

A Study on the Modernisation of Rural Tanks and Sustainable Rural Livelihoods in Villupuram District, Tamilnadu

***Mr. P. Sankardass**

****Dr. P. Balamurugan**

*Ph.D Research Scholar, Centre for Rural Development, Annamalai University, Annamalainagar- 608 002

**Asst. Professor, Centre for Rural Development, Annamalai University, Annamalainagar- 608 002

Abstract

Rural development is a complex issue as it involves interdisciplinary and inter-institutional approaches and strategies towards betterment in villages. Rural tanks are very old irrigation systems of Indian. Sustainable rural livelihoods is mainly focusing on rural resources management and its sustainability for seuring rural livelihoods. Especially water resources and traditional water harvesting system supports environment sustainability in villages to enable rural poor to gain the sustainable benefits. At this juncture, an attempt has been made to analyze the benefits occurred by the rural poor and water users from the modernisation of rural tanks and its significant uses which leads to promote sustainable rural livelihoods. The present investigation has been conducted in select two villages from Koliyanur block of Villupuram District. Both primary and secondary sources of data were collected in the study villages. It is therefore concluded that modernisation of all the rural tanks is the only way to save the water during rainy season so as to support sustainable rural livelihoods

1. Introduction

Sustainable Rural Livelihoods involve raising the socio-economic status of the rural population on a sustainable basis through optimum utilization of local resources, both natural and human. While external help is necessary, rural development can be achieved only when the rural people activity participate in the development process. Rural development is a complex issue as it involves interdisciplinary and inter-institutional efforts, as through which the desired comprehensive rural development models can be evolved. It is a concept connoting overall development of rural areas and improvement of the quality of life of rural peoples. As a designed to improve the economic and social well being of a specific group of rural poor. Rural tanks are very old irrigation systems of Indian. Most of the tanks have over time, degraded into open access resources due to weak property relations conditions. Encroachment, privatization and government appropriation of the tanks have been the main outcomes of the filer of local authority system to enforce the institutional arrangement under common property resources management regime. About 2% of the tanks in the tanks lees intensive region and 67% of the tanks in the intensive region have become defunct. Wells that are supposed to be a security against late season tank water security, have of late become a major threat to the very survival of the tanks.

2. Rural Tanks Modernisation and Its Uses

Rural tank modernisation is to renovate the tanks in terms of excavation of tank bed and Supply Channels, raising the bunds, repairing the regulations and Surplus Weirs, Removing Encroachments. On-form development and organizing farmer's organizations. Modernisation of rural tanks is an integrated attempt for the development of local water resources to promote agriculture and allied activities. These works clear the problems in and around the rural tanks which enable tanks users to avail required water to their crops. The strategy of rural tanks

modernisation is to make an environment to catch and store water required for the crop land in time.

The programme of rural tank modernisation comprises;

- Restoring the storage capacity of rural tanks by desilting and dewatering.
- Strengthening of bunds and raising trees on them.
- Repairing/reconstruction of feeder and supply channels, and control structures.
- Linking the network of channels from Sluices to tail-end landholdings.
- Repairing the Surplus weirs.
- Leveling and smoothening of uplands and undulating lands for effective water distribution in the cropped area.

The concept of rural tank is not a new and it's was a very oldest and traditional based water storage system situated naturally in rural area for the propose of domestic and irrigation use. Rural tanks are however not merely a way of providing irrigation for fields but have also constituted a significant part of social political life. Rural tanks irrigation contributes significantly to agricultural production in parts of south India. The tank irrigation system has a special significance to the marginal and small scale farmers who make a very large number essentially depending on tank irrigation as this system are less capital intensive and have wider geographical distribution than large projects. 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 constrains for pumping. The description of tanks was quite dense in some areas.

