

Tank Irrigation in Telangana State - Issues and Challenges

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Abstract: Tanks are part of an ancient tradition of harvesting and preserving the local rainfall and water from streams and rivers for later use, primarily for agriculture and drinking water, but also for sacred bathing and ritual. Often a tank was constructed across a slope so to collect and store water by taking advantage of local mounds and depressions. Tank use is especially critical in parts of South India without perennial rainfall where water supply replenishment is dependent on a cycle of dry seasons alternating with monsoon seasons. The tanks are many centuries old and managed mainly by the community as most of the tanks are small in size. The system of managing tanks through community participation is also many Centuries old. But, the performance of tanks has been deteriorating over the years owing to various reasons. Tank irrigation system is less capital intensive and has wider acceptance compared to major irrigations. Tanks can be effectively used for development of backward areas. The tank irrigation system has a special significance to the marginal and small farmers who depend on the tank irrigation. Participation as a process is a dynamic, non-quantifiable and essentially unpredictable element. As a process, participation will change the life of the project into a permanent dynamic movement. Participation of farmers is essential dimension for agricultural and rural development & is one of the crucial components of success in irrigation, livestock, water and agricultural projects. The main motivation of this paper is to examine the importance and role of tank irrigation in Telangana State to improve precious irrigation system. The paper also makes an effort to recommend issues and challenges, measures to revive tank irrigation of Telangana State.

Key Words: Tank irrigation, Agriculture, Community Participation, Rural Development

1. INTRODUCTION:

An irrigation tank or tank is an artificial reservoir of any size, mainly in India. (The word *sagar* refers to a large lake, usually man-made). It can also have a natural or man-made spring included as part of a structure. Tanks are part of an ancient tradition of harvesting and preserving the local rainfall and water from streams and rivers for later use, primarily for agriculture and drinking water, but also for sacred bathing and ritual. Often a tank was constructed across a slope so to collect and store water by taking advantage of local mounds and depressions. Tank use is especially critical in parts of South India without perennial rainfall where water supply replenishment is dependent on a cycle of dry seasons alternating with monsoon seasons.

Tank irrigation is one of the oldest and significant sources of irrigation in India and is particularly in south India (Palanisamy, 1998). Irrigation tanks accounted for more than one third of the area irrigated in the south Indian states on Tamil Nadu, Karnataka and Andhra Pradesh. The tanks occupy vital role in the irrigation as well as local ecosystem in the semiarid and regions of South India. This tank provides multiple uses like source of drinking water for uncountable rural and urban communities and livestock, fish culture, recharge of ground water, control of floods etc (Gurunathan, 2006). The existing/functioning of tanks have been known to south India for several years old, the historical evidence suggests that tank construction was sponsored by kings, chiefs and land lords (Uma Shankari, 1991). It is the most important minor irrigation source of irrigation. This system has a special significance to the marginal and small scale farmers depending on tank irrigation. Tanks in the Indian context inextricably linked to the socio cultural aspects of rural life and have historically been an indispensable part of the village habitat, sustaining its socio-ecological balance (Sakthivadivel et al, 2004). Irrigation in India has had a history extending to millennia, Tamil nadu can proud of some of the oldest examples of irrigation works in the country (Guhan, 1984) However the main source of tank irrigation has consistently declined since independence. This decline can be seen equally in the shape of decrease in the relative importance of tanks and other modes of irrigation. At the same time today there is alarm that these valuable and extensive resources are in a state of near collapse, contributing to increased drought vulnerability in some of the poorest districts in the country.

