CHAPTER 1

INTRODUCTION

1.1 GENERAL

Water is synonymous with life. Water is a natural resource and an absolute necessity for the survival of the living beings. It is recognized as a vital resource for human life serving domestic, agricultural and industrial purposes. Water is also indispensable for economic activity, societal development and environmental sustainability. At global level, demand for water is increasing steadily with general trend toward diversification of use away from agricultural activities. As of now, the world uses around four times as much as fresh water as it did in 1940 and a huge increase in use is forecast in developing countries that are already short of water, as noted by the Gender and Water Development report (2003). Securing water has, thus, become a part of everyday life, though it is scarce and costly but essential for survival and for food production.

As a sector of water use, “Water for Food” i.e. for agriculture is far and away the largest users of fresh water. Irrigated agriculture provides some 40% of the world’s food and in doing so consumes about 75% of its renewable freshwater resources. As evidenced from the Gender and Water Development report (2003), globally 91 countries, representing the vast majority of world’s population, utilise more than 50% of their total annual fresh water extraction for agricultural purposes. Figures range from as high as 99% of the total fresh water abstraction in Nepal and Afghanistan to 0% in Finland and Switzerland. In sub-Saharan Africa where
availability of water is crucial for food production, the figure is low around 9%. Agriculture remaining central to the Indian economy, it receives the greater share of the annual fresh water allocation. About 92% of India’s utilizable water is allocated to agricultural sector, mostly in the form of irrigation. However the sector is under increasing pressure from competing uses, increasing population, higher demands of water for domestic, industrial and leisure uses.

According to Mehra et al (1997), demand for food in developing countries is expected to be more than double by 2025, requiring more than a doubling of average yield of food production to ensure food self-sufficiency. Over the past 50 years, irrigation development has been a major factor enabling the yield increases necessary for food production to keep pace with rapid increase in demand. However, rapid population growth has resulted in increased pressure on water, which is slowly reducing the water available for irrigation. It could be understood that, in the future, growing water scarcity is likely to pose a serious challenge to the needed expansion in food production and to meet poverty alleviation.

In addition, there is a growing concern in recent years that increased competitions for the use of irrigation water for other sectors had led to decline in area under irrigation. The competition occurs among farmers for irrigation water, between farmers and non-agricultural users of water (domestic, industries, power plants etc.) and environmental uses. Depletion in ground water, other alternative water sources and increased salinity are the other factors responsible for increased competition for the use of irrigation water. It is clear that the scope for increasing area under irrigation is very limited due to increased pressure on the water available for irrigation. Development of new irrigation schemes has been increasing at a diminishing rate, since most of the best sites have already been exploited, cost of new irrigation development is rising and funds for new schemes are dwindling. Hence, the irrigation researchers believe that improvement in water use efficiency in irrigated areas is essential rather than expansion of irrigated area to meet the needed expansion in food production.
Irrigation sector faced major problems, which include the inability of farmers to fully realise the planned potential of irrigation, inadequate maintenance of irrigation infrastructure, poor management of systems, the high cost of operation and maintenance (O&M), limited success with cost recovery and poor performance of irrigation bureaucracies. Also planning, decision-making and implementation of many irrigation agencies is highly centralised and often-structured top down with a result that policy and procedure governing water supply are not necessarily linked to the needs of the crops and the farmers. However, many government have now recognised that the top down approach characteristic of traditional development strategies has failed to reach and aid the farmers. In response to these problems, researchers and irrigation agencies have been experimenting over the past 20 years with newer and more flexible approaches to irrigation management. These experiments started with paying greater attention to the ‘farmer’ or ‘users’ of irrigation and involving them in management aspects. Pallas (1993) found that there is a high correlation between farmers’ participation in managing irrigation systems and sustainability. More recently, a key strategy being pursued is system turnover to users.

