CHAPTER - I

INTRODUCTION
INTRODUCTION

CHAPTER - I

1.0 INTRODUCTION

1.1 THE RESEARCH IN FOCUS

Water is a most crucial natural resource and its availability greatly influences the health and wealth of the people and development potential of the area. Although water is a renewable resource, it is also a finite one. The economic growth of a country is ensured if it is endowed with adequate water resources. This is applicable more to India the backbone of whose economy is agriculture, the development of which depends much on its water resources.

India's population is expected to cross 135 crore persons around the year 2025. The Government of India estimates that despite significant progress in the 1970s and 1980s nearly 30 per cent of the population (more than 25 crore people) still remain below the poverty line; and a growing share of this group is landless wage dependent households in rural and urban areas. In order to meet the food requirements of its entire people at the turn of 2025, India's total food production should nearly be doubled.

Mankind has practised irrigation for several thousand years, yet only in the present century extensive studies have been conducted in general area of water-soil-plant relationships. Improper irrigation may waste huge quantity of water, leach soil nutrients, and impair the productivity of the soil or yield losses may occur if insufficient water is applied. Water for irrigation and other uses is becoming more and more valuable due to the increasing cost of irrigation projects and a limited supply of water of good quality. Therefore we must learn how to prevent an excessive waste of irrigation water to prevent the degradation of the land and bring about its improvement for maximum crop production. (Doneen L.D. et.al 1984)
At present in terms of area, the ultimate irrigation potential has been estimated as 114 m.ha. of which 59 m.ha. will be contributed by major and medium projects, 15 m.ha. by minor irrigation surface projects and 40 m.ha. by minor irrigation groundwater projects. The end of seventh plan has created about 80 m.ha. irrigation potential.

The gross crop area of the country at present is about 180 m.ha. with a total food production of about 180 million tonnes. The projected food requirement, in 2025 AD will be 345 million tonnes to meet the requirements of about 136 crore human beings. The rain fed agricultural areas though they cover 75 per cent of the total crop area, account for only 42 per cent of the total food production (NCIWRDP-1999).

In 2025 AD the demand for water for irrigated agriculture will go up to 1009 billion cubic meters (BCM). Hence there is a need for incorporating management improvement options like training, maintenance & rehabilitation of the irrigation systems, farmers' participation, etc.

Tamil Nadu is one of the water starved states in India whose per capita availability is less than the national average. Tamil Nadu is under rain shadow region for Southwest monsoon but is benefited by Northeast monsoon. The performance of monsoon will decide the water resources of Tamil Nadu.

At present, most of the water resources of Tamil Nadu have been exploited, but the benefit of irrigation is available only for half the crop land in which paddy alone accounts for nearly three fourths of the total irrigated area (Dhawan, S.D. 1988).

Tamil Nadu has a geographical area of 13 million hectares equivalent to 4 per cent of the total area of India. Out of this the area sown is 6 million-hectare (m.ha.) of which 3 m.ha. get irrigation facilities from the sources of canals, tanks and wells. About 0.90 m.ha. area is irrigated by tanks.
Tank is a water reservoir behind an earthen bund constructed across the slope of a land to catch and store rainwater for the purpose of irrigated agriculture. Generally the tank irrigation systems are smaller in size and larger in number with wider geographic distribution and the government can not involve in the management process except in the structural maintenance of the system. Hence they have to be managed inevitably by the users themselves, since their management by a government agency will result in huge organization expenditure. Their effectiveness and efficiency have to depend again on the involvement of the user only.

Tamil Nadu is an inheritor of more than 39,202 tanks. These small and big earthen reservoirs are indigenous devices to capture rainwater not only to support farming but also serve multiplicity of socio-economic purposes over space and time. Tanks in Tamil Nadu are broadly classified as system tanks and non-system tanks.

Tanks that receive supplemental water from near by streams in addition to the yield from their own catchment are classified as system tanks. Tanks, which are not connected to any river system and purely depend on their own catchment for the supply, are classified as non-system tanks. In general, system tanks are under the control of WRO of PWD and the Panchayat union controls non-system tanks.

Tanks are considered as assets by the community and as the giver of food and prosperity. Special manyams and grants were provided by kings and Zamindars and in certain cases by the village chieftains for the proper upkeep and maintenance of these tanks.

