CHAPTER
INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Water is truly unique commodity, without it life doesn't exist. Life can become equally forward even when there is water all round. While excess water in the form of floods and water defect in the form of droughts have struck Nepal time and again. Consumption of unsafe water has taken thousands lives every year. Poor knowledge about the relationship of the contaminated water and disease, the safe handling of water and other sanitation practices cause 80 % of the diseases leading to illness and death among Nepalese infants. Besides, majority of the rural population are in very difficult living conditions with a little facility to provide cleans drinking water and sanitation. Only one person of every four people in Nepal has access to portable water. Thus, lack of adequate water for domestic purposes and lack of awareness of the importance of sanitation behavior have resulted poor health conditions. One of the basic objectives of water supply improvement in rural Nepal is to improve the people's health.

The supply of safe drinking water has long been taken for granted in the industrialized places where water flows reliably from household taps. More than 40% of the world's inhabitants, however, do not share in this certain, access to water (WHO & UNICEF 1993). In many countries, the collection of water often from contaminated sources is a daily task that consumes a tremendous portion of women's valuable time and energy. The consequences of this burden are harshly reflected as short and long-term health status of the poor Nepalese people. Lack of water and poor sanitation practices contribute to the vast majority of the illness found in the developing country like Nepal. Each year 16 out of every 1000 children were dying before they were one year old were attributed to diarrhea alone, causes from water related disease (Kandel, 2016).

Thus, the government joins the hands with many collaborating agencies such as, NGO/INGO which are currently implementing the programmed related to water supply and sanitation focusing women. Without women's participation the programmes can't achieve its sustainability. After the restoration of democracy, the government duties are also increased and the government should not watch every development activities to provide its people for better life and needs because of establishment of various NGOs and INGOs related with and sanitation. Therefore, the government joins hands with many collaborating agencies such as, NGO/INGO to development various sectors.

Many NGOs/ INGOs and Bilateral agencies have been implementing water supply and sanitation projects in rural communities. Nepal Red Cross Society (NRCS) is one of the national NGO that implements the water supply and sanitation project in various parts of the country that aims to improve the quality of life through the provision of safe drinking water and primary health care in the rural areas of Nepal. NRCS with an active support of JRCS initiated primary health care and drinking water supply programme (PHC/DWS) in 1983 (Kandel, 2016). Among them one of the projects is in Sarumarani Rural Municipality -4 Pyuthan district. The project was implemented through community participation. After the completion, the project was handed over to the local Water User Committee. Since then the WUSC is managing water supply and sanitation programme at Sarumarani Rural Municipality. Thus, this study seeks to explore the hidden reality to the content of women's participation and sustainable development after launching the water supply and sanitation programmes. Therefore, the researcher has taken this project site for the study.

1.2 PROBLEM STATEMENT

Water scarcity and poor water quality always create human's health problems. Water scarcity and, inadequate sanitation represent the most basic and common causes of child morbidity and mortality. In Nepal, water availability per day in 1996/97 was 51777 thousands liters and the benefited population was 771 out of thousands (CBS, 1998). Similarly fetching water from long distances shows clear picture of tremendous time

consumption of female members for their household chores. Due to illiteracy and little knowledge of sanitation, the rural people do not protect water from contamination, which creates more diseases related from water. More than 70 % of the diseases are caused by water pollution, (CBS, 1998).

Official statistical records indicate that about 49 % of the rural population and 58 % of the urban population had "safe" water supplies in 1995, and 3 % and 34 % of the rural and urban populations respectively had satisfactory sanitation arrangements, (CBS, 1998). Majority of people live in remote, often inaccessible areas. The infant mortality rate currently stands at 110 deaths per thousand live births. Though infants and children are particularly susceptible to water related diseases, adults are also affected by water scarcity and poor water quality and human health problem (Lorenzen, 1996).

As human water transporter, women spend between four to seven hours a day in water collection, carrying water in their heads or backs in heavy pots and buckets. Women and girl children are easily exposed to injuries and are vulnerable to spinal problems and water born diseases. Thus, the right attitude, care and priority given to women's roles can result in their enormous qualitative and quantitative improvement in development attempt. This study seeks to answer the following questions.

- What types of role have they have played to manage the water supply and sanitation programmes in the study area?
- How much time has been saved after the programme?
- How has the saved time been utilized?

1.3. OBJECTIVE OF THE STUDY

The present study aims to analyze the pertinent issues connected with the role of women in water supply and sanitation sector and the overall impact on socio- demographic and socio- economic aspect. As a focus of this research, the fundamental objectives set for this study are as follows:

1. To identify the role of women position, decision making, composition in WUSC and sanitation programme.
2. To analyze the impact of water supply and sanitation programme of women's life.
3. To explore the contribution of women in the study area in programme.

1.4. SIGNIFICANT OF THE STUDY

Women are the main stakeholders in overall water supply and sanitation programme, In addition to this fact the government clearly identifies in the eight five year plan that women's participation in the field of community development programe cannot be avoided. But, there are some difficulties to launch the programme in the areas of drinking water supply that reflects the local population of women that still remains deprived by various reasons.

The study highlights women's potential contribution towards water supply and sanitation and its changing effects upon family sanitary habits. This study clearly shows that by involving women in water supply and sanitation, the women can contribute a great deal to the better planning, functioning and utilization of the improved facilities when provided with appropriate training and support because traditionally women have been basic managers of water installation.

The importance of this study is to find out how water supply and sanitation facilities help our rural society in general and rural women in particular to uplift socio-cultural and socio-economic status. As the DDC sector is a social service delivery type sector, a direct cost benefit analysis during the planning and implementation phase is mostly neglected. Since the sector in itself is a service oriented one and tends to affect in long run, various other sectors such as health, hygiene, economic development etc, the cost benefit analysis in itself is vague and time consuming.

As such the importance of this study is to draw some sort of relationship as how the water supply and sanitation sector affects the other social and economic sectors in general and the role of the women within the DWSS sector in particular. This study also highlights the importance of learning that safe water alone does not reduce water born disease, but the knowledge of the environmental sanitation and awareness plays a key role in reducing these diseases. Moreover, the outcome of this study is expected to be helpful to the planners (Implementers, Administrators and Researchers).

1.5. LIMITATION OF THE STUDY

The study is limited to the area of Sarumarani Rural Municipality's women respondents where water supply and sanitation facility is commissioned. Women members of each household who are more involved with water related activities are selected. This study is confined to Sarumarani Rural Municipality of Pyuthan district so that the generalization may not be applicable to other parts of the country. Only 90 women respondents were taken for the present study.

CHAPTER TWO
LITERATURE REVIEW

2.1 REVIEW OF THE STUDIES

Water Supply: Today 71% of the global population (5.2 billion people) use a safely managed drinking water service; that is, one located on premises, available when needed and free from contamination. 1 out of 3 of these people (1.9 billion people) lives in rural areas. 6.5 billion people used improved sources of drinking water that required no more than 30 minutes per trip to collect water. (WHO/UNICEF 2017)

CBS census 2011 shows that 87% of population have access to water in urban areas and 85% in rural areas. This data accounts for 84.89% in hilly areas and 84.89% in terai areas. 61% Nepalese population had access to basic water services; 62% in rural and 55% in urban areas. (WHO/UNICEF 2017). According to NMIP 2014 the coverage is about 85% for basic water supply and about 63% for basic sanitation. (WATSAN, 2014)

Almost all households (95%) have access to an improved source of drinking water in 2016, as compared with 89% in 2011. The most common source of drinking water in Nepal is a tube well (36%) followed by pipe water. Only 23% of households follow water treatment practices prior to drinking (NDHS 2016).

As mentioned in Nepal Multiple Indicator Cluster Survey (NMICS) 2014, the % of households estimated to have access to piped water via a connection in their home, yard or plot was estimated at 20% in rural areas and 52% in urban areas (UNICEF and CBS, 2014). In rural villages, most drinking water is provided through public taps and tube wells or boreholes. The predominant water supply technology in the hill and mountain regions of Nepal is gravity fed water systems. The JMP quintile data suggests unimproved water sources are more commonly used by the rural poor. According to Government figures, 43% of community managed water does not meet the national basic service level standards. Adherence to the Government target time for a round-trip collection of 15 minutes is also a challenge. The highest proportion of household members taking 30 minutes or more to collect water was in the Mid-Western Hills (30%; UNICEF and CBS, 2014). Household members in rural areas were less likely than those

in rural areas to treat water if accessed from an unimproved source. The education level of the household head and the household's wealth were both positively associated with the likelihood of treating water. UNICEF and CBS 2014 mentioned that treating water was markedly higher among the richest households (Moizza Binat Sarwar and Nathaniel Mason, 2017).

Sanitation: 39% of the global population (2.9 billion people) use a safely managed sanitation service; that is, excreta safely disposed of in situ or treated off-site. 2 out of 5 of these people (1.2 billion people) live in rural areas. 5 billion people used an improved sanitation facility that was not shared with other households. 892 million people worldwide still practised open defecation (WHO/UNICEF, 2017).

Nepal has doubled the basic sanitation coverage from 30%in 2001 to 62% in 2011 (CBS 2011, 2001) and is improving in the basic sanitation services. 91 % population had access to basic sanitation in urban areas while in rural areas it is 56%. The figure accounts for 74.48%, 87.14% and 56.93% in Mountain, Hill and Terai areas respectively. (CBS, 2011) Piped water varies across rural-urban setting with 58% of population in the urban areas having access while only 41% in the rural areas have piped water services. By development region, the western region has the highest proportion (61%) and the Far-Western region, the lowest (34%). In the Terai, about 80% of households draw drinking water from covered wells and tube wells. (DWSS 2015, SDP 2016) 46% Nepalese population had access to basic sanitation services; 45% in rural and 52% in urban (WHO/UNICEF, 2017).

Hygiene: Coverage of basic hand washing facilities with soap and water varied from 15 per cent in sub-Saharan Africa to 76 per cent in Western Asia and Northern Africa, but data are currently insufficient to produce a global estimate, or estimates for other SDG regions. In Least Developed Countries, 27 per cent of the population had basic hand washing facilities with soap and water, while 26 per cent had hand washing facilities lacking soap or water. The remaining 47 per cent had no facility (WHO/UNICEF, 2017).

The Nepal Living standards Survey, 1996 conducted by central bureau of statistics of Nepal Government (G/N) estimated that about 33 percent of households of the country have access to piped water (supposed to be safe water). Nearly 66 percent of the households depend on wells which are not acceptable from a health point of

view. About 21 percent of households depend largely on unreliable sources like river and spring water.

The access to piped water varies significantly with regions, urban and rural parts of the country. Only 31 percent of rural households of the country and 4.4 percent of the households in the Terai have access to piped water supply. Majority of households in terai (97.2%) receives water from well and land pumps that are not at adequate depth for yielding safe water. In the mountains and the hill regions, a considerable proportion of households depend on other sources like river and seasonal spring water (NRCS, DWSP.1998/99).

2.2 Concept of Women's Involvement in Water Supply and Sanitation in Nepal

In 1981, the "S" for sanitation was added to the name of the project which was called " community water supply (CWS) only. In the first period 'sanitation' was limited to construction of latrines only. Later, the need was felt to add a health education component, the first sanitation pilot project was started in Rukum District of Mid- Western Development Region in 2986 households. Sanitation was extended to sanitation and women involvement in 1988 in Central Development Region.

The concept of people's participation became institutionalized toward the mid 80s and the importance of the role of rural women was recognized, but it is only since 1986/ 87 that more emphasis is being give towards involvement of women in all stages of realizing a water supply system and its operation and maintenance.

From 1988 onwards, a new approach was developed with the involvement of beneficiary women in the sanitation programme. This approach originated from the growing realization that women are mainly responsible for water handling, Therefore, their active involvement as in sanitation masters is absolutely necessary. It implies establishing inter-linkages between sanitation; heal education and women involvement and developing and organizational set-up for the

implementation of a sanitation and women involvement porgramme with the assistance of UNICEF.

2.3 Women's Participation

According to HMG/N and ADB (1996) women play a significant role in the Nepalese economy. According to the 1991 census women constitute 71 % of the labor force in agriculture. They also generate most of the average household's income than men do (55% compared to 44% by men and 6 % by children and they work on an average 10.8 hours per day compared to 7.5 hours by men). The status of women study completed in the early eighteen established that women and girls together contribute more than 53 % of the household community income in rural household of Nepal. Several studies (Stri shakti 1995, Ojha 1989, MOA 1993, 1994) have confirmed that women's labor contribution to Nepalese agriculture is substantial of at least equal to that of man. Acharya and Benette (1981) conclude that females contribute 51.6% of the labor to run farms. Farming activities in calculation include crop farming, kitchen gardening, livestock and forestry. Likewise, rural women spend so much of their energy and time in fetching water from long distance yet only 48% of rural women as compared to 68.8 % of men are reported economically active in 1991 census.

Despite their continued socio-economic disadvantages women have traditionally been the managers of domestic water supply in rural Nepalese community. Women and children in most rural communities often have to walk miles to collect water in mountain, hills and terai. The maximum trip (Mid-Western Development Region of Nepal 1995) has been reported even up to 5 km in some rural areas of hills and terai (HMG, 1995).

The directives and the eighth five- year plan make women's involvement in user's committee groups. It is specifically targeted during the applied social preparation strategies and orientation training of staff on social development skill and understanding of cultural values and gender behavior seek to be developed in the eighth plan.

2.4 National Context of Water, Sanitation and Hygiene (WASH)

The government of Nepal formulated a comprehensive 20 years' WATSAN (Water and Sanitation) strategies in 1997. The strategies set a target of achieving 100% sanitation coverage in Nepal by 2017 AD. Replacing sanitation policy 1994, the integrated National Rural Water Supply and Sanitation (RWSS) Policy and Strategy was produced with assistance of the ADB and UNICEF. The policy had a strong focus on water supply, and does not address sanitation to the detail of the 1994 policy (Shrestha, 2005). Within the RWSS policy 2004, the Government of Nepal (GoN) reaffirms its commitment to the target of 100% water supply and sanitation coverage by 2017, as described in the tenth plan document (GoN 2004). Interim policy of GoN clearly stated that the government will follow the RWSS Policy 2004 and National Water Plan 2005 with the aim at achieving 100% coverage of basic level of water and sanitation facilities by the end of 2017, and will make efforts to make water and sanitation facilities sustainable and equitable (GoN, 2007).

Sanitation and Hygiene Master Plan of Government of Nepal (GoN,2011) has envisaged some important policies towards sound environment of sanitation and hygiene in the country. One of them is the focus on Open Defecation Free (ODF) areas with universal access to toilet in the urban and rural contexts through the total sanitation approach. Apart from ODF and toilet coverage, it has encouraged hygiene behaviors at household level and institutions. Toilet coverage along with household level waste management has been considered as the key hygiene and sanitation components. Most importantly, the NSHMP is intended for formulation of strategies, strategic action planning and programming at the government level as well as local bodies, in collaboration with development partners and NGOs. The Master Plan largely recognizes the leadership of the local government bodies for effective undertaking of programmes through unified plan/plan of action on sanitation by considering the spirit of decentralization.

The goal of NSHMP is to attain universal access to improved sanitation by 2017 for better hygiene, health and environment. To achieve the goal, it has the milestones of toilet coverage for 60% of the total population by 2012/13 and 80% by 2014/15. Thus, the plan seems to have envisioned a lot of initiations towards improvement in WASH situation in the country,

through the development of hardware facilities, though it has not specifically outlined the developments or interventions to be made at school level in particular.

It is speculated that this focus on WASH promotion in the community can bring about some influence upon the improvement of existing situation among the people. Moreover, directly or indirectly, one can assume that it can influence the school sector as well.

Commitment for child and gender friendly learning environments, including water, sanitation and hygiene facilities and education has been initiated. Of the 146 indicators for a Child Friendly School (Snel, M. (2004).10% are directly related to WASH in Schools, both hardware and software

The School Sector Reform (SSR) Plan (2009) has aimed at a more focused intervention in the schools of Nepal. It intends to ensure that all schools are equipped with the minimum enabling conditions, which cater for the diverse needs of students. In particular, these conditions include the physical and learning environment. A school's physical environment includes: the required school buildings, provision of adequate classrooms, separate toilets for girls and boys, drinking water facilities, and a playground.

The main sanitation message for schools include: formation of child clubs and strategy of mobilizing these clubs in the works of school sanitation-hygiene; preparation and implementation of annual work plan for sanitation-hygiene; establishment of drinking water and toilet facilities; promotion of the habit of hand washing by addressing the issues of child friendliness and problems of disabled/ differently able children; establishment of a local fund to manage the equipment of hand washing, maintaining cleanliness of WASH facilities and repair-maintenance of the facilities if needed; and running sanitation sessions on child-friendly life skills and practical education through curriculum and textbooks (Vishokarma, 2011)

Some important characteristics of these policies can be pointed out. First, it appears that providing the facilities of water, sanitation and hygiene in schools has been one of the priority areas of the government in the recent years. In addition to the construction of hardware facilities, need for software activities to promote hygiene behavior among students has equally been realized. Moreover, emphasis on child friendliness/disable friendliness and girl friendliness implies the fact that government has understood the need to be more sensitive

towards the special problems of students in constructing the WASH facilities. Consideration in making the facilities and hygiene behavior of students more sustainable at local level seems to be another important point in the policy, as reflected in the establishment of local fund to manage the facilities and repair-maintenance.

