Introduction

‘Change’ is a rule of nature and that of life too. The process of change is continuously going on in any society. Several internal and external forces play their role in accelerating this process. The process of change becomes dynamic due to several planned efforts and factors responsible to bring changes. In ancient Indian rural society, the occupations were hierarchical according to one’s caste and the roles of men-women were defined accordingly in traditional socio-economic system. Besides, the process of social change was also low due to simple way of living among rural masses and social controls levied on them. As compared to modern society, the communication with outside world was much less among the rural people.

Changing scenario: After independence, several constitutional provisions were made to accelerate the rate of growth of social change in Indian society. Coupled with this, new policies and programmes were undertaken through five year plans for overall development of nation under democratic political system. In rural re-construction programme, a series of plans and schemes were developed to solve the prevailing problems of the nation. To enumerate few of such programmes. Agriculture and Animal husbandry, Co-operative movement, Technological development for agricultural improvement were developed for balanced development of the nation. Several constitutional provisions aiming social development provided for right to education to all categories of children irrespective of class, caste and community. Infrastructural facilities were developed at village level to provide free and compulsory education to all children below age of 14 years. Basic infrastructural amenities have been developed to extend the communication with external world as a result of implementation of various schemes targeted to extend the propagation and extension of education. Consequently, the communication media have been developed, network of post, telephone, telegram have also developed and the national and state highways and other link-roads have also been developed. The scope of information technology (IT) has been widened to respond to new demands of innovative technology. On the other hand, banking institutions have been developed to widen the availability of finance for rapidly growing industries. Under new economic policy adopted by the Government, new economic reforms have come up in form of liberalization, privatization and globalization. All these development have immensely affected the rural masses and they have also become more dynamic. The overall process of development and the new empowerment have affected the traditional socio-economic order of rural communities in both positive and negative way resulting to considerable changes into rural institutional life-relations and their way of living.

Water and Sanitation: Pure potable water and sanitation are two matters related to our life. Both potable drinking water and sanitation are closely related to health of people. Good health is considered to be a right of every citizen; and it has been accepted as human right that every citizen should have an access to pure drinking water by 2010. Efforts are made by the Government agencies, executive and implementing agencies, voluntary agencies and other community based organizations to see that each citizen has an access to pure drinking water. Even the basic principles of social work out- lines the need for development of the clients, his/her partnership in the helping process to solve his/her problem and to help him in a way so that he can lead a dignified life in a society. That is why, need for people’s partnership is always highlighted in the model for development. The active participation by people is always emphasized in both planning and implementation level in any development programme. Women’s participation is essential in overall development of rural
families. The matters related to drinking water and sanitation are closely associated with women, and as far as distribution of work in a family is concerned, the responsibility for bringing drinking water and maintaining sanitation are always considered as Women’s responsibilities in a household. This is an obvious fact, substantiated by a number of research studies. Naturally, women’s active participation is essential in planning and implementation of these two schemes. This is how women can be empowered to find solution for problem of drinking water and sanitation.

**Theoretical perspective:**

In “Water Development Report” published by UN in Mexico, it has been observed: “The wheels of development can go further, taking start from a bullock cart to Energy; but life cannot go further without water.” As much as 97 percent of total quantum of world water is in the oceans and it is salty. Out of remaining three percent, two percent is in form of snow on the top peaks of North and South poles. Now, out of remaining last one percent, half of it flows in the river and only ½ percent of total world water remains for our use. It is underground and being constantly used and consumed by human beings, animals, birds, industries, agriculture, trees etc. Besides, this water under ground; there is some portion of water in air and space in form of vapors, fog, dew and clouds. In the cosmos, 146 crores of cubic kmnts of water is available; but 93 percent of it is in oceans and seas, 4 percent underground, 2 percent on south/north poles as well as on glaciers in form of snow and only ½ percent in rivers, ponds etc. in form of pure water. 80 percent of countries in the world to-day face crisis of water. 40 percent of people in the world are deprived of pure potable drinking water. In the world of today, every year, 20 lakhs of people die for want of drinking water or due to water-borne diseases”.

**Earlier Initiatives:** From view point of quality of water, it is estimated that 70 percent of available water is already polluted. Because of this, more than 100 crores of people in the world are compelled to drink polluted water. According to an estimate, more than 3900 children die unnatural death every day due to the use of polluted water. Every year, 40 lakh children die due to the disease like diarrhoea borne from unclean water. The researches tell us that every eighth second, one child becomes prey of water borne diseases. After the famines of 1897-1898 and that of 1899-1900, first irrigation commission was constituted. Similarly, after the well known famine of 1943 in Bengal, the water way, irrigation and boating communication commission was constituted which, in course of time, was re-termed as central water and energy commission. Today it is re-named as Central Water Board. Ever since first five year plan, i.e. since 1951, more emphasis was laid in state budgets on providing for drinking water. In the year 1954, National Drinking Water and Sanitation programme was initiated. In 1977, in the Joint National Water Conference, the subjects of drinking water and sanitation were separated. In 1986, National Drinking Water Mission was established to provide adequate and safe drinking water to rural masses. The most important mile stones in efforts to provide rural water distribution and sanitation are: efforts made in Post independence period; 1947 to 1969; the shift from technology to policy: 1969 to 1989; proclamation of national water policy: 1987; period of re-organization: 1989 to 1999 and a period of re-collection (2000 and after). Several schemes and programmes were taken up during all these phases.

**People’s Participation:** In context of India in particular, if we examine the documents between various State Governments and Government of India, frequent use of the word “Partnership” is deployed as the basis of community development activities. In most of the cases, the rural-biased organizations made efforts to place the
programmes, such as “Shramdan” or “Gramdan” to materialise people’s participation in order to make people self-reliant. The approach to village development was to make people voluntarily participate in activities like “Shramdan”. Likewise, under “Gramdan” it was envisaged to successfully materialise the concept of village-independence. It was further emphasized that all the programme of village development and village administration should be undertaken by “Gramsabha” (a village body). That, the village rulers should be democratically elected and that, it would be a responsibility of “Gramsabha” to look after widows and disabled of the village. Gandhiji wished and also insisted that a village should be self reliant entity’ and that all village leaders should shoulder the responsibility of poverty alleviation in villages and should not expect for an outside help. Besides the Panchayati Raj Institution (PRI’s) should provide employment to people and that through these programmes, only, all the needs and requirements of people should be fulfilled. However, in these programmes too, the PRI’s could not solicit people’s participation and consequently, the dream of attaining village Independence through people’s participation could not be materialized.

People’s participation assumes special significance in various procedures of working with people. In professional social work approach, the problems are studied, diagnosed and solved through participation of an individual client or a group or beneficiaries of larger community. No social work can succeed in absence of participation by an individual, a group or a community. How can participation be ensured? Of course, through Motivation and Action. No action of participation is possible without proper motivation. Active participation is essential for deciding the objectives and for realization of these objectives. Participation includes the processes of deciding goals, deciding a course of action and deciding method of work. If in the initial stage of deciding the goals, people are involved to participate, later on they will be motivated to become partners in making decisions and after getting involved in decision making process, they will surely come forward to participate in achieving those goals. In short, participation at all three stages and phases can be defined as true partnership.

In the process of ensuring people’s participation here are five approaches; which are also five steps for people’s participation. They are:

1. Participation in development.
2. Participation-oriented development.
4. Traditional approach.
5. Participatory approach.

**Steps for People’s Participation:**

1. Village level meeting/Gramsabha/Community’s meeting:
   After a couple of meetings of Gramsabha convened by a village Panchayats, the scheme should be explained in details. Proper information has to be provided about process of participation. Women should be involved to get both formal and informal leaders involved.

2. Participatory micro-level rural appraisal:
   Proper information should be provided as to, what could be the contribution by each individual in a village. They should be properly appraised about their capacity and ability. Besides, awareness should be generated about Manpower, Money and Material. The basic reasons should be discussed, why certain specific programme/activities are included.

3. Awareness building campaign:
To organise and conduct village level meetings, to organise Self-Help Groups (SHG’s), to organise consumer’s groups; to train (or get them trained through appropriate sources) members of different groups and make them fully aware about programmes/processes.

4. Organizing Training/Orientation Camps:
Training should be specifically focused on action/re-action. Besides, training should also focus on specific projects. It can be useful and helpful if exposure visits are planned at the places where successful implementation of project is done.

5. The management to be community based such as Village Development Society.

6. Various Communities to be constituted such as committees for water-harvesting, forest preservation, women and youth. The local organisation should be got registered and proper rules, regulations and procedures be prescribed.

7. All the castes/classes should be represented in membership.

8. Both male and female members be involved and included.

9. Sanction from Gramsabha, for the project, is obtained.

10. Separate proposals should be prepared for short-term and long-term programmes.

11. Periodical evaluation of the project should be ensured.

12. The funding agency should invariably be involved in the process of evaluation. 

13. Different activities should be entrusted to different local communities. The activity should be conducted by the community only.

14. On completion of the project, the achievements and experiences should be presented before Gramsabha and NGO’s. Their suggestions should be kept in mind while next planning, with appropriate modification, is prepared.

The student-researcher has selected the topic for present study; “Women’s participation in drinking water and sanitation programme managed by WASMO.” People’s participation is an essential tool for any development-oriented programme. Out of the approaches for people’s participation enlisted above; the researcher has presently concentrated on joint participatory approach and participatory approach. Beside, among steps for people’s participation, steps for implementation of programme for people managed drinking water and sanitation programme have been used. The empowerment becomes apparent with active participation. It is most important unit for concept, approach and process of empowerment which ensures success of development programmes. The student researcher, therefore, has discussed about concept of empowerment and empowerment of women and community managed drinking water and sanitation system. The participation and empowerment are two sides of a coin for planning and development. People’s participation is a tool which generates empowerment. It is therefore necessary to understand process of empowerment.

World Bank defines “Empowerment” as “a process for enhancing capabilities for their controls, efforts and participation, among organisations responsible for affecting lives of weaker sections of society” (Anju Malhotra; 2002). According to Batliwala (1994), empowerment is both a process and a goal. He mentioned that “the objective of women’s empowerment is to challenge the patriarchic principle (domination of male and submission by women); and to bring about a change in both the structure and also organisations, which nurture and strengthen the men-women inequality and social inequality, such as family, cast, class, religion, educational processes and media, health system and management, law, civil code of conduct, political processes, models of unequal development, government organisations etc. Besides, empowerment is meant to empower women to enhance their access to physical and
information/communication resources and to get control over them.” Empowerment is
a process through which women can get better control over physical and intellectual
resources, which in turn, brings them self-sufficiency and assistance. They can
reaffirm their independent rights and can challenge against the sex-based
discrimination against women; and can ascertain about their autonomy to take
decisions and make choices. The empowerment has also individualized significance
which defines the capacity and capability for control on one’s own relations and
mutual give and take with others. It links a person with social system. Empowerment
is such a process which makes people, organisations and communities capable to
achieve benefits in their lives.

In professional social work, the client is empowered through use of various methods,
techniques of social work. For finding solution to any of the problems faced by the
client, his problem is studied in toto; and there after the problem is diagnosed. After
diagnosing, efforts are made to find out whether there is any need for external/internal
resources in the process of treatment, and thereafter efforts are made to help the client
to solve his problem. After the treatment, an evaluation is carried out regarding the
process (and product) of treatment provided. All these are done with a view to see that
the client becomes empowered. In fact, this is what is attended with proper emphasis.

**Review of Research Literature:**
Keeping in view the topic undertaken for a study; the researcher has tried to place the
earlier studies on drinking water and sanitation, into two major parts viz. empirical
studies and impressionistic studies.

The problem of drinking water and that of sanitation covers all castes, classes and
communities. A number of sociologist, psychologists, professional social workers and
social anthropologists have expressed their views and derived and developed certain
principles on matters concerning individuals, groups and communities. The problems
of drinking water and sanitation are closely associated with social systems and
cultural system like a web-net. It is a problem of social nature, concerning public
health. A number of empirical studies have been undertaken from time to time on
these subjects by various social scientists, sociologists, professional social workers,
researchers and experts on public health in great details. Besides, the journalists,
social activists and other scholars also try to highlight these issues and try to bring
awareness among people at large through printed and electronic media, in news
papers, pamphlets, journal and TV/Radio etc. through articles and discussions.

