

Tanka: Empowering Women in Thar

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Abstract-- The Thar Desert in Rajasthan faces chronic drought, severe water scarcity, poverty, and poor health outcomes. Home to 26 million people, it is the most densely populated desert ecosystem in the world. With annual rainfall of only 100–250 mm, access to water is limited, forcing villagers to spend nearly half of their income on potable water. *Droughts*¹ are frequent-hitting the region every second or third year. The lack of clean drinking water leads to widespread waterborne diseases and poor health, further exacerbated by low awareness of hygiene practices.

Tanka is a well like structure used to store runoff water for the purpose of drinking. All the *Tanka* we visited observed that they are located close to the houses. A family of Tar Desert gives first preference to *Tanka* and is an essential planning component for each household before making their houses. *Tanka* normally constructed for individual household but others also get benefits. The technical feasibility study of sample structures indicates that normally one *Tanka* gives direct benefits to 10-30 people and indirect benefits to 15-20 people. The normal size of *Tanka* is 3.35 meter (10 feet) deep and 3.35 m diameter *Tankas* are very popular in the arid and semi-arid area. All visited *Tanka* constructed in year 2004 and 2005. *Tanka* consist three major components 1. Underground tank, 2. Inlet with silt trap and outlet, and 3. Top cover to fetch water and protect from pollution. All *Tanka* constructed using the external material, for which beneficiary received financial assistance. Beneficiary also contributed for construction in the form of labor and some material. The design (technical) assistance was provided by external agency. Masons were also hired from outside for masonry works. The design life of the structures as per villagers’ perception varies from 15 to 30 years with proper maintenance and without maintenance the structure cannot survive for more than 8 to 10 years.

Keywords-- Arid and Semi-Arid Zone, *Tanka*, Beneficiary, CSOs, *Droughts*, *Drudgery*, Households, Livelihoods, NGOs, Poverty, Revolutionary, Scarcity, Thar Desert, TFS,

I. INTRODUCTION

Tanka is a well like structure used to harvest rain water for the drinking purpose of a family or group of families. “Catch it where it falls” is the concept to construct a *Tanka*.

¹ [https://www.undrr.org/gar2021-drought\(Asia-Pacific Drought Risk Dialogue: Transforming institutional drought risk management for resilience – The GAR Special Report on Drought on date 27.07.2021 at 11.30am\)](https://www.undrr.org/gar2021-drought(Asia-Pacific Drought Risk Dialogue: Transforming institutional drought risk management for resilience – The GAR Special Report on Drought on date 27.07.2021 at 11.30am))

One of the revolutionary structures which impacted life of women a lot.

II. CHARACTERIZATION

Definition

Tanka is a very simple indigenous rain water harvesting structure constructed in Indian Arid Zone near to houses. This is a simple cylindrical body well plastered from all sides with three openings one for water intake, another two for taking out the water. The stored water in the structure used mainly for drinking and other household uses.

Women are the main user of this structure and a sufficient knowledge on hydrological design of *Tanka* is available with the women and villagers. The villagers understand that how much catchment area is required to fill *Tanka* completely.

Table 1:
Inlet – Outlet details

Name of structure	Type inlet / Outlet	Type of silt trap used
Taanka	Circular casted opening of 0.23 m to 0.25 m	Ziz-zag plate fitted across the flow to increase time of concentration

Note: 1 meter long and 0.60 meter wide silt trap constructed in all Tankas if not link with roof top water harvesting

III. PURPOSE

Tankas are primarily meant for drinking water purposes of a small family or a small group of families. The structure mainly stored rainwater which is used for drinking and domestic uses but after drying of stored water, the *Tanka* serve the purpose of a storage facility for water brought from outside.

IV. SCOPE

Following are the minimum requirements for design and construction of *Tanka*:

- i. Ideally there should be sufficient catchment near to the household is the most suitable place for *Tanka* construction but generally there is a practice of making a artificial catchment along with *Tanka* to ensure sufficient water.
- ii. In the natural catchment the slope is required towards *Tanka*.
- iii. The half *Bigha* (1/12 ha) catchments area is enough to produce runoff for 50 cum capacity of *Tanka*. For artificially created catchments 1/66 to 1/25 ha area is enough to collect adequate amount of runoff.
- iv. The catchment area should have more pebbles and rocky outcrops or hard surface. This will help to minimize the maintenance time, expenditure and also help to produce more runoff without sediments.
- v. Construction site for *Tanka* should be at the middle to slightly up side of catchment to control the quality of water.