The process of turning over irrigation systems to farmers groups has been picking up speed all over the world. More than 25 countries are now in the process. As indicated by Postel (1999) this institutional shift goes by different names in different countries: self Management in Niger, Participatory Irrigation Management (PIM) in India, Privatisation in Bangladesh, Turnover in Indonesia and Philippines, and Irrigation Management Transfer (IMT) in Mexico and Turkey – but in all cases it represents a devolution of authority and responsibility from government to irrigators. It was felt that successful transfer is a complicated task that requires significant institutional and attitudinal changes among both irrigation agencies and farmers. Developing and strengthening Water Users’ Association (WUAs), as a mechanism for implementing successful management transfers, are expected to improve the performance and sustainability of irrigation system.
Though devolution of responsibilities from the state to communities or local users groups i.e. WUAs has become a widespread trend, it does not necessarily lead to greater participation and empowerment of all stakeholders. While there may be many ways of identifying groups that are frequently marginalised, gender differences in power is a recurring pattern. This is mainly because, in most of the irrigation management transfer literature, water users are implicitly assumed to be male individuals, while in reality water users are organised in a household collectivity with members of both genders who have parallel, complementary and sometimes conflicting roles, needs and interest with respect to water. However, when a set of users is not involved in WUAs, as women often are not, expectations of successful irrigation management may be inaccurate. Hence this study is proposed to understand the participatory irrigation management from a gender perspective, i.e., the perspective of male and female members of irrigation households.

1.2 WOMEN AS FARMERS

Literature on women and irrigation demonstrates the failures of irrigation schemes because they did not take account of women as farmers and still it is true that women are not “officially” recognised as farmers. Nevertheless, there is enough information on women’s contributions to agriculture to warrant and to obtain a more accurate picture about the users and uses of irrigation. Research on women’s roles in agriculture has provided convincing evidence that women are farmers and that their contributions to farm production and household support are significant. Official statistics show that women represent 65% of the agriculture related work force in southern Asia and their participation may be growing (United Nations, 1995). Figures of Food and Agricultural Organisation (FAO, 1995) show that worldwide, women grow over 50% of the food consumed, the percentage is far higher in Africa (UNIFEM, 1989).
Studies on women in agriculture conducted in India and other developing and under developed countries all point to the fact that women contribute far more to agricultural production than has generally been acknowledged. Investigations conducted by Shiva (1991) in selected states in India show that women farmers perform more than 60% of agricultural operations. Even in places where it is often assumed that women’s roles in agriculture are limited, more detailed examination shows that women are intensively involved in a wide range of activities. In Madhya Pradesh, India Marothia and Sharma (1985) found that women performed many of the tasks and contributed at least half the labour used in rice production on medium and large farms. This was found to be true in Indonesia, Thailand and the Philippine as well by Mowbray (1995).

Women’s farm roles vary by region, economic conditions, cultural belief, norms and personal circumstances. They also change over time. The extent to which women are involved in decision making and diversion of labour between women and men in the actual task performed also vary greatly between and with regions and sub regions. General assumption is that women are primarily responsible for food or subsistence crops while men grew cash crops with share of the labour provided by women. In Asia, where the division of labour may be less well delineated between crops and women may exercise varying degree of influence over farm management and decision making. Thus, women’s demand for uses of irrigation water for agricultural purposes can be very varied and this demand may differ from that of men constituting important considerations for irrigation management.

The intensification of agriculture, which accompanies irrigation development, requires more labour input per unit. Increasingly, women provide the additional labour. Even in male-headed households, women provide much of the labour required. Further Felicity Chancellor (1997) points out that “feminisation” of agriculture is expected as men continue to migrate to urban employment, when already 70% to 80% of household food is produced by women. Yet within the bureaucratic
tradition, the extent and value of women's contribution in irrigated agriculture is underestimated. Where women and men perform different agricultural tasks within a single production cycle, as in irrigated paddy farming, the value associated with women's tasks tends to be understated. Ramamurthy (1991) argues that the gender ideologies of irrigation officials directly devalue women's tasks. In spite of various approaches employed in the process of development, the need for a gender approach is increasingly recognised in the domestic sector, while it is not so readily translated into planning practice in the irrigation sector.

