CONCLUSION

To begin with, in my perception, a conclusion has two distinct elements. The first is the essence of what the chapters narrate and the second is the implications that they bear. In my experience through this research three things in particular stand out.

Firstly, internationally water politics in terms of gender and changing policy environment shows that the international and national policies linking women and water have undergone a gradual shift from visualising women as mere “passive recipients” of the output of water projects to “active participants” in their planning and implementation (Singha et al. 2003). However, although it can be stated that the gender dimension has received an increasing amount of attention in the international arena, the implementation of the ideas and theories, especially in the rural environment, require the further involvement of women. Also, a paradigm shift is still needed in the thinking and approach and in the attitudes of current power holders (including the bureaucracy and the politicians) as well as change in the mindset of communities from passive dependency to active participation (Gujarat Jal-disha-2010 2000). Moreover, at the theoretical and conceptual level for developing a model on good governance through democratic decentralization process, the role of the state, civil society, gender and class are inter-related, as shown in the study. So, for the purpose of better water resource development and good governance, it is important to take into account what men and women do and the kind of technology, capital, human labour, planning and co-operative capacity option they chose to adopt. Politics in this sense has been seen in the study as the movements for community action for ‘better’ development of water resources through improvisations and innovations in existing institutions related to the water sector and how in the politics of development these different factors stated above inter-relate in processes of development.

Secondly, the uniqueness of the study in terms of good water governance has been seen in the context of Panchayati Raj Institutions in India for empowering women including those of poor classes, which as it turns out is infact a viable strategy. Given the constitutional set up under which water is a state subject and where institutions of local government, ‘Panchayati
Raj,' have been established and thirty three percent seats are reserved for women at all levels, it is important that local institutions and women are empowered to take on their responsibility efficiently and effectively. Since, one of the important spheres of action of 'Panchayati Raj' structure is the water sector, within this domain, then, decision-making powers have been specially conferred upon women by virtue of their membership in the local government structure. Experience of SEWA suggests that women take interest in panchayats for water governance and especially when their ability and capacity is enhanced through training. This enables them to take the lead in all village water development programmes. Interestingly in SEWA villages, over the years, panchayats and many of the village men have realised that the women's participation is able to deliver services and begun to appreciate its impact. They now offer assistance to women water leaders. Water/watershed committees have been made in almost every village and these committees and they are expected to work in close collaboration with the panchayats as described in chapter 5 and 6 on SEWA. Significantly, the data in Chapter 7 clearly brings out that women have shown great ingenuity in terms of participating and making a positive impact on water governance, which is seen through their increased participation in water management programmes and water committees, increased interaction with panchayat and water board officials and participation in training programmes. Positive changes in gender roles in water management have been observed with increased capacity of women regarding decision making for investment in traditional water sources, regarding use of water, follow up after breakdown, decisions about construction operation and maintenance and also for upgrading maintenance. Interestingly, women have shown leadership in a small way even in villages other than their own and are recognized as leaders in their own village. They have now taken courage in speaking in the village meetings, in going to these meetings in the villages and sometimes even in conducting meetings in other villages.

Thirdly, this thesis has primarily been a study for better governance through women's empowerment, which should be seen more broadly as upgrading the capacities of women in such a way that they are enabled to carry out or take up their roles and responsibilities with greater efficiency and effectiveness. The community model through women's empowerment remains the underpinning of the above analysis clearly impacting women economically, politically, socially, and at the level of their personal life. Chapter 7 shows that empowerment has been achieved through participation of women not merely in terms of numbers. Qualitative
aspects are equally essential in the process, which has been shown through women's greater control over their time, income and help from household and leadership in society. The case study of SEWA indicates that perhaps more crucial is the fact that the poor women from socially deprived classes are the ones that have indeed taken lead in collective movements on issues like water that so closely affects them. "It must be remembered that the needs and interests of women do not exist in vacuum. They are linked to the needs and interests of men and the roles and responsibilities of both are designed in such a manner that the societal interests and needs are fulfilled harmoniously" (Singha et al. 2003). Enhancement of the quality of life is possible only when this harmony is maintained while attempting fulfillment of the needs and interests of women by facilitating their role performance by building their capacities. The data in Chapter 7 shows that women have gained confidence in going out alone and have taken the initiative of sending children to school. They have more savings with more control over water availability in the village and they therefore make more agricultural decisions since they decide that excess water is not used up affecting availability of drinking water in the village. Interestingly, women now also participate in decisions on purchase of cattle and having assets in their own name, which was not happening earlier.