In recent years, some attempts of hygiene education along with hardware development have been initiated in schools. Apart from the schools' initiatives, NGOs have also played significant role in such endeavors. The package of hardware and hygiene education implemented by NEWAH, for instance, has been reported to have brought about a good degree of behavioural change in schools and their surrounding communities (NEWAH, 2004). The hardware provided – latrines and drinking water – has met the concrete needs of students. After the setup of girl-friendly toilets and provision of separate latrines for both sexes in schools, girls have reportedly been motivated to stay longer in the school (Ibid). It has also been noticed that students' enrolment has increased dramatically in the schools having newly constructed buildings with modern toilet and water supply facilities. Consequently, children who were out of the school previously began to get admitted and were found attending the classes regularly (Snel, 2004).

Besides, students have found hygiene education interesting and relevant to their lives. They have been encouraged, through child-to-child activities, to take their learning in school back home and shared it to their brothers and sisters. As a result, the older children bringing home health education messages. In many cases, health-sanitation programmes in the school have been effective as the source of inspiration for learning the hygienic practices among the community people as well (NEWAH, 2004)

In some schools, student clubs (or child clubs) have been found actively involved in managing the cleaning activities, thus promoting sanitation and hygiene. They have also been found collecting money to purchase the consumables (e.g. soap for hand washing) and maintain the facilities. Active SMCs and head teachers in some schools have managed to get outside support to improve the facilities (Snel, 2004).

Despite the positive aspects just described, WASH situation is not uniform in all places. Several schools are in vulnerable situation, as revealed from some studies. In 2009, a study team of CERID conducted a research on the situation of water and sanitation in the schools of

Chitwan, Tanuhun, and Kapilvastu districts. It was revealed that, when students have to sit in line for hours to drink water or go out of school premise for toilet purpose they miss classes, which eventually affects their learning. Likewise, water and sanitation situation of community/households also affects children's schooling directly and indirectly. This situation was found in many schools visited for the purpose of this study. However, schools from Tanahun were exceptions, as there were better facilities than in other districts (UNICEF, 2009)

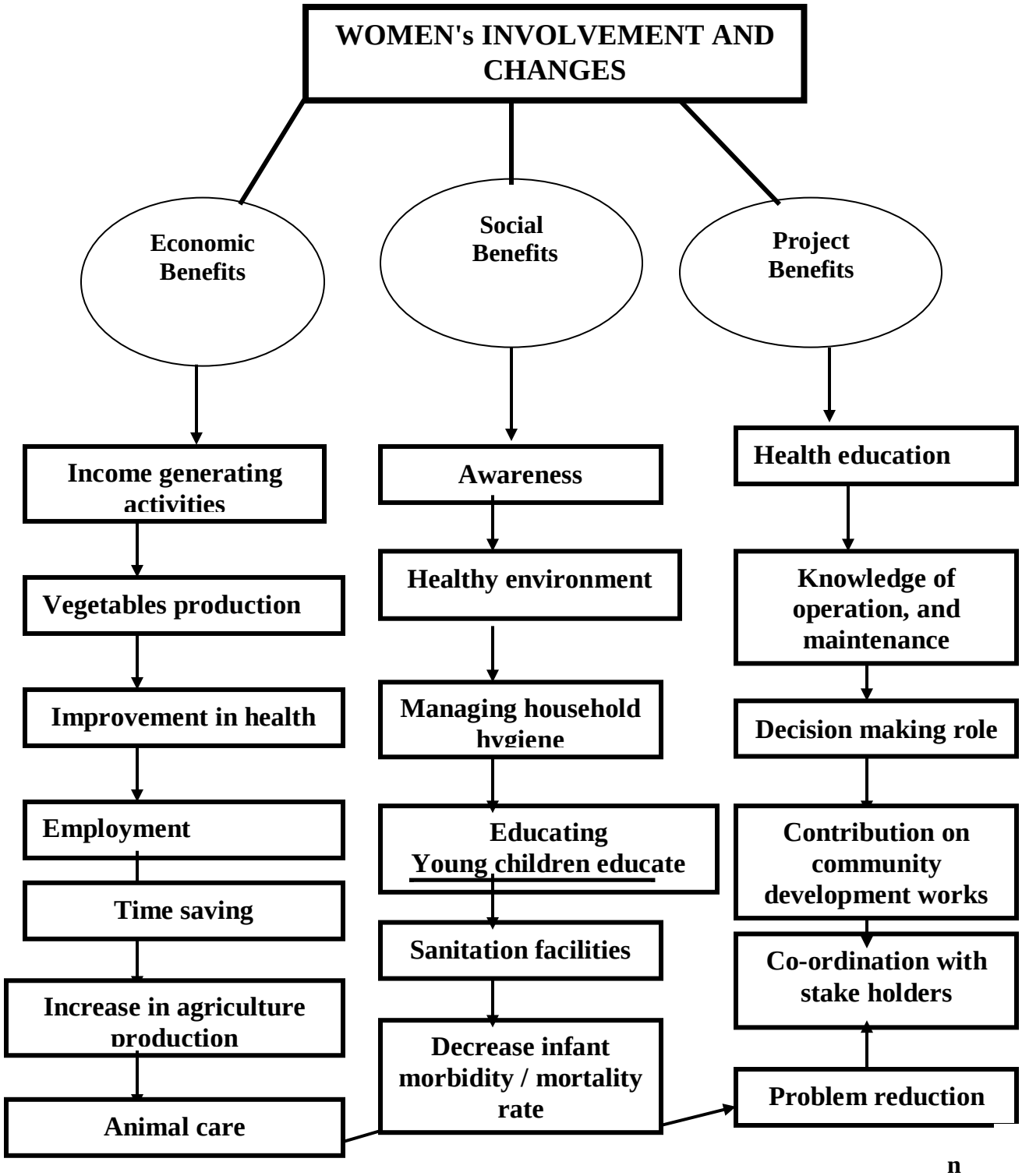
Lack of sustainability is often found a big problem in the new initiatives of promoting water and sanitation; and one major aspect related to this is financial sustainability, due to which the continuity of hygiene education is found in crisis in many cases, particularly when teachers are not sufficiently motivated to continue activities once the support and rewards stop (NEWAH, 2004)

In a study, DEOs of Kathmandu and Bhaktapur had expressed the feeling that water scarcity was a big challenge in both districts to ensure cleanliness, maintenance and hand washing in schools (Snell, 2004). Moreover, lack of mechanism for hygiene promotion or a software programme has created difficulties in maintaining proper hygiene situation in schools. Hand washing, one of the basic things needed for maintaining hygiene, seemed to have got very little emphasis in most schools (UNICEF, 2011).

It has been found that, though all students have utilized the facilities without discrimination in the case of the facilities being available in schools, all students have equally suffered where there is the inadequacy of WASH facilities (UNICEF, 2009).

2.5 CONCETPTUAL FRAMEWORK

In drinking water supply and sanitation programme women's involvement is more effective whereas all women involve in the programme from started to implementation period. This type of participation helps to sustain of the project. In this way we can see in this conceptual framework impacts by the women involvement in the programme and changes. Not only in drinking water and sanitation women's involvement but also their importance role remains in policy and decision making role. It is the best policy of implementing agency.


WOMEN's INVOLVEMENT AND CHANGES
Economic Benefits
Social Benefits
Project Benefits
Income generating activities
Vegetables production
Improvement in health
Employment
Time saving
Increase in agriculture production
Animal care
Awareness
Healthy environment
Managing household hygiene
Educating
Young children educate
Sanitation facilities
Decrease infant morbidity / mortality rate
Health education
Knowledge of operation, and maintenance
Decision making role
Contribution on community development works
Co-ordination with stake holders
Problem reduction
n

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Rational of the Study Area Selection

The study area, Sarumarani Rural Municipality is situated in Pyuthan district. Under the Municipality ward number 4 was selected for the study. It was in Dhugaghi VDC - 3 on the basis of previous political division. Where Drinking Water Supply and Sanitation Project is launched by Sarumarani Rural Municipality RWSSPWN- II.

Women are main stakeholder of water collection and work as a children care giver. So, the women are highly conscious about women participation when they know about new drinking water and sanitation project by Sarumarani Rural Municipality RWSSPWN- II. This programme is provided by RWSSPWN in 147 household of 4 wards. The researcher was made detail investigation by looking about women's participation access on the study area.

3.2 Research Design

In this study, both exploratory as well as descriptive research design was used. This study was tried to explore the impact of water supply and sanitation programme on women's daily activities basically saving time and its utilization. This study has also described the socio- economic and demographic characteristics of the women, level of participation and role play by women in the study area**.**

3.3 Nature and Source of Data

Both the primary as well as secondary data was collected and used in this study. Primary data was collected in the field, through interview and observations. Since women are the managers of water it is essential to learn their perception. Secondary data was obtained

from published and unpublished sources, literatures, journals, conference papers and reports, etc.

3.4 Unit of Study, Universe

Women are the main stakeholders of water related activities and they spend more time than males do. For this purpose the researcher was mainly base to focus on about women's participation and their role. For the purpose of this study, women water users (respondents) were selected from the project area and every household was requested to provide a responsible adult woman. Besides, women motivators, village maintenance worker, village health promoter and women volunteers have all been included for the study. There are 147 households in this area. Among them 60 % household, which represents 90 household's women were taken as sample by the random sampling method. Those women who are more involved with water related activities such as water carrying and washing clothes was interviewed. As women are the targets for this study, the sample units were women themselves.

3.5 Method of Data Collection

In order to obtain necessary data from the field following methods have been used in this study.

Interview: Structured interview was directly administered to the women water user, which was involved village health promoter, tap stand groups, village maintenance worker and women members of the user's committee according to the written schedule. Such interview involves the use of a set of predetermined questions. The interview schedule comprises the set of questionnaire to meet the objectives of the study. Thus, it is kept in mind that the target of the questionnaire schedule (survey format) is to obtain the personal and family characteristics: caste/ ethnic composition, saving of time to fetch water after launching the programme, use of saved time and impact about the health and hygiene education.

Observation: While interviewing, the researcher was observed and record the changing lifestyles of the people after getting the water supply facility and household sanitation activities and involvement in decision-making role of women in this field. Similarly, the researcher was observed operation and maintenance facility. Surrounding conditions of the neighboring household deprived of piped water system are also compared with the ones having systematic project facility.

3.6 Tools of Data Collection

Mainly, structured and semi-structured questionnaires were used for the collection of data for selected households. Question schedules were developed to conduct the interviews with the respective respondents of the study area. Observation checklist as well as FGD checklist was applied in the study area.

3.7 Data Analysis

Both the primary and secondary data was processed and tabulated. They were analyzed by descriptive way as mentioned above in the research design. The data was qualitative and quantitative which are processed by the statistical program. Bar diagram, pie- chart and percentage method was used to describe and analyze socio-economic and cultural condition and situation of the area related to water and sanitation, and the impact of the new water supply and sanitation systems. Various tabular comparisons are performed to analyze the population and number of households.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Age Structure

In Nepal, women are directly attached with the household chores and most of the times they spend a lot of time to fetch water. So, without women's participation none of the programmes of water supply achieve its target. For this concentration it is made the policy that women participation is a compulsion in water supply and sanitation programme. Then NGOs and INGOs involve women as a key component for the programme. Thus, an attempt was made to find out the distribution of the respondents by age group for which the table has been developed. The table no.01 shows the scenario of age that explicitly appears in different age group.

Table 01

Distribution of the Respondents by Age Group

Age group	No. of Respondents	Percentage
17-20	4	4.4
21-30	14	15.5
31-40	31	34.4
41-50	24	26.6
51-60	17	18.9
Total	**90**	**100**

Source: Field study, 2018

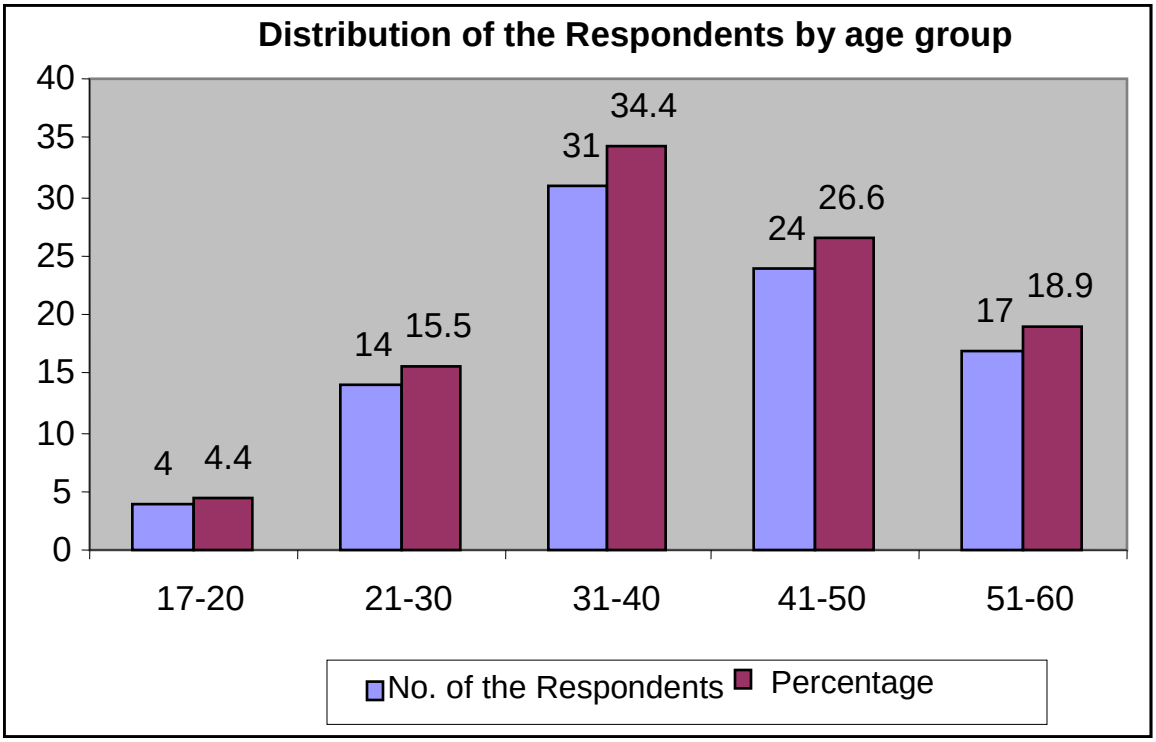


Figure: 03

The age structure of the women water users identifies their work burden in fetching water. They do so according to their age and responsibility. Hence, the range of 31-40 age group represents 34.4 percent of total who hold more burdens to fetch water and highly responsible for household activities. They have to show the keen interest and actively participate in the programme. Similarly 26.6 % women of 41-50 age groups participate in this activity. These two age categories represent the majority of the total. It is because they are physically sound and most of the time they carry the water and know the burden of carrying water in Sarumarani areas and Baddanda Village. Mostly the daughter-in laws fetch water. In Nepalese society, once the woman is married and goes to another house she is expected to do all the house works.

4.2 Caste/ Ethnicity

A wide diversity of caste/ ethnic composition is observed in the field. The researcher during the field study finds that the upper caste group and so called lower caste group of

people live there harmoniously sharing all the benefits of the programme equally. The caste ethnic composition is documented in the table no. 02

Table 02

Distribution of the Respondents by Caste /Ethnicity

Caste/ Ethnic	Number	Percentage
Brahmin/Chhetri	5	5.55
Janajati	75	83.33
Dalit (Kami, Damai, Sarki)	5	5.55
Muslim	5	5.55
Total	90	100

Source: Field study, 2018

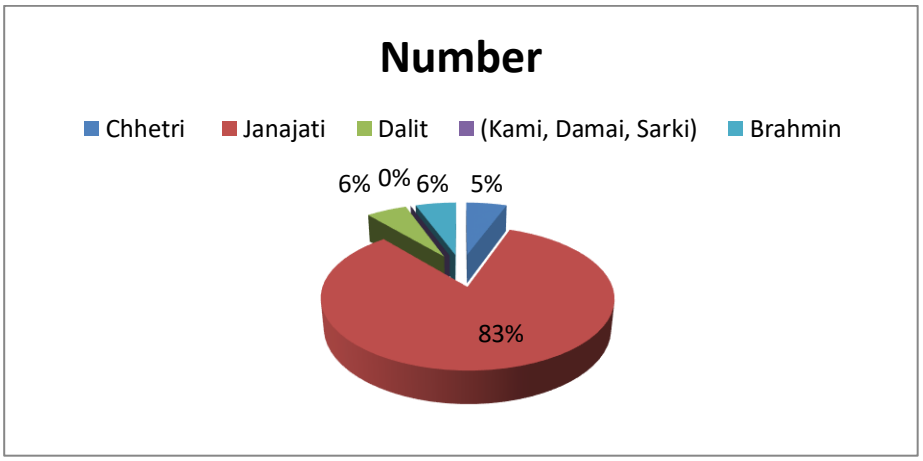


Figure: 04

According to the local people the settlement of Sarumarani areas is very old. Out of the total respondents Janajati constitute the highest proportion 83.33. Likewise Brahmin/ Chhetri 5.55 %, Dalit caste 5.55 % , Muslim 5.55 % respectively.

4.3 Occupation

An attempt is made to find out the occupation of the respondents. The researcher is interested to know the livelihood of the villagers. The figure given below shows the distribution of the respondents by occupation.