Rural tanks in such a situation are the conservers of rain water and the ability to irrigate is chiefly a function when the conservation of water in the soil. When conservation of water with in the catchment is below the optimum level, the ability of tank trends to be low or totally absent. Such factors do determine the structures that were purely for percolation and to cheek the velocity of surface run-off before it reaches the tank. In such areas where high erosion is a possibility, these structures exclusively meant for conservation do act as silt traps. These structures that do not directly lend to irrigation but aspects incorporated into the system are called by various names in Tamil like Pallam, Madhagu and cheri.

Rural Tanks originally serving irrigation and other village needs such as domestic, livestock, besides fish production, due to change in the village profile over years, tanks are mostly saving the irrigation needs only. However, judging the tank performance using the irrigation component may be inadequate, as it will not reflect the true performance of the tank benefiting the village in several ways. Multi-uses of the tank should be considered in arriving the tank performance. If such uses are in reasonable proration, then rethinking tank management in terms of multi-use performance may be warranted. The shapes of embankment in such tanks are normally crooked to dissipate the pressure at various points. In the medium tanks the shape of the embankment may be less crooked and may be a single solid structure, without any storey's, The shape of stone revetment will depend on the size and location of tank in series.

In the terminal tanks huge stone boulders will be used. In the medium and smaller tanks, the size of stones used for revetment will be relatively smaller. The stone layer will be normally placed one upon another to obtain a flight of stairs. No cement or mortar is used to bind one to another. In between, small broken stones are inserted to fill the gaps in order to prevent seepage and this also lends firmness to the whole structure. To provide additional strength and to obtain rigidity, binding stones will be placed in such an order to obtain a series of steps. Each binding stone nearer to the free board provide steps on to the left or right. This way, these binding stones

do obtain orderliness. No cement was used to fill the space. Only at the waste weir that too in very big tanks, mortar was used.

The embankment on the opposite of water spread area will be ungifted, but will inevitably have a grass and tree cover. The idea of grass and tree cover is to protect social from erosion and add strength to the embankment. At the bottom of the embankment, a small canal will run up to the sluice carrying the seepage water from the bound. In the embankment, as in the case of a terminal tank, is broad enough at the top to accumulate rain water on its own, then separate water course were run downwards to carry the water collected on the top of the embankment.

The green grass on the embankment was conserved up to the harvest season and in that season; the cattle belonging to the families including the labourers harvesting the crop in the command area were given the priority to graze. Once the harvesting season was completed it was open to everyone to graze their cattle on the embankment. The receding waters in the water spread area enabled the cattle to graze the grass the newly sprouting graze. It is a common practice for the poorest even today to make use one bed for grazing purposes. To conserve grass for such purposes collection of dung was prohibited. In certain cases the poorest may be allowed to collect the dung from the foreshore area to enrich their natural resources. Similarly the bank of channels and distribution provided green grass for the entire community.

3. Objectives of the Study

The main aim of the study is to highlight various technologies adopted in rural tanks and its significant uses to promote sustainable rural development. The objectives are

- To analyze socio-economic profile of the people live in and around rural tanks.
- To trace out the importance of rural tanks modernisation in securing rural livelihoods.
- To analyze the issues concerning with the protection of rural tanks for water conservation in villages.
- To evaluate the determining factors that promote the sustainable rural livelihoods adopted within and outside of rural tanks.
- To suggest certain policy measures for conservation of rural tanks and their technologies towards sustainable rural development.

4. Methodology

The present investigations, both primary and secondary sources of data were collected. The primary data include the profile of rural people and perception about the usage of rural technology adopted in rural tanks. The primary data were mainly focused on socio-economic profile of sample population and the detailed perception of people on the sample population and the detailed perception of the people on the usefulness of rural tank technologies as well as the respondents opinion related to the issues with regards to modernisation of rural tanks and its important factors which determine the sustainable rural livelihoods in villages.

This secondary data have been collected through the consultation with reports, journals, books and other related documents issued by the organization / institution concerned. They are in terms of total area cultivation by rural tanks, water capacity, duration of water, and location and distributaries of the rural tanks.