**Impact Assessment of “Nirmal Gram Puraskar” UNICEF-2008”**
The study comprises of totally 162 Gram Panchayats which have attained “Nirmal
Gram Puraskar” from totally nine States (Maharashtra, Tamilnadu and West Bengal-
winners of this puraskar during 2004-2005 and Andhra Pradesh, Chhattisgadh,
Maharashtra, Tamilnadu, Uttar Pradesh and West Bengal – winners during 2005-
2006). The main objective of the study was to evaluate the impact of interventions in
PRI’s which have attained Nirmal Gram Puraskar, to find out the level of participation
of local institutions, compliance”; and impact on sexual life and social structure.

In 81 percent of Gram Panchayats covered under this study, the families do have
facility for latrine (Toilet). The toilet facility exists in 73 percent of S.C./S.T. families
and in 81 percent in other families. In as many as 112 Gram Panchayats, members of
20 percent of families use open land for natural call i.e. they defecate on open land.
The members of 19% of S.C./S.T. families make use of open land for defecations; and
the corresponding number is 15% in case of other classes. 66% women and 62% men
use toilet facility. 96% of schools do have toilet facility. In 54 per cent of villages, the
liquid waste is disposed of in open. 89 percent of villages which attained “Nirmal
Gram Puraskar” have passed a resolution in their GPs for maintenance of cleanliness in their respective villages. People have become conscious about personal hygiene. More than half of the members of S.C. and S.T. communities had participated in the process of social mobilization. Similarly, 59% women and 57% children and 55% members also participated in process of social mobilization. In 39% of village Panchayats, less than 20% of respondents indicate that they have become partners in the process of taking decision. In 16% of Gram Panchayats, 21% to 40% respondents have become partners in the process of taking decisions. Whereas in 34% village Panchayats, 41% to 60% had participated in the process of taking decision. In only 11 Gram Panchayats more than 60 percent of people participated in the process of decision making.


In the present study, along with other things, efforts are also made to get thorough understanding of status of water, sanitation, solid waste management, system adopted for harvesting rain water and status of health in Doddaballapur area in the State of Karnataka. This study is undertaken in co-operation with Arkawati, Kumudwadi river Re-awareness samiti. Mahila Abhivridhi; Swachchhata sangh; Maitree, Vagadala; Parishra Pragna Kendra and groups responsible for collecting and harvesting rain water in municipal area of Doddaballapur.

The objective of the study included to verify water and sanitation system, impact on health of people generated through lack of proper arrangements for collection of water, lack of environmental sanitation, lack of proper system for disposal of used water as also to bring awareness among people and community about health hazards and also to make an evaluation about acceptance of these ideas and lastly to verify the waste generated by household and small industrial units and system of its disposal.

In the quantitative aspect of this study, attempt is made to examine various aspects of health, level of sanitation and causes of diseases and epidemics, and in qualitative aspect of the study, the opinion from concerned people is solicited. In order to coordinate and arrange the information collected, detailed information of wards, secondary information about status of health from records, reports and other documents of municipal corporation are also collected. More significant information about the town is collected from other local bodies. The preliminary information of the present study is collected through Interview-schedule from home to home visits.

The interview schedule contains 38 questions and sub-questions.

The population of Doddaballapur town is 95,000; distributed within 18,064 households’ habitation in 31 wards. 17.50 percent household’s habitat in slum and shanty towns and the rest 82.50 percent households are in non-slum areas. For the purpose of this study, its 10 per cent (1800) households are selected from 31 wards deploying random sampling method. In order to maintain proper representation of slum areas, 18.5 per cent (333) households have been selected from slum areas and the rest of households (1467) are from areas other than slums; which comprise 81.50 percent of total households.

It was observed that due to shortage of adequate distribution of water, in some cases, water is also supplied by private distributors. More water is used by those households having toilet facility. This is obvious; because flush system in toilet is water consuming system. The sources of water include Bore-well, Hand pumps and Water wells. 50 percent of these water-sources are not having potable water because the water contains more percentage of fluoride. Often the water in a pair of utensil costs Rs. 2-00. The waste water is disposed of in pubic drainage. Almost 76 percent of
people have toilets in their households or is accessible in vicinity. They make use of toilets. But those not is having this facility have to defecate in open. As compared to mainstream population, the people of schedule castes and schedule Tribes have less number of latrines in or around their households. The waste is disposed of in open land. At some places, there have been dust bins provided by municipal corporation where the waste from surrounding areas is collected. In a few cases, waste is collected directly from the household. As regards community health 56 per cent of households were found having some diseases or other and they were found spending Rs. 100/- to Rs. 500/- p.m. for medical treatment. For lack of adequate water supply system as also due to unnecessary waste in use of water in some cases, shortage of water is a major problem faced by majority of people under study. The water in underground level has been deeper and often it is un-potable. Still, people make its use because of obvious shortage in supply. As regards spread of diseases and epidemics, the main reasons could be attributed to lack of sanitation due to open drainage, non-functional public latrines due to lack of proper repairs and maintenance and disposal of household waste in open drainage etc. The prime need is sanitation management.

86 talukas out of 172 talukas (i.e. 50 percent of talukas) from 28 districts of Karnataka are identified; and 2 village Panchayats from each talukas have been selected, making a total of 172 village Panchayats. Further, on an average, 100 households have been surveyed from each Village Panchayat. Thus, 17,200 households have been selected as sample for the study. This selection has been made through systematic random sampling method. Over and above these households, interactions have been made with Village Panchayat officials and some adults and elderly persons of the village. A method of questionnaire is deployed to collect information from households, village Panchayats and officials.

For verifying the quality of water, the test have been made to water collected from several sources- as many as 10 to 40 sources and all of them were included for tests. For collection of the information for ASHWAS study 42 teams (with one team leader and 4 investigators) were deployed along with 15 voluntary organisations and 300 field workers. This huge task of field work was completed within 40 days by these 42 teams of devoted field staff. The study aimed at finding out status of conditions with regard to drinking water and sanitation in this area and make people aware and play a better role in policy making process.

It was revealed during this study that almost 78 percent respondents could get drinking water at their door-step or within in vicinity round the year. However, in case of 60 percent of water sources, it was found that it contained large quantity of fluoride in the water. It was also revealed that 72 percent of households did not have toilet facilities and consequently they defecate in open. It was found that 50 percent of people use soap to clean their hands after defecation. Further it was found that 50% of ICDS Anganwadies did not have toilet facility. 70 percent of respondents said that the problems regarding water are addressed by concerned village Panchayat within a period of 3 to 4 days. For majority of citizens, what matters is propriety of water, use of water and quality of water. It could be said on the basis of this study that the status of water and sanitation is not satisfactory. Besides, the problems of rural sanitation and disposal of used water need to be addressed on priority basis. Along with this, it is also necessary to bring awareness among people in the areas of personal and community hygiene. The other aspect to be addressed on priority basis is equitable distribution of water and repairing and maintenance of water sources.
The impact of Women’s productive use of water and time on household economy and gender relation in Banaskantha district of Gujarat, India-2004.

The main aim of distribution household water should be to enhance the public health system and to make development with welfare. Besides, water facility near the household has definite impact on economic development. This programme is mainly for famine/draught prone areas, where especially women have to spend more time to fetch water from distant sources due to shortage of water at nearby place. In short, as on to-day the women had a limited role to play for fruitful utilization of water and time in planning and maintenance of domestic distribution of water. In present study, an effort is made to find out implications of work related to men and women, relationship of women in proper utilisation of water, time available to attend family and household matters, impact on men-women relationship, programme planning and repairing and maintenance.

The present study covers 234 selected villages, in which 20 experimental villages where women entrepreneurs undertaking various activities and 5 controlled villages are also selected. Of these, 19 such villages where in women entrepreneurs have been engaged have been classified into 4 different categories viz. those villages, where conditions of water are satisfactory. Those villages, which are doing well and those villages, which do not perform well. Besides, keeping in focus the women entrepreneurs, some case studies are conducted and some leaders of women’s groups (SHG’s) are also interviewed.

Out of 25 villages selected for the study, 7 women members each are selected under selective random sampling method based on participatory technique from the groups (SHG’s) of 10 to 15 members, from 16 villages. Thus, 112 (16X7) female members are selected for the study. Our of 25 villages selected keeping in view different kinds of entrepreneurship activities, case studies have been conducted on 11 such villages. In preliminary research, a comparative case study was originally envisaged in respect of 5 types of entrepreneurship activities viz. Handicrafts, milk production, salt production, collection of gum and rearing of trees. The findings of this study are as below:

1. In both experimental as well as controlled villages, women work almost for 15 to 16 hours a day, and they allocate almost 3 hours a day in fetching water. The responsibility to bring water for the family rests exclusively on women.
2. Due to weak water distribution system, or due to lack of repairing/maintenance, each woman during summer season, loses her income (as much as Rs. 50/-per month.
3. In experimental villages, as compared to controlled ones, more involvement of women could be seen in management of community resources.
4. The drinking water is available from stand posts, water wells, ponds or sources available in other villages.
5. In both types of villages, (experimental as well as controlled ones) women utilize their available time on works related to supplementary income. The decisions are taken by women themselves in experimental villages.
6. In experimental villages. Women have control on the amount of income earned from the activities started by women. In controlled villages, however, no such activities have been initiated.
7. In both of these types of villages, women spend money to buy water. In experimental type of villages, women get assistance under health and educational programmes and therefore, they spend on maintenance of health. Such expenditure level is more in controlled villages.
8. During last ten years, there has been considerable rise in men-women equality and independence of women in experimental villages. Besides, in both kinds of villages, there is a rise in number of children attending schools, savings among women, agricultural related matters, buying of animals, transfer of assets in name of women and participation by women. However the progress in controlled villages is not to the level as in experimental villages.

9. Even at community level, women’s participation is not at par with experimental villages in controlled area; but nevertheless, there has been positive change in conditions of women both in families and in village communities, in both kinds of villages.

There are some villages where some interventions are made by the organisations (voluntary organizations) of women in water management and maintenance but in other villages, it is almost absent. Likewise, the kind of change such as in men-women relationships, in number of income up gradation programmes, in more involvement of women in decisions concerning family matters, is more apparent in those villages where there is some external interventions than in villages where such intervention was absent.

**Study of willingness to pay for improved water supply, sanitary latrines and sewerage system for rural households-Punjab, India**

In this study, 151 families from 6 villages from 6 districts have been covered. Of these 6 villages, in 2 villages, there is new water distribution system based on underground water resource, in 2 villages there is improved water distribution system based on ground level water recourse and there are another 2 villages where there is improved water distribution system based on underground water resource. 24 families have been indentified from each village based on stratified sampling method. Of these 24 families, 6 families are from general categories but BPL, 6 families are from backward class categories but APL and remaining 6 families are from backward and schedule caste but APL families. For collection of data, an interview Schedule is framed containing both close ended and open ended questions. Various techniques have been deployed to collect the data. Separate information is collected in respect of those families who are capable to contribute and those who are not.

Very poor response was found for contributing some amount towards water and sanitation facilities and repairing and maintenance.

Most of the people get water from hand pumps and they are not fully satisfied with the system. For domestic water connection, they have shown willingness to contribute an amount Rs. 250/- to Rs. 1300/- whereas for repairs and maintenance they have shown willingness to contribute Rs. 20/- to Rs. 40/- pm. For domestic toilet facility, they have shown willingness to contribute Rs. 600/- to Rs. 1300/- and for the repairs and regular maintenance of the toilet they have shown willingness to contribute Rs. 15/- to Rs. 75/- p.m. for drainage/sewer line, they have shown willingness to contribute Rs. 200/- to Rs. 1000/- and for its repairs and regular maintenance, they have shown willingness to contribute Rs. 10/- to Rs. 45/-. Again, the response from people regarding contributing towards provision of water and sanitation infrastructure and their regular maintenance/repairs is very poor. More intensive and extensive efforts are necessary to create people/s awareness on water and sanitation facilities.

