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RESEARCH ARTICLE

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CONSERVATION OF IRRIGATION TANKS THROUGH PARTICIPATION OF THEIR BENEFICIARIES FOR SUSTAINABLE ENVIRONMENT: A STUDY IN SELECT DISTRICTS OF TAMILNADU

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ABSTRACT

The main uses of irrigation tanks are mainly for irrigation, domestic purposes, fisheries, groundwater recharge (percolation tanks and ponds), shelter for birds and birds sanctuary, place for social forestry in general for forestation, flood regulators and drought mitigators. The conservation of Irrigation tanks one of the dimensions of environmental sustainability which aims at protection and promotion of the smallest water bodies viz., irrigation tanks situated in the rural area of semi-arid tropical parts of India. They were built by our past generations, for the purpose of catching, storing and distributing the water resources. Irrigation tanks are the traditional water storage system which plays a very vital role in the process of social and economic development of rural people. They provide multiple benefits to rural poor in and around of the rural tanks, by extend of irrigation to cropland, water for animals breeding, drinking water purpose through recharging ground water level and creation of natural vegetation. They have become reduction and retrenchment due to severe encroachment, heavy siltation, weeding improper management and unauthorized cultivation. Due to which, the functions of bio-diversity through rural tanks have been reduced and deteriorated, which resulted in less production from natural system that caused to human society to divert in to modern as well as artificial pattern of livelihood. It is against to the natural morality, which create so many constraints in the survival of all living beings. In order to maintain and achieve the sustainable environment to conserve the environmental resources and their properties on the earth, the ecosystem of rural tanks and their various environmental dimensions should be identified and protected properly which will enable the eco-environment and all other systems for their sustainable livelihood. It is found from careful consideration of the earlier studies listed as above that the irrigation tanks should be restored through active participation of the residents as the beneficiaries, residing in and around the rural tanks and their forestry based resources. The beneficiaries are the dependants of the whole eco-environmental system of tanks and forestry for their livelihood.

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INTRODUCTION

Conceptual Framework: *Environmental sustainability is perhaps most quoted concept which deals with the ensuring the conservation, protection and better management of the natural resources. The ecosystem of irrigation tanks comprises the water catchments area, water body and ayacut areas and flora & fauna around the tank, such as human being, agriculture, animal husbandry, social forestry and other micro habitats. The main uses of this ecosystem is mainly for irrigation, domestic purposes, fisheries, groundwater recharge (percolation tanks and ponds), shelter for birds and birds sanctuary,*

place for social forestry in general for forestation, flood regulators and drought mitigators. The conservation of Irrigation tanks' ecosystem is one of the dimensions of environmental sustainability which aims at protection and promotion of the smallest water bodies viz., irrigation tanks situated in the rural area of semi-arid tropical parts of India. They were built by our past generations, for the purpose of catching, storing and distributing the water resources. Irrigation tanks are the traditional water storage system which plays a very vital role in the process of social and economic development of rural people. They provide multiple benefits to rural poor in and around of the rural tanks, by extend of irrigation to cropland, water for animals breeding,

drinking water purpose through recharging ground water level and creation of natural vegetation. They are classified on the basis of catchment, water flow and purpose of use. However they have been classified into two types-System Tanks and Non-System Tanks. System Tanks receive the water source from the nearby rivers/canals as well as the catchment area. The rain water is only source for Non-System Tanks which is called as rain fed tanks. Rural tanks are the life saving mechanism and the most important common property resources in each and every village and their role is more inevitable to make a favourable climate, through their numerous contribution of water for the soil and all living beings as well as natural vegetation. The Irrigation tanks have had a certain problems, which resulted in declension of tanks, such as accumulated silts and heavy weeds, encroachment of inlet channels and tankbed, poor and damaged conditions of regulatory structures, sluices and surplus weirs, erosion of tank bunds and inadequate funds for maintenance work. The social and economic factors like land ownership pattern in terms of caste and class, mode of cultivation, development of other type of modern irrigation are also contribute to the inefficiency of rural tanks. The factors related to eco-environment also have a direct bearing on rural tank systems. They are unavoidable natural calamities like, flood, storm etc.