After the advent of British rule in this country the management of the tank system was transferred to governmental agency from the community. The rulers considered tanks as a utilitarian source to collect revenue from the ruled,
1.1 Photo – view of a **tank with its water spread area and tank bund** - Parambur tank.
but had not paid attention to its maintenance. Adequate funds were not provided for the maintenance of these tanks. This had set the trend of involvement of the community in the maintenance of the tank system. Over a period of time the community had not only lost interest of maintaining these tanks but started to depend for everything on the government as it ran short of necessary resources to maintain. This attitudinal change in the community resulted in the poor maintenance of the tanks, which in many cases fell into a state of disrepair.

During the past 30 years, the importance of efficient management of irrigation water has been recognized. The primary objective of efficient management of irrigation is obtaining the highest possible agricultural return per unit of water use in conjunction with improved agricultural practices.

In order to give proper statutory status to the measures for the sustained maintenance of the irrigation systems, and for the enforcement of the participatory irrigation management policy, the legislation of the “Tamil Nadu Farmers' Management of Irrigation Systems Act 2000” was passed in the state legislative assembly.

1.2 PROBLEM UNDER STUDY

The performance of existing tank irrigation systems in Tamil Nadu is not satisfactory. In order to obtain optimum benefits from water, better knowledge and understanding of water management at field level and at project level is of prime importance. To understand the causes of low efficiency, this diagnostic analysis and evaluation of tank irrigation system is called for.

The main social activities in a functional irrigation system are planning, managing, allocation of water, system maintenance, conflict management, finance mobilisation, water cess and management costs, appraisal and evaluation.
The behavioral aspects of farmers as individuals and as group are vital to water management. Irrigation system maintenance is a continuous process. The participatory Irrigation Management (PIM) has become a most effective management strategy in the farmer managed tank irrigation system.

In each tank system formal/informal organization is functioning to maintain and distribute water during both normal and lean periods of supply, to solve major problem in the system and distribute water to the ayacutdars located in different reaches of villages. An effective water users' association can play a vital role in managing the dependability and equity in the distribution of irrigation water in a tank irrigation system.

Leaders for organising the farmer groups/Water Users' Association (WUA) in the rural areas for conducting the “Kudimaramath” works are very few. Several efforts are being taken to revive “Kudimaramath” and increase farmer's participation in Tamil Nadu by various agencies with different models of farmer organisations with the objective of better management of the irrigation systems.

Cleaning and de-silting of tanks are not done regularly. The farmers do not follow the regular maintenance works in most of the tank systems. The encroachments in catchment supply channels and tank foreshores is a common problem in almost all tank systems.

Massive introduction of bore well irrigation with water market has made adverse changes in the traditional participation of tank irrigation system. Labour problem is another factor affecting the tank-irrigated agriculture. The village youths are not ready to work in the agricultural fields.

Hence this study concentrates in the activities of different farmer-managed tank irrigation systems in Tiruchirappalli and Pudukkottai districts of Tamil Nadu. It also focusses on the functioning of water users' association in
1.2 Photo – the water spread area of a tank, which fully covered with weedy herbs of water hyacinth (Eichnomea Crassipes). This will reduce the storage capacity and increase the water losses through transpiration.
system and non-system tanks. It also aims to find out the plausible reasons for the success or otherwise of the farmers' managed tank irrigation systems in different system and non-system tanks with the following objectives.

1.3 KEY CONCEPT

_Tank:_ is a water reservoir behind an earthen bund constructed across the slope of a land to catch and store running rainwater for the purpose of irrigating agriculture.

_System tank:_ tanks that receive supplemental water from near by streams in addition to the yield from their own catchment are classified as system tanks.

_Non-system tank:_ tanks, which are not connected to any river system and purely, depend on their own catchment for the supply are classified as non-system tanks.

_Kudimaramath:_ traditional community labour participation for the maintenance of irrigation systems.

_Neerkatti:_ a person who distributes and irrigates water from tank to field depends upon the requirement of water for the crop.

1.4 OBJECTIVES

1. To study the functioning of the farmer-managed tank irrigation system.

2. To study the socio-economic background of the farmers in tank irrigation system.

3. To study the selling and buying of irrigation water (water market), crop production, water management in the farmer-managed tank irrigation system.