**Improvement in women’s quality of life through decentralized water and sanitation programme run by WASMO – Sarah Glueck- 2009.**

In this study, women have been selected from 21 villages from Surendranagar and Kutch district and tribal areas. The selected women were in the age-bracket of 18-80 years. 58% of them were illiterate and 42% literate. According to castes/classes; 15%
were from schedule tribes, 31% were from other backward classes (OBC) and 4% were from other upper castes families. 90% of women were from Hindu community and 10% were from Muslim community. Besides, this study covers 169 children (91 Boys and 78 girls).

Findings:
1. Before implementation of the programme, there were only 2% domestic water connections in the villages under study. After the implementation, it reached the height of 83 percent.
2. Before implementation by WASMO, only 2% respondents could get regular supply of water in the villages under study. After implementation, now 67% get regular water supply.
3. Before implementation by WASMO in the villages under study, 75% of respondents did not have either domestic or public toilet facility. After implementation, 52% of respondents claim to have toilet facility of their own.
4. Among 164 children under study, 55% girls and 33% boys had to go to fetch water before WASMO programme was implemented. After its implementation now, the corresponding figures have come down to 23% and 9% respectively.
5. 62% of the total children under study now attend schools regularly and 19% also attend schools, though irregularly. Of course, remaining 19% do not attend at all.
6. 58% female under study are illiterate.
7. 63% of women under study take consent from the husband if they go outside their house and 75% of women take consent, if they need to go outside the village.
8. 83% of women, after having domestic water connection can find time to attend other household duties as well as an income up gradation activities.
9. Before implementation by WASMO, 44 percent of women were prey of water-borne diseases. After implementation, this figure has substantially come down to only 4 percent.

As regards quality of life of women, before implementation of WASMO, 53% at women reported weaker quality of life, 44 percent reported good quality of life. After implementation of WASMO, 7% have reported well, 2% reported average, 48% reported very good and 17% have reported medium quality of life. Because of implementation of WASMO programme, there have been considerable improvements in distribution of drinking water, regularity in supply of water, toilet facility, and regularity of school attendance among children, literacy among women, improvement in income level and improvement in quality of life. Besides, there is decrease in water borne diseases. This is very much evident from findings of this study.

Innovative participatory drinking water delivery approach in rural areas of Gujarat
In this study, various research techniques such as interviews, meeting with rural people, individual interviews, group discussions according to the target studies; under taken by external bodies and framing programmes by WASMO representatives were used for carrying out internal evaluation of WASMO undertaken drinking water and sanitation programme in remote villages of Ghogha taluka of Bhavnagar district. The study covers 82 villages of Ghogha taluka of Bhavnagar District. The evaluation was done after one and half year of completion of Ghogha Drinking water and sanitation programme.
68% of the villages under study get water for 200 to 300 days in a year. 89% of village people categorically expressed their satisfaction about the programme. Toilet units in 89% of villages were found functioning satisfactorily. The level of water has come up in 67% of villages due to water management programmes; and it could also be seen that the level of TDS (Total Dissolved Solid) has come down in many of the villages.

The researcher student has also reviewed many other studies related to water and sanitation.

Scope of the Study and Its Utility:
The problem of water and sanitation touches all sections of the society. This problem is specifically and directly associated with lives of Women. Women, besides fetching water for the family, also look after all day-to-day routine family duties. Of course, in some areas, and in some communities, men also extend their helping hands in fetching water for the family; but for fetching water especially for domestic use, women are much at work as compared to men. Like in problem of water, in the problem of sanitation too, women’s point of view is much more important in planning for programmes for sanitation. Usually women look after their young kids, and give them informal toilet training at a very early stage of their lives.

Article 75 of constitution of India provides for constituting a water committee under village Panchayats for making village people independent and self-reliant in terms of drinking water and sanitation. It is also provided for 33 percent reservation for female members in such water committees; to facilitate direct participation by women in the areas of drinking water and sanitation. Efforts are made by Government, Non-Government Organizations, Voluntary bodies, Local self-Government bodies, Village Panchayats etc. to ensure active participation by women in planning, implementation, repairing and maintenance drinking water and sanitation project.

Women play very significant roles as users of water and sanitation technology; as users of water and sanitation facilities, as leaders of water and sanitation system; as managers of water and sanitation facilities; as change agents in water and sanitation project both at family and community level. In the present study, the impact on various aspects of life of women due to availability of water and sanitation facilities is proposed to be examined; and to attain knowledge on currents of changes, challenges and new problems.

A number of social problems take place due to social adjustment and mal-adjustments that arise in the process of adjustment in new situations that is created in rural society due to impact on traditional socio-economic and infrastructure system and their active processes in affected rural committees. The significance of professional social work lies in trying to find out the kind of approach necessary for prevention and cure of problems that arise in the society. Social work studies the outcome of processes of change that occur in family life, social, economic, educational, health-related and political units of rural communities due to implementation of drinking water and sanitation project. The use of social work knowledge as a field of social work will expand by knowing how various techniques of social work can be utilized for taking various active steps for understanding of problems and challenges and solving problems that accrue in rural societies by both positive and negative conditions that are created due to the drinking water and sanitation project.

Besides, the study will be useful in knowing impact on socio-economic and health related aspects and on public life of people due to implementation of drinking water and sanitation project. Besides, it will also be useful in knowing awareness of people
about their health, vis-à-vis any change, if occurred in their attitude and in their traditional health related beliefs.

General studies regarding drinking water and sanitation have been undertaken from sociological, economic or environmental point of view. We have discussed some of these studies in the present report. However, not a single study had been undertaken from social work point of view or from the perspective of women’s participation. In the earlier studies, the water and/or sanitation status in a particular society/community has been evaluated, but the present study is a kind of comparative study about before and after implementation of drinking water and sanitation project, and there is specific focus on empowerment of women, as consequent of their participation in drinking water and sanitation project; and its impact on their lives.

In short, the study will highlight the impact of drinking water and sanitation project on lives of people and also changes it brought in status of drinking water and sanitation. Side by side, the study will also indicate what kind of creative measures could be taken for solving of drinking water and sanitation problems. Besides, this study will also be useful for explaining and clarifying the role of government and that of voluntary organisations as agents for change for developing process of development in the areas of drinking water and sanitation in rural society and also creating institutional infrastructure facilities in rural communities.

**Nature and Scope of the Study:**

There are many issues related to drinking water which are common to India, Gujarat and Surendranagar district also. The problem of drinking water and that of sanitation is omnipresent. Efforts at International level, National level, State level and Local level have been made to prevent the problem or to bring improvement in to it by government, voluntary institutions and voluntarily by people.

The student researcher has, through the study made an attempt to particularly understand the issue from social work perspective especially because this programme was in the villages affected by earthquake in early 2001 and it was then intended to find out the efforts to make women empowered through participation in the programme of providing drinking water and facilitating sanitation in those villages. However, considering the time and conditions constrains, the student researcher has limited his study on drinking water and sanitation project, to eight (8) villages of four (4) talukas out of 137 villages of 8 talukas of Surendranagar district where the project was implemented. Thus, the study is made only in 8 villages of 4 talukas of Surendranagar district where people-managed drinking water and sanitation project is implemented.

The main respondents in the study are women from rural areas. Besides, the student researcher has also tried to involve the village people, village Panchayats, the members of water committees, local bodies, organizations which are participating in implementation of the project and WASMO representatives. Professional social work is a helping profession and therefore, the techniques involving purposeful intervention could be very much useful. There was enough opportunity for a student researcher which could be support system to bring about change in the status of drinking water and sanitation. Therefore, the research was done holistically with rural women, the villagers, the gram Panchayats, the members of the water committees, the school teachers, the implementation support agencies, (ISA) and WASMO representatives.

**Scope of the Study/Universe of Study:**

The agencies which work for providing drinking water and sanitation are Ministry of Drinking water and Sanitation at National level, Rajiv Gandhi Drinking Water Mission. Gujarat State Water Supply and Drainage Department at State level and
water supply, and sanitation management Board, Coordinating, Monitoring and Supporting Unit (CMSU) Surendranagar and District Rural Development Agency (DRDA) etc. work towards sanitation. In the State of Gujarat the people managed drinking water and sanitation project has been implemented in the districts of Kutch, Jamnagar and Surendranagar. The district of Surendranagar being drought-prone district, the researcher has made it the scope for the present study. As regards villages to be included in the study for people managed drinking water and sanitation project, he has discussed and held consultation with his guide and other experts and keeping in view the limitation of time and resources, the universe of the study is restricted to the villages included in drinking water and sanitation project in the district of Surendranagar.

**Research Methodology:**

The experts of research science categories the research techniques into three divisions viz. one, Historical Research, two; Descriptive/Exploratory Research; and three Experimental Research (Uchat D.A. 2000-11). The present study is Descriptive/Exploratory type of Research.

The concern of social work research is to see that the social worker uses that knowledge, techniques and skills of social work in practice and can find the solution of the problem through appropriate interventions. Mainly there are two types of research in social work – one, Operational Social Work Research and two, Basic Social Work Research. Mainly descriptive information, statistical information, planning information and administrative information are the fields of operational social work research; whereas, history of social work, Philosophy of social work for historical and sociological knowledge, fields of measurement of principles and fields of practice of principles are fields of Basic Social work Research. (Erect Green Wood-1957, 316).

The present research belongs to the operational research social work research type; wherein the research problem is attempted to be examined in the light of descriptive, statistical information.

**Objectives of the study:**

1. To collect individualized, general and family related information of villagers under study.
2. To study the process of drinking water and sanitation project, work undertaken for the programme, and also work done by implementation assistance agency.
3. To study the conditions about drinking water and sanitation in the field areas, before and after implementation of the project.
4. To study participation of women in planning and implementation of drinking water and sanitation project as well in solving the problems that arose during implementation of the project.
5. To study the quality of work, transparency, people’s contribution (Lok Falo), process of implementation of the project and problems that arose during implementation and role of women in their solution.
6. To study the impact of implementation of drinking water and sanitation project on women’s family related social economic, health-related and their public life aspects.
7. To know the views of village people, members of water committee, implementing agencies and representative of WASMO to make the project effective and sustainable and to know the social work intervention involved in it.
Hypothesis:
1. The water being main problem in the area under study, the project of drinking water and sanitation would have been implemented very easily.
2. The implementation of project of drinking water and sanitation could have resulted in increase of supply of water and would have also resulted in lessening of difficulties of women in fetching water.
3. The people of the villages would have become more aware about sanitation due to implementation of project of drinking water and sanitation.
4. In implementing of drinking water and sanitation project, there would have been a monitoring system for quality of work and for transparency of project, and that could have earned people’s trust in this project.
5. The implementation of project of drinking water and sanitation could have mustered better participation from women.
6. The women, because of their participation in the project of drinking water and sanitation, would have become empowered in the process of making decision.
7. The project of drinking water and sanitation, must have positively affected the families, the economic, health and public life of women.