2. SOCIO-CULTURAL, RELIGIOUS AND HISTORICAL ASPECTS OF TANK IRRIGATION:

In South India, the tradition of establishing a tank alongside a temple prevails. Since every village has a temple, it also has a temple tank. These tanks were constructed to harvest water. The temple tanks are known as kovil kulam in Tamilnadu, kulam in Kerala, kalyani in Karnataka and cheruvu or pushkarini in Telangana and Andhra Pradesh. The water from the temple tank was mainly meant for the ritual bath of the deity and to provide water for the flowering

plants in the nandavanam. Devotees also washed their hands and feet or even bathed in a separate tank maintained for that purpose before entering the temple. The temple tank was the focal point of several religious activities like the theppam or float festival, for the offering of prayers to one's ancestors and meditation on the banks of the tank. The temple tanks were the focus of all activity, and the water was used for the ritual bath of the deity (abhishekham) and for the bathing of the devotees. Festivals were held round the tanks and a mandapam situated in the center of the tanks would house the deity during the theppam or float festivals.. In ancient days, temple tanks were constructed to the east of every village, and multipurpose tanks to the west

3. TANK DESIGN:

Water is considered a purifying and regenerative element in India, and is an essential element of prayer and ritual. Water is also revered because of its scarcity in western India where dry and monsoon seasons alternate and failure of the monsoon season means famine and death while plentiful water replacing irrigations sources is a time of rejoicing. This resulted in building water storage tanks that combined the practical and sacred. Since ancient times, the design of water storage has been important in Indian architecture. As early as 3000 BC, sophisticated systems of drains, wells and tanks were built to conserve and utilise water. Tank building as an art form began with the Hindus and developed under Muslim rule.

An example of the art of tank design is the large, geometrically spectacular Stepped Tank at the Royal Center at the ruins of Vijayanagara, the capital of the Vijayanagara Empire, surrounding the modern town of Hampi. It is lined with green diorite and has no drain. The tank was filled by aqueduct.

4. ROLE OF TANK IRRIGATION:

The role of tank irrigation in south India is well known to historians of the area. The enormous numbers of inscriptions at tank sites and in temples proclaim the active role of Chola, Pandya, Vijayanagara and Kakatiya kings and viceroys in the construction of tanks. Some tank-irrigated lands were granted tax-free to temples for performance of ritual: as also to carpenters, masons, boatmen, fishermen, water regulators and others for the upkeep and maintenance of tanks and de-silting operations. Other inscriptions also show the builder to be a private individual seeking merit by dedicating tank-irrigated lands to the temple or investing for his own benefit. While the state or donor underwrote the capital costs, "tank committees" carried out maintenance operations. This seems to have been the great strength and resilience of the south Indian agrarian society when faced with war and conquest and the successive dissolution of one state and the rise and dominance of another. In short, south India owes the survival of its culture, religion and ritual to the independent economic base built around "tank and temple". By the 13th century, the moral incentives were strengthened when the construction of tanks was included among the seven acts of charity, which were considered especially meritorious. The construction of tanks had become the major investment activity for rulers and their local potentates. So common were these tanks, that the *Padma purana* (circa 750 BC) has an entire chapter on ritual for the consecration of tanks.

5. IMPORTANCE OF TANK IRRIGATION:

Different sources of irrigation (canals, tanks, wells and other sources), tanks are considered the prime source for the development of agriculture which indirectly helps the wells to get recharge it s supply. Before the independence the tank system is one of the major components of minor irrigation sources in many of the India states. Tanks have many positive attributes such as

- 1) Less capital intensive to build and maintain
- 2) Provide ecological benefits
- 3) Recharging ground water
- 4) Control the floods
- 5) provided livelihood options (farming, fishing, forestry, dug hearing)

6. TANK IRRIGATION IN TELANGANA- MISSION KAKATIYA PROGRAMME:

Tanks were the main source of irrigation in Telangana for centuries. Over a period of time, due to lack of proper maintenance and siltation, most of these tanks have either shrunk or become defunct. Reduced availability of surface water has resulted in over stress on the available ground water resources. Monsoon rains have been unevenly distributed and 85% of cultivated area in the state is rain-fed. The topography and rainfall pattern in Telangana has made tank irrigation an ideal type of irrigation, storing and regulating water flow for agricultural use. The enormous number of inscriptions at tank sites and in temples proclaims the active role of Kakatiya, Qutubshahi and AsafJahi kings in the construction of tanks. In the state, there are about 46,531 minor irrigation sources irrigating a total area of 10.17 lakh hectares.

