

Reviving Traditional *Tanka* System to Augment Water Supply in Rajasthan

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Background of the problem

Women in remote villages often spend long hours every day in fetching water, especially, in water scarce areas with dysfunctional supply infrastructure.

Women and girls in the desert state of Rajasthan, spend an average of about 7 to 10 hours every day for bringing water. Ranigaon Gram Panchayat in Barmer district is one such area where scorching heat (41 degrees centigrade during winter and temperature varying between 45 to 51 degrees centigrade during summer) further worsens the hardships faced by women.

Rainfall in this district is highly inconsistent, ranging from 50 mm to 610 mm. This variation is usually in the range of 50-70%, but it can go even above 400%, across successive years. Most of the rainfall occurs in short and powerful bursts over a span of a few days. High variations in rainfall coupled with scanty irrigation facilities are rendering agriculture a highly risky livelihood option for residents in this GP.

Description of the innovative practice

For generations, a traditional rainwater harvesting structure known as *tanka*, is popular in this part of Rajasthan. A household *tanka* is constructed with mud and local materials with a storage capacity of 10,000 to 12,000 litres, costing Rs. 15,000 to 20,000. A *Tanka* harvests rainwater from surrounding agricultural or homestead lands and supports drinking and sanitation needs of the family during rainy season starting from July to September. In this traditional form of *tanka*, water is not available for agriculture or other livelihoods. Moreover, it demands regular maintenance, at least three times in a year, in terms of removal of silt accumulated in the *tanka*. Due to these reasons, many households do not prefer to construct a *tanka*.

During 2007, Rajasthan Rural Institute of Development Management (RRIDMA), as a part of its interventions in Ranigaon GP of Barmer District, improved the *tanka* system. After several interactions with people, it was understood that water availability at the doorstep for drinking, livestock (small ruminants) and arid horticulture would help them to access water for consumption as well as become a source of income. With this objective, the *tanka* was redesigned for higher storage capacity and better performance.

Following are the major components of the improved design:

1. Circular underground *tanka* of 4.2 metre diameter, constructed with stone masonry.
Walls plastered in cement mortar and *tanka* covered with stone slab roof.
2. Circular catchment around *tanka* of 19.5 metre outer diameter. Catchment constructed in cement concrete in a saucer shape with gentle slope towards the centre.



The improved *tanka* and its benefits

The estimated storage capacity is 24,000 to 30,000 litres per *tanka* (depending on the depth of *tanka*) at a total cost of Rs.50,000. Each household contributed Rs.19,000 in kind and remaining expenditure was met by RRIDMA. A total of 34 *tankas* were constructed using the improved model. It is estimated that the modified structure can harvest 60,000 litres of water through multiple fillings of *tanka* for an annual rainfall of 250 mm.

Apart from getting water for drinking and domestic purposes, beneficiaries are irrigating small pieces of land for cultivating vegetables and horticultural plants by using drip irrigation method. Since these *tankas* are located on a higher ground, gravity flow based drip systems are feasible for them.

Results and replication

As a result of this innovative intervention, water is available to the households for an extended period from June to February. With this system, drudgery and time spent by women in fetching water has reduced significantly. The quality of water has improved and silt load is also reduced due to the cement concrete catchment, eventually contributing in reducing waterborne diseases and medical expenses.



Most of the households have started using excess water from *tanka* to cultivate *bajra* (pearl millet), vegetables and horticulture plants such as pomegranate, papaya, etc., in small plots of land. Water used for irrigating plots is further reduced by 30-40% with drip irrigation. In addition to vegetables and other produce, fodder and firewood availability has increased from the plots. The fodder is used to rear small ruminants like goats and sheep. Vegetables cultivated in small plots are being used for household consumption and it is improving nutritional status of families.

During the summer months, from March to May, these households fill the *tankas* with water from supply tankers. This costs around Rs.1000 per *tanka*, and each such filling meets water needs of a family for a month. The model was upscaled in the district as well as replicated in Jodhpur and Bikaner districts of Rajasthan by RRIDMA. This model is also being mainstreamed into National Rural Employment Guarantee Scheme (NREGS), a scheme of the Government of India. The model is best suited for replication in the desert areas and areas with water scarcity.

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