Selection of Sample for Collecting Quantitative Information through Survey:
In order to maintain the representation of selected area in the sample, the multi-stage sampling and planned sampling selection methods under probability sampling technique have been deployed. The project of people-managed drinking water and sanitation has been implemented in three districts of Gujarat State, viz. Kutch, Jamnagar and Surendranagar. At first stage, the district of Surendranagar has been selected. At second stage, talukas which are at North, South, East and West form the district Head Quarter have been identified. Actually the project is implemented in 8 out of 10 talukas of the district; and for purpose of this study, 4 talukas have been identified to give representation to all areas of the district. In the third stage, 2 villages each from all 4 selected talukas have been identified. One of these two villages would be within 20 kmt. Radius of talukas HQ and another would be at more than 20 kmts radius. Such two villages have been selected through random sampling method. In the fourth stage also random sampling method has been used to select families in the selected villages. One from each twenty families in the village has been selected and the woman (wife of Head of family or a women taking care of the family) members have been named as respondents. In order to give representation to each section of the society, the women members from General, SEBC and SC category have been placed at 5% from each category.
Details of the selected sample families – Village-Wise

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Taluka and no. of villages in the project</th>
<th>Name of selected villages</th>
<th>No. of Families</th>
<th>No. of selected women respondents</th>
<th>Category wise 5% selected respondents</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>General</td>
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<tr>
<td>1</td>
<td>Sayla Villages -25</td>
<td>Noli Dhedhuki</td>
<td>466</td>
<td>23</td>
<td>1</td>
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<td></td>
<td></td>
<td>189</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Vadhwan Villages -15</td>
<td>Bala Kholdiyad</td>
<td>388</td>
<td>19</td>
<td>8</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>421</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Halvad Villages – 28</td>
<td>Mangadh Juna Amrapur</td>
<td>280</td>
<td>14</td>
<td>9</td>
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<tr>
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<td></td>
<td></td>
<td>195</td>
<td>10</td>
<td>-</td>
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<tr>
<td>4</td>
<td>Dasada Villages – 15</td>
<td>Kharaghoda Degam</td>
<td>2047</td>
<td>102</td>
<td>19</td>
</tr>
<tr>
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<td>150</td>
</tr>
</tbody>
</table>

**Sources of collection of information:**
For the study, the preliminary information is based on field data and secondary information is based on documentary sources. Keeping in view the objectives of the study, the information is collected both by quantitative and qualitative source.

**Collection of quantities information:**
After selection of samples, the quantitative information is collected through survey. In order to collect quantitative information directly, the rural women have been personally contacted, interviewed at their residence and their cooperation in collection of information was solicited by convincing them about that importance of this study.

**Collection of qualitative information:**
Discussion and deliberation are especially important for clarification of research study and for precision. Research study is helped by constant discussion and deliberation ever since selection of topic till the end of the research study. Such discussion/deliberation can help in correction of errors and addition of some innovative material. For collection of qualitative information, we have largely depended on Focus Group Discussion and the information is also collected from Key Informants. Here are some details:

**Focus Group Discussion:**
In order to collect the qualitative information in relation to the subject matter under study, it was necessary for the researcher to know about work done under drinking water and sanitation project and their over all impacts. For the purpose, in four out of selected eight villages, the researcher has organized Focus Group Discussion with persons of the villages, other than identified respondents. However, in such Focus Group Discussions, the attendance remained between 6 to 12 village persons- mainly males.

**Key Informants:**
The key informants consisted form members of the water committees in respective village Panchayats (from each village two members of water committees and two
members of Gram Panchayats), one teacher from each village, one representative of implementing agency at taluka level and also the member representatives of WASMO. The qualitative information is collected from them through formal and informal discussion and through Interview Guide. The information has been collected totally from 32 members of village Panchayats/or committee members, 8 teachers, 8 representatives of implementing agencies. Most of the informants were male. Of course, main respondents and Focus Group Participants are not included in the Key Informants.

Information collected through observation:
The researcher has also tried to collect information through personal observation and included it in the research report. Such information was collected with a view to understand the problems of drinking water and that of sanitation in depth, and in order to get such information with first hand source, he has participated in Gram Sabha meetings held at village level, water committee meetings held at Panchayat level, Ralleys, Padyatra etc. This was unique experience of getting information in participatory manner.

Collection of secondary information:
The secondary information has been collected from several documentary sources, for which the famous Gujarat Vidyapith Library has been of great help. The reports of various organizations, latest and innovative information on the subject under study, relevant books, articles, periodicals, journals, newspapers, encyclopedia etc. were available in the Library. Besides, the technological advanced method like Internet has also been used to collect relevant information. The subject matter could be clarified with a number of research studies, surveys and other reports. For the present study, Library source was found gratefully useful from the beginning of preliminary preparations till end of the study.

Research tools and techniques for collection of information:
Mainly personal interviews and observation were important tools for collection of information. The experience confirmed that these tools were very effective for getting perfect information. The tools proved useful in having first hand contacts with the respondents. Interviews schedule was prepared for rural female respondents and interview guide was prepared for members of village Panchayat and members of Water Committees as well as for teachers. A questionnaire guide was prepared for Focus Group Discussion covering relevant questions; and Interview guide was prepared for key informants. Thus different tools were deployed for specific respondents keeping in view their respective utility and effectiveness.

Interview Schedule:
Interview Schedule is a complex construction of simple questions. There are series of questions. The interviewer keeps a schedule in his own possession, asks questions to respondents one by one; and notes down the responses himself. Keeping this system in view, the Interview Schedule was drafted for respective respondents. The questions were arranged in such a way that flow of information is even, in proper order and touching the aspects of concerned matter. The draft of Interview Schedule was discussed at length with the Research Guide; and his valuable suggestions were incorporated. Besides, Interview Schedule was pre-tested.

After pre-testing of Interview Schedule with the respondents, and finding out its weaker or irrelevant questions, the Interview Schedule was re-drafted, now in consultation with Research Guide, field experts, specialists, activists of project functions and taking their suggestions for further improvement, Interview Guide was prepared afresh, after removing unnecessary questions and also adding better and
focused questions, a new Interview Schedule was generated. It was now most pragmatic, practical and pointed one.

**Interview Schedule for rural women respondents:**

For objectivity, authenticity and trustworthiness of the research study, the Interview Schedule, after a series of interactions, was prepared section wise for each type of information and all biases and prejudices are done away with from the questions. Some questions in Interview Schedule are open ended and some are kept close-ended, depending upon the kind of response necessary.

Section 1 of the Interview Schedule contains personal questions and questions related to family information. This section contains simple factual details. Section 2 is regarding information on impact on the lives of women vis-à-vis facility of water provided. This section has a scope for open ended questions, wherein respondents can come out with their personal views. Section-3 has three internal sub-divisions devoted to toilet, use of water and that of drainage system and sanitation. The sub section 1 covers information on facilities at personal level, family level and at community level. Sub-section 2 discusses about facility of water before and after implementation of project, availability of water, distance from home, how the water is stored, sufficiently of water supply vis-à-vis cost, who fetches water and how much time is spent on it and when water is not available etc. It also discusses arrangement of water, quality of water supplied, institutional management, problem solving mechanism, people’s contribution, planning, implementation, management, repairs and maintenance level of participation in other schemes, impact on socio-economic conditions and change in men women relationships.

In sub-section-3 there are questions related to toilet facility, consumption of water, drainage system and sanitation in general. Besides, there are questions on personal and social hygiene. Lastly there are questions on their suggestion for improvement of system. The format of Interview Schedule is annexed in the report document.

**Interview Guide for key informants and for Focus Group Discussion:**

In an Interview Guide, the questions cover various aspects such as age, sex, education, caste, marital status, religion, occupation, type of family, building, type of building, estimated annual income of the family, expenditure, savings, debt, land held by the respondents etc. In family data, the information regarding age of family members, their education, occupations etc. is included with regard to data related to village Panchayats, information on population of the village, male-female number, total no. of households, households of S.C./SEBC/General Category, level of literacy, infrastructural facilities, sources of water, distribution system, quality of water, works undertaken as a part of project and expenditure incurred on them, details regarding repairs and maintenance, status of health, status of village sanitation, school, toilets in schools, its impact on number of children in schools, voluntary agencies functioning in the village improvement on conditions of drinking water and sanitation etc. The format of Interview Guide is also annexed.

**Planning of Field work and its implementation:**

The student researcher has used different sources for collection of data. In a process, the representative of WASMO (Unit manager of CMSU Surendranagar) and technical and social workers acted as contact persons and were useful in collection of data from respective villages. It was with their assistance that interaction could be held with members of village Panchayats, members of water committees, representations of implementing bodies etc. Besides, they were also instrumental in getting rapport established with rural women respondents for collection of data from them. Time schedule was planned and interviews arranged with district level representatives of
WASMO who also acted as contact persons. The women respondents were contacted at their residence. Some meetings were arranged at streets. ICDS workers of respective areas were also contacted at village Panchayat offices. For interview with women respondents, often afternoon or evening time was convenient to them. Summer season was suitable for respondents in some areas, and monsoon season was convenient to desert-touch areas. At some places, even night meetings were found useful. On an average 2 to 3 days were devoted for each village to collect data. Likewise, each respondent needed at least two to three visits. The information was collected during the year 2010 and totally 7 to 8 months were spent on collection of data.

Compilation, Classification, Analysis Process for data collected:
The collected data was compiled, classified and analyzed as below:
1. A big lot of information of preliminary nature collected through Interview Schedule was codified in order to turn it into qualitative one. It was further computerized into SPSS programme.
2. Further, this computerized SPSS programme data was prepared into table form. The SPSS computer programme facilitates stratification of quantitative data, classification as required and prepared into table form for interpretation. The SPSS programme facilitates statistical measurement of quantitative data such as age, income, expenditure, debt, savings, measurement of land, water-distribution time, time to be spent (Season-wise), water storage and cleanliness of utensils, time spent on solving water scarcity issue, loss of time due to inadequate water supply, loss of time when water is not provided at all and loss of earnings consequent to this, expenditure to be incurred to get water in such case, water test, medical treatment expenditure etc. Thus computer and particularly SPSS programme has facilitated many tasks, which were both time consuming and cumbersome. All these tables, except few are now quantitative.
3. With reference to the objectives of the study and verification of hypothesis, the tables were analyzed and data therein interpreted. The tables are taluka-wise and data has been shown percentage wise also.
4. Findings were drawn on the basis of interpreted data in tables.
5. On the basis of findings drawn from this study, the creative measures are suggested from social work perspective/approach. It is also suggested, how further research studies of the similar type of topic could be useful.

Chapterisation of data collected during fieldwork:
For data to be reduced in writing, following chapters have been planned to present total report:
Chapter I
Introduction, reasons for selection of topic and theoretical perspective.
Women in the areas of drinking water and sanitation, people’s participation, a concept, approach, steps. Empowerment concept, process of interventions and its dimension.
Chapter II
Review of Research literature and techniques of research.
Chapter III
Chapter IV

Chapter V
Socio-economic conditions of respondents. General introduction is provided in respect of respondents in this chapter; which includes general introductions, personal data, family data, caste, age, marital status, education, occupation, home accommodation, income, data about family members such as, number of family members, their age, their education level, Men-Women ratio in a family etc.

Chapter VI
Status of drinking water and sanitation conditions before and after implementation of the project. Process of implementation of drinking water and sanitation project, institutional management status of drinking water and sanitation conditions before and after implementation of the project, wherein, work done under the project, role of implementing agencies, quality of work, monitoring system, transparency, people’s contribution, difficulties in way of implementation of the project, availability of water, time to be spent for getting/fetching water according to various seasons, family members helping female members in getting/bringing/fetching water, storage of water, use of water stored/collected, utensils being used to store water and their cleanliness, water facility for S.C. community, quality of water, problems related to water and time being taken to solve them and alternative arrangement during such crisis situation. Toilet facility in connection with sanitation issue, use of toilet, financial assistance, motivation to construct toilet and guidance provided, problem of defecation in open and difficulties faced in this matter, disposal of used water etc. All these aspects are taken care of in this Chapter.

Chapter VII
Impact on life of respondents of the project of drinking water and sanitation: In this chapter, the impact on the lives of respondents after implementation of the project of drinking water and sanitation has been highlighted. The chapter has been divided into three parts. In the first part, the data collected from men and women in rural area through focus group discussion is highlighted. In the second part, the data collected from key informants i.e. members of village Panchayat, members of water committees, a school teacher, representative of implementation committees, representatives of WASMO through Interview Guide is presented; whereas in third part, the responses in form of opinions from women respondents regarding facilities availed under the drinking water and sanitation project, role of women in water management, their socio-economic and health-related data etc. is presented.

Chapter VIII
It is on findings, conclusions, suggestions for future course of action etc.

Introduction to the area of Study:
The selection of eight villages from four taluka was made for the present study. There were 137 villages in eight talukas of Surendranagar district, which were affected by earthquake. Out of these, the above mentioned eight villages have been identified for
the study. The villages are located at a district at 10 to 135 kms from district head quarter, and about 7 to 40 kms. from the taluka head quarter.