The tank system has been critical to growth of agriculture in the state, contributing to soil and water conservation, flood control, drought mitigation, livestock and domestic uses, recharge of ground water, microclimate and protection

of environment. Access to irrigation infrastructure for the poor people allows them to enhance their crop production and broaden the opportunities to diversify their income base, reducing the vulnerability caused by the seasonality amidst the threats of climate change. Telangana has widely diversified farming base with large variety of crops, which include food, horticulture and cash crops. The cultivable land is about 67% of the total geographical area, 60% of which is under food crops. Paddy is the predominant food crop and is sown in 25% of the cultivated area. Pulses occupy 18% area followed by sorghum and maize which accounts for 14% of the cultivated area. Groundnut, cotton, castor, sunflower, sesamum and sugarcane are other important crops grown in the State. Considering the aforementioned issues related to the tank irrigation, the Government of Telangana State has taken up the massive programme of restoring all the 46,531 minor irrigation sources under the name “Mission Kakatiya” (ManaVooru–ManaCheruvu) in a decentralized manner through community involvement. The Government is aiming to complete the restoration of all the tanks in the next five years at an estimated cost of Rs. 20,000 crores.

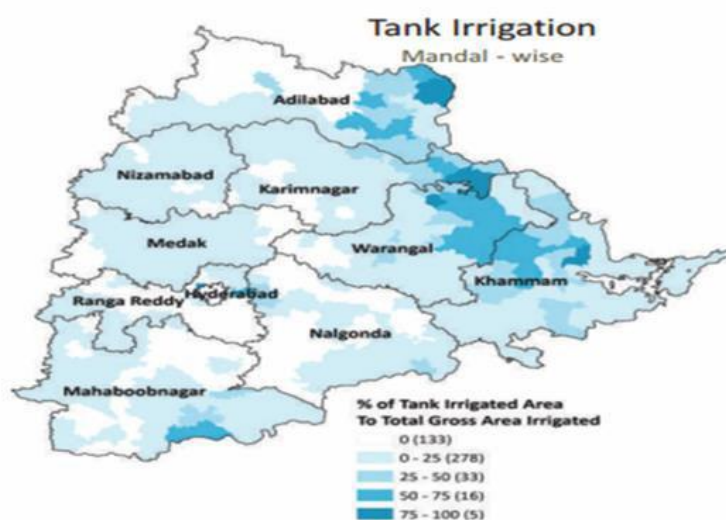


Fig: District wise distribution of area under Tank Irrigation in Telangana State

Minor Irrigation There are 35,974 tanks serving an ayacut of 18.75 lakh acres including 31,196 Panchayat Raj department tanks serving an ayacut of 6.68 lakh acres. The tank irrigation is concentrated mostly in the districts of Warangal, Khammam and Karimnagar. Under minor irrigation, an area of 37,300 acres of irrigation potential is created and 19,700 acres of irrigation potential is utilised with an expenditure of Rs.488.46 crores during the year 2013-14. The rehabilitation of Minor irrigation schemes sanctioned under World Bank assisted by Telangana Community Based Tank Management Project is in Progress. The scheme is intended to improve 1182 tanks and about 762 schemes are completed. District wise distribution of area under Tank Irrigation Since 1990, well irrigation in the State has increased substantially while there is steady decline in tank irrigation, causing serious concern on source sustainability and energy demand for pumping groundwater. A comprehensive programme for restoration of tanks and revitalization of irrigation potential is critical for developing an integrated approach towards surface and groundwater management, and filling the prevailing 63% gap in realizing the potential of tank irrigation in the state benefiting about 11.5 lakh farmers in the nine drought prone districts of Telangana state. Tank irrigation has huge bearing on generation of rural employment, poverty reduction and agricultural growth. The sheer size of command area under tank irrigation makes it a large centre of agricultural production and provides a critical opportunity for commercial agriculture through market linkages.

