

CHAPTER-I

INTRODUCTION

1.1 Background

Nepal is a landlocked country situated on Tibet, an autonomous region of China to the north, the lap of the world's highest mountain range of the Himalaya, bordered between the vast plains of China to the north and India to the south, east and west. The total land area of the country is 147,181 square kilometers lying between 80°4' and 88°12' east longitude: and 26°22' and 30°27' north latitude. Administratively, Nepal comprises five development regions East, Central, West, Midwest and Far West, 14 zones and 75 districts. Each development region has a development center and from there development activities for the region are administered. The national capital, Katmandu, is situated within the central development region. (FNCCI, 2005)

Topographically, the country can be divided into three well-defined ecological belts running parallel to each other from east to west. The Terai region covers 23 percent of the total land area with 48.4 percent of the total population. This region is located to less than 610 meters above the sea level, which is predominantly flat and alluvial land. The Hill region covers 42 percent of the total land area of the nation with 44.3 percent of the total population. It is located to 610 to 4877 meters above the sea level, including the various ranges of the Himalayan foothills. Similarly the Mountain region covers 35 percent of the total land area with 7.3 percent of the total population, over 4877 meters above the sea level comprising the Himalayan Range and touching some portions of the Tibetan Plateau. (FNCCI, 2005)

Due to the variation in altitude, there are considerable differences in climate. The Terai is subtropical with three seasons: a hot dry summer from March to June, the monsoon from mid-September, and a cool winter season from November to February. The hilly region has a temperate climate and two main seasons: a hot season (April-August), a cold season (October-February). The

mountain belt has an alpine climate; winters are long, cold and severe, while summers are short and cold. Precipitation of the belt is strongly affected by the mountains themselves. The southern slopes and valleys receive ample rainfall and snow, whereas the northern valleys and plateau that lie behind the Himalayan range are extremely dry.

The monsoon period with heavy rains occurs between mid-June to mid – September. About 80% of the precipitation is confined to the monsoon period. Average annual precipitations range from 1500 mm to 2500 mm.

A number of rivers and rivulets flow from north to south originating from the snowy slopes of the mountain Himalayan Range. The river system of the country is made up of four main rivers and their tributaries – the SaptaKosi, the Narayani, the Karnali and the Mahakali. There are plentiful perennial streams in the Hill, and seasonally fluctuating rivers and shallow and deep ground water in the Terai.

The population has always been increasing because of its high growth rate each year. The number of births is higher than the number of deaths. The world's population is growing up by 80 million per year. In Nepal, the total population will have reached 32.7 million by 2015 (UNDP/HDR, 2005). The annual population growth rate is recorded as 2.25 percent. About 67 percent of the total population is dependent on agriculture. The large and rapidly growing population makes a reversal contribution to all environmental problems. It is the main obstruction for the development of the country. Regarding the literacy situation of Nepal, about 53.7 percent of the total population, i.e. 58 percent male and 42 percent female are literate, which is very low. It indicates the poor literacy rate of the country. (CBS, 2003)

Nepal is an underdeveloped country with per capita income of \$ 270 and more than 86 percent people live in the rural areas. Most of the households are below poverty line. Low level of per capita income especially in rural areas with the rate of saving causing low rate of capital formation and investment along with the reliance of the farmer and traditional inputs and prevailing technology can also be assumed as the case of poverty. Not only the economic condition but also the socio conditions have much to do with poverty and in the rural areas, the lower caste groups are mostly poverty stricken people. Thus it is not an exaggeration to say that most of the people in rural areas live in deprived condition with the lack of basic essentials of life. The basic needs of the people increase as the number of population increases. It pressurizes the government to manage for more people of the rural as well as the urban areas of the country.

Poverty is widespread and overt problem in Nepal. It is the manifestation of historically ordained access to resources, particularly land, social structure discrimination one group of population against other and inaction of the state. About 43 percent of farm households own less than 0.5 hectare of farmland. The incidence of poverty is not uniform across various groups of population. It has regional, gender and caste dimensions. Poverty increases with the expansion of the altitude; incidence of poverty is high among the people living in inaccessible hills and mountains. Poverty is rampant in rural areas: almost double the incidence in the urban areas and its periphery. Population of dalit caste group is invariably poor. Women are extremely disadvantaged group.

Water is one of the most essential elements for sustaining of life and is provided by nature. The existence of all living beings i.e. plant, animal and human depends upon the availability of water. History shows that the civilization developed around the abundant supply of water which is derived from different sources and unevenly distributed in time and space. So water has been playing vital role since the in option of life on the earth. It is equally important for other development activities but first of all we need it for

drinking purpose because we can not live without it. Water is a gift of the nature and is available through different sources like rain, snow, hail and ice. It appears as spring, River, Lake Ground Water Sea and Ocean. The importance of water can be realized from its growing demand. It is essential for all development activities. So water is the basic element of nature, that is abundant and the most indispensable for the lives of both man, animal and plant. No living being can survive without water.

Drinking water is the basic minimum need of all human beings and provision of convenient, safe, clean and adequate drinking water is the declared commitment of Government of Nepal. It has been realized that the development of water supply and sanitation sector (WSSS) benefits public health improvements. Population growth, rapid urbanization and industrialization are imposing rapidly growing demands of water supply and it pressurizes the government for the development of water resources. The growing imbalance between the demand and supply has brought various problems. It has caused the shortage of drinking water, pollution and environmental degradation. As a result, a high incidence of water related diseases causes' significantly low productivity in our small country. Inadequate system access to safe water supplies with poor environmental sanitation and personal hygienic practices is the main cause of water born diseases in rural as well as in urban areas of Nepal.

Inadequate access to safe water supplies, combined with poor environmental sanitation conditions and personal hygiene practices are major factors impeding the improvements of health condition in Nepal. Poor water supply, sanitation and hygiene conditions have given rise to diarrhea, dysentery, hepatitis and parasitic diseases, and have exacerbated anemia and malnutrition among children. These diseases frequently take an epidemic form causing sudden heavy demands of health services, which have only limited resources to combat these outbreaks.

Most of the people accept that water supplies should be provided free as a social services, because they argue that water is free gift of nature .Water supply, traditionally in Nepal, has also been considered as a social service and it is felt to be the obligation of a government or those in power to supply water very cheaply, and of necessary, even free. It should be remembered that there is in such thing as a free lunch in the world, because every thing has a cost for production. Supply of water also incurs cost. So, with increasing cost of providing services the responsible authorities can not provide freely or heavily subsidized drinking water in Nepal.

1.1.1 Historical perspective on Water Supply and Sanitation Sector

For the first time in Nepal in 1894A.D, late Rana Prime Minister Bir Shamsheer JBR had conducted a pipe water supply system from a spring named Mahadev Khola, flowing on the northern fringe of Kathmandu valley. It was used only for the Rana families, some of their close relatives and very close high and confident government officials. The system was also provided in some public stand posts at important and well-known squares of Kathmandu city to let the people to draw water for the domestic use. Major quantity of water was taken into their places through bigger size pipe systems, not only for their domestic consumption but also for recreations like fountains and ponds built in their palace-compound. In fact, only a small section of the city area had been supplied water with public stand posts in limited number. Other population of the city area had been getting water from prevalent or widespread “Dhunge Dhara”, the stone spouts and wells for domestic consumption, which was constructed more than five centuries ago, during the periods of Malla and Lichhavi regions. Then the next late Prime Minister, Chandra Shamsheer JBR and Bhim Shamsheer JBR constructed water supply systems for Patan, Bhaktapur and Tri-Bhim Dhara for Kathmandu city respectively.

1.1.2 Planned Development and Budget Allocation

To provide safe drinking water and to control water-borne diseases, various efforts were made by the government. Among them, public participation did not get the main focus until the Seventh Plan. The government attached an importance to optimum mobilization of non-governmental sector, private sector and public participation only from the eighth plan. But in the beginning, expected success could not be achieved and only 61 percent of the total population got an access of drinking water at the end of this Plan period.

Eleventh Plan also has given an emphasis on delivering safe drinking water and sanitation facility to all the people of the kingdom. According to the target of 11th plan 80 percent of rural people and 90 percent of urban people will be benefited from drinking water facility.

With the advancement of democracy in Feb. 1950 and more prominence has been given to the drinking water since the first five year plans to 11th Plan, with the increasing allocation of annual budgets and in plan period's development of urban water supply projects gradually extended to the urban areas could fulfill the limited people's demand of drinking water supply. But in the beginning of the first and second Plan periods, more funds and construction of water supply systems were conducted only in important urban centers and district head quarters.

Table No 1.2 : Budget Allocation to the Water Supply and Sanitation Sector

(Rs. In million)

Plan Period	All Sector	Water/Sanitation Sector	% Share only in water supply and sanitation
Third plane	2101	31	1.5
Fourth plane	5048	92	1.8
Fifth plane	10985	437	4.0
Sixth plane	21750	1000	4.6
Seventh plane	29000	989	3.4
Eight plane	87080	5258	6.04
Ninth plane	18958	1190.20	6.28
Tenth plane	45572.8	1228.13	2.70
Eleventh plane	58768	2656.01	4.52

Source: National Planning Commission, Government of Nepal

From Third Five Year Plan the construction of drinking water was also extended to rural areas of Nepal during the past 10 -15 years. Approximately 2000 rural and urban pipe water supply projects have been implemented by various governmental and non-governmental agencies up to the end of 1990.

1.1.3 Agencies Involved in the WSS Sector

Some national and international governmental and non-governmental agencies are involved to delivering safe drinking water and sanitation in both rural and urban areas. These NGOs and INGOs have been playing an effective role in the drinking water and sanitation sector through the implementation of water supply projects that are usually integrative in nature and incorporate with a high level of community involvement. However NGOs are constrained by the existing regulatory framework administered through the SSNCC, their activities are not properly coordinated with government programs, and they would benefit from technical support in some areas. The regulatory framework should be reviewed in order to effectively facilitate the work of NGOs and their activities should be coordinated at the district level through integrated district teams.

The most active providers of the services in the WES sector are the Department of Water Supply and Sewerage (DWSS), Local Authorities (DDCs and VDCs) , External Support Agencies (ESAs) , Non – Governmental Organizations (NGOs) private sector, Community Based Organizations(CBOs) , and Users' Committees.

The National Planning Commission (NPC) is responsible for the overall WES sector planning and coordination. It overlooks development plans and policies and approves annual budget estimates. The Ministry of Finance (MOF) is responsible for mobilizing and allocation resources for the WES programs. The Ministry of Housing and Physical Planning (MHPP) is responsible for formulation the overall policies and looks after all rural water supply development and 22 urban water supplies. The Nepal Water Supply

Corporation (NWSC). Also within MHPP, is an autonomous body responsible for water supply and sewerage in 13 urban centers in Nepal, including the Kathmandu. The Central Human Resource Development Unit (CHRDU) is mainly responsible for planning, co-ordination, organizing and training activities in the WES sector.

MLD is involved in providing water supply facilities through integrated rural development projects. Within MLD, the Women Development Division (WDD), and Remote Area Development Committee (RADC) are also providing a number of water supply and sanitation facilities. In addition MLD also provides grants to DDCs and VDCs for the implementation of water and sanitation facilities.