Table 03

Distribution of the Respondents by Occupation

Occupation	Number of Respondents	Percentage
Agriculture, Livestock raising, housewife	81	90
Teacher	2	2.2
Service	3	3.3
Shopkeeper	4	4.4
Total	**90**	**100**

Source: Field study, 2018

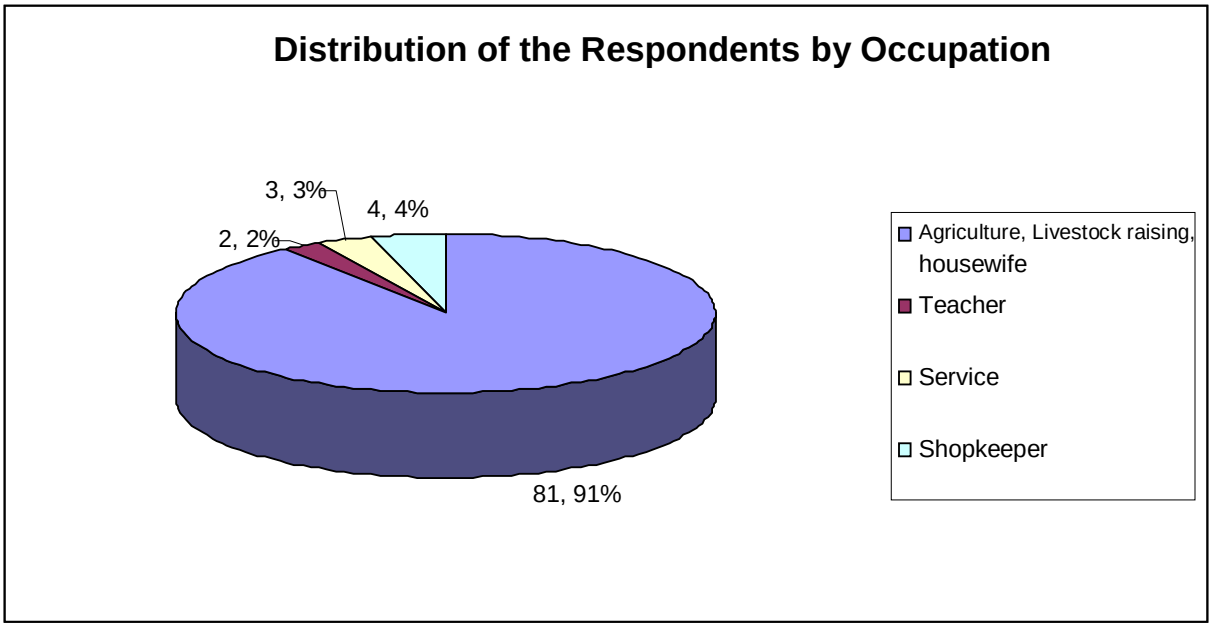


Figure: 05

The women are also engaged in other activities, although the prime duty of women is related to household works. Majority of the household women are involved in agriculture and livestock beside household activities. Teachers and service holders are more taken as executives of *Kama Kaji mahilas* contributing relatively less time to agriculture and other household works. Seasonal migration is quite familiar in this area. Migration is a form of

geographical or spatial mobility, which involves a change of usual residence of a person between clearly defined geographical units. The shopkeepers usually go to Baddanda bazar of Pyuthan to buy their goods. Lower caste men frequently visit out site the village for the construction of the house as a laborer. According to these women, the main advantage of seasonal labor is to get income. Men's migration for work does have impacts on women as well. These women are reported to have more decision power over expenditure and running household matters' when men are absent. Most women, however, have to wait for their husbands for important decisions.

4.4 Head of the Household

Nepalese society is traditionally patriarchal society and guided by the Hindu Mythology. Many of the household decisions are taken by the males rather than females that are clearly seen in the upper caste group.

Table 04

Distribution of the Respondents by Head of the Household

Household Head	No. of the Respondents	Percentage
Male	75	83.3
Female	15	16.6
Total	**90**	**100**

Source: Field study, 2018

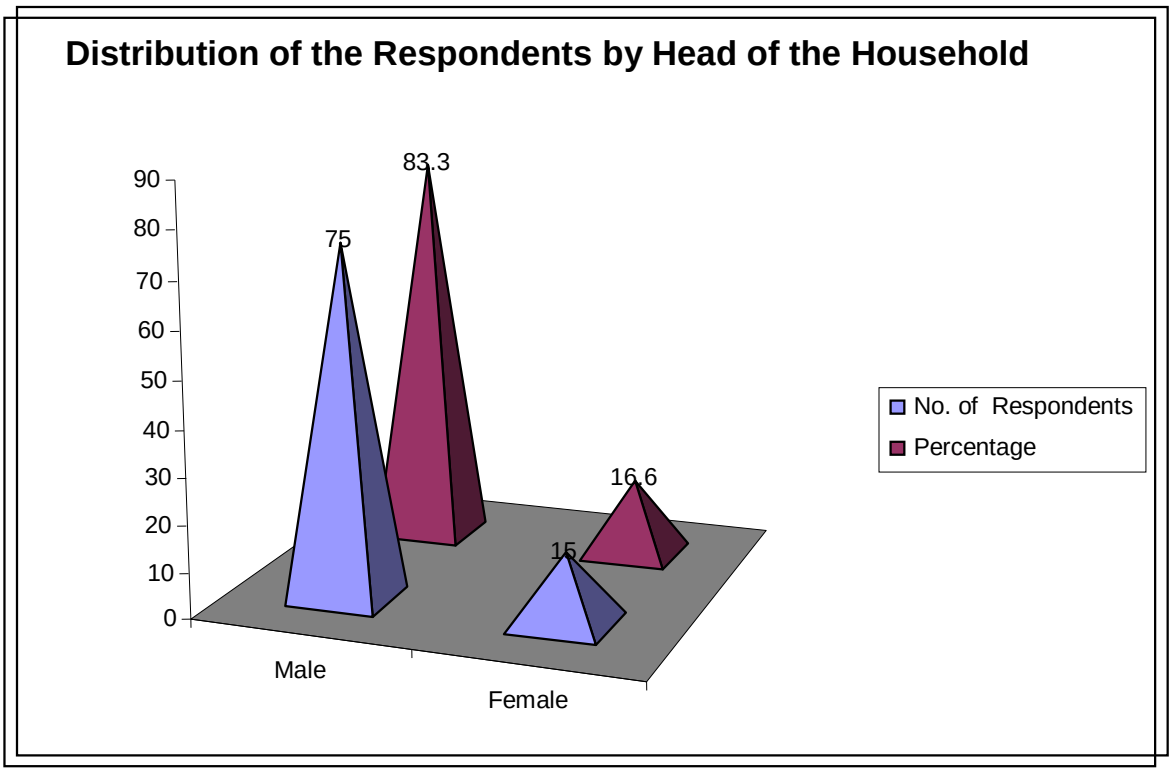


Figure: 06

The table 7 indicates that 75 (83.3 %) head of the household are males out of total 90 and 15 (16.6 %) households' heads are females. Thus, it is clear to see that the majority of the household heads are male and all the important decisions are taken by the males.

4.5 Distribution of the Respondents by Awareness and Education

Most of the married women are illiterate until the village has started adult education program. Adult women education is being conducted in this area from time to time. Organizations such as District Education Office, forest user's committee, NRCS District office and water users committees conduct adult literacy classes in this area. Most of the women now could apportion their time to these classes due to easy access to water supply and sanitation facility. The time to fetch water now has been reduced due to a nearer source. These women are happy that now they can slowly read and write. Production Credit for Rural Women (PCROW) is included in running the literacy classes. Though women literacy classes are conducted in this VDC from the very beginning, the women

are not able to attend these classes due to long distance, the women have to walk long for the collection of water. But now they are able to attend literacy classes, and most of them are literate now. They have learned about increase in environmental degradation and its negative impacts on the subsistence families. Health nutritional, sanitation and educational problems of the women and children and its solutions are taught in these classes. Training course on livestock raising and vegetable growing and kitchen gardening is also taught in these classes. The women now know many new things because they are able to apportion time to these classes. The level of education of the respondents is shown in table 05.

Table 05

Level of Education of the Respondents

Education Level	Number	Percentage
S .L.C	12	13.3
Test –Pass	15	16.6
Literate	55	61.1
Illiterate	8	8.8
Total	**90**	**100**

Source: Field study, 2018

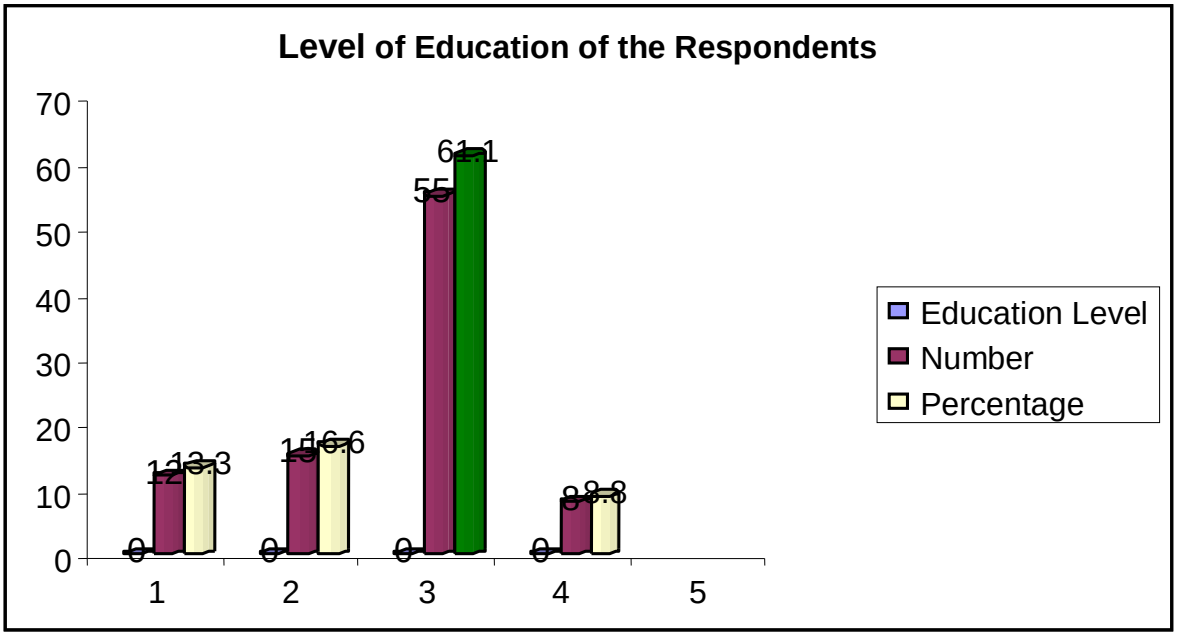


Figure: 07

While talking about the average education condition in the project area, most of the girls are sent to school these days. There is one High school in this area. In this primary school the girl enrolment is slightly higher than the boys. The overall large increase in female literacy and primary school is extremely encouraging. The higher rural enrolment in primary school is due to the result of special development inputs. In one of the high school nearby the study area the girl enrolment is decreasing. Parents do not prefer their daughters for higher level education. This is because the parents think that women should marry early (when young) and bear children and look after her husband. The bigger girls are also considered valuable as workers in the household as well as in the fields. So education for girl is not considered a good investment.

4.6 The Traditional Divisions of Labour in Water Supply

The domestic water issues/concerns and practice is a responsibility of women among all groups in the survey area. It is the women's responsibility to see that there is enough water in the house for all domestic purpose. The daughter- in –laws, daughter, and any other female member of the family, including children have to participate in the domestic activities. The male carry water only if there is no women in the house or if the women are sick, during menstruation or delivery periods, during weddings, funerals or others social obligations and festivals. Thus, women's traditional role demonstrates that women have a potential role to play in the new water supply and sanitation projects benefiting both the project and women themselves.

4.7 Women's Work

In the villages of the tasks are clearly divided between sexes. Although most the work assigned to women is the same for all the ethnic groups, there are some differences from one group to another.

All women take care of the domestic tasks/ household activities. This is considered their main occupation. Daily activities such as cooking food, cleaning the house, washing dishes, taking care of children (and other family members who need care) belong to

women in a house. Women also participate in agricultural activities; prepare fields after ploughing, plant rice and harvest paddy, or other grains. They look after animals, clean sheds and bring and dry dung to the fields. Women store agricultural products, husk paddy (with dhiki), grind grain (with Janto) and prepare daily products. Women are the main responsible people for bringing enough water. The productive activities or works create new value, and usually only productive activities are given monetary value. Productive activities are also the activities that are calculated and taken into statistics for measuring the gross domestic product. Child-nursing tasks are usually considered as women's tasks. Washing children's, clothes and cleaning the house are also women's tasks. Reproductive activities are not usually counted into national statistics, because no monetary value is given to this. This is much a socio-cultural issue; there are no natural laws telling the society which work is taken for granted and which is not. In this village, the women work both outside and inside home. Thus reproductive and domestic works are automatically productive, because without these activities a family cannot sustain daily livelihood.

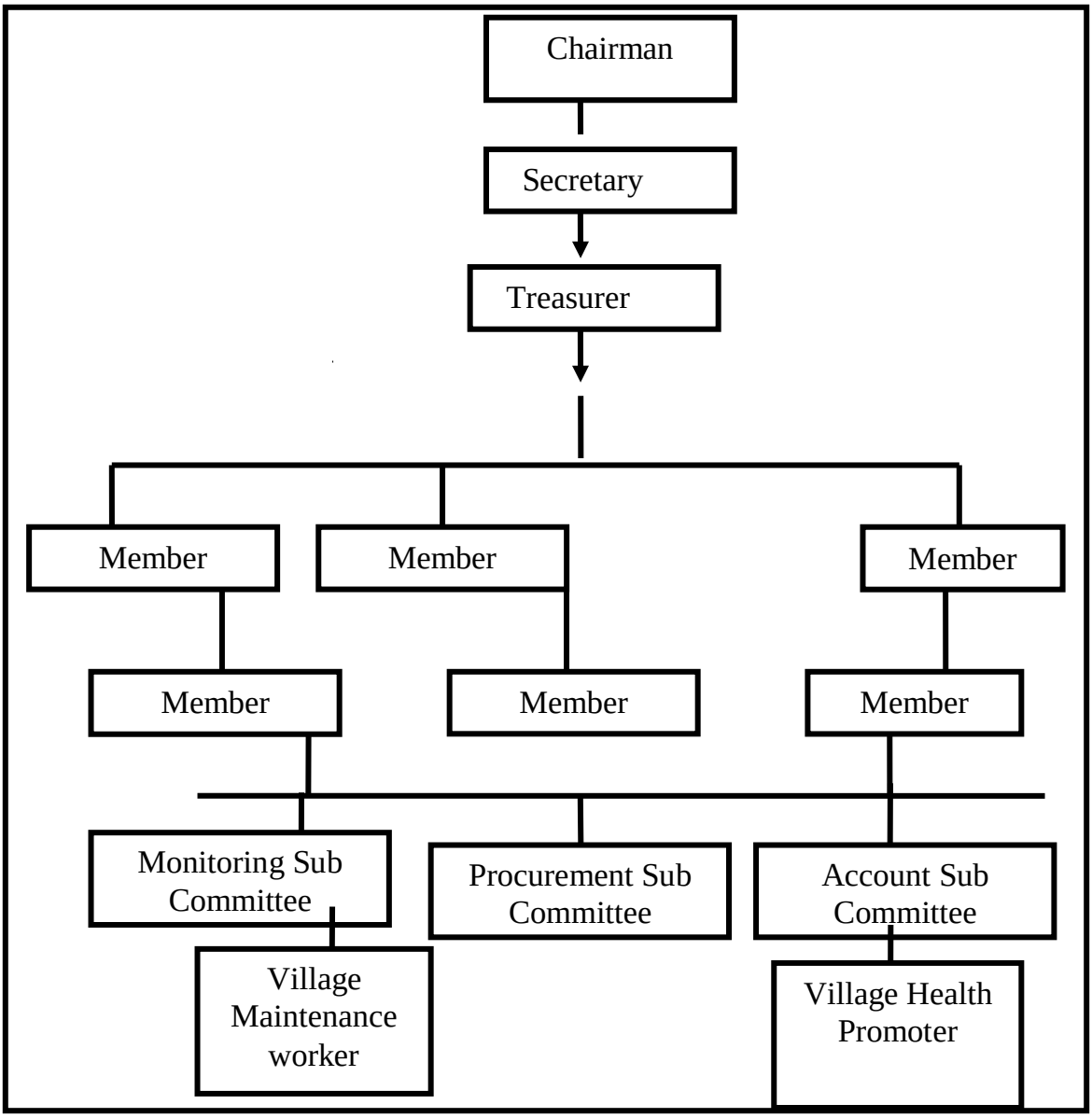
In Baddanda village it is found that men mostly plough the fields. Women collect firewood but they are not allowed to use axe but the use of knife (khukuri) is allowed. According to the villagers, an axe is not suitable for women in this village.

4.8 Historical Incidence of Commencement of the DWSSP System in the Study Area.

The problem of a community is always identified through the formation of group. In Sarumarani areas and Baddanda village, the women's groups are organized to demand a new water supply project. This village did not have a proper water supply system before the commencement of new water supply project. The women had to walk almost an hour to reach the near water source. At one trip women fetched only one 'gagro' (bucket) of water. They were very busy in both domestic and outside work. The long way, in which they had to fetch water, created additional work burden for these women. This led the women for Need of new water supply project. Local hotels used to carry water in vehicles.

Two active women represent the local women and voiced their difficulties to the VDC chairman and the Chairman of Nepal Red Cross Society Sub- branch Khalanga Through the two chairmen and vice chairman, the felt need of the water supply system in the research area is requested to the NRCS office of Pyuthan. After requesting, the preliminary study is done by the engineers (based on demand led approach). The preliminary study include if there is a genuine demand for water supply and sanitation, real problems and good prospect of village participation. Labour is always in the interest of the wellbeing of the villagers, including development works. Importance of group formation of women in community participation is very essential to launch a new water supply system, community participation is vital. Previous experiences have demonstrated that the water supply project launched without people's participation is seen ineffective. If the users of the village are participated in the community development activities then only they can have the sense of ownership. If the people feel that it is their duty to perform the water supply system they can be active in all phases of the project cycle.