Now, let us draw our attention to some of the intricacies involved in the entire process and some of the inferences and the major arguments of the thesis.

Undoubtedly, water politics or 'hydro politics' is the basis of society. However, till recently, it was understood only in terms of water disputes and control of irrigation systems controlled by men. Added to this has been the low priority given to drinking water compared to water for irrigation by the state governments. Groundwater is used extensively for irrigation and this continuously pushes the water table lower leading to wells and handpumps to go dry and making collection of drinking water for basic survival a much bigger challenge for women as they are primarily responsible for this task for the well being of the entire family. It is wrongly assumed that women use and manage freshwater mainly domestically, and that productive use is reserved for men. Infact, irrigation system are also used for many other things like domestic water, livestock, home gardens, fishing, and small enterprises, which are closely related to women. Water is an important input for their small enterprises. Chapter 5 clearly brings out that water is needed by women for irrigating vegetable plantations in home gardens.
and for nursery raising. Women also need water for dairy co-operatives where water is used to feed and clean the cattle and to keep the milk cool. Fruits and vegetables vendors need water to wash, clean or store their perishables. Savings and credit groups can generate more income by using time gains for productive work. Social security service providers like dais, (midwives) doctors and those in-charge of balwadis (crèche) also need clean water. Water is needed as an input for handicrafts, gum collection, farming and food processing. Therefore, water-related problems severely affect poor women belonging to most deprived classes of the society and their ability to access water for their employment activities. This impinges on their work, income and their productive work-time, which depends on timely availability of safe water. Moreover, for the success of any government poverty eradication and others schemes for development of women and children, the challenge of water crisis is expressed by communities for immediate redressal before anything else since they cannot get involved until this issue is solved. All these aspects clearly emerge from the study as described in Chapter 5. Also, as is well documented and well established through several studies mentioned in the thesis in chapter 1 and in the introductory chapter that due to these factors women in rural areas not only do most of the work in water collection, but also take most of the management decisions. Social studies show that women make careful decisions about water use patterns. They decide which water sources to use for various purposes, how much water to use, and how to transport, store, and draw the water. Therefore, no drinking water programme can be considered to be successful if it does not take into account women's needs and involvement in decision making regarding water, its use and distribution in the village, provisions of water, methods of water collection, its place etc. and in management of water, its preservation, rules and through women headed committees. This has been clearly brought out in chapter 5, 6 and 7 of this thesis.

Another interesting issue that emerges from this study is that indeed, conventional government approaches to water resource management do focus on large water projects that are capable of meeting supply requirements of large regions for purpose such as irrigation, drinking and domestic uses and industry. Basically, the state government is the main player in the field of governance and management of water resources and services. It is responsible, among other things, for water resources evaluation and planning, execution of water development and water resources management projects and management of water supplies. There are several
ministries, departments, corporations, and boards engaged in managing water for meeting the demands for drinking water in rural areas. However, the inherent problems in dealing with the unevenly distributed water resources and lack of inter-sector co-ordination at policy and operations level make the task of governance and management almost impossible. So currently, several state institutions are engaged in rural water supplies, which are centralised bodies dealing with planning, infrastructure development and management of infrastructure services. As stated in Chapter 4 of the Thesis, the focus and emphasis of these institutions has been on technical issues related to prospecting of good sources of water and building of water supply infrastructure. They make significant impact in terms of changing the overall water availability situation and use patterns. However, they fail to capture the water management needs and priorities of communities and women in different localities and hence are not effective in tackling local water problems. In the case of rural drinking water supply, the centralised approach to planning of drinking water supply sources does not encourage the agency to identify the needs and priorities of the women groups in the communities within the socio-cultural context, especially caste/class differences, which determine social ownership of the resource. This reduces the effectiveness of planning not only in terms of women’s physical access to water sources, but also in terms of social ownership and equitable distribution. It also often poses serious threat to the sustainability of the resource base itself, with several negative social, ecological and environmental consequences. Similarly, responses to scarcity have typically been technologically centered and supply dominated rather than addressing critical concerns, primarily equity across and between regions (spatial and temporal), within communities. (gender and class) and at the level of the household (men and women users). Thus, it is very clearly visible from this study that apart from the factors that determine the physical availability of the resource, there are social, institutional and economic factors that determine access to fresh water supplies for drinking.