The Ministry of Health (MOS) is mainly responsible for public health hygiene education, and to some extent, promotion of on- site sanitation facilities. The Environmental and Communication Center of the Department of Health undertakes these activities. The Ministry of Education and Culture (MOEC) provides health education through classroom lectures. It also has a Non-formal Adult Education Program that includes hygiene and health sections.

UNICEF has been providing technical assistance to the DWSS since 1987. Prior to this UNICEF used to support MLD for about one and half decade. Now, UNICEF supported CWSS program is active in the Central and Eastern Development Regions. UNICEF is primarily responsible for community based planning and implementation procedures. It also supports training programs.

European Union (EU) , GTZ, SNY USAID and ODA shares providing support in the WES sector through Gulmi – Arghakhanchi, Dhading , Mechi, Karnali- Bheri, Rapti, Koshi Integrated Development Projects respectively. In addition, GTZ supports Urban Development through Local Efforts (UDLE), an integrated program in the Kathmandu Valley. EU is providing funds for UNICEF. ODA has supported DWSS in implementing water and sanitation projects in the Central and Eastern Development Regions.

Often External Support Organizations that are providing assistance to the water supply and sanitation sector are FINNIDA, HELVETAS, ASDB\M, World Bank, UNDP and WHO; FINIDA has been providing support in the Lumbini Zone since 1990. Under its second phase the focus will be DDCs even though the executing agency will be DWSS. HELVETAS is now supporting Self-Reliant Drinking Water Support Program (SRWSP), which will implement water and sanitation facilities through NGOs and CBOs. The World Bank and UNDP are providing support to the development of the sector as well as to NWSC. ASDB\M had provided three separate sectoral loans to DWSS and project preparation is underway for the Forth Water Supply and Sanitation Sector Project. UNDE/WHO is mainly involved in human resources development, capacity building and production of training materials.

JAKPAS supported by the World Bank is engaged in pilot projects implemented by NGOs and CBOs. It is endeavoring to establish the proposed Water Supply and Sanitation facility in the community through NGOs and CBOs. Water Aid, an International INGO supports Nepal Water for Health (NEWAH) in implementing WES projects.

The Social Welfare Council (SWC) broadly coordinates national and foreign NGO activities. In most cases, NGOs are required to register with SWC and funds and approvals for NGO activities are often routed through it.

Nepal Red Cross Society (NRCS) and Nepal – Water for Health (NEWAH) are two major NGOs that are implementing water and sanitation projects in Nepal. NRCS is active in 12 districts whereas NEWAH has four branch offices in four regional centers (except Depayal) and is active in 25 districts.

The Rural Development Bank with the assistance of UNICEF is also engaged in water and sanitation activities especially among the poorest population in the Eastern and the Far Western Development Regions. Japanese International Cooperation Agency (JICA) had supported DWSS to rehabilitate 15 water supply projects mostly in the urban centers. DISVI, an Italian Development

Agency, is supporting WES activities in the Eastern Development Region through Environment and public Health Organization (ENPHO), a local NGO.

The American Peace Corps (APC) provides volunteers to implement water and sanitation projects, Norwegian Save the Children, Save the Children UK, Save the Children US, are also supporting water and sanitation activities in a limited scale.

Kadoori Foundation, British Gorkha Welfare Trust and India Army Welfare are providing assistance to the communities involving in the implementation of water supply and sanitation projects, mainly in the Eastern and the Western Development Regions.

Apart from these, there are more than a hundred national and local NGOs, mothers groups and local clubs that are involved in the implementation of water supply and sanitation facilities.

These agencies are struggling to provide safe drinking water facility in both rural and urban areas. For delivering safe drinking water, the environmental sanitation program can control more water born diseases. It increases the life expectancy and helps to decrease infant mortality. In Nepal's contest, life expectancy and infant mortality have been slightly improved over recent decade after a large exercise. This is due to the improvements in safe water supply and sanitation.

Thus governmental and non governmental sectors are trying to deliver safe drinking water to the people of rural as well as of urban areas 'Fund Board' is one of the agencies, which gives an importance to the promotion of safe drinking water and sanitation to some rural areas of the country. 'Rural Water Supply and Sanitation Fund Development Board' was established on March 14, 1996 by government of Nepal through 'International Development Agency' (IDA), which provides credit to manage safe drinking water to the rural communities of Nepal. 'Fund Board' was established on the basis of demand-

led principle. The 'Fund Board' implements its program through Support Organizations (SOs) including 'Non- Government Organization' (NGOs), International Non- governmental Organizations' (INGOs) and other private forms. Consultancy services are also conducted by 'Fund Board', which provides research study, project appraisal and monitoring work.

1.2 Statement of the Problem

Though, Nepal is one of the poorest countries of the world, it is rich with the various natural resources. Nepal is known as the second biggest country in water resources but it has been found no satisfactory utilization because of the poor economic condition and other domestic problems, such as lack of technology, unskilled manpower, corruption etc. therefore, these resources are not properly used. Safe drinking water and the environmental sanitation is the recent phenomenon in Nepal. Most of the urban water supply skims are intermittent seasonally and contaminated by human and animal waste.

The increasing population in Nawalparasi District demands more drinking water than ever before. Consequently, the supply of drinking water needs to be increased as the increase in demand has not been made by corresponding increase in water supply. Nawalparasi has been experiencing water shortage in recent years.

The present study is confined to safe drinking water supply and sanitation availability funded by Rural Water supply and sanitation fund development board (RWSSFDB) in ward no.2, FINIDA in 1,5 and 6 and Government of Nepal in 1,5,6,7,8 and 9 of Ramnagar VDC of Nawalparasi District, along with the people's participation and its impact in the society. The total population of Ramnagar VDC is 12,525 out of which 6060 males and 6465 are females. The total households are 2240. The study will focus on drinking water supply and sanitation availability in ward no. 1,2,5,6,7,8 and 9 of the VDC with 10,315 populations of 1883 households.

Some interactions are conducted during the study period with the villagers. The subjects of the interaction are as follows:

1. How do villagers get drinking water?
2. How did they show their participation in water supply problems?
3. How do you satisfy about present management of water supply?

1.3 Significance of the Study

Water is the indispensable element for human beings. So it must be safe and potable whatever may be its source and it has always played a major role in influencing the human activities. There are various schemes and systems to supply water and around human settlements in order to meet the basic requirement, need for drinking and other household purposes.

To address these issues RWSSFDB, FINIDA and GOV/N have been planning to improve the service level not only by increasing quantity and reducing cost but also with additional of upgrading the quality of supplied water along with improved continuity, reliability and accessibility. In this context, these projects have emphasized for quality improvement in drinking water and sanitation in Ramnagar VDC of Nawalparasi District.

This study depicts the people's participation in the scheme construction, affordability towards scheme, willingness to pay and various other parts related to water supply and sanitation sector. This study may help in the formulation of strategies and policies while constructing water supply scheme in rural areas. It will be helpful to researchers, students and persons interested in this sector.

1.4 Objectives of the Study

The general objective set for the study is to identify the economic implications of the drinking water projects implemented through people's participation in rural areas of Nepal. The main objectives of the study are as follows:

-) To identify the status of water supply and sanitation sector in the study area.
-) To identify issues related to the financing, cost effectiveness and cost sharing in rural drinking water system.
-) To assess the level of local people's participation, absorptive capacity affordability in drinking water and sanitation sector in the study area.

1.5 Limitations of the Study

This study has mainly concerned with one of the VDC of the Nawalparasi District. So this study may not represent the problems of the district or country as a whole. But the study has observed some social conditions, economic conditions and affordability to drinking water and sanitation sector in a micro level conducted within a limited time. The study is based on the Safe Drinking Water and Environmental Sanitation problem.

1.6 Organization of the Study

The thesis has been divided into six chapters. The first chapter deals with the introduction of the subject matter including issues and problems, objectives and rationale of the study. Similarly, various studies are made in the second chapter through review of literature. The third chapter is about research methodology of the proposed study. The fourth chapter consists of description of the study area. The fifth and sixth chapters are the detail discussion of findings of field study along with conclusion, problems and recommendations.

CHAPTER -II

REVIEW OF LITERATURE

As we enter the twenty first century a global water crisis is threatening the security, stability and environmental sustainability of all nations particularly those in the developing world. Again those in developing countries are hardest hit. In its Millennium Declaration the United Nations (UN) called on the nation of the world to halve by 2015 the proportion on People who are unable to reach or to afford safe drinking water and to stop the unsustainable exploitation of water resources by developing water management strategies at the regional national and local levels which promote both equitable access and adequate supplies. The world summit on sustainable development held in Johannesburg in August /September 2002 suggested that there are priority areas that need immediate action in water, sanitation, energy, health, agriculture and biodiversity. Water is at the heart of sustainable human development. There have been many assessments in the past, but up to now there has been no global system in place to produce a systematic, continuing, integrated and comprehensive global picture of fresh water and its management.

Nepal, though “rich in water resources” its history of supplied drinking water is not very old. Planned development of water supply and sanitation started in the Fourth Plan (1970-1975). The national coverage of water supply system was only about 4 percent in 1970. A separate institution the department of drinking water supply and sewerage (DWSS) was established during that period. The major trust of the development of drinking water sector only came with the UN call of 1977. By the end of water supply and sanitation decade (1990), the coverage substantially increased to 36 percent of the total population, with the rural population and urban population at 33 percent and 67 percent respectively. The recent census household information, monitoring and evaluation system (BCHIMES) report 2000 indicates water coverage at 78.1 percent for rural and 92.3 percent of urban population (WHO, 1995, GOV/N

/UNICEF, 2001). The target set by national water supply sector policy, 1998 and in Ninth Five-Year Plan could not be achieved due to various reasons. Rural communities continue to use the most convenient sources of water irrespective of quality regular outbreaks of water borne epidemics and increasing number of patient being admitted to hospitals due to water related diseases indicates that only supplying of drinking water is not sufficient to improve public health status unless concentrated effort is made both on water supply and sanitation. The draft water resources strategy 2001 further set new targets and purpose to provide the entire population with access to reasonable safe water by 2011/2012. It also targeted for establishment of necessary infrastructure and human resources for implementing drinking water quality standards. In line with this strategy, the Tenth Five-Year Plan has proposed to reach total water coverage of 85 percent by 2007. (GOV/N/WECS, 2001)

Three-Year Interim Plan (2007/2008-2009/2010) has shown extreme increment of involvement and participation of users committee in the construction, conduction and maintenance of drinking water system. 90 percent households in urban area, 80 percent households in rural area benefited for drinking water. In the same way 37 percent households in urban area and 20 percent households in rural area are benefited for using improved latrine in the context of sanitation. As administrative record mentioned about 77 percent have the access for drinking water and 46 percent people have used improve latrine.

The Plan (2007/2008-2009/2010) has also focused on the strategies and the policies for drinking water and sanitation. This has planned to pay attention for the quality of drinking water with widespread access of people in the place where drinking water facilities are not available. This has also planned to initiate the sanitation programme as inseparable organ of drinking water plan. Sanitation facility will be widespread by constructing the drain having purifying system in the area tending towards city and urban area and latrine of appropriate technology in rural area.

This has also planned to make the women participate institutionally from central level to local level for the above mentioned purpose. (NPC, 2007)

Government of Nepal has estimated Rs 5330 million (percent of total budget) rupees to improve drinking water facilities for its population for the 2007/2008.

