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An Analysis of Encroachments on Rural Tanks and their Rehabilitation Need for Sustainable Rural Development in Cuddalore District

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Abstract: Rural tanks are the general assets of society. The tanks are the main source of water in the rural areas as well as the precious gift of nature for humanity and the source of water for millions living on Earth. This study examines the reasons for the tanks encroachments and the necessary rehabilitation action. The two tank villages in Nallur block has been selected for present analysis. The study has been used at simple random sampling method in selected respondents. The total numbers of selected respondents are 120. It is therefore concluded that removal of encroachment on rural tank system is the urgent need for conserve rural livelihoods.
Keywords: Rural Tank, Encroachment, Rehabilitation.

INTRODUCTION

Water is one of the most important unique sources on the earth [1]. Local water structures are called 'rural tanks' in many places. These are important for the livelihood of society and all living things. These are inseparably linked to the socio-cultural aspects of rural life. These are help to the livelihood security of the human being from the natural disaster. The tank irrigation has been significantly contributes to agricultural production in the South and Southeast Asia and also the Tank has a long history particularly in South India and Sri Lanka [2]. There are many tanks in South India because of its geographical location, climate, and terrain conditions are favouring the tanks.

In Tamil Nadu, it is observed that tanks played a key role in the agriculture development [3]. These are the come from the Vedic periods. Many centuries ago there are many references of irrigation tanks in Indian literature and historical references. In the 1950s, farming was done in 6.5 million hectares through tanks and other small water sources. This was 29 percent of the total irrigation in the country. The total capacity of the tanks and ponds in the 1970s is 15km3 or 530 tmc [4]. In recent years, there is much decrease in present capacity. The tanks are the main source of water in the rural areas as well as the precious gift of nature for humanity and the source of water for millions living on Earth. Rural tanks are the general assets of society. A scientific and technological development has been further exploiting the groundwater resource for more utilization. This has resulted in declining groundwater levels in many places. One of the most important activities of the tanks is to save water and protect the ground water resources in the particular places. Rural tanks were well maintained by their traditional management system and their functions were good. In recent times, the tanks have been encroached in many reasons, and their condition is severely damaged.

METHODOLOGY

This study examines the reasons for the tanks encroachments and the necessary rehabilitation action. This study has been done at Nallur block in Cuddalore district. There is more number of tanks in Nallur block out of the 13 blocks in Cuddalore district. The two tank villages in Nallur block has been selected for present analysis. The study has been used at simple random sampling method in selected respondents. The total numbers of selected respondents are 120. Primary and secondary data are collected and used for this study. The Primary data is which includes the tank characteristics, importance of rural tanks, level of participation, and uses of rural tanks. The primary data has 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), Block Statistical Office and Panchayat as well as Village Administrative Office (VAO).

Multiple Uses of Rural Tanks & Present Status

Historically, the main purpose of the tanks were stored the rainwater and distributed for the irrigation. The rural tanks not only for irrigation uses and also multiple uses of water to rural society and improve wellbeing of national economy for productions besides environmental development. The tanks provide a number of advantages such as irrigation, livestock use, groundwater recharge, and environmental protection. Smaller industries are improved through the tanks. Moreover, the tanks act as the best natural setting for the climate conditions. The silt of the tanks provides good nutrition for crops. This increases agricultural production. While the tanks have numerous advantages, they are connected directly to the environment. The tanks are used for religious ceremonies. The trees on the banks of the tanks are used as fuel resources for the poor people. Certainly, the tanks can be reduced the poverty and droughts. The tanks are also providing the income of economic development through fish production for rural poor.

Encroachment on Rural Tanks

Crop cultivation being in the tank catchment area is damage to the tank. Thus, the sizes of the tank are changes and the storage capacity is decreased. The major problem in the rural tanks is did not store the full capacity of water during the rainy season because, the designed capacity of the tanks has been damaged by encroachments. Thus, the water will entered into the residential areas in heavy rainy season. Community-based irrigation management is now dependent on individual beneficiaries. Thus the importance of the tanks has been completely reduced. The removal of encroachments in the tank system is not in easy process. It is the need to address the continue management and people participation in the tanks maintenance for possible solution to remove the encroachments.