1.3 GENDER BLIND APPROACHES IN IRRIGATION

Normal professionalism in irrigation, which is the thinking and practice of irrigation development by 'experts' (technocrats), has largely focused on men as farmers, heads of households, owners of land and major decision makers regarding irrigation needs. The rural household has traditionally been perceived as a unit of congruent interest, where resources and benefits are shared equitably with little conflict between members. Women in this model of altruism are seen to benefit indirectly as co-farmers through their husband's rights. A number of researchers hold hypotheses that access to water is determined by existing land rights i.e. water rights are often derivatives from land rights. Women, almost everywhere, have restricted access to land and probably even more so to high value irrigable plot. With the direct linkage between land rights and water rights, the possibilities for women to obtain formal access to irrigation water are limited. Even those women who own land rights are placed at a disadvantage side when compared with men, which affects their productivity and family income.

The first and the foremost concern for the gender blindness of irrigation policies and approaches is the nature of irrigation system themselves. In India, and in several other countries, considerable investments have been made to control the available flow of water through the creation of irrigation infrastructures primarily to
meet the growing demand for food as well as the secondary demands. Equity in their context refers to spatial distribution of water across the system ensuring that all irrigators, particularly end-users, receive the same amount of water in relation to their landholdings. However, this conceptualization does not account for social and economic differences between users or their gender differentiated needs. For example, as mentioned earlier, in local production system gender division of labour may vary between cash and food crops. Women may require water for subsistence crops, while men may be more concerned, that all water goes to their field for water intensive cash crops (sugar cane, turmeric, banana etc.) and have access to other inputs to increase their crop yields.

Secondly, the analytical separation between irrigation and agricultural systems by creating separate ministries and department dealing with agriculture and irrigation development at the center and state level with little or no co-ordination or information sharing between them. Not only are most of these bureaucracies male dominated, the concept of farmers’ participation, let alone women’s participation, is alien to them despite the rhetoric of populist policies. Such a narrow focus implicitly underestimates the roles and contributions of women, which in most developing societies are more pronounced and visible in irrigation. Yet, irrigation contributes to the development of agriculture and has a significant impact on the gender division of labour.

The third concern for gender blind approach in irrigation policies lies in the predominant division between water for domestic uses (drinking, bathing, washing, cooking etc.) and water for productive uses (irrigation, industrial) with the former being seen exclusively as women’s responsibility and the later as men’s. This division is reflected in the literature on water resources management with a large body of material addressing the role of women in the design and management of water supply and sanitation infrastructure, their participation in public health and hygiene education and the impact on the quality of their lives and those of their families as
Correspondingly, the literature on irrigation management and on farmers participations in WUAs has, with a few exceptions, been essentially gender blind. For example, work of Ostrom (1992) rarely considers gender and equity issues in building sustainable participatory irrigation institutions. In their studies on irrigation practice and policy in India Maloney and Raju, (1994) has a token reference to women towards the end of the book saying that their involvement in irrigation water management associations is crucial, but does not explain why?

The growing body of literature emphasizes the fact that while the need for participation of women in water resources management for domestic activities is recognised and encouraged as they are the direct beneficiaries the same is not true in the case of irrigation because of the general conception that irrigation is a male task. However, the division between domestic and productive water use is a false one, since Zwarteveen (1995) had identified that women are using water in their different capacities as co-farmers, as heads of farms and the third way in which women should be considered as water users relates to uses of irrigation water for other than irrigation purposes.