Narayan, (1993) in his book 'Participatory Evaluation Tools for Managing Change in Water and Sanitation' has attempted to determine the progress towards the objective of sustainability, effective use and replicability in water and sanitation programmes drawing upon experiences gained during the past fifteen years in more than twenty countries. He has used the following indicators for measuring the progress in water and sanitation programmes.

Objective of sustainability depends upon the reliability of the system, human capacity development, local institutional capacity, cost sharing and unit costs and collaboration among organization.

Effective use of water is divided into three sectors. i.e. optional use, hygienic use and consistent use. Number and characteristic of users, quantity of water used (all purpose), time taken to use facilities and management of water resources are considered optional use. Hygienic use consists of water storage practices, home practices to improve water quality, site and home cleanliness and personal hygienic practices. Similarly consistent use symbolizes the pattern of daily use and seasonal use.

As he mentioned other important indicator for measuring the progress in water and sanitation programmes is replicability which relates mainly on community's ability to expand services and transferability of agency strategy. First factor insists on additional water, latrine facilities built, upgraded facilities and new development activities initiated where second one emphasizes the proportion and role of specialized personnel, established institutional framework, budget size and sheltering, documented administrative implementation procedure and other special unique condition.

He has used PRA approach for the investigation. Depending upon the progress on indicators his study, concludes that community members are enabled to identify and prioritize, need to create more systematical future planning projects. PRA also can encourage intensive interaction and collaboration between external agencies and community. The indicators which were used in his study may also use in this study. This is significance of the review of his study.

VAIDYA, (1994) in his report “Present water supply situation in Lumbini Zone” has expressed about the quality of ground water in Kapilvastu District and used scientific technique to find out the water quality. He concluded the quality of ground water is generally good for drinking purposes. In shallow aquifers, the iron and magnese contents are in permissible limit but in shallow aquifers less than ten miters and the organic and other material reach the ground water from the surface and cause contamination.

“Mid-Term Evaluation of Drinking Water and Sanitation Program” published by Center for Research on Environment Health and Population Activities have evaluated the programme conducted by Nepal Red Cross Society and Japanese Red Cross Society. The main objective of the Mid Term Evaluation is to assess the impact of drinking water and sanitation program on the community in the project areas of the Terai and hill district. Impacts of the programme have been studied in terms of sanitary behavioral changes among the community members. The performance of Drinking Water Supply Projects (DWSP) activities in terms of hardware and software components, involvements of women and programme sustainability have been analyzed in this evaluation. The evaluation is based on participatory rural appraisal.

Rayamajhi, (2006), Report of ‘Rural Water Supply and Sanitation Fund Development Board’ has focused on the third year of the launching of the second Rural Water Supply and Sanitation Project (RWSSP-II), remained encouraging for the rural water supply and sanitation fund development board.

This could be attributed largely to demand driven and participatory approach in water supply and sanitation projects implemented by the board with direct involvement of the community and transparency maintained in regard to flow of funds.

He has found the major achievement of the Board in 2006 were among others the inclusion and empowerment of excluded and disadvantaged groups like the indigenous people, dalits and woman and ensuring access of water supply and sanitation facility also to the population residing in the geographically remote areas.

He has concluded the health, hygiene and sanitation programmes being a major component has been successful in bringing about significant change in the knowledge, attitude, practice and behavior of the target population in his report. Furthermore, the poor, indigenous people and Dalits have been found to be in the forefront of those benefiting from the Sanitation Revolving Loan and Fund (SRLF) under the board to construct toilets. As a result, the villagers have been largely freed from diarrhea and other water borne diseases. Previously, they had been easy victims of those diseases due to lack of sanitation and consumption of unsafe water.

He has also concluded the year 2006 has also been able to add a new dimension to the livelihoods of the target groups with women's group being able to make savings, people using time saves (as a result of the water supply and sanitation scheme) to run various income generating livelihood activities like vegetable, farming, goat raising, shop keeping etc in his report.

Dahal, (1998) explains about the importance of water as: the annual internal renewable fresh water resources of Nepal is 8.88 thousand cubic meters per capita which is about four times the figures for India and Pakistan. In a country with immense water resources, it is a pity that only 66 percent of the urban population have access to "safe drinking water, which, too, is not really safe for drinking without further treatment by households such as boiling and filtering

and is available only for a few hours per day. There are also acute shortage of waste water disposal facilities, sewerage system and solid waste collection and disposal system. In addition, the lack of latrines in most semi-urban houses and the traditional habits of defecating on backyards, public defecation places, roadsides, the bank of ponds, rivers, and streams etc. lead to contaminated water supply and wide spread transmission of excreta related diseases such as diarrhea, dysentery, typhoid and parasitic infections.

Apart from painful human suffering, poor health and loss of lives, poor environment sanitation causes unnecessary expenditure on medicines and health care in a country that has to import most of its medicines and serve scarcity of hospitals, health manpower and other medical facilities. Moreover it also leads to lower productivity of the Nepalese labour force and degradation in the scenic beauty of an otherwise beautiful country.

Water, Sanitation and hygiene links to health “Facts and Figures- Updated March 2004,” World Health Organization has revealed that 1.8 million people die every year from diarrhea including cholera diseases. 90 percent are children under five years mostly in developing countries. 88 percent of diarrhea diseases is attributed to unsafe water supply, inadequate sanitation and hygiene .As controlling it, improved water supply and sanitation and simple act of washing hands at critical times reduce diarrhea morbidity by 21 percent, 37.5 percent and 35 percent respectively.

- 1.2 million people die of Malaria each year 90 percent of whom are children under 5 years. There are 396 million episodes of malaria every year, most of the disease burden is in South Africa of the Sahara. Intensified irrigation, dams and other water related projects contribute importantly to this disease burden. Better management of water resources reduces transmission of malaria and other vector-borne disease.

Schistosomiasis and intestinal helminthes are also the diseases caused by unsanitary excreta disposed and absence of nearby source of safe water. Millions of people are infected with these diseases. Access to safe water and sanitation facilities and better hygiene practice can reduce the morbidity rate.

Arsenic is another massive problem caused by unsafe water. In Bangladesh between 28 to 35 million people consume drinking water with elevated levels of arsenic in their drinking water. The number of cases of skin lesions related to this disease in drinking water in Bangladesh is estimated at 1.5 million. Countries like Argentina, Bangladesh, Chile, China, India, Mexico, Thailand and United States are mostly affected by this disease. The key to prevention in drinking water with elevated levels of arsenic is to identify alternative low sources and to use arsenic removal systems.

In 2000, 2.4 billion people lacked access to improved sanitation and 1.1 billion people lacked access to improved water sources. Out of which above 80% of these were in rural areas. Only 53% of the sub-Saharan population is served with sanitation services. In south central Asia only 38% of the population is served with these services. These above results conclude that the access to sanitation in rural area is much worse than in urban areas. The development of water resources continues in an accelerated pace to meet the food fiber and energy need of a world population of 8 billion by 2025. Its development plays a vital role to improve the lack of capacity for health sector and increase in the disease burden on local communities. Environment management approaches for health need to be incorporated into strategies for integrated water resources management.

Shrestha, (2003) has discussed on rural water supply and water quality status in Nepal. He has studied about the past efforts in improving drinking water quality. Data on water quality of gravity flow water supply schemes, ground water quality. The study finds that poor operation and maintenance in most of water supply schemes and no treatment facilities at gravity fed water supply

system. The quality of water in context of health is poor. The dug well are highly contaminated with coli forms, some wells contain high nitrate or ammonia. The water from stone spouts especially urban areas also may not be safe from nitrate and bacterial contamination. The current study reveals that around 49 percent of tube wells contain coli forms but shallow tube water was considered safe for drinking in the past. Similarly, high iron and magnesia content is found in many of the water samples from the tube wells. Another main unhealthy element “Arsenic” is detected in some of the Terai districts at alarming levels.

Prasad and Srinivasan, (2003) has discussed about the drinking water in its different aspects such as drinking water quality, equality, pricing and governance in Meta and Methan villages of Sidhpur Taluka of Gujarat in India. He has used PRA and participatory learning and action (PLA) methods for collecting information, appreciate to the people’s perceptions, decision making and actions.

A sample of 30 drinking water user committee members and 12 key informants involved in the management of the mini defluoridation plant, was interviewed. The focus group discussion (FGD) involved to users and representatives of the Muniwar Abad Charitable Trust (MACT), the meta user committee (The project partner). The local Panchayats and officials at the state Rural Water Supply Department.

He has conducted the initiatives of the user committee of the village of meta, not far away from the village of Methan are highlighted in his study. Here, the user community in consultation and cooperation with the MACT and the local panchayat, has created a water user committee with an understanding that MACT will make the initial investment in the capital equipment a Mini Defluoridation Plant (MDFLP) manufactured by Ion Exchange India Ltd. This MDFLP can process 50,000 litres of water per day. The current output however, is just 25,000 litres a day owing to problems of chemical maturing

the plant will attain its full capacity shortly and would be able to deliver 50,000 litres a day. The MDFLP, fitted with an auto-chlorinator, operates quite efficiently and effectively, as is evidenced by field observations and discussions with Meta user committee office bears and a sample of users. The MDFLP supplies initially conducted some Operations and Maintenance (OandM) on their own but with the understanding that the user committee will soon take over. The Meta user committee took over the MDFLP and its operation and maintenance within two months of its commissioning. This is a significant finding of the review of this study.

Tiwari, (2008) in his draft source book prepared by him deals with “Financial mechanism for sustainable water supply and sanitation interventions.” He prepared it with the aim to build the capacity of the participation in poor urban areas. He has raised the supporting words for people who are poorer in the community. It is the fact that water security forms one component of human security. In his assertion, it has three components: availability, access and utilization. People especially the poor ones, lack access to water and sanitation because of their poverty on a low level of affordability, due to their limited right on public policies that provide water for life and livelihoods. He has mentioned that water supply and sanitation services are often not delivered to the poor unless a project incorporates specific provisions to reach the poorest households. Actually poor households are usually forced to fetch water from public taps while other households in the same area have private water connections. In order to reach all households including the poorest ones, a project needs to incorporate specific provisions to target those households. Otherwise, the poorest households may not be able to afford the investment needed to obtain improved water supply and sanitation services. Thus he has also focused on the significant role of people’s participation in the community for safe drinking water and sanitation for all status of people residing in the community.

Acharya,(2008) In his draft source book ‘Institutional Frame work for Sustainable water Supply and Sanitation Services’ has focused on current issues in institutional arrangements of WATSAN. They are: institutional mechanism for water supply and their advantages and disadvantages, privatization for water utilities, what types of institutional frame work can command community participation and factors influencing community participation. He has described in different institutional arrangements in WATSAN sector. He also described that the legal provisions in WATSON sector has lead to confusion in prioritization of projects, participation, operation and maintenance, service delivery and revenue generation.

He has explained about institutional arrangement for implementing community based WSS intervention and formation and functions of community based organizations (CBOs). He has given the example of Bangladesh and Nepal. In Bangladesh and Nepal the responsibilities of implementing WSS innovative process are laid with the people of the community. There are two type of management system for the overall management of WSS innovative process. In Nepal, most of the WSS innovative processes have been maintained by one tier community led management organizations. In Bangladesh, the implementing agencies usually followed two tiers management system. It has been developed and introduced by the implementing NGOs for establishing a methodical and planned institutional and organization mechanism that will ensure easy access on WSS facilities among the beneficiaries in the community. Two types of management system have been introduced for ensuring proper installation, operation and maintenance (OandM) and sustainable use of WSS hard-ware facilities in the community. While a project implements in a large area then the implementing agencies divide the whole area into clusters and implement carious WSS activities through cluster management organizations. One tier management system only follows where it doesn’t need to divide the project area into different cluster. However, even in the one tier management system there some based organizations for implementing WSS related activities at the

community level. The management system also guides on financial aspects relating to the WSS innovative processes.