Table-1: Social Factors for Encroachments in Rural Tanks

Sl.No	Problems	Sample Villages		Total
		Nagar	Seppakkam	
1.	Lack of People Participation	45(75.0)	34(56.7)	79(65.8)
2.	Struggles between the head and tail-end farmers	36(60.0)	51(85.0)	87(72.5)

Source: Computed from Field Data

Social factors for the encroachments of rural tanks are given in table-1. Encroachments are the most important reason for decline of the rural tanks. There are various inequalities in society, especially among the head and tail-end farmers who use the rural tanks. Thus the rural tanks are not managed and rural tanks are occupied by the encroachers. In nagar village, 60.0 percent of the respondents said that, there are struggles between the head and tail-end farmers. This comment has been recorded at 85.0 percent in seppakkam village. People's participation in the tank management is very low.

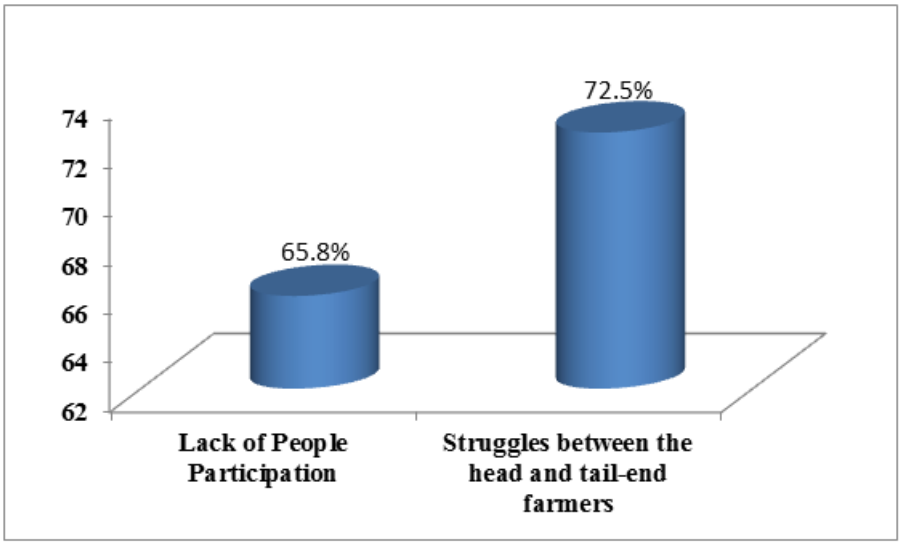


Fig-1: Figures in the Parentheses Represent the Multiple Responses of Total Percentage

Thus, the encroachments on the public rural tanks will continue. 75.0 percent of respondents in Nagar village said that people did not participate in the management activities of the rural tanks. This concept is recorded at 56.7 percent in the seppakkam village. Hence, since the results of this table, majority of the respondents reported that, the struggles between the head and tail end farmers, so that, rural tanks have been socially encroached for that above reason.

Table-2: Institutional Factors for Encroachments in Rural Tanks

Sl.No	Problems	Sample Villages		Total
		Nagar	Seppakkam	
1	Poor Maintenance	47(78.3)	56(93.3)	103(85.8)
2	Un-authorized cultivation	23(38.3)	35(58.3)	58(48.3)
3.	Less fund allocation	55(91.7)	49(81.7)	104(86.7)

Source: Computed from Field Data

What are the institutional factors for the encroachments of rural tanks is given in Table-2. The less management of the rural tanks is in favour of the encroachments. If the role of the rural tanks management is not on right time, in the rural tanks will not be able to prevent the encroachments. In Nagar village, 78.3 percent of the respondents said that there was no proper management of the rural tanks. But this record is very high in seppakkam village (93.3%). The rural tanks are administered as a result of less financial allocations. Financial reservation is essential for proper rural tanks management. The 91.7 percent of the selected representatives in the Nagar village claimed that the government was allocating less money to manage the rural tanks. This opinion was recorded at 81.7 per cent in seppakkam village. Unauthorized cultivation in the rural tanks during the summer period is one of the reasons for the rural tanks encroachments. Over time, the tanks will fully occupy. In Nagr village, 38.3 percent of the respondents said that unauthorized cultivation in the lake is taking place. This concept is recorded at 58.3 percent in seppakkam village.

Therefore, from the results of this table, the rural tanks are poorly maintained and institution reason for encroachement is poor maintenance.

