehta” in the khadin to protect early sowing crops, thorn pai use to protect mud bund erosion from heavy wind and heavy rainfall and also to support long life of the structure, etc. The innovations suggested in the structures are proving very useful and increasing the crop yield by reducing the soil erosion and check the migration of Thar people. Also, the income & health and hygiene of the rural people is improving. In fact, the traditional water harvesting structures e.g Beri, Taanka and Naadi, Khadin “dyke” is much more than a self-reliance source of food and fodder security for the community or a family asset.

**Keywords:** Thar Desert, Water harvesting, Traditional, diversion Bunds (Aad), Naadi, Taanka, Khadin, spillways, Nehta, percolation wells, Beri, Innovations.

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### Introduction

The Thar Desert is the most densely populated desert in the world, constituting a home not only to 16.600.000 people but also to a wide variety of animals and plants.

Over 60% of the desert is located in Rajasthan, a state that contains 5% of India's population yet only 1% of its water.

Receiving less than 200 mm of rainfall per year the arid area of Thar pushes a lot of challenges on their inhabitants, first and foremost the hardships of obtaining water.

Access to water is the most fundamental condition to a safe livelihood, a healthy lifestyle and a promising future. Considering this, GRAVIS puts a heavy focus on providing water security by building rainwater harvesting structures, developing water filtering methods and providing education and raising awareness towards the importance of clean water.

Since GRAVIS believes in *Gram Swarajya*, village self-rule, and wants to engage the whole community, the traditional knowledge and experience of the villagers is always taken into account.

That is why *naadies* are one of the most common methods of rainwater harvesting.



Fig 1: Naadi (Community Pond) at Motai in Jodhpur

*Naadi* is the traditional name for ponds, which can be found in almost every village. These surface rainwater storage structures with a capacity between 700 m<sup>3</sup> and 20.000-40.000 m<sup>3</sup> provide water from two months up to one year. The water availability does not only depend on the size of the *naadi* but also on the annual rainfall and the way the *naadi* is built.

In contrast to tube wells, *naadies* do not downgrade the ground water level or contaminate the water trough fluoride and other chemicals and are therefore more sustainable and durable.

Starting off as a natural surface depression, the *naadi* is enhanced through human interference to optimize its function. Digging out the silt does creates a deeper depression and increases the capacity, besides that the silt can be used to construct a natural bund to limit the *naadi*.

Three sides of the *naadi* are covered by the bund, the fourth one is attached to the catchment, a plane area with 1%-2% of slope, that guides the water inside.

To prevent seepage it is necessary to install a silt lining during the first 3-5 years. That way the loss of water can be minimized.

The highest annual run-off of water can be reached with rocky/gravelly pediments and a high slope, so whenever there is the opportunity to choose a location, this should be considered.

If no influence can be exerted on the location, for example because a *naadi* is required at a specific place, it is even more important to focus on a large catchment area.

An entrance made out of stone steps allows easy access to the water without damaging the *naadi* side through people sinking in the mud.

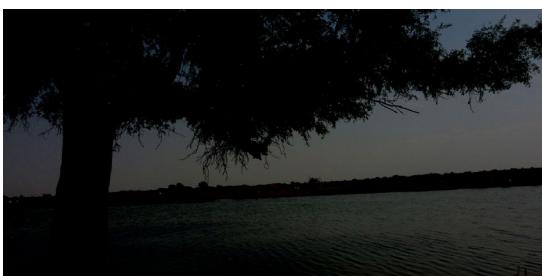
An overflow construction prevents water waste, because it allows excess water to leave the *naadi* in a controlled way.



**Fig 2:** Naadi (Community Pond) at Mandor village of Baap block

Since the villagers bring a lot of knowledge about the environment, the needs and traditional methods of water harvesting with them, and above all because they are the beneficiaries of the *naadi*, the main responsibility lays on them.

Supported by GRAVIS field workers the villagers construct and maintain the *naadies* by themselves, guided by the Village Development Committee (VDC).



**Fig 3:** Naadi (Pond) at Baap Dist. Phalodi serve rain water to animals and human beings

That way the self-reliance of the villages is established and they do less depend on often insufficient or expensive offers from public or private water harvesting structures.

Considering the several species that live in the desert the *naadi* does also provide a waterhole for animals and enables vegetation through the moisture and better air quality.

Elderly people from the village who are often seen as a burden to their families can improve their social status and contribute something to a better life quality as they do often have a lot of traditional knowledge that is useful for the construction and maintenance of *naadies*.

By being a safe and constantly available source of water, that was constructed and is maintained by themselves, a *naadi* establishes more self-reliance and safety among the villagers and improves their lives.

Since most people in the Thar desert earn their living with agriculture and animal husbandry, GRAVIS focuses on providing conditions that enable cultivation of fruit and vegetable.

The dry area, short monsoon periods and irregular rainfalls make cultivation, which requires a permanently moisturized environment, very difficult.

GRAVIS provides *khadins*, a traditional method to improve the soil moisture of cropping fields.

The construction of a *khadin* takes 10-15 days and is done by the villagers with help from GRAVIS.



**Fig 4:** Rainfed farming under khadin (farming dyke) in Thar desert

Through a bund made out of soil around the land, the rainwater is gathered inside so the crop remains moisturized. It also keeps the organic manure and the minerals inside of the *khadin*.

The fruits and vegetables harvested on the crop serve as a nutritional base for the villagers and provide them with required vitamins and prevent them from common illnesses like anemia and vitamin.

The crops do generally include of pearl millet (*bajra*), green gram (*moong*), moth bean (*moth*), cluster bean (*guar*), sesame (*til*), melon cucumber, citrus fruits, and desert plums.



**Fig 5:** Khadin (farming dyke) with Spillway

To not waste anything the leftovers and shells can be used to feed the livestock and the seeds are being dried and reseed. Selling the remaining vegetables and fruits also gives the villagers the chance to improve their financial situation and become more independent.

As said before, many elderly people have a low status in their family and are not appreciated, because they do not contribute anything.

With support of INGOs, GRAVIS gives the ownership of the *khadins* to the elderly villagers.

Knowing that they only have the *khadin* and the cropping field and hence an improved livelihood thanks to their elderly members, the villagers appreciate the elderly people and they are more and more included in the families and the village life.

### Conclusion

The traditional water harvesting techniques of the Thar needs to be preserved and community participation is needed for the same. The innovations suggested in the structures are proving very useful and increasing the availability of yield by reducing the losses. Also, quality of water is improved because of providing spillways, farming bunds, Aad, silt traps/catchers at the inlet and outlets. The health and hygiene of the people is improved. Also, the life of structure is increasing because of permanent structures. The catchment improvements are helping in increased yield to the structures. The NGO's playing vital role in the area by funding the expenses for the structures but participation of the community is kept compulsory by providing the man power for the construction and maintenance work. This is a good practice not to provide funds without the participation of the beneficiary. More awareness in the people about the importance of water conservation and its innovated methods for preservations will kick the problem of survival for drinking water, food, and fodder in the Thar Desert.

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