



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Tank irrigation in Bahour Commune, pondicherry Region

Dr.P.Zearamane

Assistant professor

Department of Economics

Arignar Anna Government Arts college, Cheyyar

ABSTRACT

Tanks are part of an ancient tradition of harvesting and preserving the local rainfall and water from canals 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 main motivation

of this paper is to examine the importance of tanks, types of Tanks and role of tank irrigation in Pondicherry.

Key words: Tank irrigation, system tank, Surface water, harvesting

Introduction

Archaeological evidence shows that the practice of water conservation is deep rooted in the science of ancient India. Excavations show that the cities of the Indus Valley Civilization had excellent systems of water harvesting and drainage. Chanakya's *Arthashastra* mentions irrigation using water harvesting systems. Sringerapur, near Allahabad, had a sophisticated water harvesting system that used the natural slope of the land to store the flood waters of the river Ganga. Chola King Karkalla built the Grand Anicut or Kallanai across the river Cauvery to divert water for irrigation while King Bhoja of Bhopal built the largest artificial lake in India. Depiction upon centuries of experience, Indians continued to build structures to catch, hold and store monsoon rainwater in this water has utilized Domestic and cultivate crops for dry seasons. These traditional techniques, though less popular today, are still in use and efficient. 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, pondicherry, Kerala, 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.

Tank irrigation system

An irrigation tank is a small reservoir constructed across the slope of a valley to catch and store water during rainy season and use it for irrigation during dry season. Tank irrigation systems also act as an alternative to pump projects, where energy availability, energy cost or Ground-water supplies are constraints for pumping. The distribution of tanks was quite dense in some areas. However, the tanks have helped in recharging groundwater, provided crucial irrigation for crop production, functioned as a source of multiple uses for the village community (drinking water, washing, bathing, water for livestock and wildlife, fishing, water for cultural and ritual purposes) and played a role in the maintenance of a good natural environment. Because of these benefits, the Indian kings, Jagirdars, religious bodies and philanthropists built a large number of tanks all over their domains. These rainwater-harvesting structures in various forms were known by different names in different parts of the country, e.g., kere in Karnataka, cheruvu in Andhra Pradesh, Erie in Tamil Nadu, johad and bund in Rajasthan, ahar and pyne in Bihar. The tanks were meant not only for agriculture, but also served as a resource-base for many other activities such as the collection of fodder, fuel, the making of bricks, pots, baskets, etc, with women offering their assistance in these processes. Tanks were also part of the socio-religious and economic system in villages. The location of the tank and its physical conditions were a matter of much significance to the people, particularly women, in carrying out their economic activities. The tank and its surroundings used to be the common property of the village and its people. The maintenance of natural resources through a continuous process of use and conservation meant not merely the assurance of livelihoods to the people of the village, but also the preservation of the ecological balance.

Objectives

1. To assess the difficulties in tank irrigation in the study area
2. To bring out the salient features of tank irrigation in the study area.
3. To evaluate the social, economic and technical problem in maintenance of tanks to the study area.
4. To suggest a suitable plan policy of action for development of tank irrigation.

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 its 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)

Ground Water depletion

The excessive extraction for all uses has caused a drop in the water table in Bahour commune the declining trend over 10 years is of the order of 15 to 30 m in the West and about 7 m in the Eastern part of Pondicherry. open wells were replaced by tube wells from 1970 to 1985 with motor pump sets and 1985 to till date with submersible /jet pump sets. Extraction has gone to 35-50 m and up to 100 m in some places. A secular decline in the water potential levels which shows that the ground water use exceeds recharge (i.e. there is unsustainable extraction of groundwater) and the banned area for construction of new and deepening of existing borewell in Bahour within 6 km range from the coast. This area covers about 60% of Bahour commune this situation can be reversed only by ensuring either greater storage for recharge or by decreasing the amount abstracted.

Seawater Intrusion

In a coastal region like Pondicherry, there is the added danger of the ingress of seawater. In 10 to 15 villages in Bahour commune, where groundwater has become saline and the villagers are supplied water through tankers from commune headquarters, the shallow aquifers along the coast show signs of salinity Due to over pumping.