Also, field observations suggest that in addition to using water in their different capacities women do participate in the irrigation activities. In Sriramsagar Project, Andhra Pradesh, Rao et al (1993) found women joining hands with their husbands in procuring and guarding water. Even the very task of irrigating is not necessarily confined to men. In Nepal, irrigating is a joint responsibility of both husband and wife. In Sri Lanka, women are found in the paddy fields opening and closing the bunds and monitoring the flow of water. In many cases, male and female farm household members both contribute to the production of irrigated crops. Because of intra-household gender based division of labour and responsibilities – women and
men do not always and automatically have the same interests and needs with respect to irrigated crop production and by consequence, are also differentially interested in irrigation services. Although development practitioners are increasingly realising that community irrigation planning and management approaches need to take into account of gender concerns, women water user’s needs and interests are often not clearly understood. Thus, the above experiences reveals the fact that the important source of gender differences with respect to water lies not so much in the gender specificity of water uses, but in gender differences with respect to access to and control of water.

1.4 WOMEN IN IRRIGATION MANAGEMENT

The growing emphasis on the users’ participation in irrigation management transfer necessitates the identification and involving of all the stakeholders. But the participation of farmers in irrigation management is often limited to male farmers despite the fact that women are involved to a large extent in irrigated agriculture. The most common gender stereotype that has guided and shaped many irrigation policies, planning and interventions is that women are primarily housewives and mothers, while men are farmers and irrigators. Overlooking women as irrigators, farmers or water users will lead to a faulty understanding of the determinants of the performance of irrigation system. Policies based on such an incomplete understanding had come out with gender-neutral interventions. According to Jayalakshmi (2000) neglecting gender concerns in irrigation planning has resulted in the under utilization of stakeholders in irrigation management and perpetuated the inequalities in access to benefits of irrigation development programmes.

Despite high involvement of women in irrigated agriculture, in decision-making, as evidenced from Water Users’ Associations in Sri Lanka, Nepal, Pakistan and India, women’s participation is much lower than that of men. Studies of GIRD and IWMI show how poor households are unable to voice their concerns in PIM
societies Parthasarthy (2000). The patriarchal structure is so strong, that bureaucracies tend to push gender issues to periphery.

Rule for membership is one of the factors, which determine the eligibility and extent of participation in WUAs. Membership in WUA for irrigation management is often confined to one member from each beneficiary household, either the official landholder or the head of the households. Both criteria apply more to men than to women, except in the case of widows or single women with no adult male living in the households. Membership in local resource management organisation assumes an increasing and important role in determining rights over resources. In addition, the prevailing stereotypical ideas that men only are farmers and interested in irrigation along with traditional male domination in public decision making and the social norms prescribing the public/private dichotomy exclude women from becoming members of Water Users’ Association.

However, some irrigation settlement schemes provide the most striking examples of how neglect of gender concerns in irrigation development interventions have affected the project outcomes. The absence of women from associations may lead to inefficiencies in management performance. For instance a study carried out in Indonesia, by Schrevel (1989), suggests that major reason for poor functioning of WUAs was the lack of women the actual irrigators in these associations. In a study on farmers managed irrigation system in Nepal, Zwarteveen and Neupane (1996) noted that the absence of women from WUA had a negative effect on management performance because they were basically free riders. Since they were non-members, it was difficult for the association to impose their rules on them, which in turn affected the long-term sustainability of the system. In the Baurahua irrigation system in Terai, Nepal the absence of women in preseason meeting led to the inefficiency in the water distribution. In Burkino Faso, the failure to incorporate women from the beginning in the project planning on the pretext that women did not own land, made women
reluctant to do maintenance. Thus, the experiences of these projects highlight the broader implications of gender blind irrigation management.

1.5 THEORETICAL BACKGROUND OF STUDY

According to Dublin’s third statement, women play a central part in the provision, safeguarding and management of water. Recognising women’s multiple roles as providers of domestic water, as guardians of family health and managers of water at the community level, water resources planners in the past decade have made some provision to promote women’s participation in management activities. However, such provisions tend to be limited and often tokenistic and the rhetoric of women’s participation overlooks the divergent needs and interest that women have in relation to irrigation water. Prioritising women’s needs and interests in irrigation management has become a self fulfilling prophecy: Because irrigation is commonly conceived as a male activity and women are not seen as direct stakeholders in irrigation systems, they are excluded from the efforts to organise WUAs. Thus, women’s specific concerns remain outside the formalised decision-making processes, as a result they are often not recognized as “real” concerns and remain marginal.