Rayamajhi, (2007), Report of ‘Rural Water Supply and Sanitation Fund Development Board’ has focused achievements, key lessons and issues related to water and sanitation sector over this period.

With support of the Board, so far construction of 1279 rural water supply and sanitation schemes are completed benefiting 8 lakh 24 thousands population. Recent study on the Sustainability of the schemes (Dec 2007) of Batch – I, II and III which are completed last 5-8 years revealed that about 84% schemes are found fully functional and well sustained under community operation and maintenance (O and M) system. For this high rate of sustainability of the schemes, credits go to the users’ for their active involvement in the operation and maintenance of the schemes with due diligence and feeling of ownership. A recent in-house study carried out on sample basis revealed that 33% of the schemes have 100% coverage with permanent latrines and the communities are going to declare their schemes as “no open defecation” area.

The Board has adopted and excelled on the technologies of gravity water, ground water and rain water harvesting as per regional requirements and feasibility of the technical options based in community demand. Learning from the field experiences, the scheme cycle is constantly modified to increase efficiency of the Boards’ core business (i.e. delivery of drinking water and sanitation schemes to rural communities) with active participation of users at all levels.

The Board has emphasized on community empowerment through health and sanitation awareness trainings, women and enterprise related interventions designed within the framework of Women’s Technical Support Services and recently initiated Livelihood Programme (Jeevika Krayakram) as piloting. Linkage and coordination with local government bodies (VDCs and DDCs) and other stakeholders involved in the WATSAN sector has been improved over

the years with increased number of cases where resource pooling, joint planning and monitoring has been successfully practiced. The practice of Social Accountability Committee (SAC) namely Jagaran Krayakram with the involvement of community leaders, social workers, civil society organizations, local NGOs etc. has been initiated with the objectives of ensuring local ownership and accountability in the Board supported schemes.

CHAPTER-III

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology refers to the various sequential steps to be used by researcher in studying a problem with certain object in view. An appropriate research methodology is necessary for an investigation of find out result. In this study, we have tried to find out some social conditions, economic conditions and people's participation conditions in drinking water and sanitation sector.

3.2 Selection of the Study Area

The researcher has conducted the study of Ramnagar VDC in Nawalparasi district. The study area is selected mainly because the Drinking water and Sanitation Project has been implemented in this area. On another hand this kind of research has not been yet alone in this area as well as the researcher is interested and familiar with the area.

3.3 Source of Data

This study is based on both primary and secondary data. Primary data has been collected through developing a set of questionnaire and testing among the user's group to know the present status and people's view on drinking water and sanitation sector. The secondary data are taken from different offices, such as DDWSS, VDC, RWSSFDB, CBS, Economic Survey, District Profile, NPC, NRB and other different publications.

3.4 Research Design

The research is exploratory in nature. In order to identify the problem, available literatures are studied. This has helped in identifying the problem of the particular study area. This study explores a descriptive research frame work.

3.5 Population and the Sample

The total population of Ramnagar VDC is 12,525 out of which 6,060 are males and 6,465 are females. The total house holds are 2,240. In the study area, 10315 population makes the structure of 1883 households of ward no 1,2,5,6,7,8 and 9 of the VDC. The sample population is 149 HH out of 1883 HH in the study area which is about 8 percent.

3.6 Data Collection, Techniques and Tools

To carry out the present study, following techniques are adopted:

- Field observation.
- Interview
- Focus group Discussion.

Field Observation: The researcher visited and observed in terms of water supply and sanitation system. The observation is mainly focused on the effectiveness and sanitation. Therefore, the basic information is collected through the observation.

Interview: During the research period, a set of questionnaire had been developed to obtain the information about drinking water supply project in the villages and the people's participation including the former status of drinking water system.

Focus Group Discussion: In addition, focus group discussion was held with user, user's group, personnel and VDC officials to obtain the level participation, affordability and willingness to pay to the service.

3.7 Techniques of Data Analysis

Data analysis is one of the most important parts of the research work. To fulfill the objectives of the study data analysis procedure has been arranged. Simple statistical tools such as percentage, ratio and average etc. are used in this study. Maps and diagrams are also sketched to apprehend the presentation of data.

CHAPTER-IV

DESCRIPTION OF THE STUDY AREA

4.1 Background of the Study Area

4.1.1 Location

Ramnagar VDC lies in Nawalparasi district; Lumbini zone situated at the foothill of Mahabharat Range of hill and is spreaded to the plain area. Mehendra Rajmarg runs through this VDC. The future scope of the VDC is bright, there is small market called Bhumahi Bazar which lies in ward no1. Ramnagar VDC, has its boundary at Chure hills (Dhurkot VDC) in the North, Ramgram Municipality in the south, Sunawal in the West and Tilakpur VDC in the East. Ramnagar VDC is about 13 km north east from district Headquarter of Nawalparasi Parashi and 28 km from east of Butwal Bazar.

4.1.2 Climate

The climate of Ramnagar VDC is same as in other part of eastern Terai of Nepal. The village development committee experience as masked fluctuation in the summer season and falling as summer season and falling as low as 7°C during winter. The annual precipitation estimated to be 2800mm. Monsoon starts on June and strong winds blow in the month of Chaitra and Baishakh.

4.1.3 Geography

The study area lies in Chure and Terairange consist of mainly plain area. The soil in the study area is alluvial and sandy. Some is gravel boulder mixed soil. Approximately 50 percent of the study area is plain cultivated land while the rest is covered by forest and household.

4.1.4 Population and Ethnicity

The population of Ramnagar VDC is 12525 which include 6,060 male and 6,465 female. The population growth rate is 3.49 percent per year. The number

of households are 2240 in this VDC. The major ethnic groups of the VDC are Brahmin, Chhetri, Newar, Tharu, Magar, Gurung, Damai, Kami, Sharki, Chamar, Kumal, Mushaahar, Thakuri, Dhobi, Koiri, Teli, Badahi, Dhimal, Kurmi, Kewat, Lohar, Bania, Paswan, Kahar, Sunar, Sanyasi etc.

4.1.5 Educational Status

There are 12 schools altogether in the study area out of which 4 Primary, 3 Lower Secondary, 3 Secondary and 2 Higher Secondary schools. The number of students is 7000 and number of teachers is 225 altogether in the study area. Literacy rate of the study area is 66 of males and 62 of females (District profile 2006)

4.1.6 Agriculture, Industry and Commerce

Main occupation of the people living in the study area is agriculture. Only about 5 percent of the population is engaged in local business trade and government services. Agriculture which engages almost 80 percent of the population of the village plays a predominant role in their livelihood. At present there is no any large scale industry in the area. There are few small scale rice mills and Brick industry. In the bazaar area most of the people are engaged in small business such as village type hotel, tea shops, and consumer's good shop and so on.

4.1.7 Health Status

There is a Health Post in this study area. General health condition of the people has seen not bad comparing with other adjacent VDC. The sanitary condition of the people is comparatively good. Most of the 80 percent people have their private latrine. 20 percent of the people go to the bank of the streams and forest because they have lack of knowledge of use of toilet, advantages of use of toilet, public awareness of disadvantage of misuse of toilet, poor economic background as well.

4.1.8 Drinking Water and Sanitation

There are three water supply and sanitation projects in the study area. They are:

- 1- Ramnagar Drinking Water Supply and Sanitation Project.
- 2- Ramnagar (Adherikhola) Drinking Water Supply and Sanitation Project
- 3- Badera Drinking Water Supply and Sanitation Project

These projects are covered 7 wards out of 9 wards of Ramnagar VDC.

4.1.9 Ward wise Population Distribution in Ramnagar VDC

According to the National Census Report 2001, total population distribution in Ramnagar VDC has been tabulated in below:

Table No 4.1 : Ward wise Population Distribution in Ramnagar VDC

	Ward no1	Ward no2	Ward no3	Ward no4	Ward no5	Ward no6	Ward no7	Ward no8	Ward no9	Total
Household	543	364	166	191	309	196	280	90	101	2240
Population	2965	2044	1044	1166	1619	1102	1452	553	580	12525
Male	1465	984	515	586	730	530	671	273	306	6060
Female	1500	1060	529	580	889	572	781	280	274	6465

Source: Census 2001(CBS)

Table No 4.2: Population Distribution by caste/Ethnic Group in Ramnagar VDC

Caste/Ethnic group	Number	Percentage(%)
Brahmin	4588	36.63
Tharu	2744	21.75
Magar	1048	8.37
Chhetri	622	4.96
Kami	350	2.79
Yadav	1349	2.78
Soonar	292	2.33
Newar	287	2.29
Chamar	263	2.10
Kumhal	275	2.19
Gurung	255	2.04

Mushahar	187	1.49
Thakuri	142	1.13
Damai	134	1.06
Rajvar	120	0.96
Muslim	117	0.93
Gharti	107	0.85
Kahar	100	0.79
Kewat	89	0.71
Kumahar	78	0.62
Nunya	67	0.54
Kurmi	55	0.44
Thakur	55	0.44
Sanyasi	52	0.41
Paswan	12	0.10
Bania	24	0.20
Lohar	21	0.18
Sharki	18	0.15
Dhobi	15	0.12
Kalwar	14	0.11
Koiri	30	0.24
Teli	6	0.05
Badai	6	0.05
Dhimal	6	0.05
Othars	17	0.14
Total	12525	100.00

Source: National Census 2001(CBS)

4.2 Socio-Economic Structure

4.2.1 Ethnic Composition

The caste and ethnicity play important roles for socio-economic development in Nepalese society. Sample HH consisted of various ethnic groups as depicted in table and figure. There has been found a good relationship and participation among all caste groups in the study area. Lower castes have also been involving in every social and developmental work with any discrimination.