In the villages covered under the study, agriculture and animal husbandry are the main traditional occupations. During the period under study, people were mostly engaged in their occupations of agriculture, animal husbandry and also salt farming.

The sources of water included ponds, river, and wells and / or bore wells. Thus all the water sources were dependent upon ground sources.

The larger section of population was socially and educationally Backward Community and they were found to be dominating at least in number. Kolis and Patel were dominating over agriculture land.

**General Information / Personal Information / Family based Information of the Respondents**

**Occupations, Income, Saving and Debt:**

An average age of respondents was 40 years. Most of the respondents are Hindus. 68.52 percent of total respondents belong to SEBC. 88.89 percent of respondents are married and live in nucleus family. 2/3 of the respondents (62.96%) are illiterate. Most number of respondents (81.94%) are having agriculture and animal husbandry as their main occupation. Most of the respondents (89.94%) hold land. The average holding is 12.05 Bighas. In the villages of Wadhwan taluka, more number of respondents (95%) hold land and their average holding is 16.10 Bighas. The holding of land is much less in Halvad taluka which is 8.10 Bighas. Most of the farmers are small or marginal farmers.

**Occupations, Income, Savings, debt.**

Most of the respondents are adults, Hindus and belonging to SEBC and mostly illiterate. The respondents are married and live in nucleus families. They are having agriculture and animal husbandry as their main occupation, and have average holding of 12.05 Bighas of land. They are small or marginal farmers.

Their average annual family income is Rs.35,972 and average annual expenditure is Rs. 34,212. It was found that the respondents from sayla and Wadhawan talukas spend less as compared to their income; whereas in case of respondents from Halvad taluka, the expenditure exceeded their income. 37.96 per cent of respondents have no savings. In case of rest of the respondents, the average savings amount is Rs. 12,824.

It was revealed that respondents from Halvad taluka save more as compared to those from other talukas. It was found that 43.06 % of respondents did not have any debt whereas, in case of rest of the respondents, the debt amount was Rs. 6725 per family (average). More amount of debt was found in case of respondents from Sayla taluka and less amount of debt was found in Dasada taluka.

On an average, both the income and expenditure level in respect of almost all respondents is almost same. What is to be noted is that though the respondents of Sayla taluka spend less than their income, still they have more amount of debt as compared to other respondents. Most of the respondents save money, but more than half of the respondents incur debt.

**Family size and male-female ratio, literacy:**

The average family size of all respondents under this study is 6.81; which is more than the district average of Surendranagar district, which was recorded at 5 during 2011 census. The male-female ratio among the respondents is 1000: 922. This is in tune with the census study, 2011. Most of the family members (74.42%) of the respondents families are married. Among family members of the respondents, 38.93% including children are illiterate. Considering education level; 43.67% have reached up to Primary and Secondary level, 8.64% have reached up to graduate level, 4.63% have
reached up to post graduate level, and 4.15 % have reached up to occupational education level. As per census figure 2011, the level of illiteracy among the entire district of Surendranagar is 26.81 per cent, whereas that among respondents of this study, it is 38.93 per cent.

More than 1/3rd of the members of respondents family are engaged in agriculture and animal husbandry, whereas 23.40% are studying; 20.34% are engaged in labour work; 2.99 percent are in household work and 3.26% are engaged in independent occupation.

As seen earlier, the average family size of the respondents is larger than the district average of Surendranagar district. Likewise, the level of illiteracy is also higher. Most of the family members of respondents’ families are married and little more than 1/3 (37.75%) are engaged in agriculture and animal husbandry.

**Housing:**
Most of the respondents have pucca houses to stay, and they use fire wood and cow-dung cakes for fuel. Most of the respondents enjoy facilities of mobile phone, motor cycle/ Bi-cycle etc. More number of respondents has buffalo as milch animal. They hardly rear goats / sheep.

People have started using new and modern facilities as could be available e.g. some people have switched over to gas as fuel, replacing fire wood / cow dung cakes.

**Sources of Water and Institutional Management**

**Sources of water, Distance from the house, work done under scheme and role of implementing agency**
Only 24.07 % respondents use the sources of river, pond, and lake for taking their drinking water. Otherwise, the popular sources for drinking water are tube wells, bore wells, open wells, ground water supply system or Narmada canal. More number (69.44%) of respondents uses tube well to get their drinking water. The number of respondents using it for other domestic use is 72.69%. If we look at the situation taluka-wise, tube well is used by 85.71% of respondents for taking drinking water in Dasada taluka, 79.17% respondents families from Halvad taluka make use of ground water supply scheme to take drinking water and 87.88% make its use for other domestic use. 95 % of respondent families of Wadhawan taluka make use of open wells for drinking water as well as for domestic use. 47.50% of respondents from Wadhawan taluka make use of water for domestic use from the supply made by group water supply scheme. Respondents from villages of Halvad taluka also get water through Narmada canal, which is used by 75% of respondents. These matters are also endorsed by participating villagers in focus group discussion and also by key informants of data.

As many as 58.80% respondents do have water tape connections at the residence and hence they get water in their houses. The respective number of respondents having water tap connection at the residence is 67.50% in villages of Wadhawan taluka, 67.23% in villages of Dasada taluka and 62.50% in villages of Halvad taluka, but in the villages of Sayla talukas, only 15.15 % of respondents have water tap connection in their houses.

As regards distance of water source from the residence, 30.56% of the total respondents have water source at about 2 Kms away from their residence. The largest number of households in this category is from Sayla taluka which is as large as 72.72%. In rest of the talukas, the villagers having such a distance source of water are less in number. Only, 10.65 % of respondents have their source of water at a distance, which is more than 2 kms. As regards responsibility to bring water both for drinking and for domestic purpose is still with women only, and there is no much change in
this aspects. May be, some male persons do extend the helping hand in bringing water from the water source, but such number is negligible and it can be affirmed that the workload of women in this aspect has remained almost the same both after and before the implementation of the project.

After implementation of project of drinking water and sanitation, there has been substantial increase in water-tap connections but one cannot say that, that has resulted in men’s increasing efforts in sharing the burden of women.

After implementation of the drinking water and sanitation project 9 out of 10 villages (90.74%) have pipelines for water, more than ¾ villages (77.78%) have washing ghats; more than ¾ villages (76.85%) have facilities for a sump to collect water under ground as a consequence of the project. Such facilities are comparatively less in the villages of Sayla talukas as compared to remaining there talukas. We have some more details below:

Storage water tanks have been constructed in 60.68% of villages in Wadhwan, Halvad and Dasada talukas. Likewise, in 58.80% of villages, new facility for animals to drink water in a specialized constructed Aveda has been installed. Here also, Sayla taluka villages lag behind their counterparts. In this taluka, 30% villages have new check-dam facility in 18.18% of villages the old water wells have been repaired / renovated, 9.90% of villages have cluster storage tank etc. under this project.

In many of the villages, under drinking water and sanitation project, there are Pipeline network for distribution of water and also washing ghat for washing the clothes besides traditional sources like water wells, check dams, water tank etc have been repaired.

Under the project, 82.50% of villages have helped implementation of the project and have also helped in collecting people’s contribution for people-managed drinking water and sanitation project. Most of the respondents (79.63%) reported that cluster wise meetings were convened to make people aware of the project, including in the villages of Sayla taluka. 58.33% of respondents mentioned that they were provided assistance through the implementing agency. Usually, the implementing agency used to organize exposure visits so that people could see by themselves the benefits of the project. The number of respondents in this regard are largest from Halvad taluka villages (66.67%) followed by Sayla (30.30%), Dasada (15.97%) and Wadhwan (2.50%).

Another programme was to arrange meetings with Village Panchayat members and with village leaders so as to ensure transparent arrangements in which people can put trust. Nearly 34% respondents said that they were involved in such meetings. Similarly, 46.28% respondents said that they were helped by the implementing agency in planning for Gramsabha meeting. More such respondents (66.67%) are from Halvad taluka villages; whereas the respondents of villages from Sayla taluka did not have any such information. The respondents who remained present in focus group discussion from both Halvad and Dasada talukas, however, have expressed positive thoughts about this.

The attitude of people has become positive towards the project due to the help provided by implementing agency.

**Monitoring System:**

As regards monitoring of quality of work by indentified units under village action plan, most of the respondents (93.06%) from the identified villages under this study opined that, before implementation of the project, in all the villages in the talukas covered under this study, there was no separate water management system in any of the villages, but after implementation of the project; the respondents opine that in a
village, one person is made responsible for water management system. Such respondents are 50% from Halvad taluka, 47.50% from Wadhwan taluka, 36.13% from Dasada taluka and 21.21% from Sayla taluka. The respondents have further elaborated the system mentioning that the detail regarding material was displayed on a notice board. The number of respondents sharing this elaboration are: 39.50% from Dasada taluka, 37.50% from Halvad taluka and 6.06% from Sayla taluka. Only 9.72% respondents informed that monitoring of water management was assigned to separate teams. This was confirmed during focus group discussion and key informants who were specifically asked on this issue. It can be concluded that monitoring of quality of work is assigned mostly to a single individual and that the details of material were displayed on notice board and often the responsibility of monitoring was also assigned to different teams.

**Means to keep Transparency:**

97.22% respondents expressed the view that, before implementation of drinking water and sanitation project, there was no system in practice to keep transparency. Not many of them (20.27%) even express the view that no special efforts are made to keep transparency even after implementation of the project. Nevertheless as many as 79.63% respondents express their opinion that efforts are being made to maintain transparency through various media in drinking water and sanitation project. Which are these efforts and through what media? 44.91% respondents mentioned that all financial transactions of the project are disclosed on the notice board. The maximum number of respondents sharing this view are (61.34%) from Dasadas taluka. Besides, 20.37% respondents mentioned that meetings under the project are held at public places. The maximum numbers of respondents sharing this view are (54.13%) from Halvad taluka. 14.35% of respondents mentioned that both financial and administrative matters are discussed in Gram Sabha meetings. The matter of transparency was discussed in focus group discussions in Halvad and Dasada talukas. The village members who participated in the discussion as well as key informants expressed clearly that the project has been successfully implemented and that transparency is practiced in its implementation wherein details of expenditure incurred under the project is displayed on the notice board and also discussed in public meeting forums.

**People’s Contribution:**

More than 3/4th (77.78%) respondents have mentioned that they contributed towards the implementation of Drinking water and sanitation project; but 22.22% said that they have not contributed. Among those who did not contribute; majority (66.60%) are from Sayla taluka; followed by Wadhwan taluka (27.50%), Halvad taluka (12.40%) and Dasada taluka (10.08%) However, most of the respondents (80.09%) are aware about difficulties in collecting people’s contribution. More respondents expressing such difficulties are from Sayla taluka (87.82%) and the least number are from Halvad taluka (54.17%).

**Knowledge and information about project:**

Little less that 1/3rd (31.94%) respondents had not adequate knowledge and information about the project. Besides 19.21% of respondents did not have enough faith in the project. Among those respondents who did not have adequate knowledge about the projects, 30.30% were from Sayla taluka, 27.50% were from Wadhwan taluka, 25% were from Halvad taluka and 12.18% were from Dasada taluka. Out of total respondents, 22.50% from Wadhwan taluka villages felt that the element of organization lacks in implementation of the project. The villages who participated in focus group discussion and also the key informants expressed their opinion that
people’s participation in implementation of the project had accelerated due to contribution made by people especially from the villages of Dasada and Halvad talukas, and in contrast to this, the implementation of the project faced some barriers in the villages of Sayla and Wadhwan taluka, because people did not show willingness to contribute towards the project. This is self-revealing about process of implementation of the project. People’s contribution can make a difference. We may sum up this issue, stating that more than $\frac{3}{4}$th of the total respondents from all the villages covered under the study have made some contribution towards the project in one form or other (in cash or in kind). However, some difficulties were there in the villages especially of Sayla taluka, in getting people’s contribution; and the reason could be attributed to lack of proper information.

