

An Appraisal of Restoration of Rural Tanks with Traditional Participation (Kudimaramathu) in Cuddalore District, Tamil Nadu

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Abstract: The tanks are an important source of water for people's livelihood development from continuous drought period and protect them. For present investigation the kurinjipadi block (Cuddalore district) has taken for the research. The Analysis is a micro-level field action based on three ayacut villages. It examines the current status of rural tanks and discusses traditional people's participation (Kudimaramathu) in the issues of restoration of rural tanks. This research cites the necessity of restoration of rural tanks and the need and benefit from it. The study concluded that restoring the rural tanks will benefit to small and marginal farmers for better production of agriculture also people's participation in maintaining rural tanks is essential need for tank restoration activities.

Keywords: Kudimaramathu, Rural, Restoration, Tanks, People Participation.

I. CONCEPTUAL FRAMEWORK

Rural Tanks are an important source of human society. The historical evidence is that the great civilizations have grown up near the river (Gomathinayagam & Ratnavel, 2007). Most of the tanks in South India are made up of ancient times. More than mythological evidence indicates that the origin of these tanks created about 4th and 5th century. There are many references to the tanks in Sangam literature (Shanmugam 2007). The tanks are an important source of water for people's livelihood development from continuous drought period and protect them. Because the tanks have been set up to store overwhelming water in a particular place and use them during dry season. Before the formation of tanks, they have explored all aspects of their location, the geometric system, and the water spread area. They also increase groundwater resources and help maintained ecological balance. The irrigation of the tanks in the areas where the drought is occurred, the tank is the backbone and sustainable protection of agriculture development. In total irrigation of the southern India, this is nearly by one-third of tank irrigated by total irrigated area. In 1950, 6.5 million hectares were irrigated by tanks (Palanisami et al., 2008). There are 39,202 tanks in Tamil Nadu which are classified by major and medium tanks and are controlled by the Public works department and Panchayat Union. Pandya kings have done many contributions to irrigation in the southern part of Tamil Nadu (DHAN, 2006). Underground water utilization depends on the technology and the higher investments, the higher the cost to create them. High groundwater usage will result on natural disasters (Reddy and Behera, 2009). But tanks management is an integral development of the surrounding environment as well as free of cost. There are numerous benefits such as livestock farming, ground water management, agriculture development, plantation development, community forestry cultivation, fish farming, agriculture and non-agriculture related employment (Sakthivadivel et al., 2004). There is also help to preserve livelihood. Especially rural communities depend on these tanks for their livelihood needs (Balamurugan.P, 2007). This is 29 percent of the country's total irrigated land. The total capacity of tanks and ponds in the 1970s is 15 km³ or 530 tmc (Sivasubramanian.K, 2000). But after that the government and people did not to take any step for increase tank storage capacity and effectiveness till now. In recent years the number of Rural Tanks has declined. Therefore, the research examines the outcome of the restoration activities for the Rural Tanks and traditional participation of tank management activities.

II. OBJECTIVE

To study aims at problems of restoration in rural tanks and traditional participation of kudimaramathu system for sustainable rural livelihood development.

III. METHODOLOGY AND STUDY AREA

For present investigation the kurinjipadi block (Cuddalore district) has taken for the research. The Analysis is a micro-level field action based on three ayacut villages. It examines the current status of rural tanks and discusses traditional people's participation (Kudimaramathu) in the issues of restoration of rural tanks. From each of these selected 3 villages, disproportionate stratified random sample of 40 farmers have been selected so as to get a sample size of 120. The required data have been collected through both primary and secondary source. The Primary data which include Social and Economic Profile of residents, tank characteristics, importance of rural tanks and the level of participation of traditional system. The primary data have been collected through a well structured and pre-tested Interview Schedule. The Secondary data were collected through the personal visit and consultation with various documents available from the office of block development office (BDO), District Rural Development Agency (DRDA), District Statistical Office and Panchayat as well as Village Administrative

Office (VAO) of both the study Villages. The Secondary data which is related to the study tanks and the particulars of their water capacity, water duration and present status and its extent to the water standing area and so on.

Table.1
Tank Details in the Study Villages

Sl. No	Village Name	Registered Ayacut in Ha.	Capacity in Mm ³	Water Spread Area in ha.	Major Basin	Controlled by
1	Kurinjiipadi (V1)	235.80	0.93	300.00	Vellar	Panchayat Union
2	Maruvai (V2)	52.34	0.48	80.00	Vellar	Panchayat Union
3	Thayalkumampattinam (V3)	97.63	0.83	120.00	Vellar	Panchayat Union

Source: Village Records

The secondary data of tank records shows that tank capacity, registered ayacut area, Water spread area in sample tank villages. In kurinjiipadi village the registered ayacut area is 235.80 ha which is higher than thayalkunam pattinam (97.63 ha) and maruvai (52.34 ha) villages. In both villages the type of tank is non-system under the controlled by Panchayat union. The tanks depended on the water from vellaru (river basin). The data also indicates water spread area and capacity of tanks in both villages.