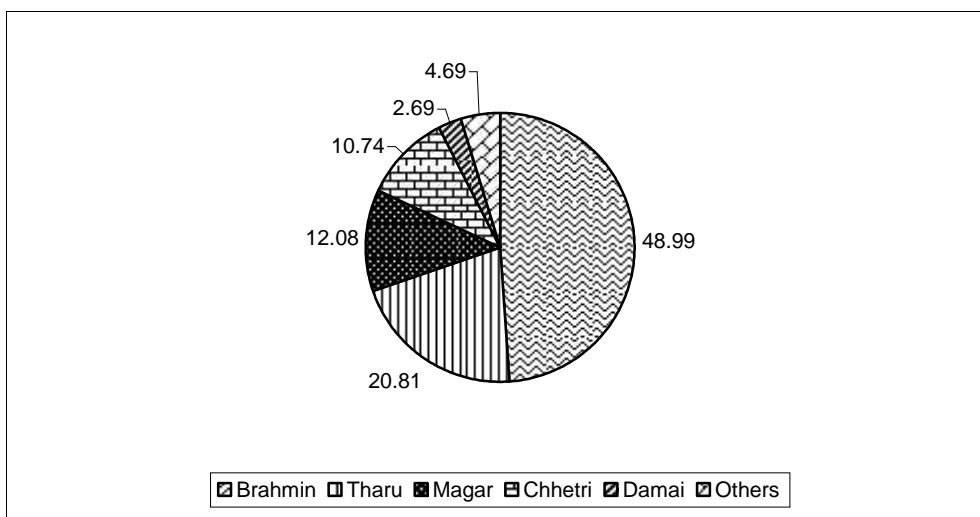
Table No 4.3 : Ethnic Composition of Ramnagar VDC, DWSS in sampled HHs

Caste	HHs	Percentage(%)
Brahmin	73	48.99
Tharu	31	20.81
Magar	18	12.08
Chhetri	16	10.74
Damai	4	2.69
Others	7	4.69
Total	149	100.00

Source: Field Survey 2008

Figure No: 4.1

Ethnic Composition of Ramnagar VDC, DWSS in sampled HHs



4.2.2 Sex Composition

Sex composition is also an important demographic features for the planners. Separate data for males and females are important for various type of planning. It will help to know which sector is weaker and which is stronger in the community and what support they extend for the uplifting of that sex. The balance of sexes affects the social and economic relationship with a community. There are 149 persons, out of them, 103 are males and 46 are females. In this study area there is also the participation of both male and female who sum up to 149. Out of the total, 103 are males and 46 are females. This data is only based on sample study.

4.2.3 Educational Status

Education is considered as human capital and important infrastructure of the development as well. It plays a crucial role in all sectors of the society. In modern age are the planners agree in the fact that development with out participation of local people is also impossible. If all the persons of households are educated, their participations on any development activities are more effective. It can be said that if all person of households are educated then society is more conscious about that problem of the community, needs of community and able to gain more appropriate solution

In this study the educational status has been classified into five groups. They are: Illiterate, Literate, Primary, Secondary and Higher Secondary

Illiterate are those who cannot read and write. Literate represent those persons who can read or write either from formal or non-formal education. Primary education means the academic education up to class five. Secondary is known as the academic education up to SLC. And Higher Secondary education refers to that the academic education which is above SLC level.

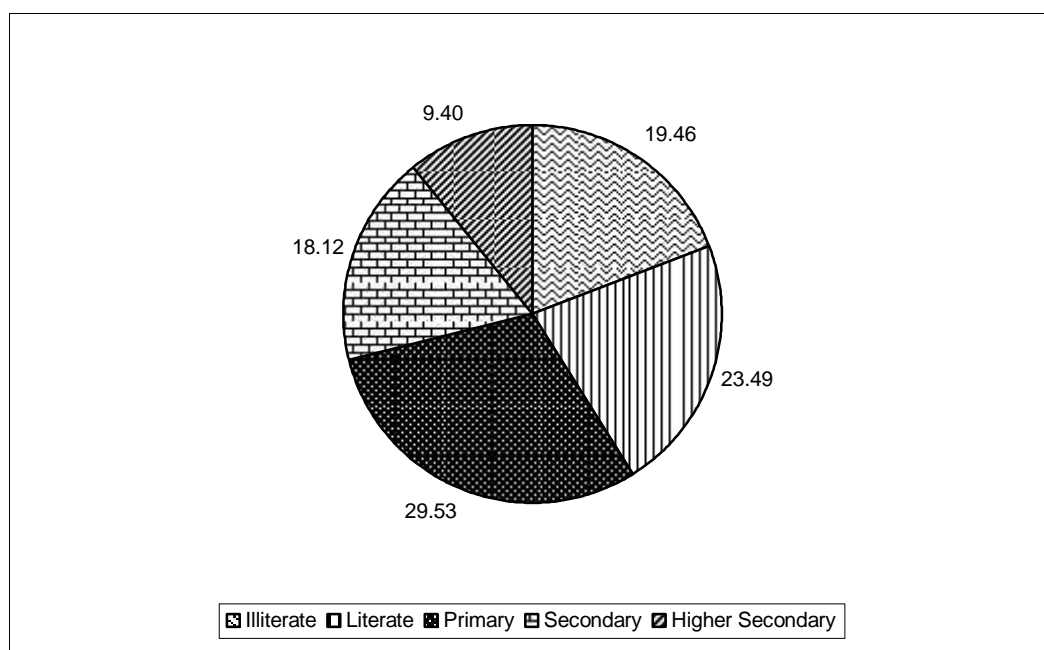
Table No 4.4 : Educational Status

Level	No of persons	Percentage (%)
Illiterate	29	19.46
Literate	35	23.49
Primary	44	29.53
Secondary	27	18.12
Higher Secondary	14	9.40
Total	149	100.00

Source: Field Survey 2008

Figure No: 4.2

Educational Status



4.2.4 Occupational Composition

Agriculture is main occupation in Nepal. This trend can be seen in the study area also along with livestock is an additional occupation of this area. The main source of income is agriculture and livestock. Moreover some households are engaged in non-agricultural occupation such as services like school teacher, permanent service, temporary service etc., business like small business, teashop, small shop, hotel etc and wage labor like daily wage labour, construction labour etc.

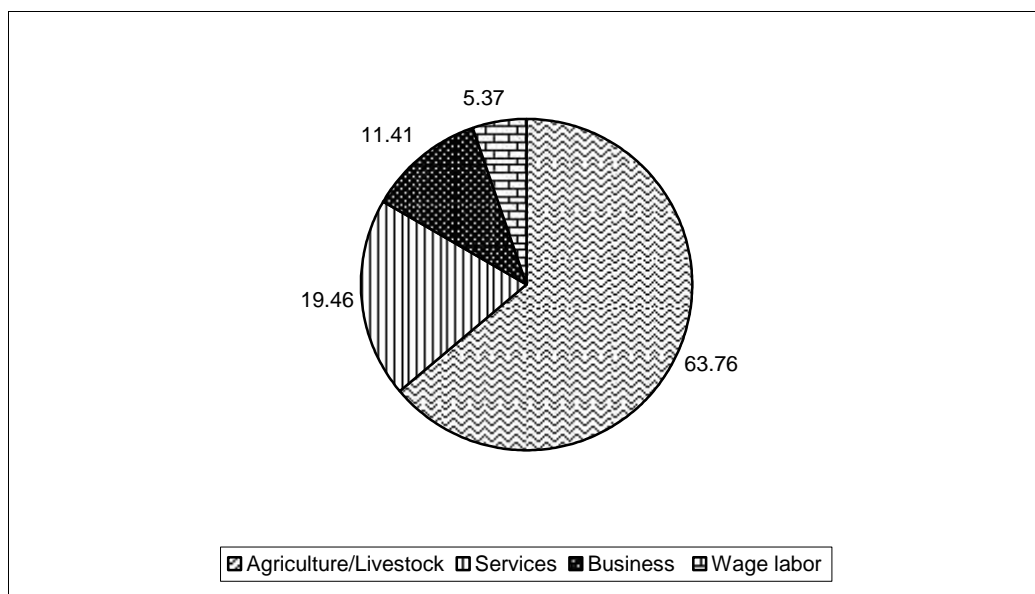
Table No 4.5: Occupational Composition in DWSS User Group of Ramnagar VDC

Occupation	No of Households	Percentage (%)
Agriculture/Livestock	95	63.76
Services	29	19.46
Business	17	11.41
Wage labor	8	5.37
Total	149	100.00

Source: Field Survey 2008

Figure No: 4.3

Occupational Composition in DWSS User Group of Ramnagar VDC



The above table and figure shows that 63.76% of the total sampled households are exerting agriculture and livestock and other households are engaging in other professions like services, business and wage labor.

4.2.5 Economic Aspect

The economic situation of the project area is characterized by increasing population, largely subsistent agriculture and other income generating activities such as carpentry, milk production, vegetable production and petty trade as supplemental source of income and employment. This underlying dynamics has forced more changes in the very structure of the local economy. Thus the challenges to any development intervention in the area is to promote its economic condition so that the people can identify and implement their one option for increased production and income opportunities to meet their basic substance and social development on a sustainable basis.

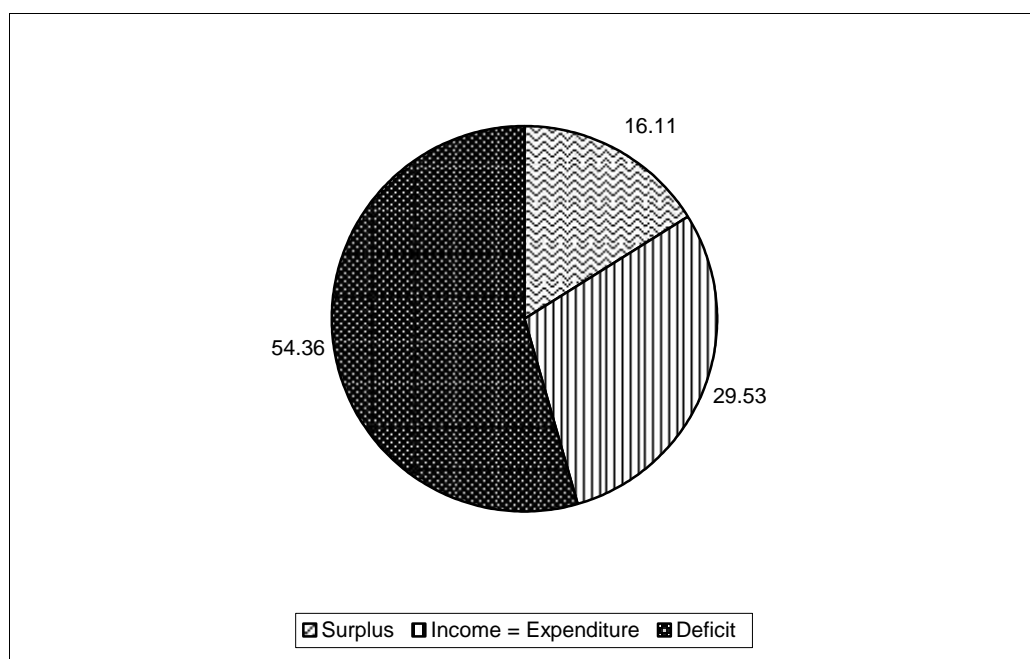
Table No. 4.6: Economic Condition of the Study Area

Title	HH	Percentage
Surplus	24	16.11
Income = Expenditure	44	29.53
Deficit	88	54.36
Total	149	100.00

Source: Field Survey 2008

Figure No: 4.4

Economic Condition of the Study Area



CHAPTER-V

DATA ANALYSIS AND FINDINGS

As Ramnagar VDC of Nawalparasi district is one of the place of Terai region, almost all people used to have tube well in the past for drinking purpose. The people used to be suffering from water-born diseases because of contaminated drinking water. The different researches were conducted for the study of condition of supply water if this VDC. It was found that the tube well water was highly rich in arsenic which could affect human health badly. The conscious people of the community came to know that one of the main causes of water-born diseases was the impure drinking water. So, they united the local people for demanding the pure drinking water. They came to be able to get financial support of FINIDA, technical support of SCAD along with peoples' active participation for running RDWSP.

The success of these projects created awareness among the other people of the VDC. So the people of ward no. 2 and 9 conducted another water project, "BDWSP" with financial help of fund board and technical support of NESCOR. Similarly, the people of ward no. 1,5,6,7,8 and 9 being united conducted the project, ADWSP with the financial help of GOV/N and technical support of DDWSP.