5. Study Area

The present study is conducted in two select villages of Koliyanur Block, Villupuram District, where the rural tanks are functioning for multiple use of proposes of rural people. The name of the study villages are Arasamangalam and Panampattu, where the purely paddy and

sugarcane crops cultivated with the help of the irrigation from the rural tanks. The villages are significant in availing various benefits from the modernisation of the rural tanks.

6. Sampling Procedure

The sample size of the present research is 120, which has been selected from two select villages of the block, where the people primarily depend on rural tanks for not only for irrigation and all other purposes. The selection of villages is mainly based on the location of the rural tanks, responsibility in the care of the rural tanks, and institutional base. In the villages the samples have been chosen on stratified random sampling basis. 50 percent of the total samples have allotted for each village, by the coverage of 3 to 4 rural tanks which includes samples from the group of farmers, SHGs women and rural youth.

Table 1

Sample Villages and Rural Tanks Covered

Sl. No.	Sample Village	Name of the Rural Tanks covered
01	Arasamangalam	Arasamangalam Tank
02	Panampattu	Panampattu periya Eari

Source: Records from Village Administrative Offices-2017.

7. Discussion and Analysis

In order to understand the importance of rural tanks and modernisation towards rural development, an attempt has been made to analyze various indicators of the present research on rural tanks and their role in sustainable rural livelihoods. It includes the socio-economic profile of tank village, uses of rural tanks and importance of rural tanks modernisation and their usefulness. The age of the respondents varies between two villages (village-A, village-B). In both the village, the age group of 35 to 50 years represents the majority. The sex wise respondents majority is male, which respondents 70.80 percent. The remaining is female 29.20 percent.

Majority of the respondents hold the own land in both the villages 45.0 percent, followed by the leased lands maintained by the respondents which represent 25.0 percent. The crops are paddy sugarcane and few horticultural crops. Paddy is the prime crop of almost all the respondents and 66.70 percent of them shown the sugarcane crop, followed by the horticultural crops grown by 13.0 percentages of respondents.

Table 2

Utility of Rural Tanks

Sl. No.	Utility of Rural Tanks	Villages	
		Arasamangalam	Panampattu
1.	Irrigation	78.33	88.30
2.	Drinking Water	53.30	66.60
3.	Animal Husbandry	81.6	90.9
4.	Personal Health Sanitation	96.6	98.3
5.	Ground Water Recharge	86.0	70.0
6.	Religious Purpose	81.67	63.30

Source: Computed From Field data.

Note: Figures represents the Percentage only.

The total respondents of both two villages, cows breeding practiced by 78.30 percent respondents. Buffaloes are the animal for milk production for 48.0 percent respondents. Bullock owned by 45.80 percent respondents, Birds Chicken and other commercial birds owned by 33.40 percent population. This is the status of livestock assets owned by respondents.

Table 4

Usefulness of Rural Tanks' Modernisation

Sl. No.	Usefulness	Villages		Total
		Arasamangalam	Panampattu	
1.	Easy water distribution	58	53	55.5
2.	Catching of water in plenty	49	52	50.5
3.	Flood control and drought mitigation	39	38	38.5
4.	Water seepage control	28	24	26.0
5.	Trapping silt and weeds	51	55	53.0

Source: Computed from Field Data.

Note: Figures Represents the Percentage only.

Table 5

Strategies for Modernisation of Rural Tanks

Sl. No.	Variable	Villages	
		Arasamangalam	Koliyanur
1.	Digging and area extending the water standing	75.0	70.0
2.	Renovation of existing supply & feeder channels	71.0	80.0
3.	Rebuilding the tank bounds	70.0	77.0
4.	Avoiding bore wells in and around the rural tanks	86.0	87.0
5.	Desalting and De weeding	97.0	95.0
6.	Construction repairing surly weirs	77.0	72.0
7.	Channelizing the drainage facilities	65.0	58.0
8.	On – Farm development	70.0	75.0
9.	Leveling tank foreshore area	74.0	70.0

Source: Computed from Field Data.