IV. ISSUES IN RESTORATION OF RURAL TANKS

Siltation is the major problem in all the tanks. As a result, their storage capacity has declined. Siltation tends to get concentrated near the sluice gates and often blocks the gate partially and raises the silt level enlarging the dead storage of tank (Raju and Shah, 2000). The silt is the good manure of agriculture land, traditionally, farmers used to regularly remove the silt in tank, especially used for dry land, to enrich the soil. In recent years the silt is not removal in tank is due to various reasons. Another important problem of decline of tanks mainly encroached by construction or modern farming practices or discharges of waster directly into the tanks, lack of will power and knowledge among administrators and politicians, ineffective use of water and another criteria for lack of availability of suitable appropriate or affordable technologies of water quality management awareness among the masses. The government not took any action against encroachers. Tanks are eco-friendly and farmers friendly .The tanks are viable and feasible option and their restoration through renewed efforts will enhance productivity (Osman et al., 2007). Tank irrigation systems are simple but, fragile structures. They have to be continuously maintained, promptly repaired, and constantly monitory (Shanmugam, 2007).

Table 2
Issues in Restoration of Rural Tanks

Sl.No	Problems	Frequency	Percentage
1	Heavy Siltation	25	20.8
2	Weeding	9	7.5
3	Improper Physical Structure	12	10.0
4	Poor Maintenance	19	15.8
5	Encroachment	5	4.2
6	Less attention of water users	17	14.2
7	Urbanization and discrimination uses	19	15.8
8	Insufficient fund allocation	14	11.7
Total		120	100.0

Source: Primary Data

Table 2 explains what the problems are in the restoration of the Rural Tanks. The problems encountered in the rural tanks are heavy siltation, weeding, improper physical structure, poor maintenance, encroachment, less attention of water users, urbanization and discrimination uses, and Insufficient fund allocation. The above table clearly pointed out siltation (20.8%) is the major problem in restoration of Rural Tanks. because the heavy siltation directly impact on storage of tanks. The table also show that 15.8 percent respondents said they could not restored the tanks without proper maintenance and 15.8 percent respondents were unable to restore the tanks by factors such as urbanization and improper water use.

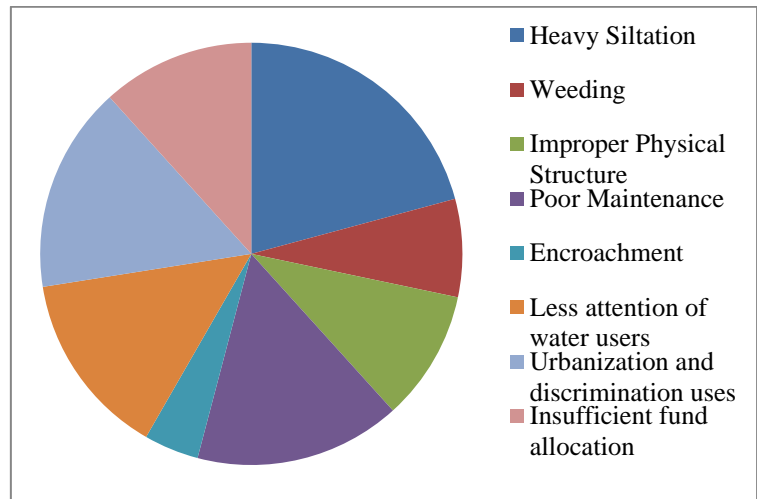


Figure – 1 - Issues in Restoration of Rural Tanks

It is observed that 14.2 percent of the respondents felt that they were unable to restore the tanks due to the lack of less attention of water users using tanks also the reason for improper physical maintenance (10.0%) and insufficient fund allocation (11.7%). The decline of tank is not only human factors but also some natural factors; they affect the performance of tanks. Few of the respondents view that weeding (7.5%) cannot be restored due to increased growth and some respondents view that the encroachment (4.2%) are the problem of restoration in rural tanks.