**Quality of Water:**
Under people managed Drinking water and Sanitation project, cleanliness and quality of water assume great significance. A number of intervention efforts were made by implementing agencies and representatives of WASMO to orient people about personal hygiene, community cleanliness and sanitation and several such awareness programmes were held by them. Besides, people’s own committees at all village level were constituted for scientifically verifying the quality of drinking water supplied to them and the member of such committees were provided proper training to conduct such testing. Before implementation of the project, 21.60% of respondents did not make use of any scientific or traditional system for purifying the water. The % age of such respondents is almost equal (33.33% and 32.50% respectively) from talukas of Wadhwan and Sayla. 71.76% of total respondents made use of a peace of cloth to filter the water, which is a most common traditional system to clean the water. Even after implementation of the project, 55.09% of respondents have continued to follow this system, but 49.58% have shifted to use filter plant for purifying the drinking water scientifically. As regards another well known system of boiling of water before using it for drinking (which is also most scientific method) was not followed before implementation of the project, nor even after implementation. This fact is confirmed by the focus group discussions as well as by the key informants.

In short, most of the respondents used to clean the drinking water by filtering it with cloth piece and largely they have continued to follow this system. In Kharoghodha village of Dasada taluka, a R.O. Plant in installed to purify the water and people here get good potable water. In all the villages under study, the present sources of water provide good potable drinking water. It is commonly believed that tasteful sweet water is good potable drinking water. **Provision of water as per people’s daily requirements, time when regular water supply is provided, time spent in getting water in different seasons and members of the family who help the women members in collection of water**
Not all the respondents could get water easily round the year before implementation of the project. At least, 69% (i.e. more than $2/3$rd) of the respondents had some difficulties in getting adequate quantity (and good quality) of water before the project was launched. The number of such respondents was highest (95.80%) in villages of Halvad taluka, followed by villages of Sayla taluka (90.10%). The respective figures for Dasada taluka and Wadhwan taluka are 62.50% and 52.50%.

The project has brought significant change in this scenario. Now at least 60.20% respondents (73.20%, 62.50%, and 57.50% respectively in the villages of Dasada, Halvad and Wadhwan talukas) get adequate water supply round the year. Before implementation of the project of drinking water and sanitation, 47.69% respondents did not get regular water supply daily. The number of such respondents
are in greater size in the villages of Sayla and Halvad talukas (81.82% and 70.83% respectively). Now after proper implementation of the project, only 17.16% respondents do not get regular daily supply of water. What is to be noted here is that there is no much difference in respect of conditions of getting water before the implementation and after the implementation of project. As per 48.61% respondents of villages from Sayla taluka, they get water regularly for half an hour. As against this, 34.26% of total respondents get daily water supply for an hour daily. Earlier, they used to get only for half an hour, and that too only to 12.96% of the respondents. Regarding regularity of water supply, the responses from Wadhwan, Halvad and Dasada talukas are positive with support from 82.49%, 62.50% and 44.54% of respondents respectively from these talukas. Regarding more availability of water, the villages of Dasada talukas are better benefitted by the project, as could be concluded from the focus group discussions and from the opinions of key informants of all the talukas. Further, in most of the villages under study, after implementation of the project, supply of water is now round the year.

**Seasonal Variations in getting water:**

Before implementation of the project, during monsoon, 23.15% of the respondents spent at least 60 minutes daily to bring water for the family. 34.26% respondents had to spend 120 minutes. More among these were from Sayla taluka villages (63.64%). Now after the implementation of the project 70.37% of respondents get regular water supply daily for 60 minutes; and 10.19% of respondents get it for 120 minutes. The average time spent on bringing water, before implementation of the project was 78 minutes which has now been reduced to 57 minutes.

Before implementation of the project, 12.50% of respondents had to spend about 60 minutes to bring the water in winter season, and 43.06 percent had to spend 120 minutes. Respondents from Sayla taluka villages out number others with 72.73% score. Now after implementation of the project, 44.91 percent spend 60 minutes, meaning thereby, their 60 minutes are now saved. Now, as against 43.06 percent before implementation, only 10.19 percent spend 120 minutes to bring water after implementation. Thus, nearly 33 percent also save two hours every day after implementation of the project. On an average, during winter season, the previous time of 80 minutes has been reduced to average 61 minutes after implementation of the project.

Summer is a critical season for water procurement. With largest number from Sayla taluka (87.88%) 35.65 percents had to spend 120 minutes in 60 minutes in summer prior to implementation of the project. Now after implementation, 46.76% of respondents spend 60 minutes and 18.98% spend 120 minutes to bring water in summer season. On an average, the time to bring water in summer after implementation of the project has come down from 83 minutes to 67 minutes. i-e 16 minutes per family saved.

**Women’s is responsibilities – then and to-day**

Earlier, in all the seasons, round the year, it was responsibility of women to bring water for the entire family may be it has to be brought from a couple of kmts distance deep water well. This was almost universally true, except in some of the families, in some of the villages, male numbers – son or a husband helped the women in Halvad taluka only. The facts are confirmed by the key informants also.
To summarize,

<table>
<thead>
<tr>
<th>Season</th>
<th>Time taken earlier (Average)</th>
<th>Time taken after implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monsoon</td>
<td>78 minutes</td>
<td>57 minutes</td>
</tr>
<tr>
<td>Winter</td>
<td>80 minutes</td>
<td>61 minutes</td>
</tr>
<tr>
<td>Summer</td>
<td>83 minutes</td>
<td>67 minutes</td>
</tr>
</tbody>
</table>

Thus, the project has resulted in savings of time by 21 minutes, 19 minutes, 16 minutes in all three seasons respectively. More time is saved for people of villages in Sayla taluka.

Another important benefit of the project is that, comparatively male members have started extending their helping hand in bringing water. This is a slow process, but one can hope that gradually both men and women to-gather will share this responsibility, a land-mark in the process of social change.

**Water arrangement for Dalit communities**

Before implementation of the project, as reported by 22.22% respondents, there was no source available for water for Dalit communities. Only in 1/3 of the villages, there was a common source for all the communities, and no separate arrangement for Dalit communities. Now, after implementation of the project, common water source for all communities is available in 57.41 per cent of villages. The project does not provide for separate arrangement for Dalits (as it would be ultra virus the constitutional provisions). A general observation can safely be made that after implementation of the project, the facilities for Dalit communities have surely improved as it is evident in the villages under study.

**Participation by respondents in drinking water and sanitation project and impact on their lives.**

**Collection of water, Use of the collected water, water storage equipments and its cleanliness.**

Before implementation of the project, except in case of 30% respondents from village of Wadhwan taluka, in all other villages of Sayla, Halvad and Dasada talukas all the respondents felt shortage of water supply, irregularly of its supply, more distance of water source from one’s residence and cost on water procurement. Of necessity, water was required to be stored. Now, after implementation of the project, water is made available at doorstep by water tape in most of the cases or nearby to one’s place. Still however, out of habit or out of necessity 49% respondents do collect water (81.80% respondents from Sayla taluka).

**Water storage:**

Earlier however, 86.11 percent respondents used to store water both for drinking and for domestic use. The number has now reduced to half, after implementation of the project. Earlier, 70.83% of respondents used stored water for about 3-4 days. The number of corresponding respondents in Sayla taluka villages was 81.82% and that in Wadhwan taluka was only 47.50% Now, after implementation of the project, there is an assurance of regular water supply – may be for limited hours in a day, the water is stored for 3-4 days only by 16.20 percent of respondents. Mostly now, people don’t store water at least for drinking propose, and take fresh drinking water every day from sources provided.

**Utensils / Equipments:**

Before implementation of the project, 94% of the respondents used to store water in pots, bucket, S.S. Utensils, tank etc.

Earlier more no. of respondents (69.70%) from villages of Sayla taluka used to store water. Even after the project, there has not been much difference in the tendency.
However, availability of water being ensured after implementation of the project, on an average now 50.93% of respondents (60.50%, 54.17%, 47.50% respondents from Dasada, Halvad and Wadhwan talukas) do not store water, That means 49.07% percent respondents (almost half the number, larger number being from Sayla taluka) do store water. The cleanliness of utensils / equipments used for storing of water is cleansed once to four times a week. However, the supply of water being ensured after the project, by and large, all utensils (except tank) are now cleansed almost daily by 63.87% respondents (70.83% from Halvad taluka). Those who used to clean twice a week were 27.39% which number has how come down to only 9.72 after the project implementation. (They now clean almost daily). The respondents of Sayla taluka have not manifested any notable change in habit of storage of water, but in rest of the three talukas there has been substantial change. This is due to the fact that water availability is as not ensured in Sayla taluka as much it is ensured in other talukas under study, as a result of project. The project is not implemented in one of the village of Sayla taluka.

As per views expressed by participants of focus group discussion, earlier, water was stored in more quantity and was used for 3-4 days; but now it is stored in less quantity and is used only for a day or two. The respondents of Dasada and Halvad talukas store less quantity of water now. The availability of water being ensured after the project:

- less number of people store water
- less quantity of water is being stored
- utensils are cleansed more regularly and more often

**Measurers taken during shortage of water supply and role of respondents**

As many as 87.96 percent of respondents from the villages under study had categorically mentioned that before implementation of the project, they used drinking water from the available sources of water; and that such water was not potable. Comparatively now, after the implementation of the project, 89.81 respondents depose that during shortage of water supply or during any problem in supply system; the efforts are being made to bring water from available sources such as through tankers etc. However, 18.06 percent respondents mentioned that there was no short supply of water after implementation of the project. Almost ¼th of these respondents are from Dasada and Wadhwan taluka.

Before implementation of the project, 45.83 percent respondents stated that if there was any short supply during that period, they used to report to the village Panchayats. Almost equal number (43.06%) stated that they contacted tube-well operator and 16.67% stated that they contacted leaders during such exigencies. Now after implementation of the project 44.44 percent respondents state that they contact members of the water committee and 28.24 percent still depend on village Panchayat for solving the problem. 45.37 percent of respondents felt that before implementation of the project, the problem of water supply could not be solved in time. Now after implementation 36.11 percent of respondents share this view. Among those who believe that the problem of water supply is not attended to in time are 75.76% from Sayla taluka, 52.50% from Wadhwan taluka and 33.33 from Halvad taluka. Little more them half of the respondents (51.85%) state that it almost takes 3 days to solve the issue. The statement is supported by focus group discussion and key informants.

**Measures to combat short supply:**

A remarkable success has been achieved in ensuring that short supply of water does not occur. People have also realized the role of water committee in solving this major
issue. Most of the respondents share a view that such exigencies are solved in a period of 3 day duration.

As many as 86.57% of the respondents mentioned that prior to implementation the project, the shortage of water supply occurred due to natural or accidental reasons. Now as many as 60.19% respondents mention that after implementation of the project there is no shortage or short supply of water. 26.39 percent of respondents mentioned that earlier the scarcity of water occurred due to drying out flow of water source and now after implementation of the project, 14.35% of respondents attribute this factor for water shortage.

After implementation of the project, the problem of water shortage occurred due to drying out of water sources which was reported to be 54.17% in Halvad taluka; 39.39% in Sayla taluka; 12.50% in Wadhwan taluka.

The respondents (20.37%) responded that short supply of electric power was a cause of water shortage before implementation of the project, but now after implementation, 31.02% respondents attribute this cause for short supply of water. The other causes are reported to be lower supply at source itself or break down in water pipes etc.

**Alternative arrangement during short supply of water:**
Before implementation of the project in the entire village under study, respondents had to arrange for alternative arrangement from more than one sources. Those respondents who had to make such arrangement almost for six months during the year are all from Sayla and Wadhwan talukas but many such respondents (77.31% and 41.67% respectively) are from Dasada and Halvad talukas who had to arrange for alternative arrangement for about 3 months in a year.

In case of 38.43 percent of respondents, water now being available regularly without break, after implementation of the project, do not find any need to make alternative arrangement, but many respondents (85.50%) from Sayla taluka still feel it necessary to make alternative arrangements for about 3 to 5 months in a year.