Further, policy-makers have ignored protection of traditional sources of drinking water like surface wells and village ponds on which women in rural areas have been relying a great deal. (Agarwal 1997). The drinking water supply systems in India traditionally depended on local sources and consequently, the distribution and upkeep was also localised. “The post-Independence eagerness for centralised, top-down planning created large bureaucracies for drinking water that eagerly embraced modern technology. Inevitably, this led to technocrat-
driven plans, sidelining of indigenous systems, even if effective" (Gujarat Jaldisha-2010 2000). Exclusive control by the government machinery, and the resultant mindset among the people that water management is the exclusive responsibility of the government cannot help us to make the paradigm shift to participative method, essentially in local management of water resources. Government institutions have so far been acting as implementing agencies. Now they will have to give greater emphasis to co-ordination and facilitating roles (Rehoej et al. 1997). This shift, if accepted, will call for repositioning of institutions and changes in their mission. Government institutions managing water resources will need to reformulate their mission to take on new and additional responsibilities. These include the shift from being implementing agencies to becoming partner organizations that facilitate others and help coordinate toward common goals. Change and alteration in the mission of institutions would imply repositioning. "From an institutional perspective, there is a need to transfer the management and financial responsibility to the lowest appropriate level, i.e. the panchayati raj institutions and, in particular women groups. Transfer of responsibility would thus require corresponding provision of management and financial autonomy to local administrations and water committees" (Rehoej et al. 1997). Both the Central and the state governments should, therefore, actively seek the involvement of the men and women from decision-making to monitoring and the implementation of decisions.

While participation of women in management of natural resources is getting wide acceptance, concepts of participatory approach also demands changes within traditional implementing institutions. Chapter 4 on Gujarat shows that the Gujarat Water Supply and Sewerage Board (GWSSB) has initiated a process of involving women groups and also of joining hands with other institutions that are also involved in management of water resources. This process needs to be accelerated. Formation of village pani samitis by water board officials to take over tasks of operation and management in some of the water supply schemes is a welcome beginning. However, nationally the official agencies concerned with water supply need to be oriented on social and intuitional aspects of managing water supplies for community benefit. There are several social and cultural realities that influence the success of water supply projects in rural areas. These include the existence of social units within the village administrative boundaries and women's own perceptions about quality aspects of drinking water. Government representatives need to be aware of these aspects. They also need to be
aware of the importance of women's involvement in planning operation and maintenance of supply schemes and of issues related to community participation. The field study brings out these aspects very clearly in this thesis. This will help build rapport between the official agency and field agencies (such as Non Governmental Organisations) that can play the role of facilitators in drinking water supply projects as discussed in chapter 3 and 4. It will also help change perceptions of the official agency among beneficiaries regarding the performance of water supply projects. Chapter 5 shows that training can play an important role in changing the attitudes and perceptions of the official agency in this regard. These can include participatory planning methodologies, community organising and institution building.