Irrigation tanks are the main irrigation sources in south India, especially in the states of Andhra Pradesh, Karnataka and Tamilnadu, where located 60 percent rural tanks. These three states happen to account for nearly 60 percent of the total area under irrigation from rural tanks in the Country. Particularly in Tamilnadu, rural tanks are dominant as a source of irrigation. There were about 39202 rural tanks available in the state as per the original records of the Government. They irrigate over 40 percent of total irrigated area of the state. According to Directorate of Economics and Statistics, 60 percent rural tanks are available in eleven districts in Tamilnadu which are called tank intensive districts. Most of the rural tanks are paddy based which irrigate usually three to four months after one filling. Thereafter, the water is used for livestock maintenance and local sanitation for the remaining one to three months. Hence rural tanks are getting reduced and retrenched in all the parts of the state, due to siltation, high weeds and severe encroachment in and around the rural tank and also diverted to tube well irrigation. According to Sivanappan, an Expert in water management, the area irrigated by rural tanks is decreasing from 9.90 lakh ha in 1968 to 4.79 lakh ha in 1990, while the well irrigated area increased from 2.15 lakh ha in 1968 to 4.5 lakh ha in 1990.

The Contribution of rural tanks to sustainable rural development is essential in the present situation, which serve the rural community towards the long-term benefits. It mainly depends on the participation of their users of farmers and rural community. The participation of farmers* is an important component to conserve and promote such type of tanks to enable them which extend the benefits to their rural community. In this process, rural tanks are the one eco-environmental zone, which are the smallest water bodies built by our past generation, for the purpose of irrigation to their cropland and recharging the ground water table. Rural tanks are the major agents of bio-diversity on the earth, which create a link between the environment, human society and all other resources. They are the life saving mechanism for both human and environment, through provision of water and other outputs. It is estimated that there are 2, 08,000 rural tanks exist in India, in which, majority of them covers in the southern parts. They have become reduction and retrenchment due to severe encroachment, heavy siltation, weeding improper management and unauthorized cultivation. Due to which, the functions of bio-diversity through rural tanks has been reduced and deteriorated, which resulted in less production from natural system that caused to human society to divert in to modern as well as artificial pattern of livelihood. Forest ecosystems are areas of the

landscape that are dominated by trees and consist of biologically integrated communities of plants, animals and microbes, together with the local soils (substrates) and atmospheres (climates) with which they interact. Forests are much more than the present population or community of trees. Forests that have been recently killed or altered by fire, insects, disease, wind or logging are still forests because of the biological and physical legacies from the previous forest - legacies of forest soil, organic matter, microbes, minor vegetation and animals. Under a regime of sustainable forest management, many or most of these legacies persist during the period between forest disturbance and the redevelopment of tree cover. Forest ecosystems are both a stand-level and a landscape phenomenon, the latter being a mosaic of stands that vary in age, species composition, structure, function and time since disturbance. Periodic disturbance is a key attribute of most forest ecosystems and maintenance of their historical character and values will generally require maintenance of historical disturbance regimes, or the ecological effects thereof. It is against to the natural morality, which creates so many constraints in the survival of all living beings. In order to maintain and achieve the sustainable environment to conserve the environmental resources and their properties on the earth, the ecosystem of rural tanks as well as small forests and their various environmental dimensions should be identified and protected properly which will enable the eco-environment and all other systems for their sustainable lives. The ecological issues related to the clearance of village forests and unsustainable land use may be addressed through better planning based on the cascade principle. The break-down of old social order (cohesion, kinship, leadership, norms and values) may not be easily restored. However, the situation may be improved with innovative approaches that suits modern 2.

Detailed Literature Survey: The theme and research issues for proposed study has been carefully identified and designed on the basis of results and findings of various literatures pertaining to the title of the proposed investigation. It is found from careful consideration of the earlier studies listed as above that the ecosystem of irrigation tanks and small forestry should be restored through active participation of the residents as the beneficiaries, residing in and around the rural tanks and their forestry based resources. The beneficiaries are the dependants of the whole eco-environmental system of tanks and forestry for their livelihood.

The Objectives are to

1. Find out the ways and means of strategies, techniques, and management for the development of eco-environment system through the sustainable conservation rural tanks and their resources,
2. Analyse the initiatives of the people in and around the rural tanks and their forest cover, through organising the training programmes, awareness camps, rural eco-environment mela, village level seminars, film shows, puppet shows, societal based street plays, competitions and
3. Develop a model for sustainable development and conservation of eco-environmental system of rural tanks, with effective participation of rural institutions and to suggest the policy measures to promote sustainable rural environment in villages.