Figure – 2 - Sustainable Rural Development through Rural Tanks and Participation of their uses and officials

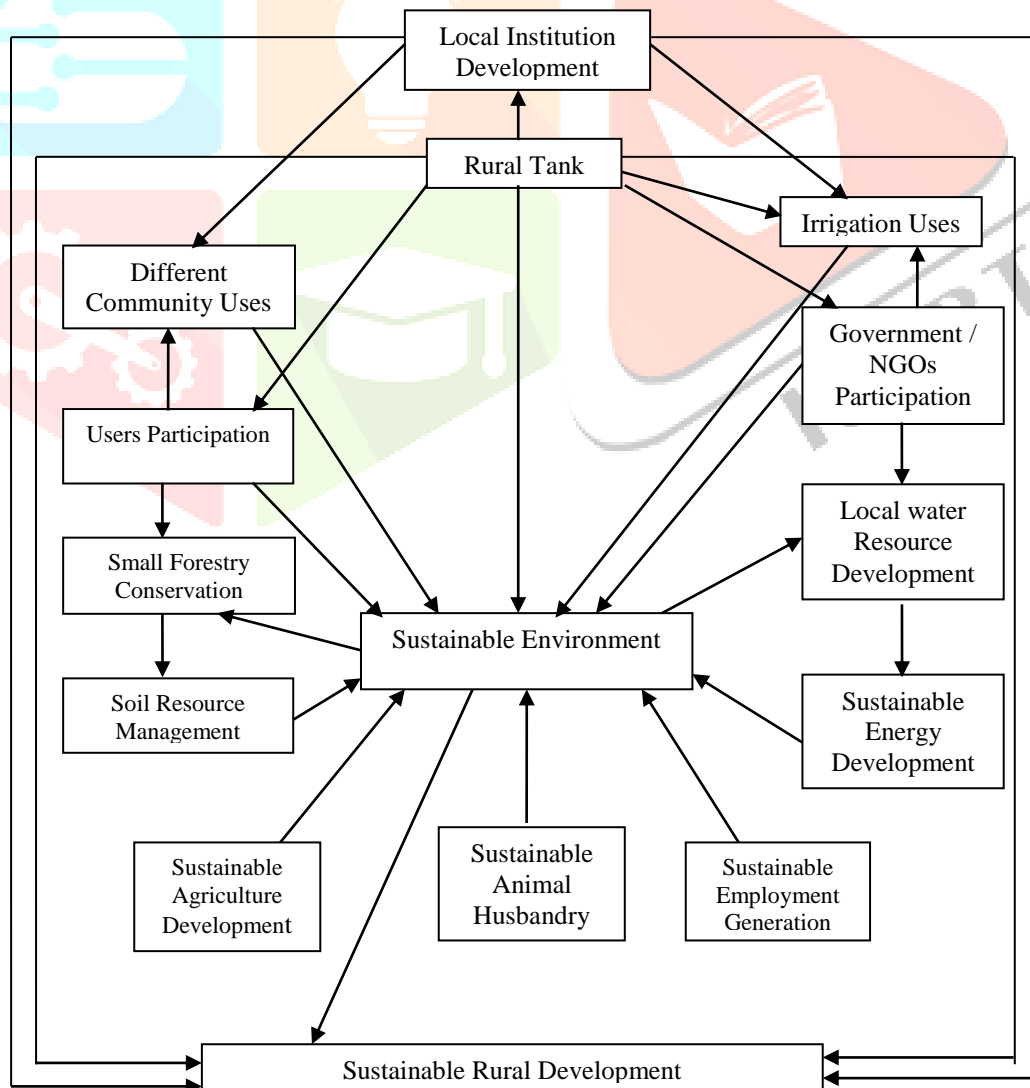


Table - 3
Factors required for the restoration of the Rural Tanks

Sl.No	Problems	Frequency	Percentage
1	Catchment Area treatment	17	14.1
2	Supply channel cleaning	25	20.8
3	Additional wells and canals	10	8.4
4	Repair the sluices and gates	30	25.0
5	Re-arrangement of channels	13	10.8
6	Removal of Encroachments	15	12.5
7	Strengthen tank administration	10	8.4
Total		120	100.0

Source: Primary Data

Table 3 indicates that what are the factors required for tank restoration. The major factors are influenced tank restoration such as catchment area treatment, supply channel cleaning, additional wells and canals, repair the sluices and gates, re-arrangement of channels, removal of encroachment and strengthening of tank administration. The table clearly shows that repair the sluices and gates are main emphasis of tank restoration should be higher priority to given. The 25.0 percent of the respondents are view that the repair sluice and gates are essential for tank restoration. Because water leakage from the sluice gates in rainy days as well as the sluices is controlled the water into and out the tanks. The table also show that catchment area treatment (14.1%), supply channel cleaning (20.8), additional wells and canals (8.4%), re-arrangement of channels (10.8%), removal of encroachment (12.5%) and Strengthening tank administration (8.4%) of the respondents opinion that all the factors are important of different stages of tank restoration.