The study shows that for practical purposes, community level water sources and other similar water harvesting systems used by women and men should be vested with the panchayats, which makes its decisions in the general body meeting of the village i.e. in the 'gram sabha' comprising all village adults. The research work in chapter 5 on SEWA shows that it is really only the 'gram sabha', the village assembly, which can accurately represents the interests of the women. For instance, the first step undertaken by women in SEWA villages is to hold a gram sabha comprising all village adults. This is done through the sarpanch, or, in case the sarpanch is not co-operative, through the talatti or some panchayat member. This way the decision making regarding use, conservation and management of the local water resources are vested in the hands of the primary users, especially women. In this regard it is envisaged that the role of the state should be to provide broad guidelines for instance of inter-state and inter community/ village usage, but details of planning for resource conservation and use should be left to the users. Thus, in all government initiated drinking water schemes like pipeline water supply, handpump repair and maintenance, watershed management etc., when the ownership is with the government and the use is by the community, the interest of women should be safeguarded. Institutional reforms are needed in the state, district and block-level organisations to make them accountable to the women for providing a quality service. This requires substantial re-structuring and re-orientation of the sector organisations and the Gram panchayats, whereby the Gram panchayats and (water committees) can approach the water agency at the block or district level (depending mostly on the type and complexity of the scheme) for the services it wants and is willing to pay for.
Some of the important characteristics of the bottoms-up institutional framework for effective water management that have emerged from the study of SEWA are that institution building begins from the village-level where the village-level organisations called 'pani samities' are the first building blocks. Pani samities are initiated at gram sabhas comprising all village adults. Majority members of pani samities are women though supportive men are also nominated to pani samities. Village institutions work with panchayat institutions and continuous capacity building is an integral part of institutionalization. District-level linking of pani samities is done through a spearhead team and a women's technical team is developed to assist rural women, state-level. Institutions are continuously influenced and communication and advocacy channels within grassroots institutions are established. Co-ordination is undertaken with the following agencies: Panchayat institutions at the village, taluka and district levels, District Rural Development Agency (at the district level), Gujarat Water Supply and Sanitation Board (GWSSB) at the state level in Gandhinagar and also its offices in district and taluka (block) level and Gujarat Jalseva Training Institute (GJTI) for technical training.

By and large what is needed at the Gram panchayat level is adequate information for instance to assess the status of existing installations, prepare the gram plan, come up with least cost technological options etc. The district and block agencies have to take a lead role in working with Gram panchayats apart from providing technical services required by the Gram panchayat/women. Where NGOs are present in the area, the need for multiple technical functions within the government agency can be reduced / eliminated. However, both these requirements are difficult and risky. "Changing from a conventional supply-driven orientation to one that responds to specific gender needs and is accountable to them for the quality of service provided requires appropriately oriented and qualified staff and incentives structures, besides a major overhaul of existing government procedures and guidelines. The district and /or block-level agency to be competitive must "reinvent": itself as a user-oriented agency that is financially viable and responsive to women's needs and demands, which means that they must have the autonomy to create and change rules, control funds flow and influence staff performance" (Gujarat Jaldisha-2010 2000). Although SEWA has not done enough for the Gram panchayats to get assistance from water sector agencies, which has been pointed out as one of the drawbacks yet it must be recognized that Panchayati Raj Institutions, particularly Gram Panchayat require extensive management training and general establishment support to
enable them to assume their role as planners, implementers and chief caretakers of drinking water supply facilities. Although women have received training yet technical assistance and training to support the implementation of appropriate systems for participative Gram Panchayat in the areas of planning, procurement and contracting, management of operations and maintenance responsibilities, billing and collection, and financial management and reporting still needs to be stressed. “The likely agents for dissemination and training in these aspects can be the staff from existing water sector agencies or state or district administrations, or non-government organizations” (Gujarat Jaldisha-2010 2000). Intensive support during the transition, for these activities is necessary and should be allocated for from existing sector commitments to ensure timely availability.