Pondicherry at a Glance

The Union Territory (U.T.) of Pondicherry comprises of four interspersed geographical entities namely Pondicherry, Karaikai, Mahe and Yanam. Pondicherry region is the largest of the four and is situated on the coramandal Coast between 11 45' and 12 0' North Latitude and 79 37' and 79 50' East longitude. There are 84 small and medium tanks in Pondicherry region of total capacity 46.36 MCM, which are serving about, 6764.6 Ha. The storage capacity of Ousteri and Bahour tank is 15.29 MCM and 5.60 MCM, which are serving about 1568.0 Ha and 388.7 Ha of agriculture land respectively. The utilizable groundwater resources (at 85% of the gross recharge potential) were assessed at 151 MCM. Since alluvial aquifers cover about 90% of the Pondicherry region, water level in the wells is fairly shallow ranging between 12 to 14 m below ground level. In the tank command areas alone there are 70-80 shallow wells and about 1000 tube wells. Over all there were 8000 tube wells in the Pondicherry region.

Irrigation sources of Bahour Commune

Bahour commune is situated at a distance of 20.5 km South West of Pondicherry (via Kirumampakkam). It is the headquarters of Bahour commune and also designated as a revenue village. Bahour Lake the second largest lake in Pondicherry is situated on the Northern side of the bahour village . Bahour commune considered as the "rice bowl" of Pondicherry was chosen for the present study This area is highly fertile with the conspicuous presence of a chain of irrigation tanks that were supplying water for agriculture allied activities, the technologies introduced in early 1970s have caused rapid decline of groundwater table and

increasing saline of aquifers in coastal regions. Bahour Lake, the second largest lake in Pondicherry is situated towards the Northern side of the Bahour commune. The lake covers an area of 1374.30 Ha. It becomes dry in the month of May. The feeding channel called Bangaru vaikkal, which takes off from Soranavur anicut about 16.8 km, north West from the tank. feeds the tank Ponnaiyar river is the exclusive source of water to the Bangaru vaikkal, which feeds the Bahour tank. The spring flow in the river is diverted into the Bangaru vaikkal temporary check dam the construction of which was governed by the convention of June 1910. This convention was entered into agreement between the British and the French Government. The full supply depth in the rear of the old head sluice was fixed as 1.675m.

List of system tank in Bahour commune

Sl.No.	Tank No.	Name of Tank	System/ Non-System	Ayacut Area (Ha)	Water Spread Area (Ha)	Capacity of tank (Mcft)
1	35	Pidarikuppam Tank	S	5.06	4.10	0.75
2	65	PanayadikuppamSitheri Tank	S	12.67	0.76	2.50
3	66	PanayadikuppamPerieri Tank	S	80.06	65.91	16.00
4	67	KaraiyambuthurOdaperi	S	89.47	91.44	19.00
5	68	KaraiyambuthurVannaneri	S	31.70	18.58	6.50
6	69	Manamedu Tank	S	69.31	7.63	10.80
7	70/71	Kaduvanur Tank and	S	28.65	19.55	6.40
8	72	Bahour Tank	S	728.98	321.55	193.50
9	73	Aranganur Tank	S	20.44	2.96	26.00
10	75	Seliamedu Tank	S	27.56	4.59	9.00
11	76	Adingapet Tank	S	36.60	2.00	26.00
12	77	Kirumambakkam Tank	S	203.39	65.25	43.00
13	78	Pinnatchilkuppam Tank	S	27.47	1.15	9.00
14	80/79	Kudiyirupupalayam (or) Pirivupalayam Tk.	S	17.63	2.41	9.00
15	81	Manapet Tank	S	79.54	22.67	7.42
16	82	Utchimedu Tank	S	26.37	5.10	15.00
17	83	Keelparikalpet Tank	S	69.49	8.05	18.30
18	84	Melparikalpet Tank	S	39.86	6.60	9.50
19	85	Arachikuppam Tank	S	22.73	5.13	6.00
20	86	Kuruvinatham Tank	S	13.69	9.58	15.00
21	87	Irulansandai Tank	S	135.13	5.70	27.50
22	89	BahourSitheri	S	23.48	5.65	1.20
		Sub Total		1789.28	676.36	477.37