There are three water supply and sanitation projects in Ramnagar VDC i.e. Ramnagar Drinking Water Supply and Sanitation Project, Ramnagar (Adherikhola) Drinking Water Supply and Sanitation Project and Badera Water Supply and Sanitation Project. The donor agency FINIDA accomplished Ramnagar Drinking Water and Sanitation Project out of these three. Similarly rural water supply and sanitation Fund Development Board accomplished Badera Water Supply and Sanitation Project. District Drinking Water Project accomplished Ramnagar (Adherikhola) Drinking Water Supply and Sanitation Project.

Water supply is available in seven wards out of nine wards whereas two wards are completely out of this facility of Ramnagar VDC. According to the data surveyed 1883 house holds are benefited from water supplies out of total households 2240 in this VDC. The source of water while observing Badera Drinking Water Project is the stream water that is collected in the reservoir. Similarly, Ramnagar Drinking Water Project and Ramnagar (Adherikhola) Drinking Water Project are constructed by damming the river and collecting water in a tank but filtering scheme is not developed.

Different users committees have been constructed in these projects which manage and conduct activities of the projects. RDWSP consists of 13 member's executive committee which has been headed by chairperson. Similarly, BDWSP has 15 member's executive committee and ADWSP has 11 member's executive committee. Every year public meeting determines annual programme and appoints the new committee in above all projects. The roles of water service programme and management sectors are determined by annual public meeting so the committees and the activities performed by them are based on public participation and democratic in nature.

These three projects are based on peoples' participation from the initial phase of construction. So, almost all construction work has been completed by using local material and technology. But for the designing of the projects, technical help has been taken by the committee from the donor agencies for ADWSP, the technologies and other constructive materials provided by GOV/N. Similarly, for RDWSP, the technical aid has given by FINIDA and for BDWSP by FDB. While the construction work was done almost all unskilled manpower was used. However, the quality of technical aspects is satisfactory.

After the completion of projects, the water users committees have employed village maintenance workers (VMW) by providing monthly salary. VMW have been designed their duties of regular supply of water, maintenance if any

needed and day to day care of the projects. So, there is satisfactory management of technical aspect of the projects done by the committees.

The comparative study of Tap distribution, Tariff structure, Drinking Water system, Sanitation situation, People’s participation, Absorptive capacity, affordability, financing cost effectiveness and cost sharing is presented here in this chapter.

There is different tap distribution and tariff structure in these three water supply projects. In RDWSP, there are three types of tap distribution: public, private and partnership. Private tap has been distributed for one HH whereas partnership has been distributed for 2 or 3 HH. Users have to pay Rs. 10,000 for private whereas Rs. 3,000 for partnership. On the other hand, public tap distribution has been done for 5 or 7 HH. RDWSP has only made the provision of use of metre in private and partnership but other two projects do not have such facility. From the structure of tap distribution it can be concluded that RDWSP’s distribution method is scientific, economic and sustainable in comparison to others.

Tap Distribution

Table No. 5.1: Distribution of Tap

Types of Tap	Projects		
	RDWSP	ADWSP	BDWSP
Public	71	107	75
Private	110	40	35
Partnership	50	-	-

Source: Office of RDWSP, ADWSP and BDWSP

There is different tap distribution system and tariff structure in these three water supply projects. In RDWSP, there are three types of tap distribution: public, private and partnership according to the income and economic status of the people. This project has distributed the private taps largely. The project has

distributed the partnership tap for the people of medium economic status and public tap for the people of poor economic status. In other two projects, there are two types of taps distributed, among these, public taps are largely distributed. To be project sustainable, there is a need for distribution of public tap and meter system. Comparatively this project, RDWSP seems to be good.

Tariff Structure

The tariff rate structure is also different in these three projects which is clearly shown in following table.

Table No. 5.2: Tariff Structure

Types of Tap	Projects		
	RDWSP	ADWSP	BDWSP
Public	Rs. 10/HH/month	Rs 10	Rs. 15
Private	Rs. 50/15000 litre	Rs. 10	Rs. 40
Partnership	Rs. 25	-	-
Additional Rs. 7 will be charged for 15000 ltr to 30,000 ltr. for private and partnership taps.			

Source: Office of RDWSP, ADWSP and BDWSP

From the study of the Tariff structure of the three projects, we came to know that BDWSP most expensive for public tap. People gave to pay Rs. 15 per month/HH in BDWSP whereas Rs. 10/HH/month in other two projects for public use of water supply. But for private use, RDWSP is more expensive in which people have to pay Rs. 50 per HH/month whereas in AWSP Rs 10 only and in BDWSP Rs. 40 per HH/month. RDWSP has the provision of extra charge Rs. 7 for over use of water i.e. more that 15,000 litre to 30,000 litres. So on the basis of the Tariff structure if the projects one can come into the conclusion that RDWSP is better which can be long lasted economically than other two projects.

5.1 Drinking System of the Study Area

The Drinking System of the Projects

Table No 5.3: The drinking system of the projects

Method	HH	Percent
Directly	107	71.81
Boiling	11	7.38
Filtering	17	11.41
Using Medicine	14	9.40
Total	149	100.00

Source: Field Survey 2008

While we analyze the drinking system of these water projects, more than 70 percent people have used water directly and only rest of them are either using filter or boiling the water or using medicine for purifying purpose. So, one can come into a conclusion that most of the people are out of knowledge of purifying system of water so that they are bearing risk of water-born diseases in absence of it.

5.2 Health Status of the Study Area

According to report of sub health post of Ramnagar VDC, the following types of water-born diseases are making to suffer to the water users of the study area.

Table No 5.4 : Health Status of the Study Area

Diseases	Number	Total no. of patients
Typhoid	19	1805
Cholera	122	
Dysentery	118	
Tape Worm	5	
Jaundice	21	
Skin Disease	310	

Source: Sub-Health Post, Ramnagar VDC, Annual Report, 2007/2008

We can bring the conclusion from the above data that skin disease is one of the main water diseases that is making suffer to the people of this area. As the people are directly using the water, they are suffering from most of the water-born diseases. So, they have to use the water either by boiling, filtering or by using medicine to get relief from these problems.

5.3 Sanitation Situation of the Study Area

Table No 5.5: The situation of sanitation of Ramnagar VDC

Types of Toilet	Number of Users	Percentage
Sanitary	124	83.22
Trench	12	8.05
Open Place	13	8.73
Total	149	100.00

Source: Field Survey 2008

Nearly 83.22 percent people are using their private toilet whereas 8.05 percent people are using trench toilet and 8.73 percent are using open place for the toilet according to the data of the given table, in case of sanitation process. The people are using open place for toilet purpose because of lack of knowledge of sanitation, lack of money to construct toilet. To sum up, the sanitary situation is comparatively satisfactory in this area.

5.4 People's Participation

Community participation in rural areas is more complex than in urban areas for many reasons. Communities are less cohesive and the water supply infrastructure is often technically more difficult to manage. Furthermore, new scheme construction is less often to self-help contribution because of the community being involved in formal ways earning activities and the scheme's complexity. However, there still remains a need to fundamentally involve the community in the planning and decision making process for water supply scheme development in order to develop a civic responsibility. However,

sanitation is one particular in which community participation can be fostered in a similar manner to rural areas.

It is now generally accepted by the major development agencies that women are key change agents in the process of improving hygiene behaviors in households and communities. Furthermore, woman has the primary beneficiaries of improved access to water supplies and sanitation facilities have a potentially strong vested interest in effectively managing and sustaining improved water supply system. The Fund Board has shown some success in involving women in the planning and management of water supply system, promoting improved sanitation and hygiene practice and this has been taken up recently as an element of Project's program. There is a need to assess the relative merits of the various approaches that have been taken towards involving women in water supply sector development.

Table No 5.6: People's Participation

Types of participation	No of households	% of houses
Labor and cash	140	93.96
Only labor	6	4.03
Only cash	3	2.01
Total	149	100

Source: Field Survey, 2008

People's participation can be seen as an example during construction period; male and female were equally inspired to participate for collecting local materials, trench excavation and portage as expected during feasibility study made by the Projects. Above table shows that 93.96 % households have contributed both labor and cash. 4.03 % households especially from oppressed group, have contributed only labor. Similarly, 2.01 % households have contributed only cash. It can be noted that 100 % households were participated while constructing the scheme.

5.5 Affordability and Absorptive Capacity to Water Service

This section outlines the income distribution of the households served by Ramnagar VDC drinking water supply system in terms of affordability. This study differentiates the needs, demands and absorptive capacities of different households with different economic status.

Table No 5.7 : Households and Per Capita Income by Level

Levels	Households	% of households	Average per day income	Average annual income	Average per capita income/ month/HH
Rich	24	16.11	200	17,28,000	6,000
Medium	44	29.53	110	17,42,400	3,300
Poor	81	54.36	70	20,41,200	2,100

Source: Group Discussion, 2008

The study outlines the income level of each household and their willingness to contribute for purposed treatment component in the water supply system. The middle class people of the households have average income of Rs 17,42,400 per year with an average income of Rs 3,300 per month, per households. On the contrary, the poor groups of households representing have average income of Rs 20,41,200 per year with average income of Rs 2,100 per month. The rich class people belonging to 16.11 % households have average income of Rs 17,28,000 per year with average income of Rs 6,000 per month, per households. In regard to this scenario, the logic is that the rich class is relatively in better economic position and can afford for the services.

5.6 Willingness to pay for the service

The study conducted a comprehensive survey to solicit the opinion from the beneficiaries in their willingness to pay for improved water supply system and services conducted by Three Projects (RWSSFDB, FINIDA and DDWSS) .

This study was meant to diagnose the absorptive capacity of the beneficiaries in terms of their annual income.

The study found that 100 percent of the beneficiaries are willing to contribute for the improvements of water treatment plant, which will provide clean drinking water for the beneficiaries of the project area.

5.7 Water consumption and capacity to pay

Before the construction of these projects, water consumption of people was average 165 liter per day which has been increased up to 289 litre per day after construction of these projects. So, they got opportunity of consumption of water in optimum amount which has made them to use it in other purpose except drinking purpose, such that in their vegetable yards, for their cattle and so on. This opportunity has brought economic surplus for the consumers. Therefore, the capacity of paying of people has being increased so that they can pay 50 percent more charge than shown in the tariff structure. Similarly, they are able to save their time which was used to spend for fetching water before the construction of projects and they are being able to use that save to time in other economy generating activities. It can be more beneficial for them if the water supply can be increased for 24 hours from 8 hours of supply so that they can use it in other purposes too. It will make enable to them to pay more charges than the now.

Source: Group Discussion

5.8 Financing

Cost Sharing and Cost Effectiveness of Water Supply Scheme

The community implemented the scheme under agreement between Projects and community. The community operates a joint account with Projects to manage the scheme implementation. The Projects transferred all construction related funds to that joint A/C to invest in construction work. The community

in support of Projects managed the entire scheme related procurement that constitutes non local materials like pipe, cement, fitting, etc.

Quality of the non local materials procured was monitored under materials quality spot check mechanism of the Projects. That mechanism further ensured the quality of materials used as per standard. Public auditing was performed both during operation and after the completion of a scheme in the community mass meeting. Additionally, financial auditing was performed to ensure proper financial management and transparency. The funding source and contributions made are put on the display board in the community.