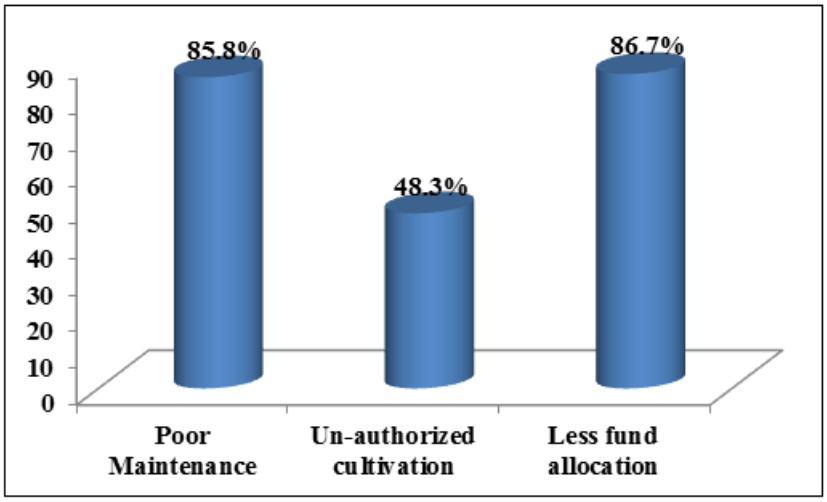


Fig-2: Figures in the Parentheses Represent the Multiple Responses of Total Percentage

Table-3: Situational Factors for Encroachments in Rural Tanks

Sl.No	Problems	Sample Villages		Total
		Nagar	Seppakkam	
1	Intensive of Bore wells	35 (58.3)	53 (88.3)	88 (73.3)
2	Heavy siltation	51 (85.0)	40 (66.7)	91 (75.8)

Source: Computed from Field Data

Situational factors for the encroachments of rural tanks are given table 3. Situational factors are directly and indirectly associated with management factors. Silt deposition in the rural tanks is a natural factor, but it can get many benefits by managing it properly. The growth by utilizing soil for agricultural lands will improve production.

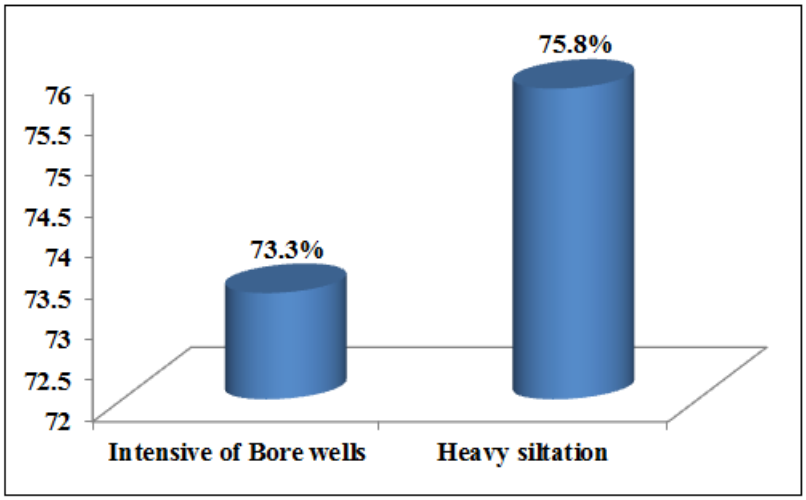


Fig-3: Figures in the Parentheses Represent the Multiple Responses of Total Percentage

The heavy siltation in the rural tanks will resulted that, the storage capacity has been reduced. Thus, the rural tanks will dry up quickly without proper water management. Encroachments is the initiated during without water in the rural tanks. In nagar village, 85.0 percent of the respondents reported that there is heavy siltation on the tanks. This opinion was recorded at 66.7 percent in seppakkam village. Due to the intensive of bore wells around the rural tanks, the tank management is completely reduced and will occupy. 58.3 percent of the (Nagar village) respondents expressed that agriculture is taking place through more bore wells around the rural tanks. This concept is recorded at 88.3 percent in the seppakkam village. Hence, from the results of this table, the most important reason for the situational encroachments of the rural tanks is the heavy siltation.

Various Benefits of Rehabilitated Rural Tank

1. Social forestry development.
2. Preservation of Bio-diversity and increased eco-environment conditions
3. Reduction in soil erosion.
4. Better well-being of human life and increased rural livelihoods.
5. Decline the hazard of floods, droughts, disasters.
6. Irrigation development.
7. To lift better management ground water recharge.
8. Equal share of distribution of quality drinking water
9. Produce superiority of food crops
10. To elevate economic and employment activities such as fisheries [5].