Table 4
Benefits of Restoration of Rural Tanks

Sl.No	Benefits	Frequency	Percentage
1	Decreased water demand	34	28.3
2	Increase farm income	17	14.2
3	Environment Sustainability	16	13.3
4	Agriculture Production	28	23.3
5	Droughts Control	10	8.3
6	Employment Generation	15	12.5
Total		120	100.0

Source: Primary Data

Table 4 shows that what are the benefits of tank users by after restoration works done. Nearly every village in Tamil Nadu has one or two rural tanks. These are providing enough water for irrigation and many benefits, as well as for living environment and economic security.

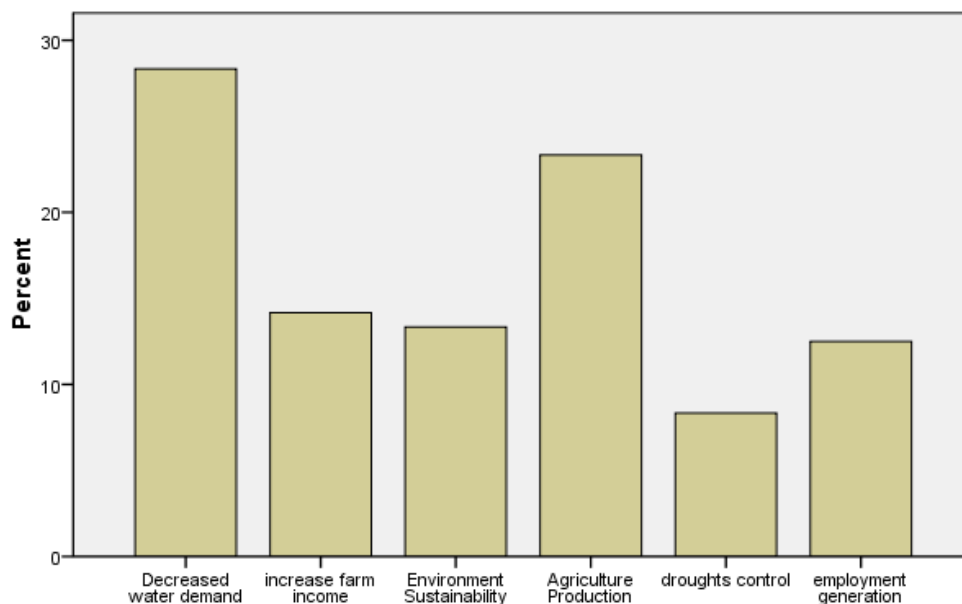


Figure – 3 - Benefits of Restoration of Rural Tanks

Water deficit and water management are the main issues confronting the world. We can find a permanent solution by restoring these tanks to the rising water management problem. Furthermore, farmers are often confronted with the water shortage in agriculture. As a result 28.3 percent of the respondents view that the tanks after the restoration the water demand will decrease in

the area. Furthermore, 23.3 percent respondents believe that the restoring of tanks will help to improve agricultural production, and 14.2 percent of respondents consider agricultural income to increase. The tanks also serve not only the irrigation development but also the environmental, natural and employment development. The respondents opinion that get more number of benefits after the tank restoration such as environmental stability (13.3%), employment generation (12.5%) and drought control (8.3%). Therefore, this table shows that the surrounding users will be benefited and the poverty also eradicate through tank restoration.

V. TRADITIONAL PARTICIPATION OF KUDIMARAMATHU

Kudimaramathu refers as the community based voluntary participation of maintaining the tanks. Historically, these tank systems are managed collectively by informal local bodies, called kudimaramathu workers, which mobilize community labour to perform the maintenance and management works. These works include desilting the catchment area, cleaning the water supply channels and arranging water distribution among the users (Palanisami et al., 2006). Customary rights along with kudimaramathu system were followed with dedication and vigil by the villagers during the 15th century A.D and even under East India company rule for some time. But after the introduction of Ryotwari settlements by the middle of 19th century, the efficient management of tank system deteriorated progressively and tanks were not maintained properly in the country (shannugam C.R, 2007). The act was passed, namely the madras compulsory labour act 1858, it is called as kudimaramathu act. The act stated, wherever by local custom any work for the purpose of irrigation or drainage or connected herewith, is usually executed by the joint labour of a village people, any person bound by such custom to contribute labour to such work, who neglects or refuses without reasonable cause to comply with a requisition for such customary aid made to him by the head the village under the orders of the Tansildar and other superior revenue officer, shall be liable to pay a sum equal or twice the value of the labour which he is bound to contribute (Janakarajan, 1993). Effective farmer participation and cooperation would result in (a) equity among different community, (b) minimum social conflicts, and (c) increase in productivity (Arumugam, 1997). A major role for users in decision making and greater responsibility for carrying out various management tasks such as construction of irrigation structures, operation and maintenance, water allocation and resolution of conflicts in all phases of irrigation system such as water source control, water delivery, water use and water drainage is necessary (Sivasubramaniyan, 2006).