A typical organizational hierarchy of the user's committee of Dinglangkhola Drinking Water Supply and Sanitation Users Committee is shown in the following diagram.



The main function of the user's committee is to help the implementing authority of WSS system to generate maximum people's participation and solve problems that arise during the implementation. It is now well understood that without people's full participation no development projects can become a success.

4.9 Factors for Need of Water Supply System

Before the commencement of the water supply system, most of the family drank or used water for food from the nearby source, *kuwa (perennial water source)*. There was high possibility of contamination because cows and cattle used to go to these sources. People

did know the knowledge of sanitation. To reach these kuwas named Kol pani and Foolseni pandherao, they had to walk one and half an hour. And even when these kuwas were dried they had to walk about one and a half-hour to reach to another source.

Due to long distance most of the women were suffering from backache. Most of the women said that because they were very busy, the time to collect water had created additional burden. They could not apportion their time to literacy classes conducted by NRCS. Water–related diseases were very common in these areas, but before the begining of water supply system the women thought that vomiting and headache ware caused due to evil spirits, or witches (bokshi). The bokshis and evil spirits are quite common in Nepalese villages.

Table 06

Factors for Need of Water Supply System

Factors	No. of the Respondents	Percentage
To get rid from diseases	12	13.3
To lessen morbidity	5	5.5
To save loss of time	52	57.7
To reduce water carrying burden	21	23.3
Total	**90**	**100**

Source: Field study, 2018

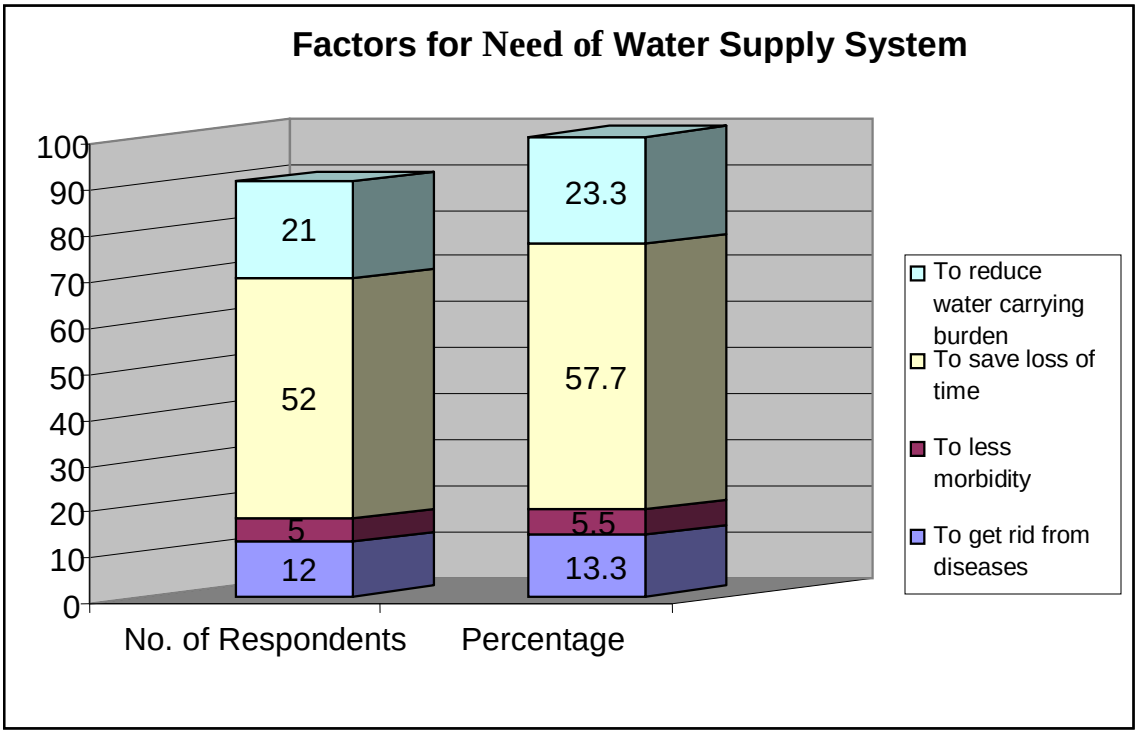


Figure: 08

The table 6 shows that the clear data about respondent's view as regards to factors for Need of water supply system The table clearly shows that 52 (57.7 %) respondents say that they spend most of their times of the day for fetching the water. They have no leisure time and feel tired. Thus to save the time and fetch water from short distance they request NRCS to launch the program. Also, 21(23.3 %) while asking the reason for Need of the programme say that they get rid of water carrying burden that they have faced. Similarly, 12 (13.3 %) want the programme to get rid from diseases and 5 (5.5 %) to lessen morbidity.

4.10 Role of Users Committee Members

No water supply and sanitation project can be a real success without people's participation. As such the users committee plays an important role in the implementation of the DWSS program. The UC members in Sarumarani areas and Baddanda village play an important role in providing free labor required for earthwork excavation and back

filling in pipeline construction to the village. Furthermore, they also participate voluntarily in transportation of materials locally. It is understood that they have been playing an important role in formulation maintenance and operation of the policies. Nevertheless, the UC also conducts village meetings to raise funds for paying to maintenance workers and funds for incidental expenses. Lastly, all these phenomena of user's involvement have made the water supply system sustainable.

4.11 Role and Responsibilities of the WUSC

For the purpose of planning and implementation, the water supply scheme is divided into three phases, namely pre-construction phase, during construction phase, and post-construction or the service- delivery phase. After the initial request is done in demand led approach; the preliminary study is done and the users committee is formed. The basic purpose of introducing WUSC is to give decision – making activities to the lowest units of social maintenance and construction of the water supply system. Regarding the role and responsibilities of the WUSC there, the RM chairman and WUSC chairman are basically responsible for the overall management of the project. Besides, a vice-chairman supports the chairman and is acting chairman during the chairman's absence. Secretary is responsible in overall correspondence works, whereas a treasurer is responsible in keeping and maintaining all financial transactions and accounts.

For the sustainability of the programme many aspects are needed. The user's committee is the one that chooses village maintenance workers, women tap stand group, tap stand caretakers, and women motivators from the same village. After the pre- construction period, these people belong to the WUSC during the construction and service delivery period. In WUSC the women motivators are also the members of user's committee. The water supply project is always accompanied by the health component as safe water alone does not reduce water related diseases unless people are aware of the sanitation habits. The district RWSSP WN-II office first conducts the sanitation motivators training. The water user's committee has responsibility to collect maintenance fund from the villagers.

During the planning and construction phase the UC acts as an interface between the District Office and community.

Thus the partnership programme works best when the role of the each partner is clearly defined.

4.12 Importance of Involving Women in WUSC

Sanitation of the participation of local women in all phases and activities of water supply and sanitation project on particular has implications for informal exchange and training. Throughout the project the project staffs communicate as partners with the men and women of users committee and give meaningful consultation with local women by providing adequate necessary trainings. These women successfully impart their knowledge and experiences about health and hygiene to the women of the same village. The participation of women in sanitation project is of crucial importance. Women usually are more motivated to have sanitation facilities for reasons of convenience and privacy.

Women use water points for both domestic and productive uses. Productive activities include riving animal's growing, vegetables and growing fruits, brewing, post harvest processing and pottery.

Table 07

Response Regarding Usefulness of Involving Women in WUSC

Response	No. of the Respondents	Percentage
Very useful	68	75.5
Useful	22	24.4
Total	90	100

Source: Field study, 2018

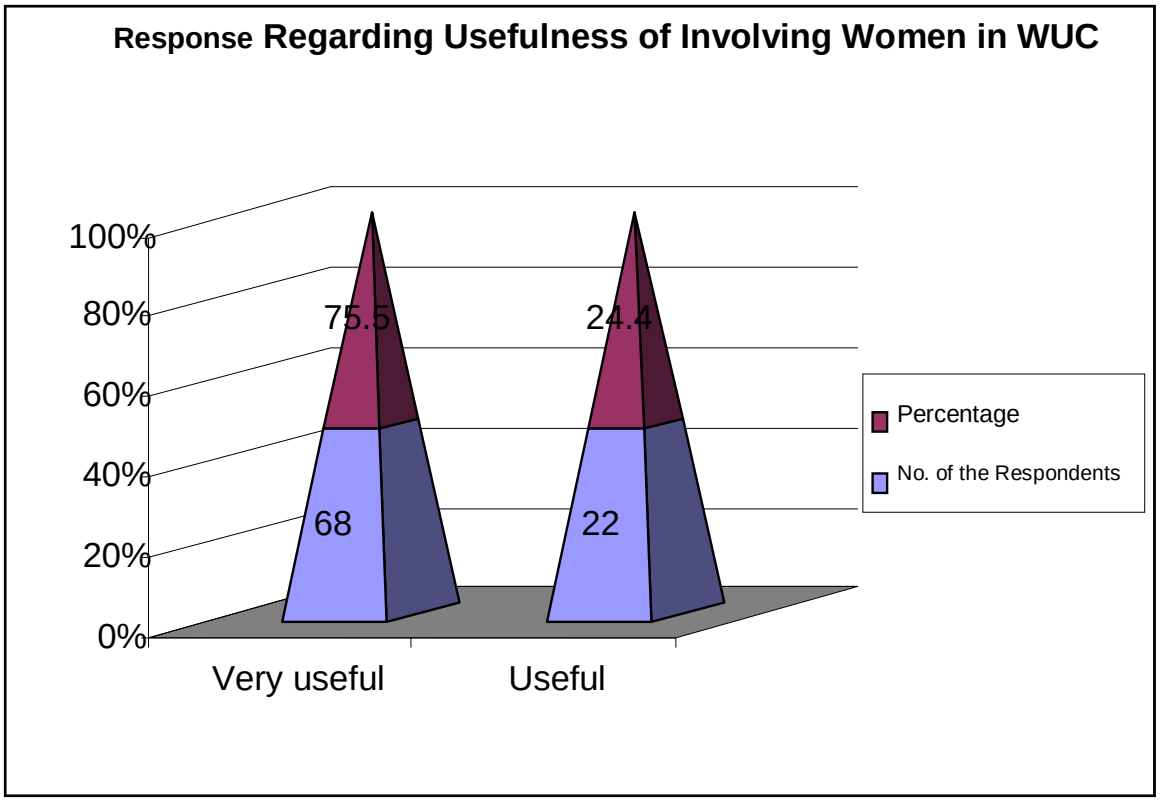


Figure: 09

A balance of men and women on committees achieve an equitable division of work and responsibilities between men and women. Women also should be involved in taking decisions along with men. According to Nepal Government policies, there must be an involvement of 33% of women in any organizations. Also, the treasurer must be a woman with in the committee. The women motivator performed better than men do. Most of the villagers are very happy that women are involved in many aspects of the community. The local women say that they feel more confident talking to women about their problems and the women of water user's committee can understand their problems more easily than the males. Information from the villagers which is hoped to reach the leaders, or possibly higher up in society has many channels, some of them seem to be more direct while some are more of less discussions. The respondents are asked to tell about the information channel back and forth. However, user's committee is clearly the biggest element in both the top-down and bottom-up information dissemination system.

The village women can easily express their feelings and problems to other women and they can easily talk in-groups. Women in villages are still shy to talk to the engineers confidently. They are especially shy to talk about defecation habits. Talking openly about defecation habit is very important for the construction of a latrine. Most of the informal learning about water and sanitation takes place through interpersonal contacts between women.

4.13 Importance of Integrating Hygiene Education

In very phase of behavior, practices and needs, the knowledge of the local people is fully used and at the same time the knowledge of the external agency is conveyed to the people by the village health promoter channel. Many locally specific risks of transmission of water and sanitation related diseases are based on behavior which continues after the introduction of improved facilities. It makes the health education support programmes necessary, where such a program is added to the project frequently. It is the only part of the project on which women should also have to be involved compulsorily. Their practical knowledge of community practices, conditions and beliefs require that women be involved. Technology in itself is not enough to ensure reduction of sanitation related diseases. Sanitation is dependent on the way people behave and organize them towards hygiene. In every phase of the project, health education can contribute to and understanding of behavior, practices, and needs. Participation of women in sanitation projects is of cultural importance because in our religion women are the ones who keep the facility clean, maintain them and train their children to use them.

4.14 Current Source of Water in the Study Area

Currently, the source of water for Sarumarani areas is a stream source called Dinglangkhola which is approximately 4.5 Km south from the study areas. From this source water is brought in GI and Polithen pipe with 45 liter capacity per day per person. One reservoir tank are constructed at the top of the village called Rana Tole Pakuribot.

4.15 Cultural Implications of Water

The ascribed status attributed by birth in a Hindu system defines an individual's position completely and secularly in stratification. The low caste people like Damai and Kami are not allowed to touch by the high castes like Brahmins, Chhetris, Newars and even matwalis. Though in the cities due to modernization food touched by low caste is no longer regarded as polluted as far as eating in public place is concerned. The village cannot avoid his/her involvement with ritually polluted water in everyday life. The villagers perceive certain type of water as also polluting. While the physically polluted water is easy to avoid by majority, it is more difficult to recognize otherwise polluted water. The villagers perceive running water, such as river and water flowing from the pumps or taps as ritually clean pure water. Kuwa water is also considered as pure, and there are restriction about who can touch and who cannot; for example the out castes untouchables are not allowed to touch and clean the taps directly. If untouchable castes touch the water facilities, taps/ pumps or water pots, water will be polluted and cannot be used by twice born caste/varna. Due to illiteracy and orthodox belief, these things are still prevalent in villagers. They believe that evil eyes, spirits or whitches (Boksi) can also pollute the water sources.

Table 08

Sufferer in the Family during WSS System Break-up

Response	No. of Respondents	Percentage
Male	12	24.4
Female	73	75.5
Children	5	5.5
Total	**90**	**100**

Source: Field study, 2018

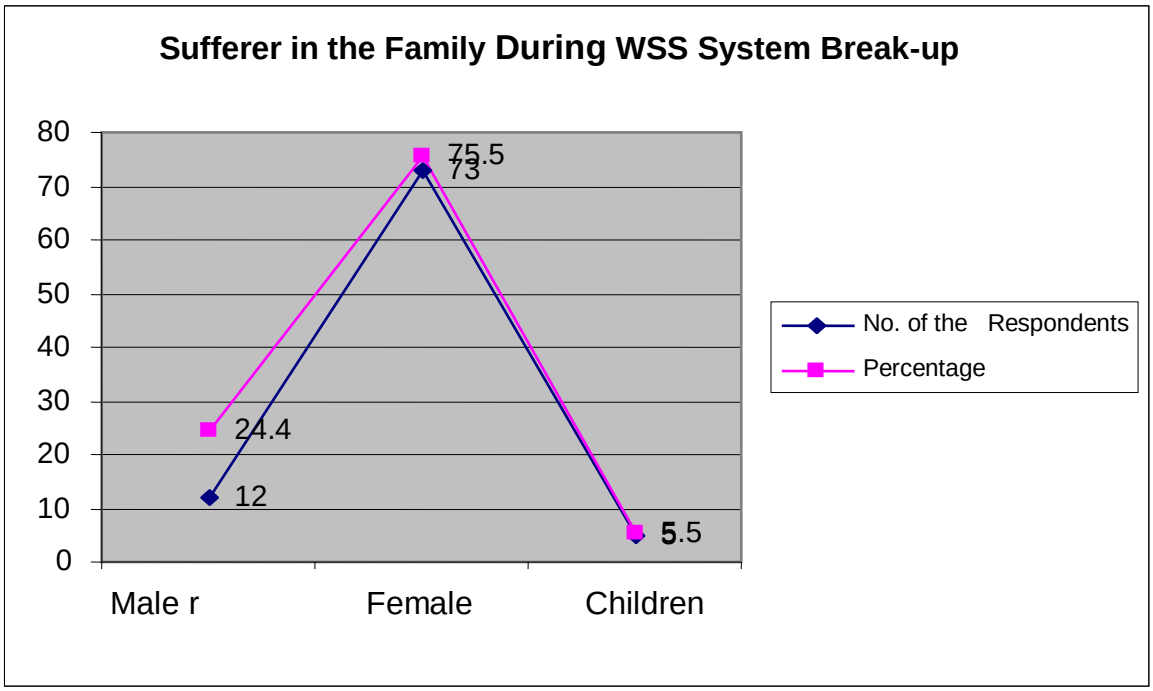


Figure: 10

Most of the women eagerly admit that women suffer most when something goes wrong in the facility, because women are more involved in water related activities which is clearly shown in above data 73 (75.5) percent women suffer because of the break-up of WSS system.. It is women's responsibility to look if there is enough water in the house. But 24.4 percent of women say that the male suffers most because males have to work outside the house and if there is no water they cannot have proper food so they become weak during their working periods. According to these women, women can walk to other sources if there is no water in the present source. The women say that the male suffers most is because their husbands are engaged in offices and have some business, so they would come late to their houses. However, 5.5 percent of the women say that children suffer most because they are small and they need food more frequently. They cannot tolerate their thrust as adult people can.

4.16 Involvement of Women as Village Health Promoter

A leader is a person who is both respected and obeyed by these followers. Education is an important determinant of leadership. The village health promoter acts as a leader and teaches villager women about sanitary habits. Thus for this, village sanitation motivator are guided, supervised and reoriented as necessary by the implementing department. The village health promoters of Sarumarani areas and Baddanda village are teachers. They are also the members of user's committee group. They are instructed various methods of interaction in the training provided by the water and sanitation programme. They are actually treated as future teachers on conveying messages on hygiene and sanitation. Furthermore, they are also instructed on how to conduct meetings locally, and how to motivate villagers to build private low cost latrines. After completion of the training the motivators are assigned for a monthly remuneration of Rs 800. Thus the district office more than the technical part, has been functioning to do sociological tasks by motivating villagers for development works, by giving them adequate training. They are trained minimum once together with women motivators and other water supply projects. Responses regarding involvement of women as motivators are shown in the table below.