To understand the differential impact of irrigation on women and men, it is necessary to look at the agricultural production system, which includes an analysis of gender division of labour in agriculture as well as an analysis of women’s and men’s access to water. In this context, more realistic assessment of gender roles in irrigated farming becomes a prerequisite not only to evolve better gender aware approach to irrigation management but also to challenge the inappropriate assumptions about men as the only “bread winner” or “development actors”.

The marginality of gender in policy making means that it is especially important that policy recommendations should be based on a clear and rigorous analytical framework. One such framework used in this study is that which
distinguishes between "gender roles" and "gender needs". The 1995 Commonwealth Plan of Action on Gender and Development recognises that, as women and men have different roles and responsibilities, they also have different gender needs. If the gender roles and gender needs are understood, planning will be more effective.

An useful framework for identifying gender needs has been developed by Maxine Molyneux (1987), which has been further refined by Moser (1989). The framework, called gender planning, is based on identification of the triple role of women in society and on a fundamental analytical distinction between practical and strategic gender needs.

Moser (1989) outlines triple role framework for understanding the different roles women (and men) have to fulfill in society. Policies of a practical nature should assist women in fulfilling their roles or at least should not make such fulfillment more difficult by vastly increasing women's workload. In most societies, women must fulfill the three main roles viz. the reproductive, productive and community management tasks.

Reproductive roles refer not only to women's childbearing role, but also to childrearing. Women engage in various activities to ensure the maintenance and reproduction of the labour force. Productive roles refer to the women's role as income earners, often in agriculture or in informal sector. However any productive roles of women are underestimated or ignored. It is also noted that in most societies gender division of labour within production also exists, especially in agriculture, with regard to the tasks women and men do or are expected to do. Community role, as one of the triple roles, refers to women's performance of collective action at the community level. Women have to balance these three roles, whereas men generally have only a productive role.
Caroline Moser’s theoretical framework of gender needs analysis is more relevant for the critical analysis of asymmetrical gender roles in irrigated farming and allocative resources. Gender needs can be divided into practical needs and strategic needs. Practical gender needs are needs, which are derived from the concrete conditions women experience in their engendered position within sexual division of labour. Practical gender needs are routine in nature, as men and women are embedded within specific configurations of rules and practices. Practical gender needs are those that are related to the immediate needs (water, food, fuel-wood, fodder, income, health etc.), which may be fulfilled through short-term development interventions. Thus, practical gender needs reflect their socially prescribed obligations and responsibilities and do not challenge the prevailing forms of subordination of women.

In as much as the configurations of rules and practices underpin asymmetrical division of labour and resource allocation, men and women are likely to have conflicting strategic gender interests in resisting or transforming prevailing rules and practices. Strategic gender needs are formulated from the analysis of women’s subordination to men. It pursues a more equal organisation of society, in terms of both the structure and nature of relationships between men and women. Strategic gender needs also pursue a more egalitarian structure of society and egalitarian gender role relationships. Strategic gender needs may include the abolition of the sexual division of labour, the removal of institutionalised form of discrimination such as rights to own land or property or access to credit, the establishment of political equality and the adoption of adequate measures against male violence and control over women. Strategic gender needs such as these are often identified, as “feminist” as is the level of consciousness required struggling effectively for them.

Though Moser’s concepts are well known to development practitioners trained in gender analysis, they remain outside the conventional framework for planning and designing irrigation projects. Nevertheless, most of them agree that they are concerned for twin aims of enabling women and men to meet their practical needs
and to enable the marginalised group which includes women, to fight against oppression and exploitation. However, an argument in this study is that irrigation projects and programmes, which aim to meet the practical needs of women and men, should also focus on meeting women’s strategic gender needs. The study considers a focus on women’s strategic gender needs in development projects to be important for two reasons. First, the intervention may then contribute to greater gender equality in society and secondly, focusing on women’s strategic gender needs is the only way to ensure that women’s and men’s practical needs are met fully and efficiently.