Note: Figures represents the Percentage only.

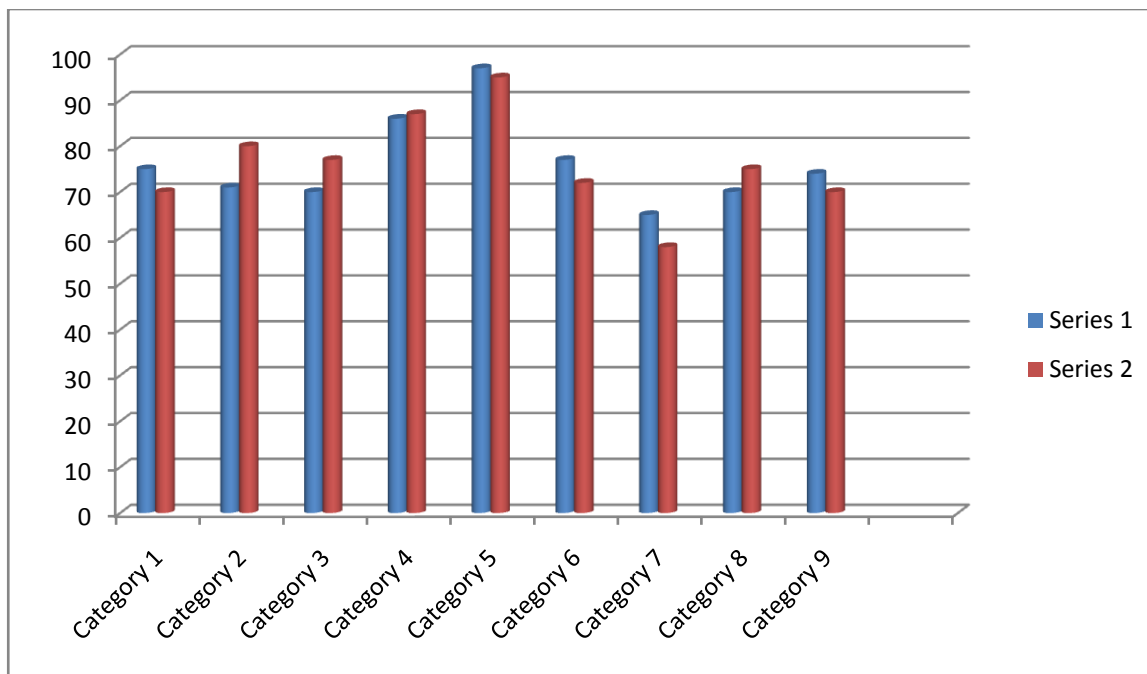


Chart 1

Strategies for Modernisation of Rural Tanks

The percentage analysis was made on the perception of the respondents about the strategies for promotion of rural tanks technologies for the sustainable management of water resources is presented in table 3 percents. The majority respondents argued that the desilting and removal of weeds from the rural tanks and awareness generation about the rural tanks' modernisation and proper use of tank water which represent above 90 percent of the respondents. Followed by it, the opinion about avoiding bore wells in and around the rural tanks as responded by above 80 percent of the respondents. Because the bore wells are the dangerous and it will make reduce the capacity of rural tanks do to less attention of the tank water users. Through the figure 3 clearly depicts the percentage analysis the strategies for promotion of rural tanks technology for sustainable management of various resources in rural area.