Specifically, the village water committee or the ‘Pani samiti’ or ‘pani panchayat’ constituted by the gram sabha form a very important building block in the institutional structure for executing the water projects in the village and the study of SEWA shows that at least half or majority of the members of these pani samities should be women. Encouraging women’s participation in water committees or ‘pani panchayat’ is considered very essential. As a matter of principle, village-level water committees work with panchayats. This helps the water committee garner panchayat funds, get panchayat sanction required to undertake building of any village-level common facility, and tap other resources like labour mobilised by the panchayat. Thus it is very helpful in linking up and winning support from villagers and the local leadership. It is also suggested that there should be scope to constitute committees at different levels: a village cluster, gram panchayat and district/zila levels, as has been experimented by SEWA through their “spear head teams” described in Chapter 5 of the thesis. The committees need to be empowered to settle disputes among users and also to give punitive powers to take up cases of frequent defaulters, which the committees set up in SEWA have shown to take up effectively. While doing so, the existence of different social units within the village administrative boundaries needs to be recognised. In many instances, separate water supply sources or stand posts will be required for each one of the communities and therefore separate water committees may have to be created for each social unit. Training needs to be imparted to the members of the village water committees about their roles and responsibilities, and technical issues related to the operation and maintenance (O&M) of water supply scheme. Non Government Organisations (NGOs) also could facilitate this process wherein the officials
of the government agency could provide technical inputs. "Special training can be imparted to a few members of the water committee to collect water samples periodically and analyse them for various water quality parameters (physiochemical and biological) stipulated by the official agency. This will help ensure maintenance of minimum quality standards and promote a sense of partnership with the Government. The presence of village water committees can also ensure collection of water cess from village households" (Gujarat Jaldisha-2010, 2000). Usually, supportive and pro-active men should be part of the committees as is the case in SEWA villages. The women belonging to poor classes in the villages should also be able to interact with panchayats and facilitating NGOs and government officials to get for themselves access to technical, financial and capacity building support. The research brought out some positive and significant influences that have happened through state government and NGO interaction. Thus, partnership between NGOs and government in identifying women's needs and finding solutions in this manner is a successful model in some aspects.

The study shows in Chapter 3 that in general, NGOs involvement in the sector is restricted to externally funded projects and government sponsored programmes. In states such as Gujarat, Maharashtra, Karnataka, Uttar Pradesh and Kerala, there are several drinking water supply projects being funded by foreign governments (under bilateral arrangements) and other international funding agencies. The donors have often made involvement of NGOs a prerequisite for project funding and have willingly funded institutional strengthening and capacity building to address their limited management and technical capacities and skills levels. In such projects, donors have played a crucial role in changing the style of functioning of agency officials. Nevertheless, regular training on social engineering skills should now be made mandatory for officials of the water supply agency rather than confined to donor funding.

In terms of government schemes, a few charismatic leaders are responsible for the success of schemes as seen in Chapter 3 on India's experiences with participatory water management. While from a national perspective, the role of NGOs may be limited; there are a few individual NGOs, which have developed areas of expertise and regional profiles, which could serve the emerging water sector institutions. However, if the participation of NGOs is to be encouraged, presently inflexible government procurement and contract regulations and procedures will require several amendments.
The study of Gujarat shows that although there are multiple authorities including GWSSB who have yet to act in a synergistic manner, so as to be more focused and productive yet networking between stakeholders outside the government sector, and between NGOs and state authorities, is now a major strength in Gujarat and needs to be fostered. The Government is now considering the creation of a state level "authority" to act as an umbrella in the form of a regulating body to develop and regulate the conjunctive use of waters through integrated water sector development.