Table 09

Involvement of Women as Village Health Promoter

Involvement	No. of the Respondents	Percentage
Yes	8	8.8
No	82	91.1
Total	**90**	**100**

Source: Field study, 2018

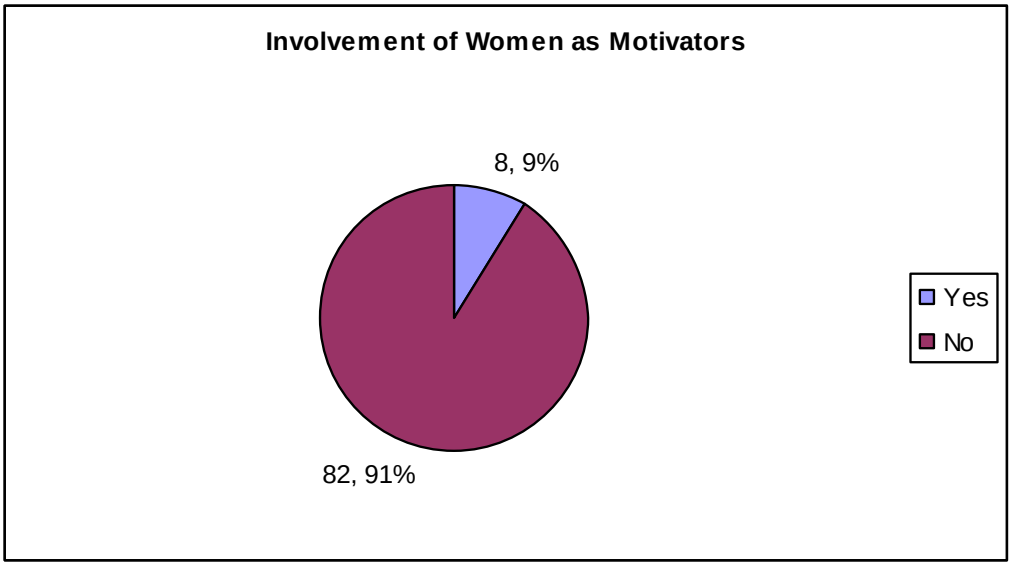


Figure: 11

During the programme period the women are asked whether if they play the role of motivators. Very few (8.8 %) say that they are involved as motivators while 96.5 % report that they do not any such roles.

4.17 Criteria for the Selection of Village Health Promoter

As a part of the program, district water and sanitation section has been regularly conducting training for women motivators and women volunteers. The women motivators are selected from the village meeting considering the following criteria:

1. She showed have regular contact with community members
2. Is a resident of the village
3. Is she educated and does she have the potential to explain clearly? and
4. Does she have time for involvement in the programme?

The women motivators of Sarumarani areas and Baddanda village are enjoyed in social services. One of them has passed SLC and the others have passed SLC send -up exam only. They are also the members of user's committee. The S.B.S training for seven days and 3 days construction seminar give training to these women by RWSSP WN-II. During the one –week training session, they are instructed various methods for interacting villagers.

4.18 Involvement of Women as Village Maintenance (Caretaker)

At present there are 21 women involved as tap stand caretaker. The user's committee has chosen these women. Women's involvement as tap stand-caretaker for 21 women out of the total women surveyed. These women (tap stand caretaker) use to operate, maintain, and clean the areas of taps as well as encourage other participants to make the surrounding clean. These women are given training on the hygienic transport and use of water from the sources to the point of final use. The covering of containers during carrying and storage and the prevention of contamination through touching the collected water and its negative effects are important information of the training. Raising awareness of the need to take measures to safeguard water is an important part about community action. The stand post caretaker's role often includes promoting the careful and hygienic use of taps. The advantages of a well – maintained and safe supply of drinking water can have many positive implications of overall health and hygiene. The training is provided by water and sanitation section of the district office, duties of tap stand –caretakers are:-

1. To clean the areas near the taps and tap stands.
2. To be involved in cleaning activities of the village.
3. To motivate other people and children in cleaning activities.
4. To maintenance and manage the water supply system.

These volunteers are given training on site in project area. They are trained once at the beginning of the project and frequently as necessary.

4.19 Benefits

After the intervention of new water supply systems people in the rural areas has have opportunity to take the benefits from the related activities. Such types of benefits are analyzed as follows:

Economic Benefits: The introduction of improved water supply and sanitation has welfare benefits particularly, when time and energy spent by women on water collection and water disposal is reduced. Potential economic benefits from the time saved in fetching water is closely related to the extent of women's involvement in domestic, economic and community development works. In many rural areas, women are actively involved in agriculture, particularly food crop production and processing, and in animal

care (Acharya and Bennet 1981). Women are also the main users of water and wastes for household economy, for example, in vegetable gardening, animal husbandry, brewing and soon.

Social Benefits: Time and energy gained from reduction in water collection can be used for community development and educational activities. In some areas, when time permits, women make the largest contribution to community self –help projects. Lack of time is often a major constraint to their participation in non – formal education. Water and sanitation related diseases are responsible for most of the morbidity and mortality in developing countries (NG / MHPP 1994, UNICEF1992, 1996, 1983). The use of more water of improved quality and safe methods of excreta disposal, adequate personal hygiene, and food hygiene by all members in the community can lead to significant reduction in these diseases and their treatment for individual households and for government and reduce the human suffering associated with them. Women play a key role in this process because traditionally, they manage domestic water and households hygiene, educate and care for young children, produce health care in their household and often in community and make decision on use, and maintain of water supply and sanitation facilities.

Project Benefits: Women's traditional role describes the obvious rationale for involvement of women in the introduction of improved water supply and sanitation arrangements for operation, maintenance and health education. The literature reviewed indicates that many of rejection and problems in the functioning and use can be explained, either partly or fully, by insufficient attention to the traditional roles and position of women, and that the women have had sound reason for non- use facilities. The project focuses on providing the means for rural villagers and especially women to take the lead in decision- making at critical stages, in implementing their decision and in collective sharing of benefit (World Bank release No.96/30 EAP). As prime beneficiaries, women have promoted the interest and willingness of men to contribute to improving water supplies and installation of latrines (CWSS, New Era, 1991).

4.20 Effectiveness of the DWSS Project on Women's Involvement

Women's role now has changed significantly than in the past. Because most women mass is illiterate and the social structure as well as a household is more male-dominated it is

quite a challenging task to develop a feeling of leadership in women. However, given an equal opportunity, women can contribute a lot for betterment of society. With involvement of women, promising results have come in income generation activities; living standards, health, hygiene, sanitation, and most importantly better community feeling. The meaningful and responsible attitude of women toward building a strong and dynamic community will definitely pave a path for sustainable development in WSS system. After commissioning of the water supply system in Sarumarani areas and Baddanda village majority of the women have utilized their surplus time in some form of income generation activities, which is shown in table 10. From the table, it seems that majority of women are involved in agricultural activities because it is less difficult and indigenous skills can be utilized for that.

Table 10

Utilization of Saved Time After the Commissioning of WSS System

Form of Income Generation Activities	**No. of the Respondents**	**Percentage**
Livestock Raising	25	27.7
Agriculture , Kitchen Gardens	59	65.5
Cottage Industry, Handicraft	1	1.1
Literacy classes	4	5.5
Total	**90**	**100**

Source: Field study, 2018

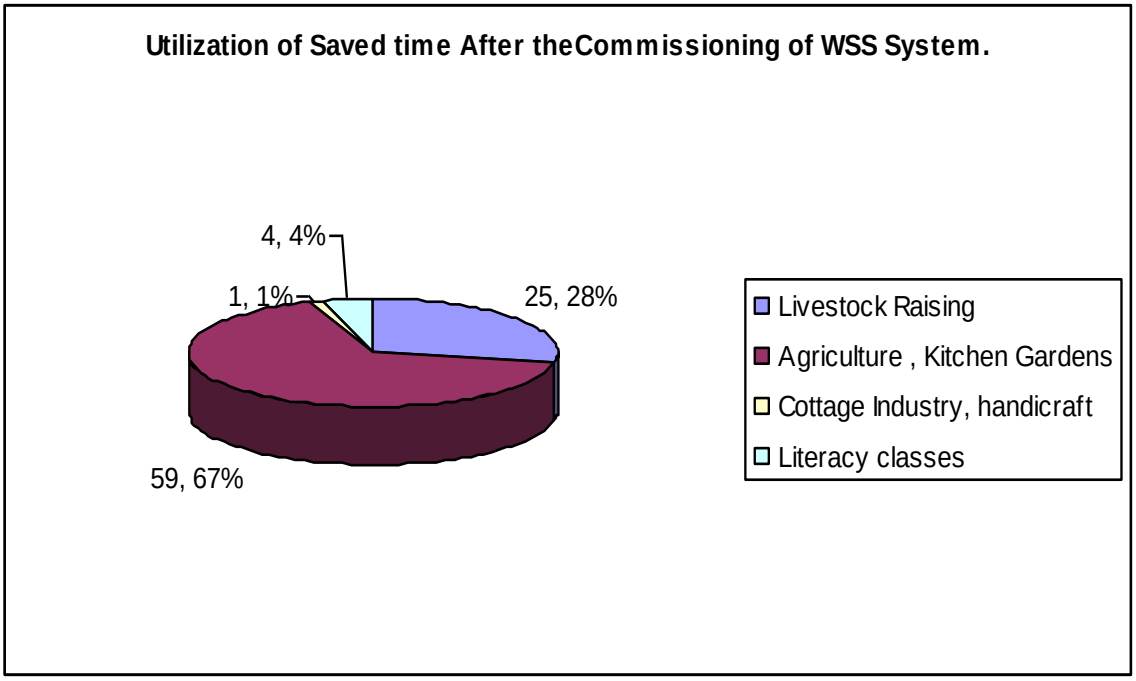


Figure: 12

A woman whose time in fetching water all through morning has now been reduced to a short walking distance as well as a safer water quality than before. Before the commissioning of the new water supply system the women used to fetch water from Kuwas and Dhungedhara. Beside the increase in these income generation activities, majorities of the women are able to attend adult classes. Now very few women are literate. Due to nearer water source, most of the women could apportion their time to literacy classes conducted by various institutions. So now they are literate now. One of the women says has that she had a great dream of being educated but never hoped she could learn and write. She used to say *Chhori buhari kophootte ko marma huncha jasto lagthyo,* but now her dream has come true. *Karma* in Nepali measn 'luck', which is destined by previous life (*Janma*). If one has done good things in previous life then only he or she can have a better life in this *Janm. Now* women can apportion more to productive and reproductive activities. Now most of the women can apportion their time in agriculture, many women have carried out plantation of fodder trees and have painted seeds of varieties of vegetables and flowers, too.

Since the water supply and sanitation program falls as sub-sector in the social sector, making a direct calculation of timesaving and income generation is a quite hectic and vague task.

However, an attempt has been made to estimate the amount of time that is saved and the corresponding monetary value that is attached as an opportunity cost. Before the commissioning of a WSS system, in average a household has to spend about an hour per day to fetch water. After the WSS system installed, the average time spent is about 20 minute per day. So, if a household saves 40 minutes per day it can be utilized for any activity that can generate them an income. So in a month a household saves 20 hours which is in other words, 240 hours or 30 man-days (based on 8 hours average work-day) of working time gained per year. The minimum average local wage for an unskilled laborer is Rs. 60. Hence, it is seen that a household can gain as much as Rs. 1800.00 per year. Besides, indirect profits gained from better health and hygiene is far more rewarding, which can't be calculated here because of the time limit for this study.

4.21 Changes Towards Sanitation and Community Cleanliness

The objective of drinking water supply system is not only to provide of safe drinking water to the community to provide facilities in different aspects of sanitation, e.g. household latrines, washing platform, individual, household and environmental sanitation, change in attitude and practice, and community cleanliness, etc. As proper sanitation without water is impossible, water must be utilized for achieving the desired and affordable sanitation practice in the community. In this context, various positive impacts and changes observed in health and sanitation- related activities are briefly discussed here.

4.22 Hand Washing and Sanitary Habits

One of the problems with sanitation is that it is rarely a strong felt need, especially in rural areas. Only a few people realize that many disease are caused by poor sanitation or understanding the way these disease are caused by poor sanitation of understand the way these diseases are transmitted. Water facility alone does not solve people's problems in matter of hygiene unless hygiene components are included. Many local specific risks of transmission of a water and sanitation related diseases, based on behavior that continues after the introduction of improved facilities, make health education support programme

necessary. The training of hygiene education is especially sought to women motivators. Participation of women in sanitation projects is of crucial importance. A change experience in hand washing and sanitary habits are shown in table 11.

Table 11

Changes Experienced in Hand Washing and Sanitation Habits

Washing means	No. of the Respondents	Percentage
Ash	10	11.1
Soap	80	88.8
Mud	0	0
Total	**90**	**100**

Source: Field study, 2018

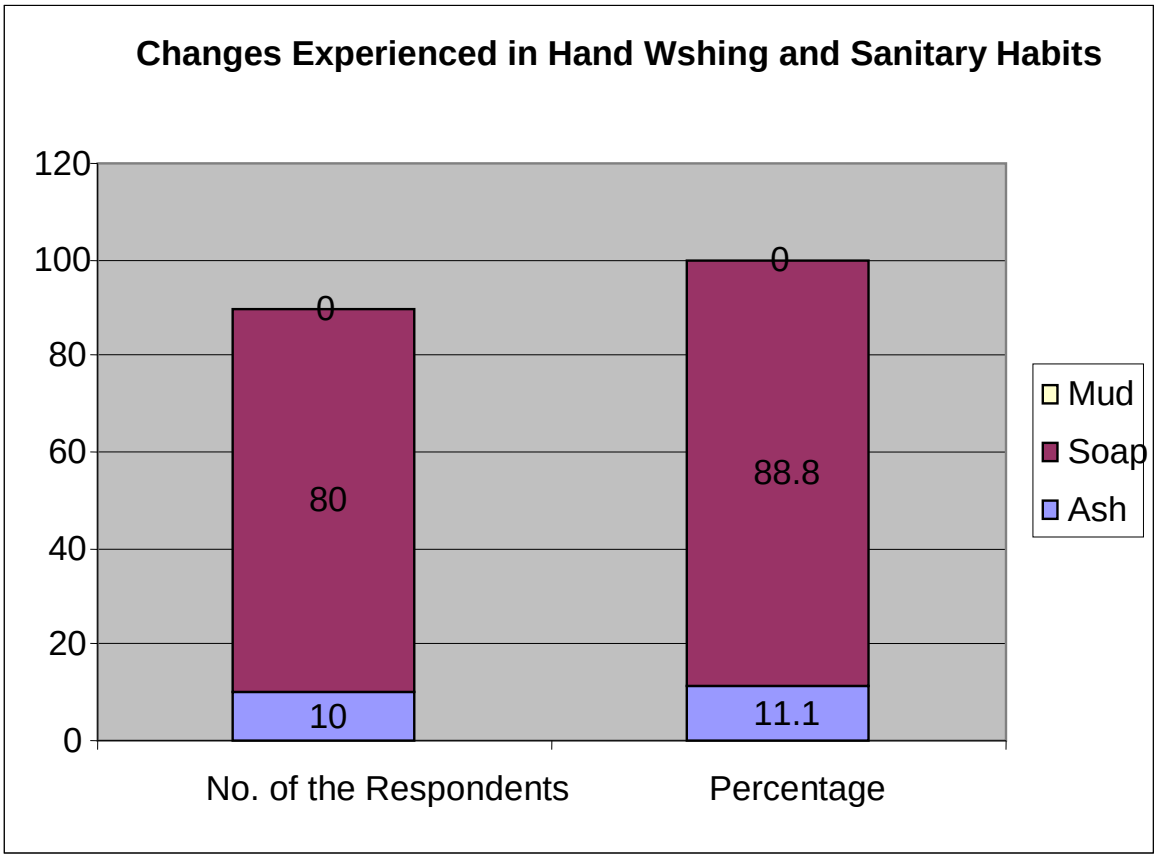


Figure: 13

Usually women are motivated to have sanitation facilities for reasons of convenience and privacy. They are the ones who keep the surrounding and the infrastructure clean, who

maintain them and who train their children to use them. Women themselves have been found to be the most effective promoters and educators in programmes where they are primary focus.

The women motivators of Sarumarani areas are teachers who are trained by the RWSSP WN- II office. They successfully impart their knowledge about sanitary habits to the villagers. In this area diarrhea and worm infection is very high. This makes the people weak and caused dehydration due to loss of body water. This is mainly because of drinking contaminated water. Children are prone to get infected when their hands are not washed properly after defecation and those dirty hands contaminate kitchen utensils and food. Before the water supply system, majority of the people did not know that mud was also source of bacteria. Before the program is launch, most of the people wash their hands by mud or water only. Hand washing, promoting the use of ash as a substitute for soap is one of the first programmes. According to the local shopkeeper, the use of soap is increased from about 35 to 40 %. Majority of the women now admit that the knowledge of hygiene behavior has changed a lot due to their changed sanitation behaviors. In above table 11.1 % women use ash out of total and 88.8 % women use soap daily. In this way this table clearly shows that hand washing and sanitary habits are changed after the commissioning of the new DWSSP.