**Time spent for collecting water:**
Before and after:
Before implementation of the Project, 57.41% of respondents had to spend one hour in getting water; whereas the time has been reduced to half i.e. 30 minutes and that too, in respect of 49% of respondents only, after implementation of the Project. Earlier, 50.46% respondents had to sacrifice a day’s earning i.e. Rs. 30 but now the corresponding number has been reduced to 31.48%. Now when the water is easily provided after implementation, no person has to sacrifice one’s income for getting water. Earlier, 55% of respondents spent Rs. 10/- daily; but now the amount has been reduced to half. In Wadhwan, Halvad, Dasada and Sayla talukas, the respondents respectively 75%, 62.50%, 49% and 45% used to spend about Rs. 10/- per day for getting water. Now after implementation, both the number of respondents and expenditure on water has been reduced. This fact was confirmed both in focus group discussions by village participants and by key informants.

The clear benefits from the Project are these: Now there is no need to make alternative arrangement because water is supplied regularly; and the problem of scarcity of water both due to natural causes or accidental causes have reduced.

**Role of participants in Water management—before and after:**
As regards renewal of source of water distribution, earlier to implementation, only 14.81 per cent respondents participated in process of taking decisions. However, there is improvement in the situation after implementation of the project. 59.72 respondents have become little active in this regard; but such activity is not up to the level of expectation. The respondents who have shown some participation are 91.67% from
villages of Halvad taluka, 76.47% from Dasada taluka, 32.50% from Wadhwan taluka and 9.09% from Sayla taluka.

It was held by 84.72% participants, including all respondents from the talukas of Halvad and Sayla that women had no role to play in water distribution system. However, after implementation of the project, many respondents come forward to express that, now women have been playing at least medium level role in water management system in the villages. Such respondents represent 76.47% of Dasada taluka and 54.63 percent of entire group of respondents inclusive. 23.53% respondents of Dasada taluka indicate the level of role played by women to be “good”.

But then, what is the role of respondents, especially that of women, when the water distribution system is disturbed? Before implementation of the project, 84.26% respondents did not see any role on their part to re-start the distribution system. But now after implementation, there is a positive change. 54.63% of respondents now mention that, women have now started playing fairly good role in re-starting of the system. These include 66.39% from Dasada Taluka and 20.53% from Halvad taluka. Whatever the number and percentage, fact remains that at least some women have come forward in taking leadership to see that water distribution system re-starts after solving its problem of system failure.

In fact, after implementation of the project, there is considerable improvement in the role that women play; which is considered as “fairly good” by respondents of Halvad and Dasada taluka. The women have also played active and decisive role in water sources renewal. But, women according to Sayla taluka respondents are not so much active. Only 8.33% say that women do take initiative in restoring water distribution system. Ever since Project planning, Sayla taluka seems to be lagging behind in mustering people’s participation in the project. Despite many efforts by implementing agency and WASMO representatives, the project of drinking water and sanitation could not be launched in one of the villages in Sayla taluka. During data collection stage, the focus group discussion participant villagers and key informants came out with a view that there were genuine difficulties at Primary stage; but now people have started co-operating but not to the level of expectation.

**Willingness to contribute towards services:**
At least 63.89 percent of respondents did not pay water tax before implementation of the project. (100% from Sayla taluka; 59.66% from Dasada taluka; 57.50 percent from Wadhwan taluka and 45.83% from Halvad taluka did not pay water tax) They assigned the reasons for non-payment as lack of water distribution system and / or irregularity of water supply etc.

Now after implementation of the project, at least 69.04 respondents pay water tax-among those who pay more amount of water tax are from Wadhwan taluka - 82.50% respondents paying Rs. 120/- per annum, and 58% respondents from Halvad taluka also pay equal amount.

To take a general picture, 31.02 percent respondents used to pay water tax, but now 69.04 percent respondents pay water tax; of which 24.54 percent pay Rs. 120/- and above.

Before implementation of the project, as many as 87.04 percent did not contribute towards repair and management of water distribution system. Now only 39 percent do not contribute towards this and 61.11 percent contribute towards this service. The respondents of Dasada taluka are more in number (74.79%)

During focus group discussion and during meetings with key informants, it was revealed that the maintenance charges are decided by Gram Sabha of a village Panchayat in consultation with members of Water Committee and other members of
Gram Sabha also. The amount so decided varies from Rs. 50/- to Rs. 25/- in different villages. They also consider the role and contribution of respondents towards repair and management in the drinking water and sanitation project to be fairly good.

**Facility of Toilet, its use, financial support, motivation and guidance:**

**Difficulties being faced in defecation in open and disposal of used water:**

Under people managed drinking water and sanitation project, programme of sanitation assumes as much importance as water distribution distribution itself. WASMO takes care that the families and children become aware about personal hygiene and social hygiene; and both Water Committees and Project implementation committee also extend their helping hands in such awareness building programme. In order to provide lessons of sanitation and cleanliness right from the childhood, such orientation training was provided in the schools itself. While collecting data, it was also revealed that the children in the schools were provided with nail cutter, comb, hair oil etc. to maintain personal hygiene. Besides, for village cleanliness campaign and for group sanitation, the dust bins were also provided.

Before implementation of the programme under project, 75.46 percent of respondents did not have toilet facilities in their houses. There has been considerable change in this situation during / after implementation of the project. The pace of change is faster in the villages of Dasada taluka; wherein after implementation, 44.54 percent respondents have now toilets in their residence. Both respondents from Dasada and Wadhwan talukas were more active in getting toilet facilities placed in their houses as compared to Sayla and Halvad talukas. Those respondents tried to muster resources from various available fields to build toilets. However, this cannot be said about use of toilet even after installing them.

People who get toilet facilities in their houses take assistance from institutions, village Panchayats, members of water committee. However despite many efforts by the institutions under project, not many respondents were convinced to have toilets in their houses in Sayla taluka.

**Open Defecation:**

It was found that as many as 71.76% of the respondents used to defecate in open, due to lack of toilet facilities. However, 47.22 percent from them felt it inconvenient. 34.72% of the respondents mentioned that for defecation in open, the timings are to be scheduled in very early morning or at night, to avoid appearance in public. About 66.67% (2/3rd) of respondents in Sayla taluka had to defecate in open during early morning or night hours. Besides, 12.50% respondents also felt that finding a safe and proper place in open was also a problem.

**Drainage facility:**

Out of total respondents in the villages under study, 87.72 percent mentioned that there was no drainage system in the villages. Besides, more than 80 percent felt that the sanitation conditions in the villages was just average (good in a few cases also). Before implementation of the project, as many as 87.96 percent respondents used to dispose of the used water in open on public roads or on ground. Even after implementation of the project; this practice still continues in case of 66.20% of respondents. It can be concluded that the impact of project in this aspect has shown improvement only in case of about 20 percent of respondents; the rest of them continuing the old practice as usual.

**Motivation behind Toilet facility:**

Obviously, toilet facility was a rarity among the respondents before implementation of the project. Due to efforts of WASMO, constant and continuous motivation from
the implementing agency, toilet facility could be introduced gradually in the villages under study for which guidance was also made available. In this regard, the facts indicate that villages in Wadhwan and Dasada talukas were leading and these in Halvad and Sayla talukas were lagging behind. Surprisingly, the efforts of the implementing agency in form of motivation and guidance proved futile in case of villages of Sayla taluka; where the toilets were constructed in very few houses. But, as regards disposal of water on public roads or ground; there is certainly an improvement and in most of the villages, now water is disposed of in drains.

Earlier to the project people after defecation used to wash hands with ash and earth; but now many of them use soap to wash their hands after defecation.

**Impact of the Project on Family life and Public Life:**

- Earlier to implementation of the project, about 1/3 (33.33%) families of the respondents were dining together. After the project implementation, this practice is prevalent among 60.64 percent (about double).

- Co-participation of family members in decision taking on family matters was among 23.61 percent of respondents before the project implementation has now increased to 46.30 percent after implementation of the project.

- Comparatively speaking, regarding participation, respondents from Halvad and Wadhwan talukas are found more in number (79.16 percent and 75 percent respectively) in matters of occupations or other family matters. The number of respondents in Dasada taluka is much less (31.93%).

- The partnership of women in purchases of milch animals was 12.04 percent before the project, has now increased to 19.44% after project implementation.

- Before project implementation, only 13.89% of respondents could spare full time after one’s occupation. This, after project implementation has increased to 45.37 percent.

- This aspect varies from taluka to taluka; and comparative representation among all these talukas is 65%, 62.50%, 36.13% and 22.42% in Wadhwan, Halvad, Dasada and Sayla respectively.

- Only 16.20 percent of respondents used to move out on their own, before the project. Now, there is great increase in this number, viz. 66.67% in Halvad taluka, 40.00% in Wadhwan taluka etc.

- Before the project, only 13.89% respondents were members of Thrift and credit Society; now the membership of such societies is held by 50 percent of respondents and they save money regularly. (87.50% in Halvad taluka, 60% in Wadhwan taluka; 42.86% in Dasada taluka and 36.36% in Sayla taluka)

- Only 4.17 percent of respondents attended Gram Sabha meetings before the project was launched; and now after the project implementation 22.69% respondents attend their Gram Sabha meetings.

Thus, some tangible and concrete change is seen in respondent’s life after implementation of the project. The change is seen at various levels to greater or lesser extent. Halvad taluka villages seem to have greater impact of Drinking water and Sanitation Project with more representation on all fronts.

**Improvement in economic conditions of families:**

Celebration of Social events in a family is quite usual in typical Indian family. Earlier to the implementation of the Project, 43.52% families of respondents used to spend as much as almost 1/2 of their income on celebration of social events, rituals, customs
etc. Now the level of such expenditure has shown an increasing trend and has reached to 61.60 percent of family income. The level is much higher in Sayla taluka villages (84.85 percent) and the least expenditure on such events is incurred by respondents in Dasada taluka (52.94 percent).

It we look at the pattern of expenditure on household and domestic / occupational items; the level of expenditure during pre-project and post-project phases was 31.92% and 44.40 percent respectively. There is quite a sharp variation in this pattern in different talukas; with highest expenditure level among respondents in Halvad taluka; (70.80%) and lowest one among respondents of Wadhwan taluka (20.00%)

Let us look at the expenditure level on care and education of children in the families. After the project implementation, this level has been 38.40%, with highest expenditure (50%) by the respondents of Halvad taluka. The respondents in Sayla taluka spend the least amount on care and education of the children.

There is another aspect of expenditure, that is, on personal matters (such as hobby, habits, clothes, other items of personal use etc). Earlier to the project, this level among the respondents was as low as 13.84 percent. Now after the project phase, respondents spend as much as 34.30 percent.

While expenditure levels on all these items have gone up, it has gone down at least in one item. Earlier, the respondents had to spend on bringing / buying / collecting water. The percentage of respondents, prior to project implementation, who had to spend on water, was 48.15%, and now after the project implementation, only 21.80 percent of respondents have to spend on water.

The number of respondents who had to spend on water was as large as 79.17 percent from Halvad taluka; but now in this taluka, the number has fallen to 37.50 percent. In Wadhwan taluka, only 15% of respondents have to spend on water. This is smallest number in any taluka under study.

Earlier to the project 30.09% respondents used to spend on repayment of debt incurred earlier. Now after the project, 35.20 percent make use of their income on repayment of debt.

The number of persons who could make some savings was 8.33% before the project was launched. Now as many as 18.10 percent can save money. This is evident that their income level has come up.

We can conclude this summing up that the direct impact of the project can be seen in upper level of personal expenditure, expenditure on social rituals and customs, on buying domestic or occupational equipment, on quantum of savings and on repayment of loan/debt. Simultaneously, there is savings on expenditure on water.