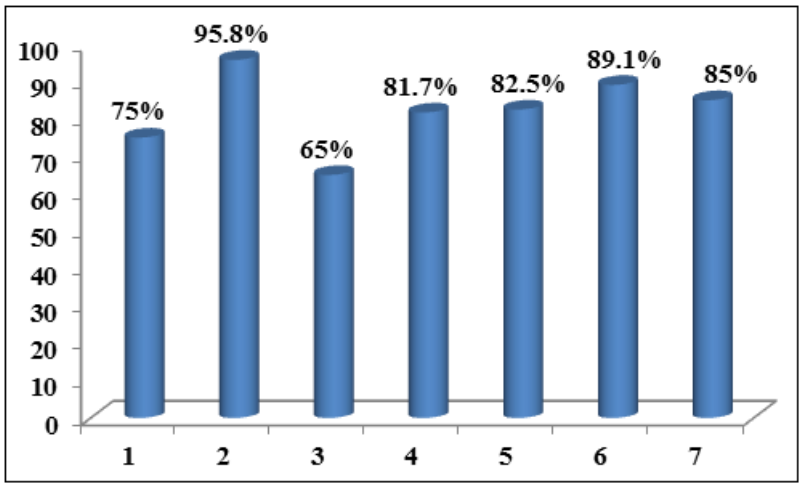
Table–4: Need for Rehabilitation of Rural Tanks

Sl. No.	Needs	Sample Villages		Total
		Nagar	Seppakkam	
1	Treatment of Catchment Area	50 (83.3)	40 (66.7)	90 (75.0)
2	Traditional Management of tank system	55 (91.6)	60 (100.0)	115 (95.8)
3.	Removal of Silt	35 (58.3)	43 (71.6)	78 (65.0)
4.	Renovate tank foreshore channel	41 (68.3)	57 (95.0)	98 (81.7)
5.	Raising tank bed	45 (75.0)	54 (90.0)	99 (82.5)
6.	Restructuring existing sluice and surplus weir	55 (91.6)	52 (86.6)	107 (89.1)
7.	Removal of Encroachment	53 (88.3)	49 (81.7)	102 (85.0)

Source: Computed from Field Data

The table is shown that, in the detail in what are the necessary factors to be rehabilitation of rural tanks. The respondents' said on the rehabilitation activities required for the problem in the tank is given in this table as it finds the right solution from the problems. The less participation in people and the traditional management systems on the tanks is declined. When we asked the respondents what are the factors required for the rehabilitation of the tanks, the most of the respondents view that, the traditional management

system is required to need for rehabilitation of rural tanks. We can see how the tanks have been managed by the traditional methods by ensuring the good condition of tank management. 91.6 percent of the (Nagar village) respondents expressed that the people's participation and traditional management system is the need for rehabilitation of the tanks. 100.0 percent of the respondents confirmed the same record in Seppakkam village. The 91.6 percent of respondents (Nagar village) commented that restructuring the existing sluice and surplus weir is the factor of need to rehabilitation of the existing tanks. This percentage is high in Seppakkam village (86.6%). And 88.3 percent of respondents in the nagar village and 81.7 percent respondents in the Seppakkam village have suggested that the existing encroachments should be removed from the tanks. Most of the tanks' beds are weakened, and 75.0 percent of the (Nagar village) respondents reported that the water leaked through weakened beds so that, the tank beds should raising. This percentage of the seppakkam village is 90.0 percent. In Nagar village, 68.3 percent of the respondents said that to renovate tank Foreshore channels are needed. This percentage is 95.0 percent of the seppakkam village. And 83.3 percent of the respondents (Nagar village) and 66.7 percent of the respondents (Seppakkam village) said that, treatments of catchment area are needed. In Nagar village, 58.3 percent of the respondents expressed that the silt to be removed and should be deepened. This percentage is 71.6 percent of the seppakkam village. Hence, it is concluded that from the table, the majority of the respondents expressed that, the traditional participation is main needed for rehabilitation of rural tanks.