4. To compare the functioning of Water Users' Association (WUA) under system and non-system tank areas.
1.5 HYPOTHESES
The following hypotheses were made for this study:
1. The education of parent and their children is closely associated.
2. System tank farmers have higher value assets than the non-system tank farmers.
3. Non-system tank farmers have more saving habits than the system tank farmers.
4. Large farmers use groundwater to a greater extent than small farmers in system and non-system tanks.
5. Water management practices at non-system tanks are better than the in the system tanks.
6. Conflicts occur less in non-system tanks than in the system tanks.
7. The selling and buying of water (water market) are practise more in non-system tanks than in the system tanks.
8. The crop profit significantly increases with the increase of experience in farming activities.
9. The crop profit increases with the level of literacy of farmers.
10. The head reach farmers of system tank get higher profit in season –I, than the middle and tail end farmers.
11. The head reach farmers of non-system tank get higher profit in season –I, than the middle and tail end farmers.

1.6 CONCEPTUAL FRAMEWORK
The institutional structure of a society must be regarded as a special aspect of a total social system. The institutional patterns are the backbone of the social system. But they are by no means absolutely rigid, entities and certainly have no mysteriously substantial nature. They are only relatively stable, uniform resultants of the process of behavior of the members of the
society and hence the forces which determine that behavior. This perspective
directs the present research. The farmers who use the tank irrigation system,
the system tank or non-system tank are in a position to adjust among
themselves to sort out their problems which arise from time to time to use the
available water for irrigation. According to the perspective of system analysis
the relative stability results from the particular structure of inter-dependence of
those forces and institutional structure is subject to change a function of any
one of many different kinds of changes in the underlying system of forces. The
farmers maintain the relative role in their respective tank irrigation systems. It
indicates that the institutionalised pattern does in fact mobilize a combination
of forces in support of their maintenance which is of primary significance in
the total equilibrium of the social system. The broad outline of the current
research concerns elements, which are universal to all societies and does not
depend upon specialised knowledge of particular society. The uniformity of
the farmers' behavior is are analysed in terms of the structure of the motivating
forces on the one hand and the situation in which they have to operate on the
other hand.

1.7 CONCENUS THEORY

Structural functionalism, a leading consensus theory, views society as an
integrated whole, and the parts are essentially contributing to the maintenance
of the whole. Emphasising on such characteristics as integration, stability and
consensus this perspective asserts the primacy of the whole over the parts, and
sees the parts as being functional in the whole.

Applying this functionalist approach to irrigation and society, Durkheim
views irrigation essentially as an agent of socialisation by which individuals are
moulded to exhibit socio-economic patterns of conformity with the social
norms and values.
Parsons also proposed that though the unequal distribution of materials in the field may be disruptive potentially, it would help farmers internalise the norm that achievement would be economical and that each of them has equal chance of utilising and benefiting well. In short Parsons stressed the functional inter dependence of irrigation and other societal institutions and proposed that two of the basic functions of irrigation are socialisation and selection.

In the tank system the available water should be equally distributed to all fields depending upon the requirement of water for the crop. The irrigation should be done to the crop based on its requirement, time and place. Farmers should co-operate and work together to achieve the goal. For this, farmers' participation in an organised manner is essential in the tank irrigated agriculture.
1.8 CHAPTERIZATION

Chapter -I introduces the research theme and its focus, highlights its rational and significance along with a note of the investigator's interest on the topic. It makes a brief presentation of the historical perspective of the topic and underlines the overall sociological thrust of the study.

Chapter - II presents a review of select studies related to the research theme in Tamil Nadu and India and indicates how the present study is different in scope and approach.

Chapter - III deals with the methodology of the study. It states the research problems and identifies its broad area, spells out the basic assumptions and working definitions present the universal sampling procedure. It also explains the objectives and hypotheses and introduces the tools of data collection as well as that of analysis.

Chapter - IV gives the macro level view of irrigation in India and Tamil Nadu. And also it describes the profile of the study area.

Chapter - V attempts the data analysis, explains and illustrates the correlation between variables and verifies hypotheses.

Chapter - VI consolidates the findings and concludes with suggestions by making a brief comprehensive presentation of the emerging picture in the light of the objectives.