Tank irrigation contributes significantly to agricultural production in the parts of South and Southeast Asia. Especially in South India and Sri Lanka, tank irrigation has a long history and many currently used tanks were constructed in the past centuries. Tank plays a dominant component for agro-based activities. Tank is a low, earthen bund constructed across a shallow valley to hold the runoff from its catchment area. Irrigation tanks are eco-friendly. They serve as flood moderators at times of heavy rainfall and as drought mitigating mechanisms during long dry spells. They recharge groundwater, which is a major source of drinking water for numerous rural and urban communities.

The storage capacity of the tank has been decreased due to the factors such as siltation of supply channels, tank bed and irrigation courses, and inadequate maintenance of tank and evaporation loss. In order to reduce the factors causing reduction in storage capacity, desilting of tank has been chosen as rehabilitation work. In Tamil Nadu, most of the tanks have been rehabilitated with financial assistances from EEC, NABARD, World Bank etc., However, many of these tanks have been degraded into open access resources due to weak property relations. Encroachments, privatization and Government appropriation of the tanks have been the main outcomes of failures of the local authority to enforce the institutional arrangement under the common property resource. Tank rehabilitation is multidimensional, which needs to take into account all the activities concerned with tanks. In certain cases, complete rehabilitation may not be possible as the irrigation
structures are ancient and old. Also, it may not be a cost effective process. In such cases, partial rehabilitation may be possible such as partial desilting of tank beds and supply channels which may yield the expected benefits. Most, if not all, planned restoration of tank irrigation system programmes failed due to lack of involvement of people in the projects.

In order to address the above problems the study was intended to investigate the conditions under which sustainable tank irrigation system management through restoration scheme is possible in Tamilnadu, more particularly to explore the restoration schemes, which have been executed with the involvement of peoples’ participation leading to sustainable improved agricultural production. The study was carried out in three restored tanks in the villages of Avalur and Puliambakkam in Walajabad block of Kancheepuram district and Ponpadi tank in Thiruvallur district in Tamil Nadu, India. In all three tanks, stakeholders were involved to implement the restoration programmes. In one case study at Ponpadi, restoration work was taken up under the PWD scheme with short and long term perspectives. In the other two cases at Avalur and Puliambakkam, the restoration work was carried out on need based demand sensitization (localization) (woman participation) and localization based on balancing restoration scheme with utilization ( leadership participate). Restoration works like desilting of tanks, desilting of channels and tank bund strengthening have been done on these three tanks during the period of 2008.

For a tank irrigation system project to be sustainable, multidimensional impacts should be considered, mainly social, economic and environmental well being. The measurement of impact is based on the information collected from the total population of household of landholders and randomly selected landless labour from each of the villages. The impact is measured across different size of landholding in order to examine the
distributional aspects. The sample farmers were classified using the Probability Proportionate Sample (PPS) based on the size of the landholdings. On the whole, detailed information was collected from 423 sample households i.e., 176 and 119 from the two beneficiary villages under NREGA scheme and 128 from the beneficiary village under PWD Scheme.

Both qualitative and quantitative approaches have been used for the evaluation. Data were collected through group discussion with different categories of farmers. However, the study mainly relies on the data collected by using an interview schedule. Key informant interviews and focus group discussions with multiple stake holders to find out strength and constraints of the restoration schemes under NREGA and others. The data obtained through quantitative methods were classified and analysed using SPSS, a Statistical Package for Social Sciences. Profitability analysis involved assessment of the costs and benefits of the farm income, benefit of irrigated area, crop production and crop yield related to before and after implementation of the restoration schemes. Economic analysis, which compares the benefits and costs of a restoration project, is an important tool in project appraisal.

All the three restoration projects with different approaches aims to bring about increased irrigated paddy crop area, cropping intensity and fodder availability through increase in groundwater level for protecting the environmental well being by conserving the basic natural resources of rural water bodies and agriculture land. The high crop yields obtained in irrigation and other benefits such as increased incomes, employment creation, food security, are an indication that irrigation can bring a sustainable agriculture benefit. Financial feasibility indicators in terms of Benefit Cost ratio (B/C), Net Present Value (NPV), Internal Rate of Return (IRR) and Payback period
for Restoration scheme of tank irrigation system in all these three villages are within the accepted limit. Benefit cost Ratio for the restoration project at Avalur, Puliambakkam and Ponpadi are 4.01, 6.22 and 5.94. The Profitability index (PI), the most efficient way of measuring the worth of a restoration schemes, it is worked out to be greater than the 1.

SWOT analysis inferred in weighing the threats, opportunities, strengths and weaknesses. Strengths and opportunities seem to outweigh the threats and weaknesses for restoration work under NREGA scheme thereby offered tremendous scope for success in unskilled manual work like partial desilting like partial desilting of tank, supply channel desilting, strengthening bunds, etc., The PWD scheme thereby offered scope towards success in skilled work of machinery used to desilting work for protecting and conserving small water bodies. This means that such stakeholder involved implementing the restoration scheme projects were beneficial at the village level to promote sustainable land use and thus improved the standard of living of the villagers particularly those who are depended on the land based and allied activities.