**Expenditure on treatment of Water-borne diseases:**
Both occurrence and spreading of the water borne diseases is an outcome of use of polluted water. Such diseases include diarrhoea stone, muscular pains, cholera, Typhoid, loose motions etc. Before the project, 24.54 percent of respondents had a problem of stone; which, after the project implementation has reduced to 10.19%. The incidence of Cholera has reduced from 28.70% to 22.22%, the muscular pain cases have been reduced from 14.35% to 9.72%, and Typhoid cases have reduced from 11.57% to 6.94%. The overall illnesses have been reduced by 43.97%. The expenditure on treatment of diseases, before the project was Rs. 396/- average on each respondent family; which has come down to Rs. 272/-. Thus the implementation of the project has helped people come out of water borne diseases and have helped them in reducing the cost on treatment.

**Verification of Hypothesis:**
1. The water being main problem in the area under study; the plan of drinking water and sanitation would have been implemented very easily.
Yes, this hypothesis has been found true to greatest extent. In five out of eight villages under study, the programme of drinking water and sanitation has been implemented in very smooth manner.

2. The implementation of programme of drinking water and sanitation could have resulted in increase in availability of water and would have also resulted in lessening of difficulty of women in fetching water.
Yes, this hypothesis has also been proved true, because, after the implementation of programme of drinking water and sanitation, seven out of eight villages under study are now getting more quantum of water.

3. The people of the villages would have become more aware about sanitation due to implementation of programme of drinking water and sanitation.
No, this hypothesis did not prove true. The people in large number still dispose of the used water on public roads and they still defecate in open.

4. In the implementation of drinking water and sanitation programme, there would have been a monitoring system for quality of work and for transparency of programme and that could have earned people’s trust in this programme.
Yes, this hypothesis also proved correct. There was proper monitoring system and transparency in the implementation of programme to ensure quality of work; and this has surely earned people’s trust.

5. The implementation of programme of drinking water and sanitation could have mustered better participation from women.
The hypothesis is not found to be true in toto. Women’s participation in all the villages under study has not increased to the level of expectation, hence, hypothesis, proved true to less extent than expected.

6. The women, because of their participation in implementation of drinking water and sanitation programme, would have become empowered in the process of taking decision.
The hypothesis has been only partially true. In fact, more than 1\2 of women have not become partners in implementation of programme of drinking water and sanitation. Therefore, their involvement in the process of taking decision is limited.

7. The programme of drinking water and sanitation must have positively affected the families, the economic, health and public life of women.
Yes, the programme has definitely made impact in one way or the other on women in all the villages under study. Of course, there have not been basic changes in family life; but tangible changes in economic, health and public life areas are evident. So, the hypothesis has been proved true to greater extent.

**Intervention in context with social work and proposed course of action for social worker**
The basic objective of social work is to make positive development in individuals, in groups and in communities and to find out ways to address to their problems, to see that they get justice and to take course of action for their development; as also to provide conducive environment. A social worker tries to help for development of deprived sections of society and providing assistance for their capacity building. He always makes efforts to identify proper intervention; and therefore tries to build certain body of knowledge and identify proper alternatives. In order to increase the effectiveness of techniques of social work it is necessary;
- To identify proper alternative mechanism and programmes thereunder.
• To find out both internal and external causes of individual and social disorganization and social disintegration.
• To make appropriate and proper suggestions and also to take appropriate course of action.

Social work itself has its philosophy. Its principles and values have scientific base and have been derived from scientific knowledge. A social worker tries to bring about a change in behavior of a person, a group or a community through utilizing the techniques of social work and making use of certain specific skills and mechanisms after knowing the attitude of a person, a group or a community. The problems arising in a society do not take place in vacuum. There are several factors and reasons responsible for this. Of course, the contribution of one or another factor could be different. There is always a multiplicity of reasons behind a situation. Social work tries to study these factors, tries to bring about reconciliation among them, and also takes such preventive steps, so that the situation possibly does not occur repeatedly. Social work always thinks in term of total development of mankind and while he tries to find a solution; he always keeps “human being” in focus. In social work research, a social worker tries to propose an intervention strategy for problems arising between an individual and individual; between an individual and a group, between and individual and a community or between a group and a community. Thus, social work research becomes a base to find out causes of a problem.

In the present research study, it was presumed that women’s participation in programme implementation is a significant factor in bringing about change in the lives of women. Keeping this perspective in mind, it was envisaged to find out:

What is the impact of implementation of programme of drinking water and sanitation on various aspects of women’s lives; and the student researcher has attempted to suggest a strategy for social work and also necessary creative measures for development strategy and based on his field experiences and also on basis of findings of this study he submits as under:

1. Impact of people’s contribution on the project

The project could not be implemented because little less than ¼ of the total respondents and little less than 2/3 of respondents from the villages of Sayla talukas did not agree to contribute towards people’s contribution (Lok-Fala); in drinking water and sanitation project. Therefore, now, a social worker can start a campaign for helping people contributing towards the project; and can also make efforts to convince people to collect the contribution e.g. If people do not agree to provide their contribution in cash; they can be persuaded to make contribution in form of labour (Shramdan). People can also be persuaded and convinced that if they do not agree to give contribution, they may not get water connection at household. Consequently, one has to spend money to get fetched water or has to spend on utensils and ropes to fetch it from the water well. That, diseases may take place by consumption of untreated (unclean) water; which may result in expenditure on treatment etc; that due to sickness, one may also lose one’s earnings; that not only oneself but other family members who attend to a sick person may also lose their earnings; that such a situation results in physical difficulties; that when somebody is sick people from outside come to see him/her and such guests are also to be attended at one’s own cost and that they have also to lose work and earnings back home and that they also have to spend on travels etc. Thus, it can be explained that it becomes a vicious circle placing each one concerned in difficult situation and arousing their sensitivity, they could be convinced to make contribution as a
responsible citizen. The meeting of a deprived people could be convened and in a group, they could be persuaded and convinced after making them aware about a situation. Such awareness building programmes could be conducted at group and community level, using group work and community organisation methods of social work.

2. Women’s partnership in implementation of project:
The literacy and participation are having positive relationship. This could be seen in the process of this study. Level of participation was found higher in the villages of Halvad taluka, where level of literacy among women was high and the participation by women was less, where the level of literacy was also less. There has been a great relief by women’s participation in the problem of drinking water and there is definite savings in use of labour by women in bringing water. That is why, it is important to increase inter-actions to solicit more participation. Sensitivity among women can be enhanced through conducting of discussions in groups of women may be even caste wise. Likewise, discussions should be held with village leaders to highlight the issue of women’s participation in the programme implementation. Women’s formal and informal groups can be formed by initiating income generating activities. Besides, exposure tours/visits can be planned where women can directly see the results of project. Women’s participation level can also be increased by organizing taluka-level rallies and meetings and village level campaigns for women’s awareness. They can be convinced as how they can become self reliant and can lead a dignified life. A micro-level survey on participatory rural appraisal is made on implementation of drinking water and sanitation project. However, participatory Rural Appraisal (PRA) was target oriented exercise, and hence it seems, adequate time was not spared on it. It can be transpired that had it spared more time, perhaps it could have resulted in more and better participation of women. Besides, male domination in our society does not allow more women to come forward and participate. The male domination can gradually be lessened and thereby women should expand their level of participation. A social worker, with the help of Information Education and Communication (IEC) can get co-operation from men and ultimately can help women to enhance their involvement.

3. Status of Sanitation:
Under ‘Nirmal Gujarat’ and ‘Total Sanitation Campaign’ more stress is given having domestic toilet in each household. However, during the study, it could be seen that in Case of many respondents, the facility of toilet is missing. As far as the respondents from the villages of Sayala taluka are concerned; the toilet could not be found in almost all the households. Even when it exists in few cases, only 1\(^{\text{st}}\) of respondents make use of this facility, and rest of them (in larger number) do not make use of this facility. In fact, sanitation is given as much significance as drinking water itself under people-managed drinking water and sanitation project, but this is not realized. The student researcher has identified the bottlenecks in implementation of drinking water and sanitation project and it is suggested that such bottlenecks can be removed by creating awareness among people through developing social work intervention strategy. Besides, people can be made aware about personal and social hygiene. He can make efforts to see that beneficiary gets the funds from budget earmarked for sanitation. In order to create awareness about behavior of making use of toilet, a social worker should try to create sensitivity through
group meetings, public programmes, rally and should also widely use audio-visual equipments to provide proper information.

4. **Quality of Water:**
   Most of the diseases have their roots in use of unclean/untreated water. Such use gives rise to water-borne disease. It could be observed through findings of this study that though water testing is done in laboratory to find out its purity; people trust their own traditional beliefs than scientific testing. A social worker can undertake a campaign of explaining people about quality of water can explain to them about disadvantages in making use of unclean water and also explain to them with scientific demonstration how use of such unclean water can lead to serious diseases; and how to avoid use of unclean water in drinking. He can invite experts to explain to people through appropriate demonstration how water testing takes place. He can even help people to constitute their own committee and help the committee to undertake such water testing by themselves after appropriate training. Such a committee then can distinguish between potable and non-potable water and can take proper measures to convince more people.

5. **Improvement in level of literacy:**
   In the areas under study, the level of literacy is low. A professional social worker can motivate the education committee of the village to bring improvement in the level of literacy. The removal of illiteracy programme can be undertaken with partnership of local level organizations, schools, voluntary organization and other literate people. Programmes like “Sakshar Bharat” (Literate India) can be launched and the people who are deprived of literacy can be made literate and thereby their life can be improved.

6. **Vocational Training:**
   A social worker, in partnership with children and parents and through co-ordination with local organizations, gram-Panchayat, School, Jan Shikshan Sansthan (JSS) and District Industries Centre (DIC) can arrange for Vocational Training programmes soliciting public support. He can motivate women to take benefit of this vocational training to improve their capabilities to earn supplementary income. Besides, he can try to improve the capacity and skills that already exist in the women, and in co-operation with the training institutions, can provide them work suitable to their capacities/skills and also can arrange for upward linkages for marketing of the goods produced by trained women. He can motivate women members to take lead in all these endeavors.

**Our suggested studies**
1. Can be undertaken keeping in view the dimensions of empowerment attained as a results of Drinking Water and Sanitation Project.
2. The people managed Drinking water and Sanitation Project is implemented in the districts of Kutch, Jamnagar and Surendranagar. The study could be undertaken to assess impact on women in all these three districts.
3. The people managed Drinking Water and Sanitation Project is now implemented in all the districts of Gujarat State. The study could be undertaken to assess its comparative impact on rural communities.

**Conclusions:**
   The impact of Drinking Water and Sanitation Project is found at various levels in all the villages under study. Several of activities are under taken for supply distribution of drinking water under the project. In this, the implementation
agency plays critical role. Efforts are made to see that the work is done in qualitative manner and that transparency is also maintained. However, even after implementation of the project, women could not participate at the level of expectation. The level of literacy in the villages of Halvad is comparatively better than that in villages of other talukas. Therefore, women could participate better in those villages. Besides, there is also a problem of people’s contribution (Lok-Fala) in implementation of the project. Both quantum of water availability and regularity in supply could be seen. After implementation of the project, people have to spend less time in collection of water in all the seasons. Men have also started extending their helping hands in collection of water. There has been definite change in collection of water, its use, utensils for collection/storage of water and their cleanliness. Besides, facilities for Schedule Castes for availing of water have also increased. Consequently, un-touchability, to that extent, has reduced. People still continue their traditional thoughts about cleanliness of water. It is necessary to bring better awareness about scientific concept of cleanliness of potable water. Water committees have been constituted and people report to them in times of problems of supply of water. Therefore such problem is attended to in about three days. Measures are taken to see that there is no scarcity of water supply during hard times. Not much change is found with regards to toilets. The benefits of Government Schemes have yet not reached to the respondents. Due to lack of toilet facility, women have yet to defecate in open. Besides, people still dispose of the used water on open ground due to lack of drainage system. The participation of women in the Drinking Water and Sanitation Project, have affected their other roles. There has been decrease in loss of time and loss of income or expenditure of procuring water when there is short supply of water. There has been an improvement in renewal of old water source, make them functional, their maintenance and repairing. Less time is now spent in getting water. Women’s participation has increased in decision making at family level and the family relations have also improved; but still women are not adequately empowered. There is positive impact on women’s health, economic life. Less expenditure is now done in treatment of waterborne diseases.