4.23 Changes in Defecation Habits

In this area there were no latrines before the commissioning of water supply and sanitation project. There were few latrines approximately 10 to 12 out of 250 households. Among them all latrine ware constructed in Brahmin and Chhetri caste and some other latrines were in the form of pit latrine. Defecation areas were found some distance away from where people lived. Flies and insects have their share to transmit these diseases. A change in defecation habit is shown in table 12

Table 12

Change in Defecation Habits

Changes	No. of the Respondents	Percentage
Yes	83	92.2
No	7	7.7
Total	**90**	**100**

Source: Field study, 2018

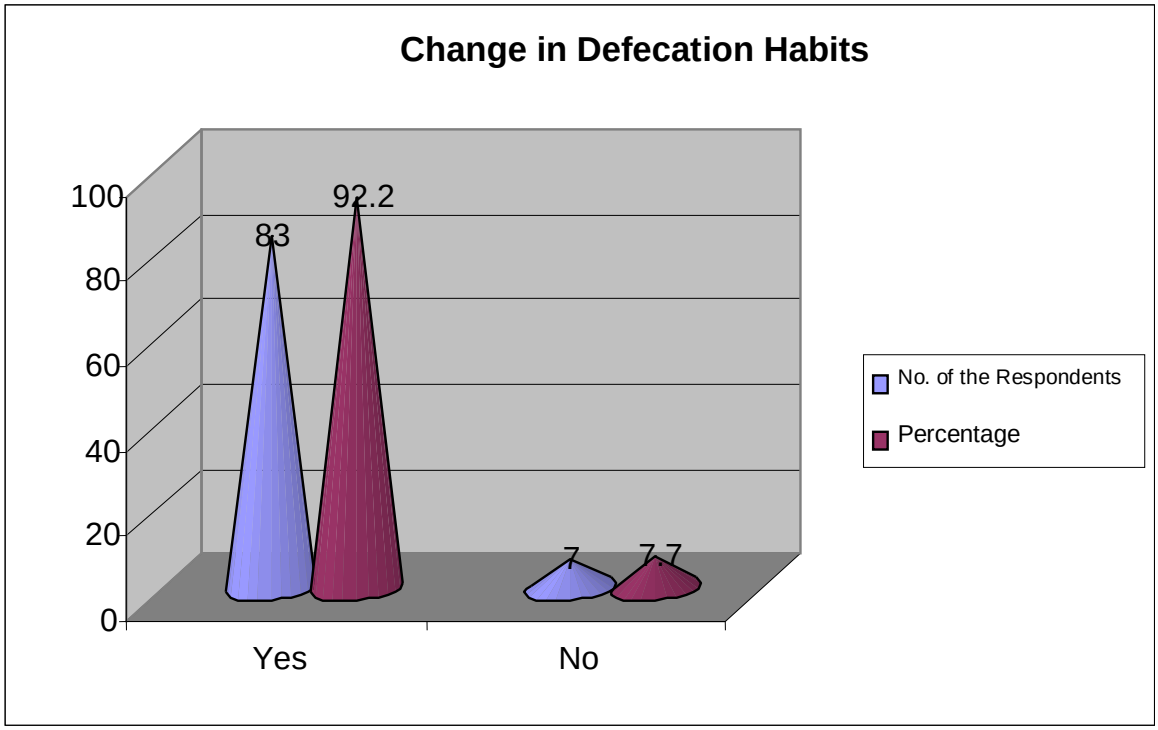


Figure: 14

In order to make people aware of hygiene and to change the sanitary habits, the users committee of Sarumarani areas and Baddanda village provides free non-local materials (cement, rod, pipe, tins, bricks, water-seal pan) by the system of Sanitation Revolving Loan Fund (SRLF). There are some pit latrines in that area. Though the pit latrines are constructed, the behaviors of defecating do not change totally. Sanitation is, to a large extent, a social phenomenon, rather than technical one. The background of cultural, social and environmental factors influence in sanitation behavior in society. Still a majority of interviewees admit that men and women use these toilets. Children are the ones who still

defecate in the open, areas because some of them feel uncomfortable defecating in the closed area as they are not used to it.

Most women eagerly admit the benefits of new water supply and sanitation programmes in disseminating knowledge on health and hygiene, which has helped to reduced the incidence of diarrhea disease among children. The habits of defecating on stream banks by people, especially adults changed to the use of pit latrines. The knowledge about recycling used water for kitchen gardening and improving cultivation is practiced. Hygiene and sanitation behavior is changing quickly to the extent possible time. However, more than 50% of the people still expect some form of subsidy as introduced by RWSSP WN- II for latrine building. Now the children wear clean clothes.

Regarding personal cleanliness, most men and women now wash themselves at the taps. There is enough water and water nearby them. However, the daughters- in- laws feel shy to wash themselves by a tap that is in front of her father in law. Changed experience in sanitation habits are shown in table 13.

Table 13

Changed Experience in Sanitation Habits

Changes	**No. of the Respondents**	**Percentage**
Clean than before	67	74.4
Satisfactory	23	25.5
No difference at all	0	0
Poor	0	0
Total	**90**	**100**

Source: Field study, 2018

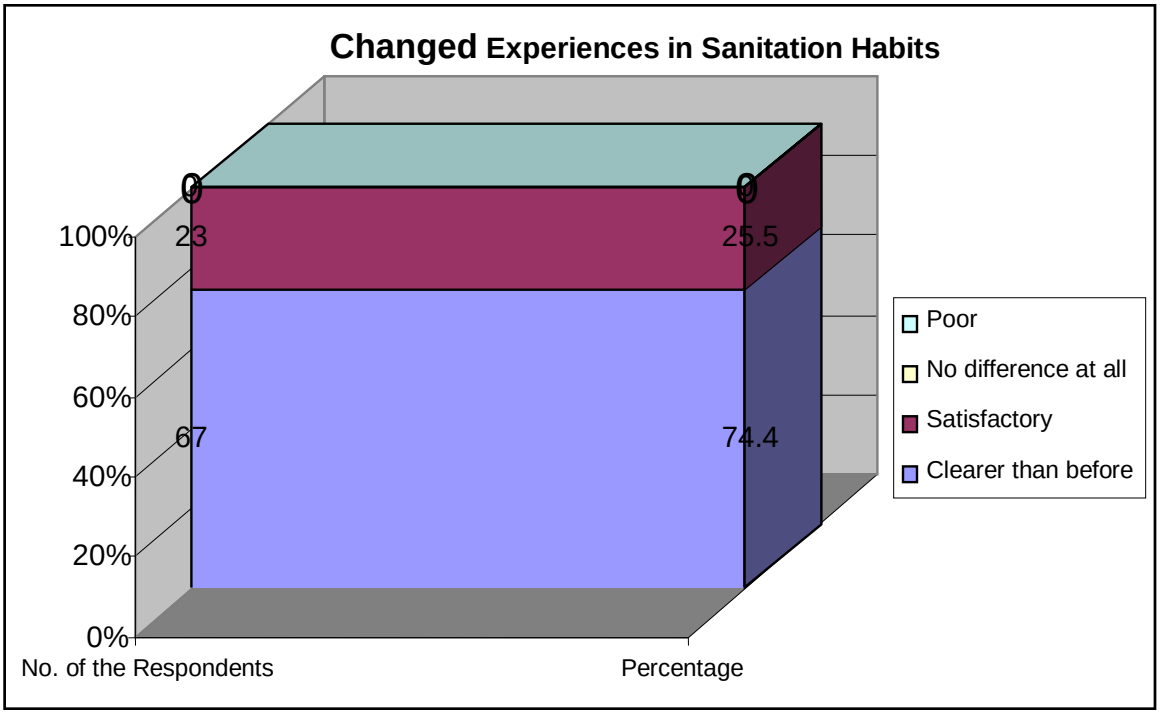


Figure: 15

67 (74.4 %) women say that the sanitation habits are clear than before after the commissioning of new DWSS system and 23 (25.5 %) women say that the sanitation habits are satisfactory. The project has changed the habits of washing clothes; washing is more frequent, because water is closer. All women go to the taps to wash their clothes because the water is clean and enough. Now the children go to school with clean dresses because of availability of water in every time in every tap-stand in every cluster.

4.24 Changes in Bathing Habits

After the accessibility of water nearby and also by the health and sanitation education, people do not suffer from among diseases because of personal hygiene such as bathing. So, the people are now more conscious about their health and take a bath regularly. Here, the researcher shows the change in bathing habits in the table 14.

Table 14

Change in Bathing Habits

Changes	No. of the Respondents	Percentage
Highly	80	88.8
Considerably	10	11.1
Total	**90**	**100**

Source: Field study, 2018

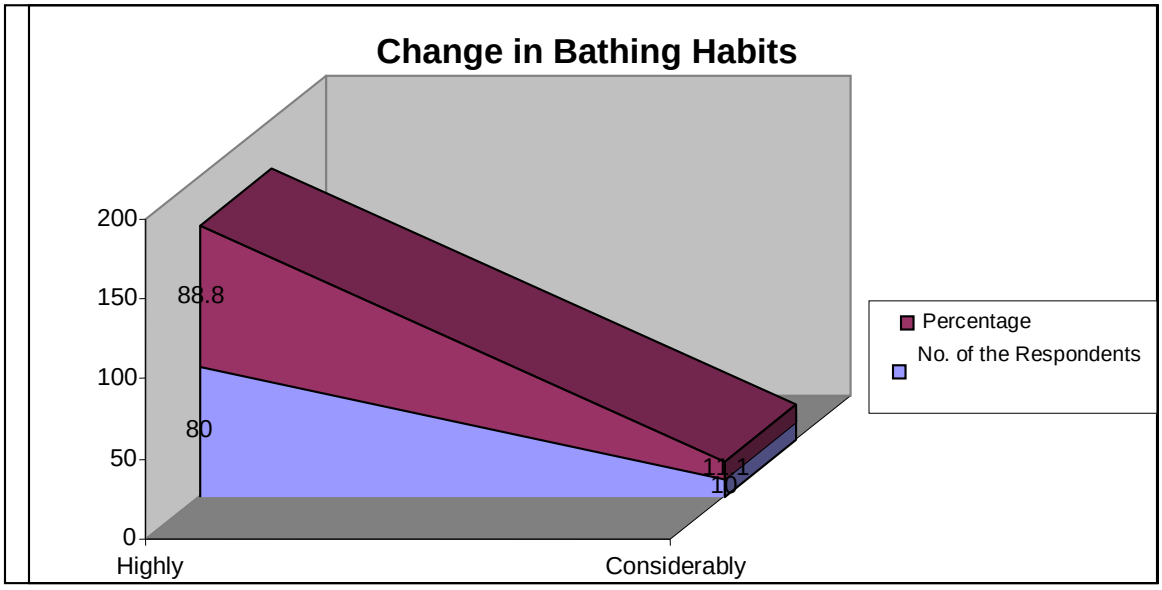


Figure: 16

In above table 80 (88.8 %) women change bathing habits in that area and 10 (11.1%) woman considerable change in bathing habits. The data shows that the bathing habits of that area have been changed. Because of this the children are healthier and have cleaner heads than before. Now with the sanitation knowledge attitude and behavioral change through the women motivators the children don't have such problems. Before the commissioning of the DWSP system, there were no water taps and women family members took their children to traditional system of water such as kuwa or dhungedhara. Cattle and cows also used kuwa water. There was much more possibility of contamination due to human defection and cattle movement. The women had to wait in a line and thus could not wash their children or themselves properly because of time factor. Moreover, the water was not clean and caused many skin problems. But now as there are

several water taps nearby the houses and of the advice of the women motivators trained through the NRCS office of water supply, the bathing habits have changed, now they wash themselves and their children properly, which has eventually benefited their health a lot.

5. 25 Changes in Sanitation and Community Cleanliness

The table demonstrates that positive impact is observed in overall health hygiene and sanitation of the household and community. Concerning water supply and sanitation, the village has undergone a great change since the project and women's involvement programme was initiated. Similarly, changes occurred in sanitation practices are shown in table 15.

Table 15

Change Occurred in Sanitation and Community Cleanliness

Change in bathing habits	No. of the Respondents	Percentage
Very positive	60	66.6
Positive	30	33.3
Total	**90**	**100**

Source: Field study, 2018

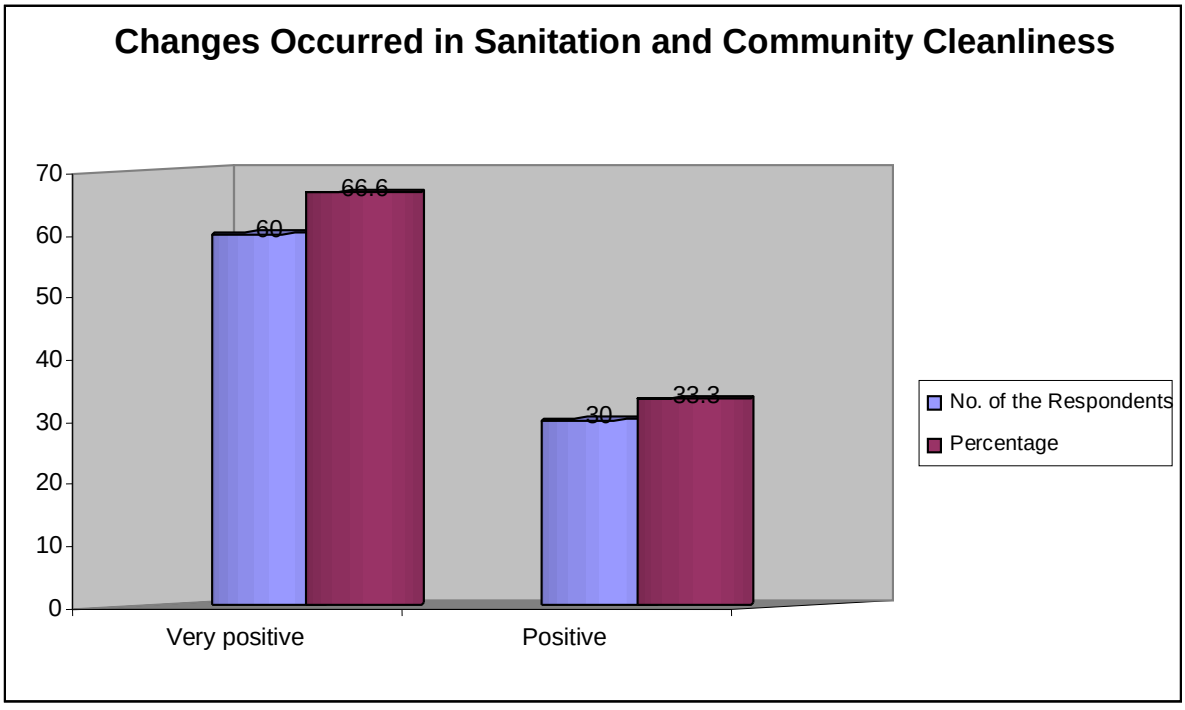


Figure: 17

Sanitation behavior had been greatly handicapped in the past due to the scarcity of water. With the help of community technician and local women's involvement in the village, the water supply is now well- maintained and personal hygiene is improving. Community has become much leaner because of the progamme. The women wash their dishes regularly than and has given up eating 2 or 3 days old leftover food kept uncovered. They also know about immunization, how and when to prepare 'Jeevanjal', how to clean infected eyes and how to wash hands with ash before eating and after defecation, to use pits for rubbish and how to clean the gagro with ash and so on.

Before the sanitation and women involvement program 80 % washed their hands with mud (a big source of bacteria). Hand washing, promoting the use of ash as a substitute for soap, was one of the first programme. Only 5 % reported washing with mud and 82 % with ash. According to the local shopkeeper the use of soap has increased from about 9 to17 %.

4.26 Protection of Water from Contamination

The fetched water is used for various purposes. It is stored for drinking and cooking, and for washing vegetables and dishes. It is stored also for animals. It is also used for washing hands, especially after defecation. The water is unsafe if the buckets are not covered after filling. Majority of the women in the village feel that boiling water is too expensive and is not affordable. Most of the women cover the water with containers. Now they know that uncovered water is highly contaminated through physical pollution. The way in which water is protected from contamination is shown in table 16.

Table 16

Protection of Water from Contamination

Protection strategy	No. of the Respondents	Percentage
Boil	30	33.3
Cover the water with container	60	66.6
Total	**90**	**100**

Source: Field study, 2018

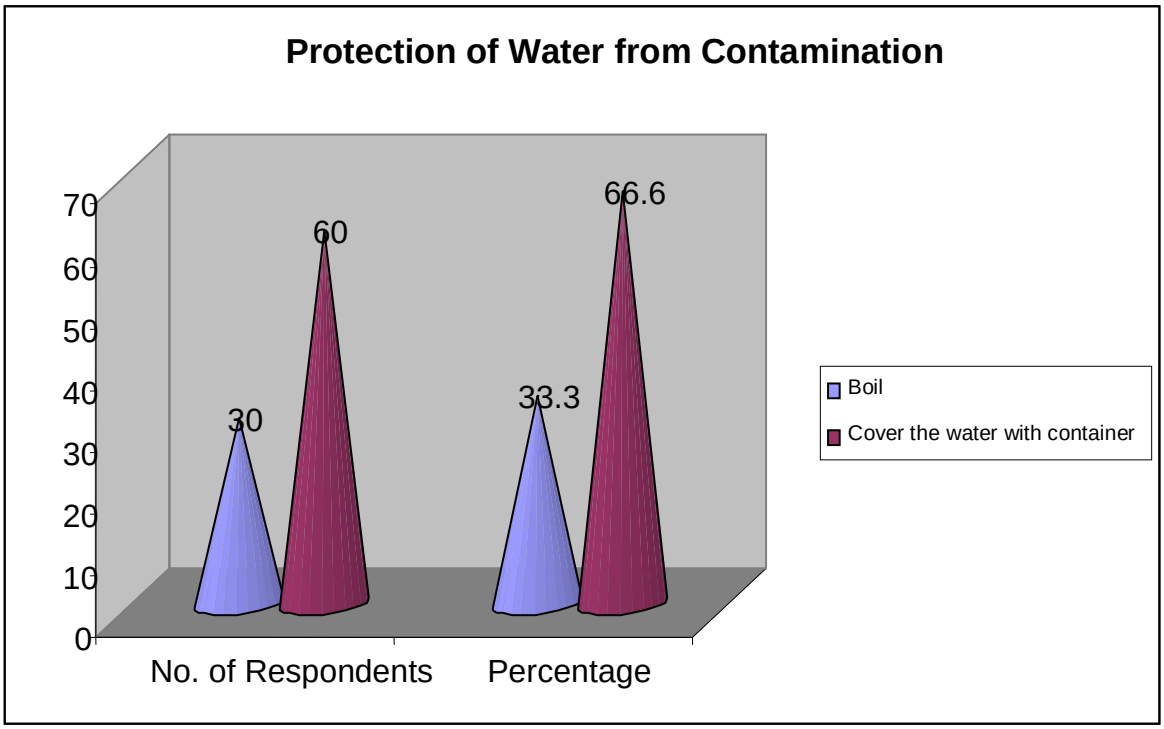


Figure: 17

Figure: 18

Most of the women say that User's committee puts potash/ chlorine in the tanks, the source of drinking water. The containers are washed when they are empty. For washing most women use ash. Soap is also occasionally.