A traditional Tankas

V. DETAILS OF TANKA

Structural details:

Traditional linkages: The first known construction of *Tanka* in the Indian Arid and Semi Arid (ASA) regions was traced back during the year 1607 in village “*Vadi ka Melan*” near *Jodhpur*^{*}. Thereafter, almost every household, religious centers, schools in the rural areas constructed *Tankas* for meeting drinking water demand.

Tanka is constructed by digging a circular hole of 3.00 to 4.25 m diameter and plastering the base and sides with 6 mm thick lime mortar or 3mm thick cement mortar^f. The top is covered by locally available thorns, brushwood etc. After a log evolution in the design of *Tanka*, the design is improved a lot compare to earlier design.

Hydrological details: There are two important hydrological considerations in design of *Tanka*, these are estimation of catchment area, runoff volume and size of *Tanka*.

The villagers’ long practices of *Tanka* made the hydrological design very simple, and as a thumb rules many NRM practitioner and villagers follow the following thumb rules in *Tanka* design;

^{*} Samra J.S., Sharda, V.N. and Sikka A.K. 1996. Water Harvesting and Recycling – Indian Experiences, CSWCRTI, Dehradun (UP), India.

^f Vangani, N.S., Sharma, K.D. and Chatterji, P.C. 1988. *Tanka* – a Reliable System of Rainwater Harvesting in the Indian Desert. Technical Bulletin No.33, Central Arid Zone Research Institute, Jodhpur, India.

- i. Considering the bare minimum rainfall (50mm in a year); and 3m diameter and 3 m deep *Tanka*, a minimum of 850 Sq.m. (1/12 ha) catchment area is required.
- ii. The height of inlet should always be above than outlet and roof / lid of the *Tanka* should be at least one and half feet above the inlet. Sometime air pressure built up at the time of water entering into the *Tanka*, which creates rupture and cracks in the lid if *Tanka* is air tight. The difference in height of inlet and outlet prevent air lock and provides space to pass the air.



An improved Tanka

VI. GEOGRAPHICAL COVERAGE

The concept of Tanka was introduced in 16th century when Kings were built such structure to store rain water for their army. The rain water is pure from any impurity and store longer time. One of the reasons to store rain water was hardness of available ground water.

Western part of Rajasthan is known for its ability to survive in the center of desert. People are still surviving because of these rain water harvesting systems and *Tanka* is one of them. This structure was initially constructed in Jodhpur, Bikaner, Barmer, Nagaur and Jaisalmer districts only.

CSOs, NGOs was constructed more than **1000 individual and group Tankas** in Jodhpur, Barmer, Nagaur, Jaisalmer, Churu and Bikaner district. **In year 2002 CSOs, NGOs** was included *Tanka* construction activity under watershed projects as tool to increase participation of **landless and marginal** families. **The result of that inclusion is visible and some of the migrant families were settle-down around these Tanka and adopt livestock rearing as source of their livelihoods.**

VII. SUMMARY OF STUDY FINDINGS

The key findings of the study are as follows:

- i. Low cost and very simple in design, high return. Could be constructed by taking loan.
- ii. This is the structure for building peace.
- iii. Drought proofing permanent structure.
- iv. One of the structures which is playing an important role in empowering the women.
- v. Landless and marginal community groups are survived in such harsh conditions because of *Tanka*.
- vi. Year long water availability in normal monsoon year increases its importance.
- vii. Help to irrigate 5-6 plants near to houses.
- viii. Provide water for domestic requirement.
- ix. Drinking water for small animals such as goat, sheep etc.
- x. Reduce drudgery time to fetch water.
- xi. Reduce burden from women and drudgery of whole family.
- xii. Help to improve health status of families.
- xiii. Social status increased
- xiv. *Tanka* is the structure provides sweet and clean water.

VIII. RECOMMENDATIONS

- i. Maintenance of the *Tanka* catchment area is important component while constructing a *Tanka*.
- ii. The additional component like silt catcher, filter trap, Tanka cap will reduce maintenance cost of Tanka.
- iii. Construction site for *Tanka* should be at the middle to slightly up side of catchment to control the quality of water

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