8. Major Findings

- About 51 percent opine that their tank has 26 to 50 feet, as the majority.
- The Majority of the respondents know the relationship between rural technology and rural tanks.
- The use of rural tank is the ground water recharge through modernisation of rural tanks.
- The total filling of rural tank in a year is Two times, as stated by 50 percent respondents.
- 66.80 percent of the respondents have reported that the rural tanks are having water for the duration of 6 months.
- The majority of the respondents of from both villages state that the major problems of rural tank is high siltation (55 percent).
- Almost all the respondents in both the villages have used the rural tanks for all the purposes, after tank modernisation.
- Water users of both tank villages use the benefits from the modernisation of rural tanks are not having any differences,

9. Suggestions

- The educational institutions should conduct the survey on rural tanks which is located her by, in order to understand the status of rural tanks especially temple tanks.
- The organizations and institutions related to rural tanks should come toward to identify the problems of rural tanks and make arrangement for solving problems.
- Local level village organizations should identify the local level tanks and make arrangements for the periodical maintenance in order to meet all the sanitation and health requirements of the people.
- All the local level NGOs should motivate rural people to participate in various maintenance activities of rural tanks.
- The residency residing in and around the rural tanks should organize a tank level organization for the maintenance and saving of rural tanks.

10. Conclusion

Natural resources are called as common property resources of the villages, which is the backbone to rural economy. Likewise, rural tanks are the central to rural economy, society and cultural. Because of the rural tanks are the main sources for the sustainable livelihood of poor people in rural area. They are the traditional based social, economic, cultural and environmental unit which detriment the livelihood status of the rural people. It is noted that the water users of rural tanks of both tank villages use all the benefits from rural tanks' modernisation for the purpose of irrigation, animal maintenance and ground water recharge for safe drinking water and over all sustainable management of water resources. It is therefore concluded that modernisation of all the rural tanks is the only way to save the water during rainy season so as to support sustainable rural livelihoods. The rural tanks should be protected through renovation and rehabilitation, by the efforts of rural people. More over it is the duty of every citizen of the country to preserve and promote rural tanks and their technologies, which are the gift of nature protection of living beings of the earth, through storing and easy distributing of the water resources through rural tanks.

Reference

1. Palanisami, K., Easter, K.W. (1987). "Small scale surface (tank) irrigation in Asia", water resources research, Vol. 23, No. 5, PP. 774-780.
2. Palanisami, K., Easter, K.W. (1991). Hydro-Economic integration in tank irrigation systems, Indian Journal of Agrl. Economics, Vol. XLVI. No.2. April-June, 1991.
3. Shanmugam. T.R. Factors influencing extant of tank irrigation, *Economic Poname of Tamilnadu* Vol. 1997.
4. Balamurugan, (2012), *An Appraisal of Rural Tank and their Importance to Sustainable Rural Development*, a working paper, Center for Rural Development, Annamalai University, Annamalainagar.
5. Agarwal and Narayan (2004), *Dying Wisdom*, Centre for Science and Environment, New Delhi.
6. Chambers, R (1986), *Rural Development Putting the Last First*, Longman Publishing, New York.
7. Desai, V *Rural Development: Environment and Ecological Development*, Vol-IV, Concept Publications, New Delhi.

8. Govindaiah, T – Tank Rehabilitation and Integrated Rural Development, Institute of Research and Science Bangalore, Karnataka.
9. Harris, J (1998) Rural Development: Theories of peasant Economy and Agrarian Change, Hutchinson University Library, London.
10. Jaiswal.N.K and N.Sivaprashada Rao Saddalavenganna Tank – National Institute of Rural Development.
11. Robert Champers, (1997), Rural Development putting the last First, Oxford Press, Washington.
12. Sharma, C.B.S.R (1998), Eco-graphy of Small Water Bodies: A Study of Five Irrigation tanks in Tamilnadu and Pondicherry, Pondicherry University, Pondicherry.
13. Somashekhar Reddy (1990) A Study on the Status of Irrigation Tanks, Prarambah, Karnadaka
14. Vaidyanathan, A. Tanks of south Indian – Centre for Science and Environment, 2001.
15. Balamurugan. P. (2012) Rural tanks: An Indigenou Technology towards Sustainable Rural Development, Annamalai University Humanities Journal Vol: 48.