7. DISTRICT AND YEAR-WISE PLAN OF RESTORING THE TANKS

Sl. No.	District	No of Sources	No of tanks proposed during the year				
			2014-15	2015-16	2016-17	2017-18	2018-19
1	Karimnagar	5,939	1,188	1,210	1,220	1,200	1,121
2	Adilabad	3,951	790	800	800	800	761
3	Warangal	5,839	1,168	1,170	1,180	1,200	1,121
4	Khammam	4,517	903	910	920	930	854
5	Nizamabad	3,251	650	650	650	650	651
6	Medak	7,941	1,588	1,590	1,600	1,610	1,553
7	Ranga Reddy	2,851	570	500	570	600	611
8	Mahaboobnagar	7,480	1,496	1,500	1,510	1,510	1,464
9	Nalgonda	4,762	952	978	980	980	872
	Total	46,531	9,305	9,308	9,430	9,480	9,008

Source: Telangana Socio Economic Outlook -2015

All the 46,531 tanks are proposed to be rehabilitated, at the rate of about 1/5 number of tanks per year, in a span of 5 years starting from 2014 – 15 onwards. The State is committed to ensure restoration of all the irrigation tanks in the next five years in a phased manner.

8. ISSUES AND CHALLENGES:

The most important challenge that most reviews of India's irrigation and agricultural scene put forward is that of exploding population. After the independence the significant source of tank irrigation drastically decreased due to several socio-economic and institutional factors, the most factors have been changes in land ownership pattern and changes in caste and class configuration. The minor irrigation was decreased after independence due to importance given to canal systems and over exploitation of ground water. The decline of tank irrigation due to particularly massive diffusion of private wells and pumps has spread to tank command area. Emergence of wells is influenced by many factors such as the advent of green revolution technology, the farmers were switched over to well irrigation due to its quality irrigation which provides more yield and more crop. Due to this change farmers are able to cultivate multiple crops in a year. So the cropping pattern was changed meanwhile the traditional irrigation system such as tanks got disintegrated. Materialization of wells in the tank ayacut has led to the decline of interest in the tank management among farmers who own wells at the same time well is a private resource whereas a tank is a common property, moreover well irrigation is more stable and reliable than tank irrigation.

The IWMI-Tata Programme pointed out identify the characteristics of high performing local managed tank institutions which are able to adapt themselves to changes in water supply, ground water development, changes landholding pattern, and wider socioeconomic changes such as changing landholding pattern, social structure, urbanisation and others. The most important reasons of breakdown of tank irrigation are due to disappearance of village institutions that were managing the tanks. Encroachment on the tank foreshore area, deforestation in the catchments area, poor operating condition of the upper sluices, defective tank structures, weak farmers organization also lead to decline of tank performance.

Today, many are abused or in a state of disuse, their potential and original purpose all but forgotten. The problems due to poor maintenance, encroachment, lack of money etc.

In the present scenario of tank degeneration, and tank use and management, the major deficiencies noticed in the tank complexes are

- Lack of community involvement in tank management and maintenance
- Inadequate and unreliable water supply to the tank
- Absence of local institutions for management
- Large-scale infestation of weeds and loss of grazing land in the tank bed
 - Encroachment of tank bed and supply channel by the government, public, private people
- silting of tank water spreads and supply channels
- Choked or leaky sluices and damaged weirs
- Sluices with missing shutters
 - Dilapidated and weak or cut-down tank bunds
- Meagre resource allocations for maintenance
- Urbanization and extinction of tanks
- No sustainable large-scale groundwater development and decline in gravity flow in tank-fed irrigated area

9. CONCLUSION:

The important source of tank irrigation has been constantly decline due to other mode of irrigation, shortage of rainfall, lost of farmer interest, financial problem etc., and the traditional water management of tank irrigation largely disappeared due to modern technologies. Now the tank irrigation system is critical condition. Because farmers are more concerned about Ground water. Without surface water the ground water used for only limited period. The other factors of decline of tank irrigation are conflict among villagers, encroachment, siltation, poor maintenance etc. Except suitable finance, institutional arrangements, improve of user participation are evolved the present condition will continue. The State or Central Governments should take necessary action through Public Works Department, Forest Department, and Village Panchayats (watershed development, water harvesting, revival of small water bodies) to avoid growing water scarcity for agriculture, industry, domestic and drinking purposes.

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