METHODOLOGY

The methodology of the proposed project exercise has been planned on the basis of the data, location and proposed geographical area, sampling frame and scheme of the extension and field activities. The present research work is purely extension based and action oriented micro- level exercise which is the field oriented data base, which includes both the sources of primary and secondary data. The primary data were collected through a well structured and pre-tested interview schedule. The secondary data are profile of the district, the blocks and the study villages which include, land, soil, population, crops, livestock, infrastructural resources etc. The total samples for the proposed research project will be 2240, which is equally

The concept of irrigation tank is conceived on the basis of various works on tanks rehabilitation, undertaken by European Economic Commission (EEC) in the Modernisation of various irrigation tanks situated in Kanchipuram, district of Tamilnadu.

distributed to all the 60 blocks of the both two select districts and the samples of 80 in each block, which will be selected in its select Eight villages. The total sample tanks in both districts are 320, which represents 25 percent of the total rural tanks in the proposed districts and also equally distributed to eight tanks from each block. The selection of villages will be based on the location of rural tanks and their size, water capacity and uses to the community. Also, the samples of eight villages will be classified into two types of tank villages (TVs) and the villages as adjacent to tank (ATVs) and 10 samples in each village, which comprises six farmers, two SHG's women and two senior citizens have to be chosen from each village.

Study Area & Data Collection: In order to make progressive changes in the development of rural people and eco-environment system, in terms of conservation of rural tanks, participation of tank users and recharging of ground water, there is an urgent need for renovation of rural tanks. To undertake various works related to the proposed action oriented research project, it is practical exercise to identify the importance and various issues related to tanks, in order to save and conserve the rain water towards recharging ground water as well as protect the environs of surroundings of rural tanks. Also to motivate and generate the awareness among the farmers and villagers who are the rural tank's users to participate in the maintenance and protection of rural tanks, it is proposed to conduct the extension works in various sample villages of the select districts.

RESULTS & DISCUSSION

The data based action oriented motivational unit which addresses the real facts to the neighbourhoods of rural tanks, in order to rehabilitate and restore the existing system of rural tanks in the study area. It is also aimed to focus the contribution of ecosystem of irrigation tanks and forests in sustainable rural development. Other positive benefits included increased soil moisture around the tank and enhanced capacity of this wetland ecosystem to provide niche and habitat support to wider species. Here is a brief account of the impact of tank desiltation on the birds. Before this study was undertaken, there was no documentation of the avifauna of these twelve tanks. Though there was evidence of migratory and resident wetland birds, the baseline data did not exist. Based on the proposed research, it was found that both density and diversity of flora fauna in the irrigation tanks which is the central to most of the activities in the village, and desiltation activity is bound to have influence on the village life where primary support to soil resource management, towards sustainable rural development.

Major Findings & Conclusion: The proposed research project will be the pioneer to explore the significant prospects and consequence of the rural tank based eco-environment conservation, with a view to highlighting the people's participation by initiation and nurturing the rural local organisations/institutions for the water users of rural tanks, self help groups and rural youth clubs for those who are living and functioning in and around the rural tanks. The physical outcomes of the proposed project may be the promotion of eco system of rural tanks and forest cover through.

- Organisation of the stakeholders of rural tanks and ensures their effective participation by establishing the initiatives of tank water users' association, farmers' clubs and youth clubs and so on.
- Collection and processing of data as well as documenting the concepts, consequences and issues and significant importance related to rural tanks, towards sustainable environment development in villages.
- Conservation of eco-environmental resources through renovation of rural tanks and their natural properties on sustainable basis, in view of effective participation of people who are the neighbourhood.
- Measures and policies for Conservation of existing command area of rural tanks and provides the enough water for crop cultivation and all other uses of the community Viz, recharging

ground water, supply of water to the plants and trees in and around the rural tank, maintenance of rural public health and sanitation, generation of natural vegetation and support to all living beings, in order to ensure eco-environmental sustainability in villages.

- Development Planning for the promotion of natural resources like rural tanks forestry resources and ensured participation of the rural people as well as the farmers.
 - a. To promote environmental changes in terms of Protection of Irrigation Tanks, which will leads to sustainable environment.
 - b. To generate awareness about the environmental development through conservation of rural tanks and small forestry.

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