Table - 5
Traditional Management of Kudimaramathu System

Sl.No	Particulars	N	Percentage
1	Highly Satisfied	40	33.3
2.	Satisfied	61	50.8
3.	Neither Satisfied nor Dissatisfied	9	7.5
4.	Dissatisfied	5	4.2
5.	Totally Satisfied	5	4.2
	Total	120	100

Source: Primary Data

This table-5 illustrates the participation activities of traditional maintenance of tanks by kudimaramathu system. The participation of people in tank maintenance is one of key role of development of tank system. Out of the total respondents, 33.3 percent of the respondents is opinion that have a highly satisfied by kudimaramathu system of tank management and 50.0 percent of the respondents their view that kudimaramathu system of maintenance is satisfied. The small proportion of the respondents (7.5%) their view that the traditional management of kudimaramathu system neither satisfied nor dissatisfied. Only few per cent of the respondents (4.2%) expressed their view on tank maintenance under the kudimaramathu system is dissatisfied followed by totally dissatisfied (4.2%).

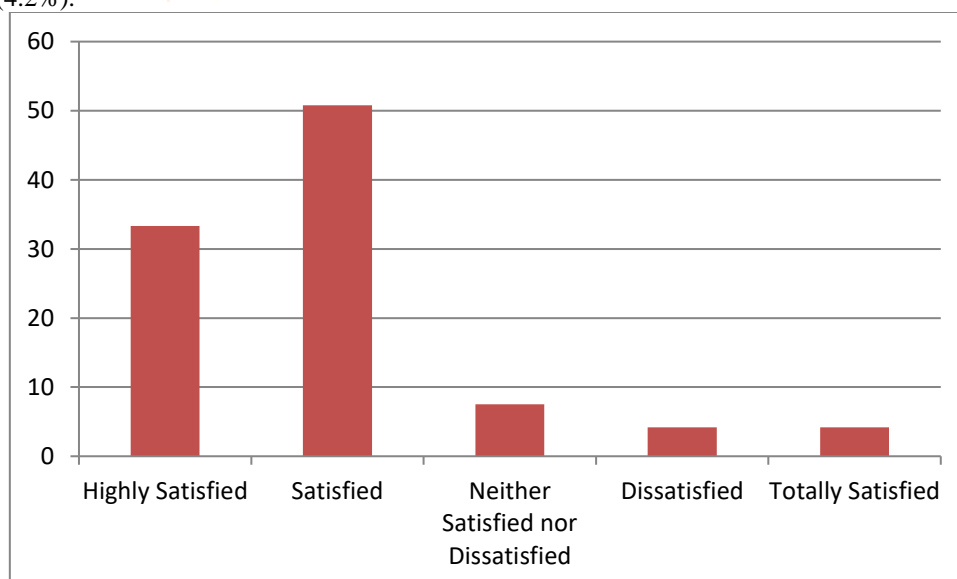


Figure – 4 - Traditional Management of Kudimaramathu System

VI. CONCLUSION AND SUGGESTIONS

This research cites the necessity of restoration of rural tanks and the need and benefit from it. Furthermore, the government is not only involved in the process of restoration of rural tanks, but also the participation of the people through the ancient method of kudimaramathu. Un-restored tanks are directly affecting the rural population, poverty and unemployment and agriculture activities. The study concluded that restoring the rural tanks will benefit to small and marginal farmers for better production of agriculture also people's participation in maintaining rural tanks is essential need for tank restoration activities.

Therefore, the research suggests that rural tanks should be properly maintained. Because people depend on the tanks for different needs. Rural tanks can be regarded as social sciences and their ecosystem is the most important thing. The educational institutions and public based organizations should conduct the survey on rural tanks which is located nearby, through the Services of National Social Service in order to make of rural tanks clean and relief from various issues. Institutions and non-governmental organisations must come forward to identify the problems of rural tanks, organize their original capacity, and save water resources for sustainable rural development.

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