1.6 IMPORTANCE OF PRESENT STUDY

World wide, most of the human effort in irrigated farming is provided by women. Women have expanded their traditional agricultural obligations into the irrigation sector, often more than doubling their workloads as agricultural activities grew from a single crop in the year to in some cases, three crops. Though income increases at household level, at scheme level, women are seriously under represented on management committee. In India, increasing user participation in the management of irrigation systems is being tried as a means to reduce pressures on government finances, improve performances of irrigated agriculture, and ensure sustainability of irrigation systems. The government of India has supported various moves towards irrigation management transfer in the country through programmes and policies such as the Command Area Development Programme (CADP), National Water Policy (MOWR, 1987) and the Participatory Irrigation Management (PIM). The Agricultural Engineering Department of Tamil Nadu took the responsibilities of implementing CADP in the State. Thus, the tool for PIM in Tamil Nadu was the CADP.

Though much stress was laid on all the river basin projects in Tamil Nadu, substantial and meaningful attempts have been made on the Lower Bhavani Project (LBP). The main activities of the programme were On Farm Development (OFD) works and implementation of Warabandhi system. Although the formation of WUAs
with three-tier structure has been successful in terms of systematic delivery of water and improved water conveyance structures, it is not performing well in gender equality in management. In spite of the regional based organisation i.e. Tamil Nadu Women in Agriculture (TANWA), the State programme effectively functioning in the study area, a strong gender bias is prevailing in favour of men, while women's participation is very much neglected. Within stereotypical ideas, women are generally not given representation in WUAs.

Projects and programmes that involve the local organisation of community-based group do make explicit mention of their intention to guarantee some degree of participation of women. Contrary to the expectations raised by these policy statements, there exists very little evidence of explicit attempts at increasing or improving the involvement of women, and even less evidence of success, for example, the Farmers’ Organisation and Turnover (FOT) programme of Tamil Nadu – Water Resources Consolidation Project (WRCP).

In the wake of globalisation, the Water Resources Consolidation Project was implemented in Tamil Nadu during 1995 – 2002 with the financial assistance of the World Bank. It primarily aimed at optimising the irrigation system performance towards sustainable development and higher productivity. Towards realisation of this goal, the World Bank sought to strengthen the irrigation management through decentralisation and Participatory Irrigation Management. Gender advocacy in WRCP was not simply “adding women on” but to develop a more encompassing strategic proposal to ensure participation of women in irrigation management where it is lacking and to increase their participation where it is already in existence. As per the Bank’s stipulation, all land owners are eligible to become members in WUAs and one out of three must be a woman representative at all Sluice Level Committees. The Baseline Survey (2000) conducted by the Centre for Water Resources (CWR), Anna University in eight irrigation commands of Tamil Nadu, noted that out of 35,770 total land holdings there are 7847 women land owners (constituting 22%) owning about
3600.73 ha of irrigated land and are growing variety of crops like paddy, sugarcane, banana, groundnut, vegetables etc. However, it was identified that women’s awareness on WUA and their participation in it is almost closer to nil. Though the purpose of WRCP was to enhance the role of women in WUA activities, the membership had been reduced to mere tokenism. Even the “Tamil Nadu Farmers Management of Irrigation System (TNFMIS) Act 2000”, which is under implementation in the State, does not make any provision to promote women’s representation at different levels of WUAs.

More recently, gender mainstreaming approach has been implemented in a number of irrigation development activities. However, there is still a lack of research on specific roles, tasks and functions women have in irrigated agriculture and irrigation management, especially in Tamil Nadu. It should also be noted that, though many studies available on gender issues in irrigation management, there is no specific studies available on quantification of information on women participating in irrigation management, specifically in Water Users’ Association except few documented reports.