With reference to the success of Jhabua in Madhya Pradesh, one of the studies undertaken on Rajiv Gandhi Mission on Drinking Water, pointed out the challenges of replicability and how it has not worked in many districts so well as it has worked in Jhabua. (Agarwal, 2001 (i)). The "outlier villages" in chapter 6 of the thesis also point at similar factors that make a participatory programme a success or a failure in terms of women's participation and role. One reason is that in these districts the local mission leader, the district collector, has failed to show enough interest and enterprise, as pointed out in the study conducted by the Mission. Therefore, despite all the planning and thinking, social mobilization is not possible unless there are committed officials at all levels. The second factor for failure identified was the village community itself, especially where the community does not display an adequate spirit for cooperation and unity especially where society is stratified and male-dominated. Another challenge was that things also go wrong if the entry process for the project is hurried through. Instead of undertaking a detailed process of social mobilization, that is, developing a variety of village-level groups, an exercise which involves and educates all interest groups, men and women about the benefits of the project, if a quick meeting of the village gram sabha is called and a watershed committee is set up through nominations, few people in the village get involved or educated about the project. Widespread corruption poses another threat to the programme. The study points out that everybody wants decentralization, but only up to their level. Good rural development, especially one that is based on good natural resource management, demands decentralisation of power and government expenditure. Only when money reaches the public directly, and in a manner that is transparent, only then nobody can siphon it off. However, as pointed out in chapter 3 that for the moment, the Madhya Pradesh watershed development programme remains a participatory model of land management that
can be implemented nationwide. (Mahapatra, Richard, 2001). Interestingly, even in the case of Jhabua, the gram sabha has emerged as the most powerful institution in villages that looks after all the activities. Crucial decisions like site selection of a dam or tank, its size and the percentage and mode of community contribution towards building such a structure is decided by the gram sabha. Once a village feels the need and agrees to work with Tarun Bharat Sangh, the non-government organization active there, for building or renovating a water harvesting structure, the gram sabha along with an elected head is formed, in a general meeting held in the village. The gram sabha meets once every month on the no-moon day, as traditionally villagers devote this day to community work. One of the unique features of the gram sabha is that villagers can recall any elected member for non-performance or misconduct. The gram sabha forms five sub-committees to look after various aspects of the work. The construction committee looks after all construction works and decides the mode and magnitude of villagers' participation. The forest committee enforces a ban on felling trees and monitors regeneration of forest in the catchment areas of the water structures. The grazing committee prevents stray grazing, particularly in protected areas like regenerating forests. The water committee manages the created water resources and looks after distribution of water between users as decided by the gram sabha. However, all final decisions are the prerogative of the gram sabha, with the committees functioning as its implementing arms.

In terms of policy change at local levels, the case of SEWA shows the positive outcome that has come about in the nature of the agreement drawn up for operation and management of hand pumps. For instance, the word 'agreement' has replaced the word 'contract' and 'legal action' has been toned down. There has been other vocabulary changes to reflect a participatory partnership between the two organisations rather than a purely economic contract. SEWA's membership (along with other NGOs) on the Water Recharge Committee has also played a key role as discussed in chapter 5. For instance, SEWA asked some village women from Surendranagar to present to the committee their case for building roof rainwater harvesting structures. It was following this presentation that the committee advised the GWSSB to fund construction of roof rainwater harvesting structures in village Surel, Surendranagar, and elsewhere in the state. A similar process gave SEWA the state's first operation and management project to be handled by a people's organisation in Surendranagar again. SEWA also uses its membership on the committee to leverage government funds and
take up various government schemes through the GWSSB. Its presence on the committee has helped SEWA link up with water board's Gujarat Jalseva Training Institute for training women mechanics and other water-related programmes. Thus even the State, district and block level administrations need to improve their general management capacity, in terms of management information systems, financial systems, and performance monitoring and evaluation in order to improve overall effectiveness of the government administration as a whole. In areas where the presence of NGOs is markedly absent, capacity building to strengthen the ability of government water boards and institutions is required until alternative options develop independently.

In terms of taking up sustainable development of water resources at local levels through participation of women, Chapter 4 shows that basically the alternatives available for supplying water to any rural area are a) accessing ground water, b) accessing surface water (from tanks, ponds or nearby river), c) collecting rainwater or d) transporting water from a distance. The study also shows the preference of first three approaches by women, which are considered cheaper than the fourth one, as transporting water involves high capital and operation and management costs. The first two approaches, however, can assure sustainable water supply only if the water resources are recharged, when the ground water resources in the state have been depleted and badly degraded during past decades. So collecting rainwater has been one of the major focus of the women as seen in chapter 6 of the study.

Handpump scheme was also studied in the thesis in chapter 6 in the section on Sabarkantha district. Statistics on India indicates that these schemes account for 95% of the total number of publicly funded rural water supply schemes, and serve almost 395 million people of 75% of the rural population (Rehoejet. al. 1997). Interestingly, management responsibility for their operations and maintenance does not in fact require high level of technical skill or financial resources which is beyond the general ability of the women to provide on a collective basis as seen in the study. One of the crucial issue is of spare parts for handpumps but while these may not be commonly available in some parts, this is more a result of government domination of existing demand rather than any real monopoly of supply. Undoubtedly, since many of the existing handpump schemes are in poor operating condition or general disrepair, it is important to install a sense of ownership by the gram panchayat and in women who use them most often
for its proper management as seen in the success of Sabarkantha experience. Women are now more actively involved for better governance of handpump schemes by interacting with panchayats for reporting after repair of handpumps and for its maintenance and for training and entering into contract with the government in their own specific terms i.e. sensitive to women’s condition as seen in the study.