Community procurement mechanism not only ensures the quality of the goods procured but also enhances community ownership and accountability. The system of “public auditing” ensures transparency and makes it easy to work even under conflict situation.

The community shared costs both cash and kind. The major contribution in kind comprised of unskilled labor, local materials and portage. Similarly, people were involved around 36 percent of kind contribution in total cost. The financial contribution and cost sharing between Projects and community are as follows:

5.8.1 Adherikhola Drinking Water Supply Project

Total Cost – Rs. 7160862.82

HMG Contribution – Rs. 6435137.74

Community Contribution – Rs. 725725.08

Percent of Community Contribution – 10.13%

Adherikhola drinking water supply project is provided its services to the study area with its profound acceleration. It was constructed by damming the Adherikhola at its origin flow at the foothill of Churia range. The total cost of the project was estimated Rs 7160862.82. The then his majesty government of Nepal contributed Rs 6435137.74 encouraging the inhabitants of the study area

to enhance the project to generate its service. Thus, the community of the study area contributed Rs 725725.08 to the project. The contribution of the local community included the cash donation, labour participation and many other direct and indirect sources. After all, the participation of the members of the community in building the project has really been appreciated. The community accomplished its contribution 10.13 percent of the total cost of the project. Although the main occupation of the community in the study area is agriculture and live stocks. Nevertheless, the contribution of the community is important that they offer this grand support to accomplish the project. The above mention data of cost has been taken from the office of district drinking water supply project, Nawalparasi.

Source : DDWSS (District Drinking Water Supply and Sanitation Office, Nawalparasi)

5.8.2 Ramnagar Drinking Water Supply Project

Table No 5.8 : Ramnagar Drinking Water Supply Project

Total Cost – Rs. 88,38,365.38

Stakeholders	Cash	Kind	Total	Percent
Users	150,000.00	2158484.27	2308484.27	26.13
VDC	500000.00		500000.00	5.66
Public Tap Connection	200000.00		200000.00	2.26
Member of Parliament	200000.00		200000.00	2.26
Existing Pipe Cost	420687.33		420687.00	4.76
Private Tap Connection (10)	100000.00		100000.00	1.13DWSSF Contribution
DWSSF Contribution	5109193.79		5109193.79	57.80

Source: SCAD, Panchanagar

The total cost of the project was approximated by Rs 838,365.38. Different stakeholders had contributed to flourish the project users in study area contributed Rs 150000 as cash and Rs 2158484.27 as kind. Ramnagar VDC

mainly supported to regulate water supply in the study area by contributing Rs 500000. Other stakeholder, public tap connection was also the source of conducting the project and its trust was Rs 200000. Similarly private tap connection (10) also contributed Rs 100000. There was a great hand of Member of Parliament over this project as the trust of Rs 200000 for this project existing pipe cost was Rs 420687.33 major support of this water project was DWSSF which contributed Rs 5109193.79 which was 57.8% out of total.

5.8.3 Badera Drinking Water Project

Total Cost – Rs. 5217685.04

Fund Board Contribution – Rs. 4040502.18 – 77.44%

Community Contribution – 1177182.86 – 22.56%

To initiate this project people in this study area effort from the levels as man power and economy. Intellectual and active social workers helped directly or indirectly to fetch water door to door. About Rs 52,17,685.04 as total cost was estimated to develop and sustain this water project Rs 40,40,502.18 (77.44 percentt) out of total was undertaken by fund board and remained post Rs 1177182.86 (22.56 percent) by community due to the great hands of above stockholders the project was accomplished.

While we evaluate the financial situation of these three projects, RDWSP is to be found most expensive in total cost of expenditure for construction whereas BDWSP is the cheapest one. But number of HH is also list in BDWSP. Community contribution is highest (27 percent) in RDWSP among these three projects. Community contribution in BDWSP is 22.5 percent and in ADWSP is 10.13 percent. It can be claimed that the more community contribution means the more consciousness, love and affection for the project. So, on the basis of community contribution, RDWSP can be taken as long lasting project among the three projects.

5.9 Income and Expenditure of Projects

Among the three projects, RDWSP has its own building for drinking water supply office of which property can be evaluated nearly Rs. 20,00,000.00. It has Rs. 8,00,000.00 bank deposit. But BDWSP rented a building for its office by paying Rs. 600 per month. It has Rs. 5,00,000.00 bank deposit. Similarly, ADWSP has also rented a building for its office and its bank deposit is 1,00,000.00. On the basis of the property of the project, RDWSP is more sustainable and long lasted among the three projects. The income and expenditure of the projects is separately presented in the following tables.

5.9.1 RDWSP

Table No 5.9: Income and expenditure

Income			Expenditure	
S.N	Types	Rs. Monthly	Types	Rs. Montly
1	Public Tap (468x10)	4,680.00	Salary (Office staff and VMW)	12,000.00
2	Private Tap (110x50)	5,500.00	Committee Allowance	1,000.00
3	Partnership Tap (120x25)	3,000.00	Maintenance	3,000.00
4	More than 15,000 litre	2,000.00	Miscellaneous	1,000.00
5	Fine	500.00		
6	Tap maintenance	3,500.00		
7	Interest	7,000.00		
	Total	26,180.00		17,000.00

Source: office of RDWSP, Ramnagar-1, Nawalparasi

The total income of this project is Rs. 26,180.00 per month whereas its expenditure is Rs. 17,000.00 and saving is Rs. 9,180.00 per month. The total yearly saving of the projects comes to be Rs. 1,10,160.00. This saving will be sufficient to run the project smoothly by providing pure supply water.

5.9.2 ADWSP

Table No. 5.10: Income and Expenditure

Income			Expenditure	
S.N	Types	Rs. Monthly	Types	Rs. Montly
1	Public Tap (730x10)	7,300.00	Salary (Office staff and VMW)	4,000.00
2	Private Tap (40x10)	400.00	Committee Allowance	1,000.00
3	Tap maintenance	2,000.00	Maintenance	2,000.00
4	Fine	300.00	Miscellaneous	1,000.00
5	Interest	1,000.00	Rent	800.00
6	Total	11,000.00		8,800.00

Source: office of ADWSP, Ramnagar-1, Nawalparasi

Its monthly income is Rs. 11,000.00 whereas total expenditure is Rs. 8,800.00 and saving is Rs. 2,200.00 per month. The total yearly saving of the project is Rs. 24,400.00 which may not be sufficient for running the project smoothly. So this project may have to face economic crisis in future.

5.9.3 BDWSP

Table No. 5.11: Income and Expenditure

Income			Expenditure	
S.N	Types	Rs. Monthly	Types	Rs. Montly
1	Public Tap (380x15)	5,700.00	Salary (Office staff and VMW)	4,000.00
2	Private Tap (35x40)	1,400.00	Committee Allowance	1,000.00
3	Tap maintenance	2,000.00	Maintenance	1,000.00
4	Fine	200.00	Miscellaneous	500.00
5	Interest	5,000.00	Rent	600.00
6	Total	14,300.00		7,100.00

Source: office of BDWSP, Ramnagar -2, Nawalparasi

The total monthly income of this project is 14,300.00 per month and total expenditure is Rs. 7,100.00 per month and total saving is Rs. 7,200.00. Its total

yearly savings come to be Rs. 86,400.00 which is sustainable for smooth running of the project.

When we analyze the total income and expenditure of the three projects, RDWSP has better economic condition. It can be long lasting and sustainable project in comparison to the other two projects.

5.10 Cost Effectiveness of Water Supply Scheme

The water supply scheme has brought some positive effects in the community making support to the conceptual aspect of the scheme and their contribution for that scheme. Especially, in the area of health and sanitation and environmental sanitation program, their initiation was found most impressive in the community. After the implementation of the scheme, some changes such as, time saving, consumption and utilization of water can be seen in the project area.

Table No 5.12: Cost Effectiveness of Water Supply Scheme

S. No.	Description	Before Construction	After Construction	Remarks
1	Quantity of Water Demand	24585 liters	43061 liters	
2	Demand of water per HH	165 liters	289 liters	
3	Total time consumed to haul water/ day/ WUG	447 hours	149 hours	
4	Average time to haul a trip of water	25 minutes	5 minutes	
5	Average Total time needed to haul water/ HH	3 hours	1 hour	

Source: Field Survey, 2008

Above table shows they have to spend 25 minutes to haul a trip of water before construction. But after the construction of the scheme, they are utilizing 20 minutes time on various income generating activities such as, vegetable

farming, goat farming, buffalo farming, environmental protection activities and other activities. Regarding household water consumption 165 liters water was consumed before construction and it was increased by 75.15 percent after the construction of the scheme.

The total time needed to fetch water per day per HH before construction was 3 hours. But after the construction, they save 2 hours per day and they are utilizing that time on various income generating activities. Each HH can save 60 hours time monthly, while they utilize that time, they can easily earn Rs more than before per month in average. In this way, we know that the project is positively effective than the cost.

5.11 Sustainability

Sustainability of the projects can be analyzed on the basis of tariff distribution, financing, income and expenditure, tap distribution as well as the property of the projects. Among the three projects, tap distribution of RDWSP has scientific economic and sustainable in comparison to ADWSP and BDWSP. It has a sound tariff structure among three projects which can be long lasted. There is proper balance of income and expenditure of RDWSP whereas BDWSP has satisfactory condition and ADWSP has poor economic condition. Similarly, on the basis of property possessed by the projects, RDWSP has sound condition because it has its own land and building for office. Other projects do not have their own property and have rented buildings for running their office.

To sum up, the sustainability of RDWSP is stronger than the other two projects because of its sound economic condition, proper tariff structure and scientific tap distribution as well as its permanent property.

CHAPTER -VI

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Drinking water is one of the most important aspects of social life. If there is piped water supply facility in rural area, people of that area could spend their surplus time in other activities to promote the socio-economic progress as they can consume their time that spends on fetching water.

Community level workshops and extensive education program should be initiated to make people more conscious about various methods to optimize the use of water in the households. Mass Media, communication, public awareness should be resort to this purpose in order to make water users aware of their own use, wastage and maintenance. More emphasis should be given to educate women about use of water as they play a key role in the overall water supply in the household activities.

Although drinking water supply is essential to human beings, it is a challenging work even for the government target is to provide safe drinking water for all people. Although government target is to provide drinking water for 100 percent of people in coming 3 years community should participate actively for the success of the government programme.

Observing these three projects, it is concluded that RDWSP is sustainable project due to the betterment and strong aspect of community participation, tariff system, economic condition and management committee. This also symbolizes the success and long term working capability of aforementioned project. Out of two projects, BDWSP is categorized in the second level. Its sustainable development can be enhanced by tariff rate initiating the meter system after increment of the private tap. Due to the scares of economic condition, tariff rate, tap distribution and indifference of management committee over ADWSP. One can doubt in its further betterment but it is much more satisfactory in cleanliness and sanitation around their peripheries because

of private latrines built by 80 percent households. Anyway the present situation of these three drinking water projects is flourishing in their respective way which is really praiseworthy.

To sum up, further enhancement of these projects, the peoples' participation must remain continue in future time.

6.2 Recommendations

Community drinking water programme is supposed to be an effective programme in the western part of the Nepal. It can play a very essential role to fulfill the villagers drinking water based basic needs as well as to maintain the eco system. On the basis of conclusion and problems of the study, here are some recommendations for the effective exploitation of community drinking water programme.

