

**COMMUNITY MANAGED DRINKING WATER SUPPLY IN NEPAL:
A CASE STUDY OF ICHANGU NARAYAN VDC IN KATHMANDU**

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RECOMMENDATION LETTER

This is to certify that the thesis submitted by **Narayan Prasad Adhikari** entitled **Community Managed Drinking Water Supply In Nepal: A Case Study of Ichangu Narayan VDC in Kathmandu** has been Prepared under my supervision in the partial fulfillment of the requirements for the degree of Master of Arts in Rural Development. I forward this thesis to the evaluation committee for approval.

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Abstract

Drinking water facility is one of the basic needs of people. Providing pure drinking water and sanitation improves the health and hygiene of the people. The healthy populations of the nation are a prime factor of economic growth and development. Proper use of pure drinking water helps to control water-borne diseases and reduces medical expenses. Easily available drinking water for households uses reduces the time span and contributes to invest other activities i.e. income generating, which is the prime factor of increasing family standard and human development. Water collection in Nepal is often responsibility of women usually and sometimes also of children, which is also never ending process because of inevitability of water in our life every moment. Community managed drinking water supply system reduces the workload of women and they can involve in other activities especially to fulfill the needs and demands of the family. This study has been carried out on effectiveness of community managed drinking water supply system has been completed as study of the Ichangunarayan VDC in Kathmandu District.

The main objective of this study is to dig out the effectiveness of community managed water supply system at Ichangunarayan VDC. The study has been completed by using primary as well as secondary data. Primary data were collected by using different tools & technique of data collection such as questionnaires, observation, group discussion, checklist and key informant interview. Similarly, secondary data were collected by visiting and consulting library, VDC profile, CBS library, Department of water and sewerage library, and experiences persons. Moreover, the secondary data were collected by online.

Altogether 52 respondents were requested to fill up the structured questionnaire. The gap between responses of respondents and study objectives was fulfilled by using other tools of data collection mentioned in above paragraph.

Community managed drinking water supply system has brought positive changes to the people of study area. About 77 percent respondents replied clean and pure water supply system, rest of them 23 percent replied as impure and moderate quality of drinking water. More than 85 percent respondents were found to be satisfied.

After the completion of the study, it was found that this society is a Newar dominated with 42.32 percent out of total respondents. Similarly, the second ethnic group is Lama, which occupies 17.31 percent.

This study had used the descriptive cum exploratory research design. Besides, case study research design was applied for households survey. It was used simple random sampling for households survey whereas, purposive sampling for location selection. This study had applied interview key informant interview, observation and Focus Group Discussion as the tool and technique for data collection.

In a nut shell, by completing this research work it had dug out that Community Managed Drinking Water provides double benefits as Sustainable Drinking Water management and Natural resource management.

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ABBREVIATIONS/ACRONYMS

AAN	-	Action Aid Nepal
AD	-	Anno Domini
CBS	-	Central Bureau of Statistics
CHRDU	-	Central Human Resource Development Unit
DDCs	-	District Development Committees
DWSS	-	Drinking Water supply System
ESAs	-	External Support Agencies
FY	-	Fiscal Year
GDP	-	Gross Domestic Product
GON	-	Government of Nepal
HMG	-	His Majesty Government
IDWSSD	-	International Drinking Water Supply and Sanitation Decade
INGOs	-	International Non-governmental Organizations
IUCN	-	The World Conservation Union
MOF	-	Ministry of Finance
MHPP	-	Ministry of Housing and Physical Planning
NEWAH	-	Nepal water for Health
NFE	-	Non-Formal Education
NGOs	-	Non-governmental Organizations
NPC	-	National Planning Commission
NWSC	-	Nepal Water Supply Corporation
PRA	-	Participatory Rural Appraisal

RWSSFDB-		Rural Water Supply and Sanitation Fund Development Board
RRA	-	Rapid Rural Appraisal
VDC	-	Village Development Committees
WECS	-	Water and Environmental Sanitation Sector
WSSUCs	-	Water Supply and Sanitation Committees
WSSUGs	-	Water Supply and Sanitation User Groups
WTO	-	World Trade Organizations
UN	-	United Nations
UNICEF	-	United Nations International Educational Fund

CHAPTER- ONE

INTRODUCTION

Community Managed Drinking Water Supply is a vital for drinking water perspectives. It can solve the problems of water scarcity by managing in the concept of equity and justice. It is the old practice of Nepal like in the world. Since, the third world prediction goes to water scarcity in the world; this community-managed system will eschew this problem if effectively realized across the world.

1.1 Background of the Study

Water is the vital for living things: too little is suffering so as too much. Water is a truly unique commodity without it life does not exist. Life can however, become equally uncertain even when there is water all around. While excess water in the form of floods and water deficit in the form of drought have struck Nepal repeatedly, consumption of unsafe water has claimed thousands of lives annually. It is one of the most important and precious of natural resources and a regular and plentiful supply of clean water is essential for the survival and health of most living organism.