Source: Public Works Department Pondicherry

The above table has clearly explained total irrigated area (ayacut) 1789 Ha water spread area is 676 Ha and capacity of irrigation tank has 478 Million cubic feet. These 22 system tanks has received water (Feeder) from Sathanur dam in Thiruvannamalai district, through Ponnaiyar river. When one Tank fills up, the excess water exits the system through the surplus weir into another tank at a lower incline. This way, the water is guided and released in a calculated manner, preventing it from washing away entire villages and fields. However, in order to be effective flood control and soil erosion control systems, arresting rain water from gushing out at break-neck speed along with fine top soil. The ayacut under the Bahour tank is 1789 Ha accounting 10% for U.T. of Pondicherry. But the tank feeds twelve other tanks whose ayacut also may indirectly be treated as under Bahour tank. Water from the tank is supplied by means of eight sluices situated around the periphery of the tank bund.

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, Agriculture department and Forest Department, to avoid growing water scarcity for agriculture, industry, domestic and drinking purposes. To meet out the increasing demand for water, the government has initiated renovation and restoration of water bodies and rain water harvesting.

References

- Anderson, V. 199 1. Alternative economic indicators London, Routledge.
- Annual report from Pondicheny meteorological department, 2004.
- Anon, 1964. Agriculture in ancient India, Indian Council for Agriculture research, New Delhi.
- Anon, 1965. Irrigation in India through the ages, Central Board of Irrigation and Power, New Delhi.
- Arjjumend, H. 2003. Innovations in rainwater harvesting: case of Rajkheta in Chattisgarh, Ways of Water Harvesting, LEISA India, Vo1.5, no.2, June 2003.
- Aniens, W.L., Bird, J., Berkoff, J., and Mosley, P. (Eds.) 1996. Towards Effective Water Policy in the Asian and Pacific Region: Volume 1. Overview of Issues and Recommendations. Asian Development Bank, Manila, Philippines.
- Barah, B.C. 1996. Traditional water harvesting systems in India. In: Traditional Water Harvesting Systems, an Ecological and Economic Survey. Barah, B.C. (ed.). New Age International Publishers, New Delhi.
- Amarnath JS, Karthik RP (2006). An Economic Analysis of Tank Rehabilitation in Madurai District of Tamil Nadu. Agri. Econ .Res. Rev., 19: 187-194.
- Anbumozhi V, Matsumoto K, Yamaji E (2001). Towards improved performance of irrigation tanks in semi-arid regions of India: modernization opportunities and challenges Irrigation and Drainage Systems Num., 15: 293-309.
- Sakthivadivel R., Gomathinayagam P (2006) Rehabilitation and management of tanks in India. Asian Development Bank.
- Sakthivadivel R., Gomathinayagam P, Tushaar S (2004). Rejuvenating Irrigation Tanks through Local Institutions. Economic and Political Weekly.
- Sivasubramaniyan K (1997) 'Irrigation Institutions under Two Major System Tanks in Tamil Nadu', Review of Development and Change, Madras Institute of Development Studies, Chennai.
- Tang SY (1992) Institutions and Collective Action: Self Governance in Irrigation, ICS Press, Sanfrancisco, p. 151.
- Tushaar S, Raju KV (1999) Rajasthan Minor Irrigation Tank Rehabilitation Project .Socio-Ecological and Organizational Assessment for Swedish International Development Agency, New Delhi.
- Tushaar S, Vengama KR (2001) Rethinking rehabilitation: socio- ecology of tanks and water harvesting in rajasthan, north-west India. Raju International Food Policy Research Institute, Washington, D.C.
- Tushaar S, Vengama RK (1999). Rethinking Rehabilitation: Socio-Ecology of Tanks and Water Harvesting in Rajasthan .Capri Working Paper, p. 18.