In order to fill up the above felt gap, the present study was proposed to first classify the scheme into men, dual or women farming system by identifying the gender of farm decision maker. Then, the study attempted to establish that women as a farm decision maker need access to water as much as men farm decision maker. And it was also proposed to identify whether women as farm decision maker are included at different levels of Water Users’ Association. A Generic Analytical tool: “A Gender Performance Indicator for Irrigation (GPII)” developed by van Koppen (2002) was used as a methodology. It is clear from the available literature that women’s participation in WUA has received considerable rhetoric, but there has been less careful attention paid to identify the actual barriers women face and the factors that prevent women from participation and achieving control over resources, especially within local organisation. The study also attempted to throw light in identifying the
same. Identifying gender specific barriers would be useful to develop capacity building strategies and training programme.

1.7 OBJECTIVES

In view of the above-mentioned facts, the general objective of the study is to identify the gender issues in irrigation management with specific reference to gender participation in WUA: the specific objectives of the study are:

(i) to identify the gender of farm decision maker and their participatory roles in irrigated agriculture;
(ii) to assess the problems encountered by women and men in access to irrigation water;
(iii) to examine the level of gender participation in Water Users Association; and
(iv) to identify the barriers faced by women and men towards their participation in Water Users Association.

1.8 SCOPE OF STUDY

During the past decade, there has been a growing consensus worldwide that gender is an important variable in irrigation management. Most of the international and national development agencies consider gender as a priority issue on policy agenda. However, such positive thinking towards gender is bereft at national level except for a few selected states like Gujarat and Andhra Pradesh. The research in these states have been carried out by the International Water Management Institute (IWMI), Sri Lanka, the N M Sadguru Water and Development Foundation and Aga Khan Rural Support Programme (AKRSP) both Gujarat based Non Governmental Organisations (NGOs) and the Institute of Resource Development and Social Management (IRDAS) an NGO based at Hyderabad, Andhra Pradesh. Though the
research findings have made governments as well as national and local agencies to realize the important role played by women in irrigation management, still, there is a considerable gap between positive policy intensions and the conversion of these intensions in to concrete actions. Hence, it is realized that there is a need for gender analysis, which is important to highlight the barriers women face in participating in WUA.

The study was taken up in Lower Bhavani Project command area in Tamil Nadu. It is hoped that the methodology used here will have replicability in any other Farmers' Council in the command. The results and findings can reflect the status of women in Tamil Nadu as irrigation stakeholders, their problems and barriers in irrigating their fields, and their lack of participation in Water Users' Associations. The findings would be useful to the planners and administrators for encouraging women to have proactive roles in irrigation water management and sensitise men to accept women as equal partners in every activity of irrigated agriculture towards improved food production with improved and efficient water use and application.

1.9 STRUCTURE OF THESIS

The structure of this thesis is divided into seven chapters more are less reflecting the sequence of the research objectives. The current chapter dealt with general description on the Participatory Irrigation Management, need for the study, the objectives formulated and scope of the study are described in detail in this chapter. Gender role in irrigation and their stake in irrigation management, farming system with reference to decision- making and participatory role are described in the second chapter, i.e. the review of literature. Emphasis is also made on gender participation in water users Association. The third Chapter in general deals with study area description, which incorporates the description on sample distributory and general characteristics of the selected villages. Methodology adopted for the research is presented in the fourth chapter, which focuses on the selection of respondents, sampling framework, source and tools of data collection. Keeping in trend with the
latest advancement, data analysis has been extensively done using SPSS (Statistical Package for Social Sciences). Further more the fifth chapter on analysis and interpretation highlights the socio-economic background of the respondents. It lays greater stress on decision making and participatory role in various agricultural operations and highlights their problems encountered by women and men to access irrigation water. This has been further substantiated using multiple regression analysis. Towards end of this chapter structure and functioning of WUA is dealt in detail with emphasis on barriers and inequality faced by women farmers towards participation in WUA under LBP Command. This has been adequately substantiated using factor analysis. Results and discussions are detailed in the sixth chapter. Finally the overall summary and conclusion are presented in the seventh chapter, keeping in view other additional factors, which can be taken up for further research.