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2. Traditional Management of tank system
3. Removal of Silt
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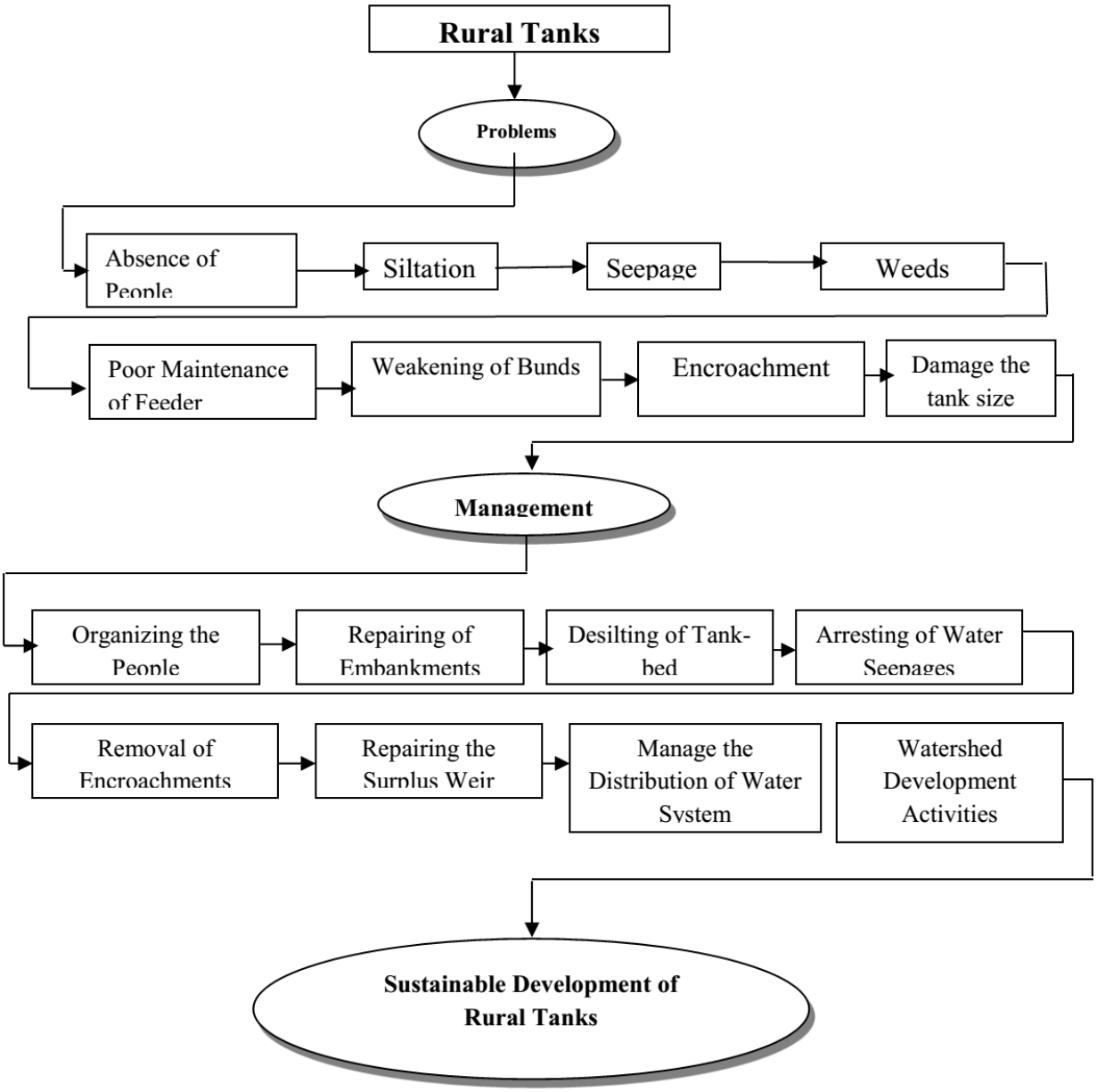

Fig-5: Sustainable Management of Rural Tanks

The tanks are factors that control the environmental variation of specific areas. Despite the various slopes in the tanks, the tanks can be well performed by improving the sustainable management. The tanks management will have able to achieve self-sufficiency in rural development. The sustainable development of the tank should be effectively implemented with all the projects in coordination. The integrated process must be technically, socially, economically, and organically environmental friendly [6].

CONCLUSION

Rural tanks are the traditional based social, economic, cultural and environmental units of the local water manage in rural area. It should be protected by the efforts of rural people. The government should be take action against the encroachments. Similarly must continue to removal of encroachment on successful approaches to involving the people participation. Government and non-governmental organization should generate new policy making action against the encroachments. All the factors of the encroachments should identified by the correct management system. These leads to water deficit in the villages can be solved. It is therefore concluded that removal of encroachment on rural tank system is the urgent need for conserve rural livelihood developments.

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