4.27 Overall Effect on Health and Hygiene

In the health sector there are notable changes. Previously they used to depend on Dhami and Jhankris (traditional healers). Even though they are awarded about healthy habits through DWSS programme they are less frequently visit the health post. But, now they prefer to go to health centers. There is sub-health post in Sarumarani areas. Now the villagers are not bothered by many of the health problems.

People suffer from diseases not only because of contaminated water but also because of the long distance to fetch water. As a result they suffer from back pain, body aching and headache. These problems have been reduced now because of the nearer water collection

points. The impacts on health are also obtained from the information provided by Baddnda sub-health post, which shows a marked decrease in overall health problem.

7.10. Change in the Way of Thinking

Before the commissioning of new water supply system the women thought that diarrhea occurred due to heavy food. They never believed it to be because of bad water. Likewise vomiting, dizziness, irritation, and if there was no appetite are caused because of disrespect to their rituals. Polluted water (the water taps are touched by meanest women of from the dead person's house or so called lower cast people or someone's evil eye right) is the main cause of these diseases. But now due to the knowledge imparted by health motivators, they know that these things mainly happen because of bad water. Thus now they protect water from contamination. The village maintenance workers repair the water taps, the women motivators impart hygiene knowledge to the village women and the tap stand caretaker cleans the nearly areas, and motivate others to handle the taps correctly. Thus the users committee chooses these people.

7.11 Ownership Feeling

Previous experiences have demonstrated that drinking water launched without people's participation have failed in comparison to those projects launched with community participation (Giri, 1991).

In the completion of this project the people of this village have been involved from the very initial stages, from the pre-construction phases to the post construction period. Women village motivators have accompanied the project and through them the local women have gained health education. Likewise village maintenance worker, women tap stand caretaker, RM chairman, vice chairman, chairman of

RWSSP WN- II and local women groups have contributed in one or the other forms for the creation of this project. They have provided financial support, free labor, village cleaning activities, etc. Thus now they have a great responsibility as well as feeling of ownership to the new water supply and sanitation project. They are ready to face any problems related to minor and major breakdowns of the water taps. The village maintenance workers who are trained are ready to provide financial support and pay taxes for the improvement of water. Moreover, they are careful in handling the water taps. Due to the water supply and sanitation

project now the women have known the importance of group. Group formation has been the basic concept. Community development feeling on women has been found highly increased. The male members have realized that water and sanitation also belong to women's department so the involvement of women in water and sanitation sector is of crucial importance. The women motivators who impart the hygiene education to the local women are seen to be very effective. The women tap stand caretaker maintains the areas near the taps. Previously women are not involved in DWSSP, as such most of the DWSS project failed. But, now women are involved in WSS in different forms such as users committee members, volunteers, tap stand caretakers etc. This attribute to a better development of gender feeling and this is realized by males, too.

7.12 Community Feeling

Now the people have realized that community participation plays a key role for the development of their village. The best three definitions of community development in advanced sociological literature discovered basic consensus on only three definitional elements; social interaction between people, one or more shared ties, and an area context (Almger, 1992) through community participation change occurred in diseases. Opinions the respondents regarding changes occurred in incidence of water- borne diseases are shown in table 18.

Table 18

Change in Incidence of Waterborne Diseases

Change in waterborne diseases	Number	Percentage
Decreasing rapidly	67	74.4
Decreasing	23	25.5
Total	**90**	**100**

Source: Field study, 2018

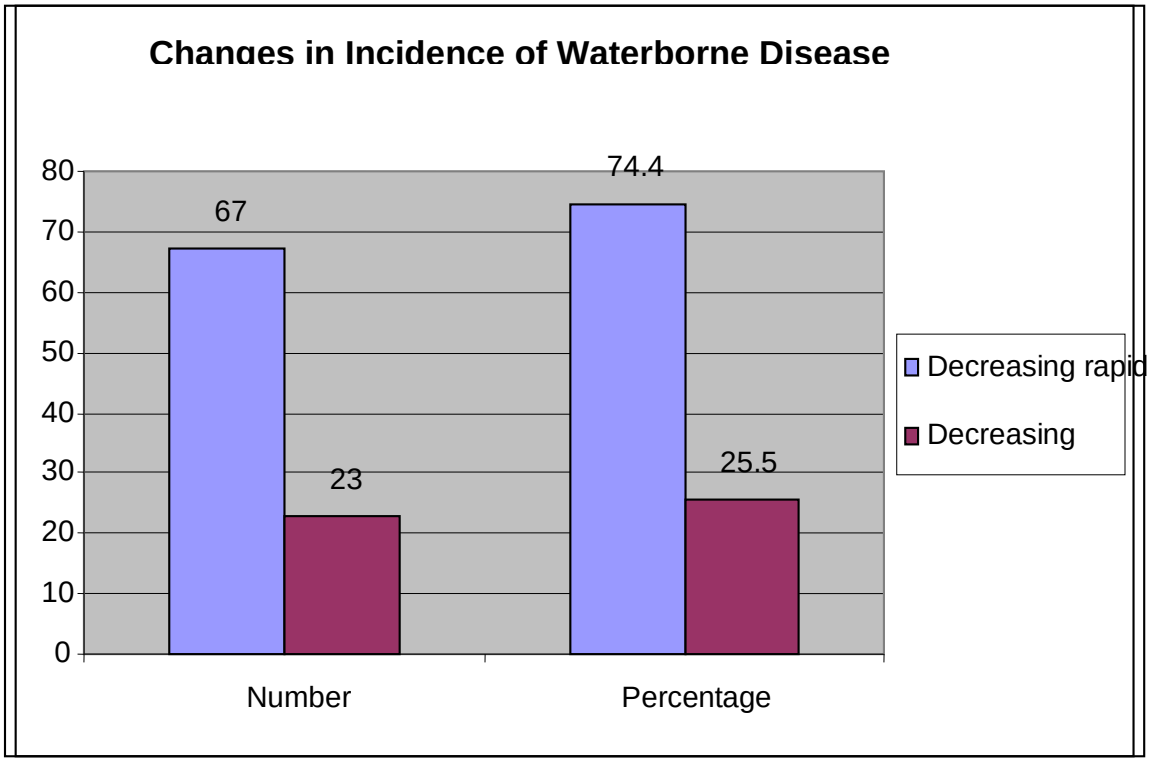


Figure: 19

The trend of water borne disease has decreased after the commission of the new WSS system. Water related diseases were very common in this area before the new water supply system. The records obtained from sub health post verify this saying. So that cumulative members of health post visitors had gone decreasing. This however can also be attributed to the positive impact of water supply and sanitation training's to the villagers by women motivators.

7.13. Impact of Women's Involvement in WSSP

Most of the women feel that it is very useful to involve women in the water supply and sanitation project from the initial stage pre-construction to the post construction. The local women can communicate more easily to the women of water committee, because water related activities are mostly the concern of women. In the villages women are shy to talk freely, directly to the engineers about defecating habits for the construction of latrines. The local village uneducated women, feel unrestricted to give their opinions and discuss the best possible sanitation option for local circumstances to the women. Usefulness of the women's involvement in WSS is shown in table 19.

Table 19

Usefulness of the Women's Involvement in DWSSP

Usefulness	No. of the Respondents	Percentage
Very useful	56	62.22
Useful	34	37.77
Total	**90**	**100**

Source: Field study, 2018

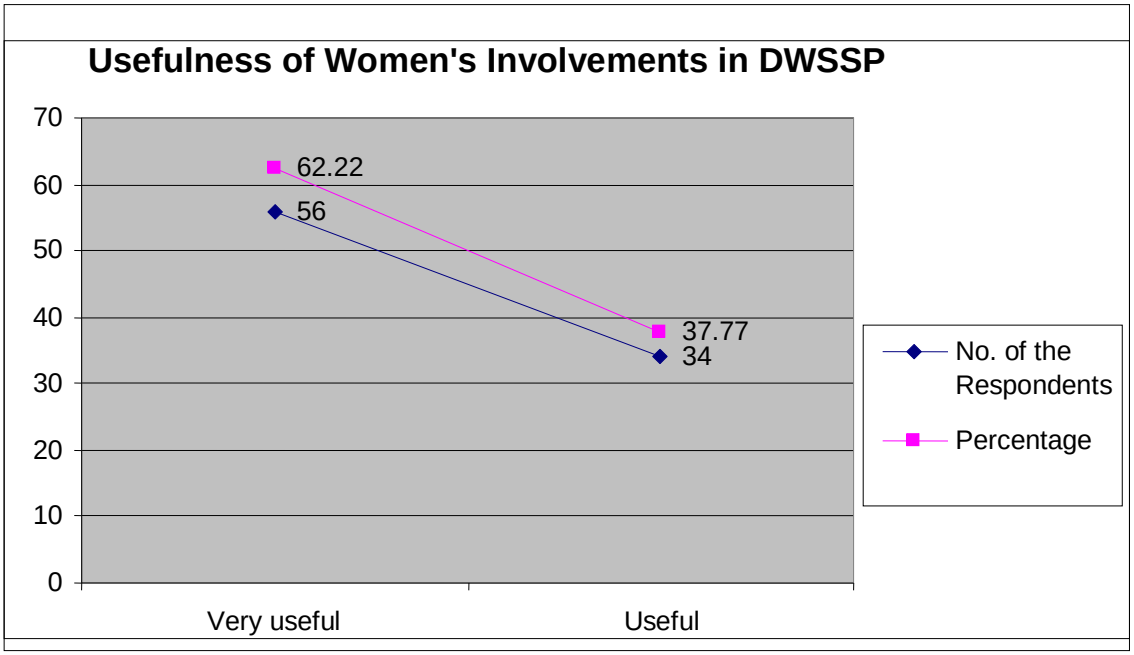


Figure: 20

According to local women, women workers generally understand more intuitively the problems and issues faced by other women and can communicate more openly with other women. The women sanitation promoter observe that only a woman can tell another village woman how to keep her house, her street and her children clean, as well as to take care of the food they eat.

7.14 Involvement of Women in Decision – Making

Involvement of women in decision – making is shown in table 20. Majority of the women admit that their decision – making activities have increased. Normally in the village, it is men whose decision is heard, but it is women whose decision has been heard for a new water supply project in this area. Now the women look more confident in decision – making activities than before.

Table 20

Involvement of Women in Decision – Making Activities

Degree of involvement	No. of the Respondents	Percentage
Higher	53	58.8
Adequate	37	41.1
Total	**90**	**100**

Source: Field study, 2018

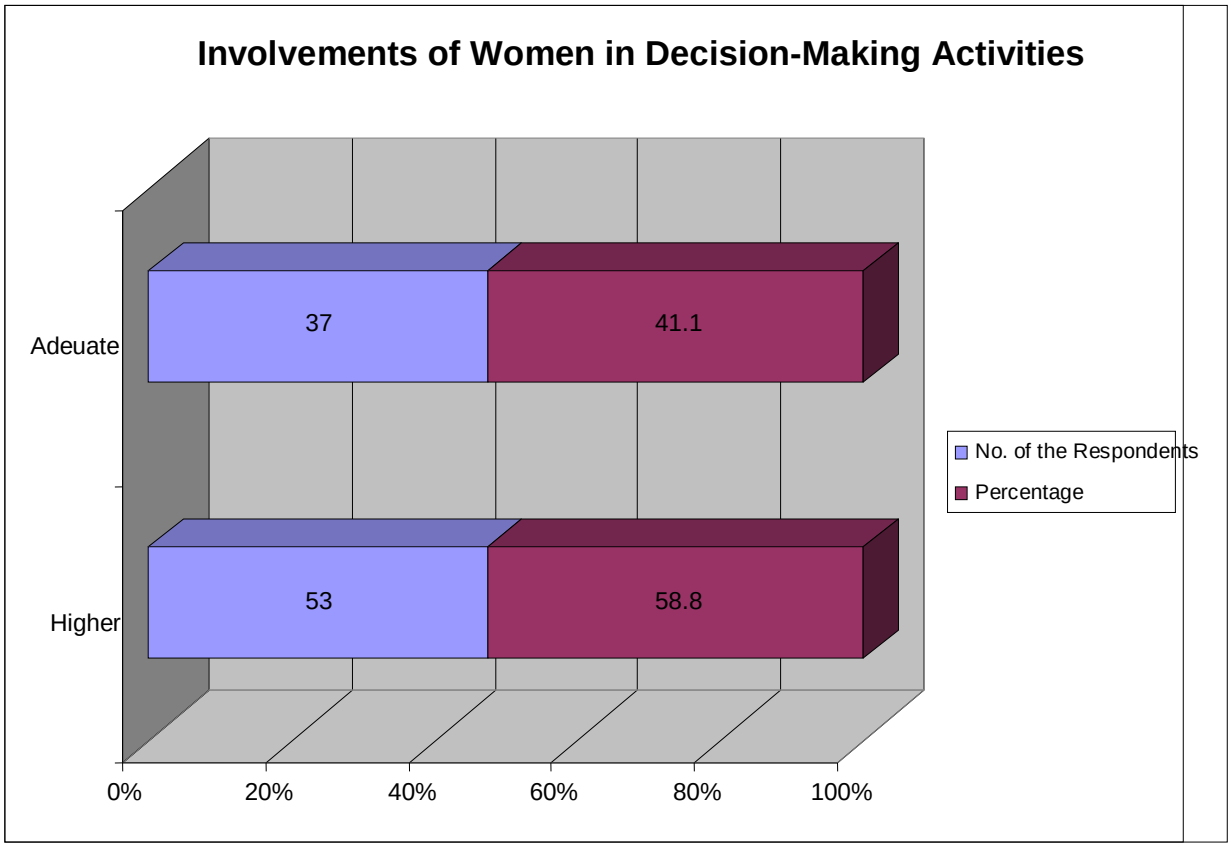


Figure: 21

The district office has consulted women on the design of location along with user committee members; they give the villagers the idea of making ventilation improve latrines. The materials were not found in the community. The latrine is suitable for the community were the community has easily access of sufficient water. They contributed to decision making for community water supply and sanitation by providing information on schedules for using facilities that fitted women's work pattern. Likewise they provide information on schedules for using facilities.

CHAPTER: FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Summary

Woman's Participation on Drinking Water Supply and Sanitation Programme A Study of Sarumarani areas of Pyuthan Nepal is representative vision of the reality. Main thrust of the present study is to analyze the socio-economic and demographic characteristics of women of the study area, to identify the role of women in water supply and sanitation programme and the type of contribution give in the community by the women and to study the impact of water supply and sanitation programme of women's life.

Nepal is a country bounded by the great Himalayan and rich fresh water resources. But resources are hardly used for human needs. Water is a truly unique commodity, without it life does not exist. Life can however, become equally uncertain even when there is water all around. While excess water in the form of floods and water deficit in the form of droughts have struck Nepal time and again. Consumption of unsafe water has claimed thousands of life annually. Poor knowledge about the relationship of the contaminated water and disease and the "Safe" handling of water and other sanitation practices cause 80% of the diseases leading to illness and death among Nepalese infants. Besides, majority of the rural population in Nepal lives under very difficult living conditions with a little facility to provide clean drinking water and sanitation. Only one person out of every four people in Nepal has access to potable water. Thus, lack of adequate water for domestic purposes and lack of awareness of the importance of sanitation behavior have resulted in poor health conditions. One of the basic objectives of water supply improvement in rural Nepal is to improve the people's health.

Women involvement in the programme has been conceived from the perspective of inter – linking water, sanitation and health with quality of life. As all chores related to water are basically within the responsibility of women, their involvement is perceived to enhance sustainability to the programme. Thus, the present study aims to analyze the women's perception and their activities in the programs.

The objectives of the study are to find out the socio- economic and demographic characteristics of women, to identify the role of women in water supply and sanitation programme and to study the impact of water supply and sanitation programme on women's life.

The research design of this study is of descriptive nature. The descriptive design which describe the characteristics of socio- economic and demographic characteristic of the women's level of participation and role played by women in the programme of the study area. In this study both qualitative and quantitative data have been used, and the source of data is both primary and secondary. Out of 150 households, 90 are included as sample of the study. The primary data were collected through interview schedule and interview with key informants.

In this study area, among the sample (90) respondents Janajati constitute the highest proportion 83.33. Likewise Brahmin/ Chhetri 5.55 %, Dalit caste 5.55 % , Muslim 5.55 % respectively.