Also, there are hundreds of villages being served by the mini and small piped and regional water supply schemes in most parts of the country. Mini piped schemes rely on powered pumps and spot sources and as seen from the study of Surendranagar, the level of technical skill required does not exceed that which can be found locally. Operation is a simple procedure which involves turning the pump on and off at scheduled times. Repairs and preventive maintenance can be undertaken by locally trained women mechanics, who can repair broken taps, and leaks in either the holding tanks or the source pipe. While recurring costs associated with operations and maintenance are higher, they are still within the general affordability of collective community. Spare parts, are generally available, thus the key challenge is effecting transfer of ownership such that concurrent responsibility is transferred.

The physical systems involved in regional water supply schemes are more complex and cut across administrative boundaries and several externalities influence the performance of these water supply systems. Though regional water supply schemes need not be predominant, they may be needed in situations where local resources may not be adequate to meet the demand. “Devolving responsibility for the management of regional piped water supply schemes to block or district level local administrations is also practical and each regional water supply scheme should be managed independently with the participating villages sharing capital and operation and management costs. Unlike in the case of village based water supply schemes (where village water committees can fully take care of the operation and management of water supply infrastructure and services), in the case of regional water supply schemes, the nature of institutions required for managing rural water supplies will be very different. Easy loans may be given to the local panchayat to share the capital costs. The management of a regional water supply scheme should be decentralised to the village level with the village panchayat taking the operation and management responsibility. The panchayat could be given support in training for this purpose so that the routine management and repairs are carried out locally
through locally trained women and men. It is necessary to provide incentives and encouragement to local bodies to undertake local schemes, and even to bear the burden of a regional water supply scheme locally. Village panchayats willing to undertake local water based schemes can be given 10 percent of the total costs as grants or incentives. Villages able to manage their water scheme successfully for five years may also be given a larger sum as an incentive. Those able to manage their waters supply locally under a regional water supply scheme may also qualify for incentives. They should be given additional incentives when they show their willingness to undertake local water harvesting systems" (Gujarat Jaldisha-2010 2000).

For the purpose of implementing local strategies in rainwater harvesting as seen during the experiences of Banaskantha and Surendranagar, it is important to carefully select a local system of harvesting rain water keeping in mind the geohydrological conditions, topography, climate etc. NGOs as well as technical experts have presented several models for the different regions in the state and these needs to be identified and adopted. Research and development in this area needs to be promoted.

Similarly, water harvesting structures developed as part of watershed management approach, as seen in women's experience in Banaskantha and Sabarkantha, do not give immediate results in terms of water collection but they are very effective and also locally sustainable. Due to low water tables, erratic rainfall and geo-climatic conditions it may need 3 to 5 years or even more to give results in terms of ground water recharges. However, it is certain that water harvesting will give results, sooner or later. It is important therefore to begin such works in all the regions in the country without delay. In fact, it should be made mandatory to do so. "The state government and the village may share capital costs of water harvesting structures. If necessary, the government can provide easy loans for the purpose. The operation and management costs could be borne by the village. Since the maintenance and management is done locally, and the since the source of water is local, it should not be difficult to assure regular water supply. Collection of water charges therefore could be strict with punishments and penalties for default. Thus the promotion of local structures can put the economy of water on a sound footing with the poor getting subsidies on the one hand and management being efficient on the other" (Gujarat Jaldisha-2010, 2000). Women's role in watershed management
has also been positive and effective impacting on governance through participation in water committees for construction and maintenance so all the watershed structures built through women's active involvement.