1. Government and Non-government organizations should be encouraged to work on community drinking water based programmes by keeping aware people regarding such programmes and giving trainings to the people and economic uplift from communities.
2. Community drinking water users groups operational plan are not focusion on sustainable drinking water management and also do not contain a holistic approach for community development. Therefore the operational plan should be revised by focusing on the linkages of community drinking water programme with other sectors of community development.
3. Community drinking water user group need to be supported and strengthened in institutional development aspect through different types of exposures such as field trips training and workshops related to decision making, fund management and overall group empowerment and capacity building.
4. Training Programmes on operational plan preparation, use of drinking water regulations and awareness building should be conducted for all

community drinking water user group. For successful community drinking water programme leadership training should be given to the leaders.

5. The women are the main users of the water. So they should be allowed to participate in all meetings and trainings related to the proper use of pure drinking water. Their views are also to be incorporated regarding the use of drinking water and maintaining the health awareness.
6. There is no well-managed or effective meter system in above mentioned projects. Therefore effective meter system should be ratified that causes the secular sustainability of the projects. It also curtails the leakage of water due to good management of the maintenance and constructive works by making them aware as if the programme is of their own as well as by suggesting leaders about the leakages and misuses of water.
7. Filtering process in the stream should be developed to purify the drinking water that causes the safe from different fatal diseases. Filtering process is one of the elements that should be developed to purify the drinking water. We can not imagine the pure drinking water in absence of filtering process. The provision of pure drinking water helps to be saved from water-born diseases. Being conscious of it, we have to suggest leaders of the projects for demanding filtering process to the doner agencies as well as have to request to the consumers for their economic support. The filtering process should be provided in the first reservoir tank. So that all of the consumers can have access to the pure drinking water.
8. The role of community drinking water user groups improving the welfare of rural communities need to be known and supported for achieving the success in this direction. All users should be involved in the community drinking water management process in abovementioned projects. Users should be sensitized through awareness, raising programme related to community drinking water programme for the involvement of users from different background.

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APPENDIX-I

A Survey of Drinking Water and Sanitation Programme

Questionnaire related to Household Survey

Ramnagar VDC, Nawalparasi

Question Paper No. :

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Date: 2065/ /

Project's Name and Address: -----

1. Social and Economic Detail of Household and Family

1.1 Name of household head: -----

1.2 Age:-----

Sex: -----

1.3 Education: -----

Illiterate = 0	Literate = 1	Primary = 2	Secondary = 3	Higher Secondary = 4	Graduate = 5	Post- graduate = 6
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1.4 Present occupation of household head

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Farming = 1	Permanent Service = 7	Student =13
Daily Manual Labour = 2	Temporary Service = 8	Unemployed =14
Industry and Hotel Labour = 3	Small Business = 9	Ex-Serviceman/ pension holder =15
Construction and Transport Labour = 4	Large Business = 10	Housewife =16
Rickshaw, Bullock Push, Tanga Driver = 5	Handicraft and small industry = 11	Not working =17
Household Worker = 6	Large Industry =12	Others =18

1.5 Total members of your family

Age Group	Male	Female
Age less than 15 years		
Age 15 to 59 years		
Age 60 years and above		
Total		

1.6 Do you have any cattle at your home?

Buffalo----- Cow----- Goat-----

1.7 Is there vegetable-farm nearby your home?

Yes----- No-----

1.8 If yes, do you produce vegetables or consume by purchasing?

Own production ----- by purchasing -----

1.9 How long have you been in this location?

Year----- month-----

1.10 Possession of this house -----

Own =1	Rent = 2	Not Chargeable = 3	Any other = 4
--------	----------	-----------------------	---------------

1.11 How many rooms are there including kitchen and bathroom?

No. of room -----

1.12 If it is to buy, how much do you for this house?

Rs.-----

1.13 If you are to stay, how much rent do you pay for this house?

Rs. -----

1.14 How many jobholders are there in your family?

1.15 How much average monthly expenditure is there in your family?

Rs.-----

1.16 How much average monthly saving is there in your family?

Saving----- Loss-----

1.17 If there is no saving, how do you manage your expenditure?

1.----- 2.----- 3.-----

2. An Introduction of Drinking Water Supply Project

2.1 What is the source of daily essential drinking water at your home?

Piped water = 1	Closed well/ Tube-well/ Roar pump =2
Open well = 3	Stream/Dhunge Dhara = 4
Rive/Pond =5	Rain water =6
Others (mention)	

2.2 What type of drinking water source that is used by your family?

Private----- Public -----

2.3 How many households use the public tap that has been used by your family?

Household number -----

2.4 How long does it take to fetch the water from public tap?

2.5 Have you set water meter?

Yes----- No-----

2.6 What quantity of water have you consumed daily?

Litre -----

2.7 Is water that you have been consuming good for drinking?

Yes----- No-----

2.8 How do you consume water?

Not-----Boiling-----Filtering ----- Using medicine -----

Others-----

2.9 Do you use that water that you use yourself for your cattle too?

Yes-----No-----

2.10. What source of water do you use in case water is not there in tap?

Open well----- Close well/Tube well/ Roar pump----- River/Pond-
----- Stream/Dhunge Dhara/Rain water-----

Others-----

2.11 Do you use the water that you are using for drinking in your garden?

Yes-----No-----

2.12 Is this drinking water system needed to be improved more?

Yes-----No-----

2.13 What factors of improvement should be done, if needed?

1.-----

2.-----

3.-----

2.14 What measure of satisfaction do you have towards present drinking water system?

Full satisfactory-----Moderate----- Satisfactory ----- Not satisfied -----

2.15 Mention your level of satisfaction for the following topics.

Quality of water -----

Quantity of water -----

Service management -----

2.16 Are you or your any family member involving for the following activities?
Please tick.

In the selection of drinking water resources -----

In the selection of proper place of public tap -----

To provide labour charity for construction/to provide cash charity -----

To observe or supervise for the construction -----

Initiation and maintenance sanitation -----

Others-----

2.17 Is users committee formed to make well-managed for public tap or whole drinking water system you use?

Yes-----No-----

2.18 In what interval of time that meeting of users group is held?

Monthly----- Bimonthly ----- As needed ----- Others-----

2.19 Are you or your family member member of that users group?

Head of household ----- Other members ----- None-----

2.20 Is woman member in your family a member of the users group?

Yes----- No-----

2.21 How can this drinking water committee be made more effective?

Any suggestion, please? -----

3. Introduction about Sanitation System

3.1 Where do you or your family member for toilet?

Private toilet having flush joined to public drain -----

Private toilet having flush joined to safety tank -----

Public toilet having flush joined to public drain -----

Public toilet having flush joined to safety tank-----

Private toilet having no flush -----

Public toilet having no flush -----

Dug-well -----

Open place, public meadow, forest, road -----

3.2 Is there tap water in you're your toilet?

Yes-----No-----

3.3 How long did it become to have been using the toilet?

Year-----month-----

3.4 What level of satisfaction do you have from the toilet you have been using?

Full satisfactory-----Moderate----- Satisfactory ----- Not
satisfied -----

3.5 Why are you satisfied?

1.-----

2.-----

3.-----

3.6 Why did not you build the private toilet?

Feeling no need----- Lack of money----- lack of land -----

Having adequate open place----- Others-----

4. Financial Situation and Community Contribution

4.1 Is there involvement of any organization to construct the public tap?

Yes-----No-----

4.2 How much money did you invest to construct the public tap if it is due to
investment of society?

Rs.-----

4.3 Does any organization or user group invest tor not to maintain for public
tap?

Yes-----No-----

4.4 If organization or user group has not served, have you (household maintained or not?

Yes-----No-----

4.5 If private tap is joined, how much money have you invested for it?

Rs.-----

4.6 Do you pay equivalent charge with public tap user if private tap is joined or not?

Yes-----No-----

4.7 How do you pay the charge of water?

Fixed Rate----- On the basis of monthly bill-----

4.8 How much approximate charge do you pay per month?

Rs.-----

4.9 Who determines monthly charge?

Drinking Water and Drain Source Department/Nepal Drinking Water Corporation-----

Drinking Water User Group-----

Local Unit (DDC, Municipality, VDC)-----

Others-----

4.10 What kind of contribution did you do to initiate drinking water project?

Yes-----No-----

4.11 What sort of contribution did you do?

Cash-----Labour, Management, Land, Food----- Or both-----

4.12 How much charge do you agree to pay if water flows 24 hours in your tap?

Rs.-----

4.13 Do you get a chance to observe all the records containing debit and credit related to drinking water project if you are interested?

Yes-----No----- Not interested-----

4.14 Does your family use the public toilet?

Yes-----No-----

4.15 Is there facility of canal in your community?

Yes-----No-----

4.16 Is your toilet joined to the canal?

Yes-----No-----

4.17 Is there facility of drain in your community?

Yes----- No-----

5. The Participation of Concern People

5.1 Have you got any trust from governmental and non-governmental organizations for drinking water and sanitation?

Yes-----No-----

5.2 If you have got, from which and what type of trusts?

Organizations	Types of trust

5.3 In your opinion, what should it be done to enhance the participation for satisfaction drinking water of local community?

If management initiated by local community-----

If management initiated by local user group-----

If letting local community decide/participate in decisive system-----

If project benefits the local community-----

If project demanded by community-----

Others-----

5.4 In what situation do you contribute more in the project of drinking water and sanitation?

If the account of programme is transparent -----

If programme is conducted by user group -----

If me or my family member is in the programme of users committee-----

If programme is much more beneficial for me-----

If initiators are responsible and real social candidates-----

If programme is demanded by local community-----

Others-----

6. Consciousness of Health and Use

6.1 Have you washed your hands before and after the meal?

Yes-----No-----

6.2 Have you made your children wash their hands before and after the meal?

Yes-----No-----

6.3 Do you wear slippers or shoes while going toilet?

Yes-----No-----

6.4 Do you wash your hands after going toilet?

Yes-----No-----

6.5 What do you use to wash your hands?

Water only----- Soap----- Ash----- Soil-----Others-----

6.6 Where do you manage your children excretion?

Toilet----- Any fixed place-----No any fixed place-----

6.7 Is there any improvement in the sanitation of your family for last five years?

Yes-----No-----

6.8 Have you or your family member taken any training concern with health and sanitation?

Yes-----No-----

6.9 If training is taken, from which organization?

Governmental organization-----Non-governmental organization-----
----- Local organization (VDC, Municipality)----- Others-----
--

6.10 What did you or your family learn from the training?

- 1.-----
- 2.-----
- 3.-----

6.11 Was any member of your family suffered from any sort of diseases within three months?

Yes-----No-----

6.12 Mention the name and the causes of diseases which has suffered to you and your family?

Code of Diseases

Diarrhea	Skin Diseases
Typhoid	Tape worm
Dysentery	Others
Jaundice	

Code of Causes

Impure water in stream	To be mixed with drain or human excrete
Not to be attentive while filtering water	To be mixed with cattle excrete
Not to store water properly	Others
Not to be attentive while consuming water	

6.13 Is there any relation between water and sanitation in your thought?

Yes-----No-----

6.14 What will be the benefits when you can keep yourself clean?

1.-----

2.-----

3.-----

Thanks for your cooperation.