While viewing to the respondents age group, people from the range 31- 40 are found the largest, which represents 34.4 also the range 41 - 50 consist 26.6 %. Nepal is basically agrarian country and in the study area 85.75 % of people are involved in this sector. In academic field there is low level of illiteracy i.e. 13.3 % has completed S.L.C. 16.6 % SLC send up and 61.1 % are literate only. (During the study time while asking the respondent, factors to demanding the programme 57.7 % to save loss of time and 23.3 % said to reduce water carrying burden). The programme mainly focuses on women involvement because women are the stakeholders of the programme out of 75.5 % of the total responds regarding the usefulness involvement of women in WUSC. During the programme period involvement of women as a village health promoters can be found as not effective 91.1 %. This shows that they were not involved as village health promoter. Only 8.8 women were involved as village health promoter. Out of the 90 respondents said that they were utilize their save time in the respective field and among them the highest no of respondents use their time in the field of agriculture which constitute 90 % similarly 4.4 % spent their saved time for the literacy classes.

Similarly, changes occur in hand washing and sanitary habits and 88.8 say they use soap whereas 7.7 % say they use ash. Similarly 92.2 % of the respondents say that changes

occur in defecation habits. 74.4 % of the respondents say that they live cleaner than before 88.8 % has taken a bath regularly.

After launching the programme the people come to know about the various diseases, which originate from dirty water. So they are very aware to use such water. Thus, 33.3 % of the respondents drink boiling water and 66.6 % of the respondents drink water is kept in the container with cover. Similarly, 74.4 % respondents out of total say that water borne diseases are reduced rapidly than the past and 25.5 % respondents said that the disease was decreasing. Among the respondents 75.5 % say that this programme is very useful 58.5 % women are involved higher degree of decision making process during the programme.

5.2 Conclusion

The programme in Sarumarani areas has changed the general status of women through training, exposure, provision of knowledge and skills, and by enabling them to participate in the formal process of development through physical involvement in water supply and sanitation. The women motivators, volunteers and women user committee member's responsibility to make fellow women and men aware of sanitation issues show that women can do something, more than just farming and household activities. The women of Sarumarani areas and Baddanda village are becoming increasingly familiar with the formal system and are preparing themselves to participate in water system, decision-making and planning process by making them involve in such activities.

Lacking access to knowledge of sanitation behaviour, awareness of the health implication of improperly handled water and poor sanitary habits have increased among most women and men. Due to familiarity with facial oral transmission of disease, more people are building and using latrines and pursuing others to do the same. A growing number of people now feel that villagers should have latrines, and should be aware of the pointlessness of their own efforts to use latrines if others continue defecating in the open. The positive result of the new water supply system in the area with community participation and women involvement has created a realization that the sustainability of the project largely depends on people's participation with women's involvement. The

training provided by the Rural Water Supply and Sanitation Project Western Nepal Phase II has made the women realize their self-respect and confidence. Before the project there were no such attempts which voiced women's need regarding water management and in other fields. A user's committee consists of only female and other 10 male members. They play important role to raise fund for maintaince work. It is understood that women have been playing an important part in the formulation, maintenance and operation of the policies. The women have also participated voluntarily in transportation of local materials. Thus this reflects gender involvement in community participation.

According to the implementing agency, the engineers and overseers have actively tried to change women's reality of self- esteem by adopting innovation approach and focus group discussion to make realize that women have an important contribution to make. According to the local women water users, the community and their children seem much healthier. Especially, diarrhea, skin disease, worms and infection of eyes among infants have been tremendously reduced. There is a great change in group-formation. A large number of women actively take part in the village meetings. When the district engineer visits the village for supervision of the water supply system, the women actively put forward their ideas and suggestions as well as their problems.

Women motivators play a key role in building awareness and motivating people, and give the ideas about sanitary habits, and building of VIP latrine. Likewise, they make the work of the engineers easy by assisting project officials in conducting survey on knowledge, awareness and evaluation structures, and by organizing the orientation camps in the health and sanitation and education fields. The training provided by the implementing agency to the village maintenance workers in matter of water system, of the particular village, has created a positive impact in the community self-help project. This has led to the villagers realize the importance of their own village.

Some trainings and exposure visits provided by the agency enhance the women's confidence and management capacity. However, further training and exposure visits are most essential for women's capacity building and management of WSS.

5.3 **Implication of the Study**

Women are found to be overloaded by the household works. Their involvement in the programme is not possible unless they are supported by the male members of the family. Male members are guided by the traditional concept of man-women role. Male members do not want to change their roles unless they are presented with benefits, to the family, by assisting male- female each other. Therefore the males should be provided with orientation showing advantages of sharing household work. This could be started with gender sensitization training to the members of the study area.

The other aspect of capacity building is to give responsibility in the WUSC. Women are the prime users of water and they should also be involved in the decision-making positions such as chairperson, treasury and members.

As it is observed that women representation in the most of the committee is very limited or token presentation only, therefore, there should be a clear and specific policy regarding women involvement in water supply management system.

The participation of women should be significant and active during the planning and implementation of drinking water supply and sanitation project. The women should also be encouraged to participate in management of the project along with health education. For this they should be trained in the areas of planning, implementation and management to make able to manage the project by themselves in a sustainable way.

User committee is responsible for simple repair and maintenance of drinking water supply and sanitation project. But the beneficiaries are not found much aware of management activities of user committee, although most of the women know who the members of the user's committee. Hence, there should be transparency as well as simplicity in project functioning and management activities.

BIBLIOGRAPHY

Acharya. M. (1997), Gender Equality and Empowerment of Women: A status report submitted to UNFPA, Kathmandu Nepal.

ACTED (2015), *How to reduce inequalities in access to WASH: rural water and sanitation in Nepal,* London,UK

ADB and UNDP, 1989: Women and Water Proceeding of Regional Seminar, Manila.

ADB, 1997: Project Programme Audit Report on the Rural Water Supply Sector Project in Nepal.

CWSS, 1987: Women Involvements in Community Water Supply and Sanitation.

DWSS, DoLIDAR & MoSTE. 2014. *Water Supply and Sanitation (WATSAN) Sector Adaptation Plan Framework for Guidelines: Synthesis Report on Adaptation to Climate Change*,Kathmandu, Nepal

Howard, G., & Bartram, J. (2003), *Domestic water quantity, service level, and health*. Geneva: World Health Organization

Howard, G., & Bartram, J. (2003), *Domestic water quantity, service level, and health*. Geneva: World Health Organization

http://www.dwss.gov.np/content/49/NMIP_PROJECT. 2014.

Kailash Sharma (2015) SNV Nepal: *Case Study of the Sanitation Café, step towards strengthening sanitation supply chains*, Kathmandu, Nepal

Kandel, H. (2016), Drinking Water, Sanitation in Rural Nepal: Water for Health, Kathmandu, Nepal.

Lorenzen, E. (1996), Drinking Water, Sanitation and Health Education in Rural Nepal: Water for Health , Kathmandu, Nepla.

Ministry of Health and Population; Nepal Government, Central Bureau of Statistics.2001 *National Population and Housing Census 2001*, Kathmandu, Nepal

Ministry of Health and Population; Nepal Government, Central Bureau of Statistics.2011 *National Population and Housing Census 2011*, Kathmandu Nepal

Ministry of Health, Nepal; New ERA; and ICF. 2011.Nepal *Demographic and Health Survey 2016*. Kathmandu, Nepal: Ministry of Health, Nepal

Ministry of Health, Nepal; New ERA; and ICF.2017.*Nepal Demographic and Health Survey 2016*. Kathmandu, Nepal: Ministry of Health, Nepal

Ministry of Water Supply and Sanitation, Nepal Government 2017; *Second Quarterly Progress Report 2073/74*, Kathmandu, Nepal

Ministry of Water Supply and Sanitation; Nepal Government, *District Water Supply and Sanitation Report 2015*; Nepal

Moizza Binat Sarwar and Nathaniel Mason (2017); *How to reduce inequalities in access to WASH: rural water and sanitation in Nepal*,London,UK

MPO. 1991: The community Water Supply and Sanitaion (1992-96).

National Management Information Project (NMIP). Department of Water Supply and Sanitation (DWSS). Access from:

Nepal Central Bureau of Statistics (CBS) (2011); *Nepal Living Standards Survey 2010-2011*, NLSS Third. Kathmandu: Government of Nepal.

Nepal Ministry of Federal Affairs and Local Development (MoFALD) (1991); Local *Self Governance Act (1991)*. Kathmandu: Government of Nepal .

Nepal Ministry of Federal Affairs and Local Development (MoFALD) (2010a); *District Development Committee Operational Guidelines.* Kathmandu: Government of Nepal.

Nepal National Planning Commission (NPC) (1992) *8th Five Year Plan (1992-1997).* Kathmandu: Government of Nepal.

Nepal National Planning Commission (NPC) (1997) *9th Five Year Plan (1997-2002).* Kathmandu: Government of Nepal.

Nepal National Planning Commission (NPC) (2002) *10th Five Year Plan (2002-2007).* Kathmandu: Government of Nepal.

Nepal National Planning Commission (NPC) (2015a) *Post Disaster Needs Assessment: Key Findings.* Kathmandu: Government of Nepal.

Nepal Red Cross Society (1998-2002/03): Drinking Water and Sanitaion Programme, Plan of Operation (The Sixth Phase).

Nepal Rural Water Supply and Sanitation Project (2016); *Annual Progress Report FY03 FY 2072/073 – CY 2015/16. Western Nepal Phase II. Kathmandu*: Government of Nepal.

NG / WECS; 1996: Final Report on Study on Gender Issues Related to the Water and Energy Sectors in the FWDR of Nepal.

NG And ADB, 1996,: Fourth Rural Water Supply and Sanitation Project Memorandum of Undrstranding of Appraisal Mission.

NG, NPC 1994: Nepal National Sanitation Policy and Guicelines for Planning and Implementation of Sanitation Programme.

NG, NPC, CBS (1997), Nepal Living Standards SURVEY Report, 1996 (two vols) Central Bureau Statistics, Thapathali, Kathmandu, Nepal.

NG/ WECS, 1995: Gender Issue Related to Water Resources and Energy Development in Mid Western Dve. Region on Nepal.

NG/MHPP and WHO/ UNDP Nepal: Drinking Water Supply and Sanitation Sector Review and Plan (1991-97). Kathmandu: January, 1991

NG/MHPP, 1994: Nepal National Sanitation Policy and Guidelines for Planning and Implementation of Sanitation Programme.

NG/MHPP/DWSS, 1991: User's Group Participation in Drinking Water Project: Performance, Problems and Potential.

NRCS (2002) Community Development Program: Policy and Procedure (in Nepal Red Cross Society, Kaski.

Oxfam Brochure (2012); *Water and Sanitation Support for Landslides/Flood affected families in Baitadi district*, Nepal, Kathmandu Nepal

Rima Kumari Sah, Prem Kumar Sah, Jitendra Kumar Sah, Sudip Chiluwal, Sanjeev Kumar Shah. *Assessment of the Knowledge, Attitude and Practice Regarding Water, Sanitation and Hygiene among Mothers of Under-five Children in Rural Households of Saptari District,* Nepal. *American Journal of Public Health Research*. 2017; 5(5):163-169. doi: 10.12691/ajphr-5-5-5.

Shrestha, N. (2005); *How to reduce inequalities in access to WASH: rural water and sanitation in Nepal*,London,UK

Slaymaker, T., M. Adank, E. Boelee, F. Hagos, A. Nicol, T. Tafesse, D. Tolossa, and J. Tucker, (2007); 'Water, livelihoods and growth'. *RiPPLE Concept Paper*.

RiPPLE Theme 3. Addis Ababa: Research- Inspired Policy and Practice Learning in Ethiopia and the Nile Region.

Steering Committee for National Sanitation Action (2011) *Sanitation and Hygiene Masterplan*. Government of Nepal: Kathmandu.

Suaahara Annual Report 2015, USAID/Save the Children, Kathmandu, Nepal

UN Habitat (2016); *Reviving Sanitation Campaign after 25th April 2015 Earthquake: Global Sanitation Fund Lessons*

UN Habitat, Government of Nepal and WSSCC (2016*); Global Sanitation Fund Annual Report 2015.* Geneva: Global Sanitation Fund.

UNICEF (2016); *ONE WASH Annual Report 2015*, Kathmandu,Nepal

UNICEF and Central Bureau of Statistics (CBS) (2014); *Nepal Multiple Indicator Cluster Survey 2014*. Kathmandu: Government of Nepal

UNICEF and Central Bureau of Statistics (CBS) (2014); *Nepal Multiple Indicator Cluster Survey 2014.* Kathmandu: Government of Nepal.

UNICEF, SOUTH ASIA, 1993: Report of a Regional Meeting on Environmental Sanitation, Kathmandu.

UNO Report: (Two Halves Make a Whole CCIC 1991 page 12).

WHO and UNICCEF (2017); Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines,

WHO and UNICEF (2015); *Progress on Sanitation and Drinking-water, 2015 Update*. World Health Organization and UNICEF: Geneva.

WHO and UNICEF (2015*); Progress on Sanitation and Drinking-water, 2015 Update.* World Health Organization and UNICEF: Geneva.

WHO and UNICEF, 1993: Water Supply and Sanitation Sector Monitoring Report U.N New York.

Wolfson, E. (2016) '*One Year after a Devastating Earthquake, Nepal is Still in Ruins'*. Newsweek Europe. Published on 21 April 2016. Available at: http://www.newsweek.com/2016/04/29/nepal-earthquake-anniversary-2015-gorkhakathmandu-450449.html.

World Water Day 2013: *Ensuring universal access to water and sanitation*, News By Institute of Development Studies, 2013 Published on 22 March 2013

Questionnaire

FORM-A: Question for Women Users

Personal History

Name: Age: Occupation: Caste/ Ethnicity: Qualification: Marital Status: Number of Family Members:

1. What type of water source have you been using?
    a. Traditional source
    b. Government or NGO's/ INGO's water supply system.
    c. All of above.
2. Who fetches water frequently in your family?
    a. Myself
    b. My husband
    c. My daughter
    d. Others.
3. How long does it take you to fetch drinking water after launching the water supply system?
    a. Less than 10 minutes
    b. More than 10 minutes.

4. How long did it take you to fetch water before launching the R.M. system?
    a. Less than 10 minutes
    b. More than 10 minutes.

5. How is the surplus time utilized after the new R.M. system?
    a. Income – generating activities
        i) Agriculture/Kitchen garden
        ii) Cattle/Livestock farming
        iii) Cottage industries/Handicraft
    b. Career building
        i) Student
        ii) Teacher
        iii) Service
        iv) Literacy classes
6. What are the changes experienced in household sanitation habits after R.M. facility?
    a. Clear than before
    b. Satisfactory
    c. No difference at all
    d. Poor.
7. How frequent do you visit the health post visit after launching the R.M. system?
    a. Frequent
    b. More frequent
    c. Less frequent
    d. Poor.

8. Are you happy in all respects with the launching of the New R.M. system?
    a. More happy
    b. Satisfied
    c. Indifferent
    d. Unhappy.

9. What is the degree of your involvement in decisions making of the operation and maintenance activities of the R.M. system?
    a. Higher
    b. Less
    c. Adequate
    d. Negligible.
10. Who plays the major role in decision-making activities in your house?
    a. Male member
    b. Female member.
11. Why did you want a R.M. system in your house?
    a. To save of time
    b. To get rid of disease
    c. To Lessen morbidity
    d. To reduce incidence of back-pain.
12. Are you involved in WUC?
    a. Yes
    b. No.
13. What is the tendency of water born diseases after the commencement of the DWSS System?
    a. Decreasing rapidly
    b. Decreasing.
14. How has bathing habits changed?
    a. High
    b. Considerably.
15. Has any impact been observed in overall health, hygiene and sanitation of household and community after launching the R.M. system?
    a. Too positive
    b. Positive
    c. Negative.

16. Are you village health promoter?
    a. Yes
    b. No.
17. Are you involved as a village maintenance worker?
    a. Yes
    b. No.
18. Mention about the following practices:
    a. Means of hand-washing now:
    i) Mud
    ii) Ash
    iii) Soap.
    b. Change in defecation habits:
    i) Yes
    ii) No.
19. Your view regarding usefulness of women's involvement in R.M.:
    a. very useful
    b. Useful

Questions for Rural Municipality User's Community Members

Personal History

Name: Sex: Designation:

1. How do you feel working together with women users in R.M. system?
   a. Very useful
   b. Useful
   c. Less useful
   d. Detrimental.
2. How do women influence over user's committee activities in R.M. System?
   a. Very actively
   b. Actively
   c. Less actively
   d. Indifferent.
3. Do you think that women should be involved in overall operational, managerial and policy aspects of a R.M. system ?
   a. Yes, too effective
   b. Effective
   c. Indifferent
   d. Ineffective.
4. Has any significant change occurred in income generation activities after launching of the R.M. system?

a. Yes, very much
b. Significant
c. Little
d. Indifferent.

Questions for Implementing Agency

Personal History

Name: Sex: Designation:

1. How do you see the importance of women in R.M. system?

    a. Importance

    b. Less important

    c. Indifferent

    d. Negative

2. Can women bring positive impact on socio-economic status of a community?

    a. Yes, too positive

    b. Positive

    c. Indifferent

3. How do you assess the impact of the existing R.M. situation on the work burden and health risks of women, and children?

    a. Positive results

    b. Optimistic

    c. Indifferent

    d. Dangerous

4. Does your office maintain qualitative and quantitative information on the status of women and gender issues for project planning?

    a. Maintain and update systematically

    b. Maintain on ad-hoc basis

    c. No system at all.

5. What do you think the women need for producing better results in community life?

    a. Education

    b. Training

    c. Both education and training

    d. Awareness