Roofrain water harvesting experience of Banasknatha and Surendranagar shows that it appears to be a good option for providing drinking water security in areas where rainfall is reasonably high in certain months followed by dry spells for months together and where the houses also have sufficient roof area for catchments. Roof water harvesting systems can also supplement existing public water systems and reduce the stress on them. Rooftop water harvesting will be physically most feasible for the rural households, which face acute drinking water scarcity due to poor natural storage of water resulting from the steep terrain. However, for encouraging large-scale adoption of such techniques in rural areas, technical guidance and financial assistance is needed, as seen in the study. Women have impacted on governance through this scheme firstly by influencing the government to adopt and experiment with this scheme in the first place and eventually through innovation in designs etc. of the tanks, as seen in the study on Surendranagar and Banaskantha.

At another level, as a solution, it is being pointed out that the basin approach to water resource management discussed in Chapter 4, shows that it integrates various physical systems affecting water availability-groundwater surface water, base flows, catchments- etc- so as to estimate the effective supplies within the river basin and also the amount of water that can be sustainably harnessed. It incorporates socio-economic systems affecting the use of water so as to analyse various demands existing within the basin that need to be met. The approach also helps identify “problem areas” or water abundant/water scarce areas, where local interventions are needed, as well as the types of possible interventions possible (watershed treatment, water harnessing, groundwater recharging). Such an approach can optimise the number and size of large projects, and also other interventions for water resource management such as inter-seasonal and multi-annual storage of reservoirs, conjunctive management of surface and groundwater and evaporation control from reservoirs. The basin approach can thus help minimise the negative social and ecological consequences of water development (IRMA 2000). As a part of this approach the Watershed development and construction of plastic-lined ponds through active participation of women in Banaskantha has
immensely improved the quality of drinking water supply. Wherever women have reduced their time for collecting water, they have enhanced their incomes through various productive works. SEWA's network of craftswomen is well established and studies by SEWA\textsuperscript{21} have shown that this has led to even a threefold increase in incomes.

The research also shows the need for the state to adopt flexible framework for the management of water resources at the community level so that there is scope for combination of traditional with modern innovations in the interest of people at large. For instance, the use of plastic-line in construction of ponds in Banaskantha district to prevent salinity, roof rainwater harvesting tanks (in Banaskantha and Surendranagar districts), watershed management schemes (in Banaskantha and Sabarkantha) along with management of pipeline water supply and repair (in Surendranagar) and maintenance of handpumps (in Sabarkanta) by women show new possibilities for innovations that exist at the local levels. Community participation is achieved in the true sense where the women become an active partner making informed choices in the policy-making, planning, monitoring and evaluation stages. Participation of women creates a stake on their part and therefore a willingness to pay also increases. Field research has shown that only when the stakeholders are involved in decision-making, do they pay for operation and maintenance. Non-involvement of people in the design and execution of projects leads to sub-standard quality of materials used, poor workmanship and insufficient maintenance. This confirms an observation that the women will manage available water resources in such a manner that demands will be met and cost will be recovered. In Gujarat, construction of roof rainwater harvesting tanks and watershed are examples of this. The study shows that the small-scale water harvesting strategies are economically sustainable and tend to be environmentally and institutionally sustainable as well.

Field research also shows that large scale awareness programmes, primarily educational in nature, will motivate and prepare people for contribution at individual as well as collective levels. Awareness activities need to be linked to action programmes so that people can experience the impact of their contribution. As discussed in chapter 3, 4 and 5, information dissemination, increasing understanding, developing positive attitudes and developing skills among selected groups of people can be objectives of such programmes.

\textsuperscript{21} Information collected from district water co-ordinators of SEWA.
In summary, addressing the issue of gender requires a multi-pronged, integrated and holistic approach to water management, which is based on a realistic planning unit (e.g., a watershed or basin, handpump maintenance, operation of piped water supply schemes) and takes into consideration the needs of women. To create favourable conditions for gender equitable and sustainable water use and management and governance practices, gender equity concerns need to be integrated in policies, programmes, administrative, financial activities, and in organizational procedures. It also requires organizations to address the ways gender inequity has been manifested or is latent within their structures and procedures. At the regional and national levels more emphasis must lie on empowering local women and the local institutions of self governance, and on facilitating situations whereby all women water users have greater control over their lives and greater choices about how they will respond to challenges of water governance.