Water is the largest natural resources of Nepal although only a relatively low percentage of the total population getting safe and clean water for daily use. Water is use for drinking, bathing, washing and cleaning. Besides, it is used for agriculture, industrial, hydropower generation, religious purpose and recreation such as swimming, fishing and different forms of ecotourism. Water is a truly unique commodity without it life does not exist. Life can however, become uncertain even when there is water all around.

It is estimated that only about 3% water is potable in the world whilst Nepal has lavish portion on it. In relation to size, Nepal has abundant water resources. Its rugged topography creates great potential for putting these resources to economically productive uses, such as hydroelectric

power generation and irrigation. (council, 1993, August). There is about 6000 rivers and rivulets in Nepal out of which 100 are more than 10 km long. The total length of all the rivers and rivulets in Nepal exceeds 45000 km. Annual mean flow of Major River is estimate to be 4930 m³\ sec. This amount to 70 percent of total surface run off about 60-80 percent of surface runoff occurs during monsoon. In Nepal, the capacity of hydropower generation is 83000 megawatt but until now, it is only generation 600-mega watt i.e. 0.7% of the total potential (Lekhak, 2003).

Some unpublished report shows that two billion people in the world are without clean water and sanitation. In the worst water feminized countries, people live on just two gallon of water a day, which is far below the 13.2 gallon stipulated by the UN as the absolute minimum for water needs. In about 20 years time, average water supply per person around the globe is likely to be one third smaller then it is now. Agriculture uses more than 70% of global water and industry about 20% much of it is wasted. Drinking water is the basic minimum need of all human beings and provision of conventional safe, clean and adequate drinking water is the declared commitment of the government of Nepal. Population growth, rapid urbanization and industrialization are imposing rapidly growing demand of water supply and it pressurizes the government for the development of the water resources. The growing imbalance between demand and supply has brought various problems. It has caused the shortage of drinking water pollution and environmental degradation. Most people expect that water supply should be provided free of cost as a social service, because they argue that water is a gift of nature. Traditionally in Nepal water supply has also been considered as a social service and it is taken to be the obligation of the government or those in power to supply water very cheaply and if necessary even free.

Most of the projects mainly focused on the installation of drinking water supply infrastructure. However, the INGO- and NGO-installed projects have package programs, which include training on agriculture and small income generating activities. Moreover, the INGO-installed DWS projects have includes Non-Formal Education (NFE) program during the construction period. Both INGOs and NGOs are being involved to deliver safe drinking water and sanitation in both urban and rural areas. These NGOs and INGOs have been playing and effective role in the drinking water and sanitation sector through the implementation of water supplies projects which are usually integrative in nature and incorporate which the high level of people's participation. The most active providers of services in WECS (Water and Environmental Sanitation Sector) are

the Department of Water Supply and Sewerage (DWSS), Local Authorities (DDCs and VDCs), External Support Agencies (ESAs), Non-Governmental Organization (NGOs), CBOs and user's committees.

The government has introduced the Water Resource Act 1992, with the following main features: proper utilization of water resources; and guidelines and instructions for the use of water resources to minimize the negative impact on the environment. According to the act, all water user committees should be registered with their respective district administration to legalize their action (B.W., 2000)

In order to ensure sustainability and certainty of projects and services, the concept of community management rural and semi-urban projects were put forward to enhance the concept of people's participation. Similarly, for ensuring and promoting the concept of community management a provision of 20% contribution of the cost of execution of the project by the community has been made. However, in the case of backward class and targeted groups of people the policy to contribute only 10% of the costs by community has been adopted. Faculty extension programs, aimed at promotion public awareness towards sanitation are in operation as an integral part of drinking water projects. Against the target to complete 13 projects under development of water in the current Fiscal Year (2006/07) that would provide service to 123 thousand people, only 10 projects have been completed and the overall progress is recorded at 78% (Economic Survey, 2006/07: B.W., 2000). In Tenth Plan (2002-2006), it was taken strategy in rural drinking water project on the basis community needs and demands the project under toke, with the involvement of user community for maximum utilization of locally available resources and means. Moreover, it was given emphasis on the conservation of local resources and operating rural drinking water projects through the consumer committees and NGOs, such institution had also gave emphasis (Tenth Plan, 2002-2007).

In this study, an attempt had been made in micro-level to focus on some of the social and economic characteristics of the study area. The social part of the study will mainly discusses about caste/ethnicity structure, health status, educational status, family structure, households and average family size. Likewise, the economic study of the study area focused on income generating activities, sources, income and various other aspects related to the economy of the study area.

This research study area Ichangunarayan Village Development Committee lies in the Kathmandu District in Bagmati Zone. It is situated in the western part of Kathmandu valley at about 9.5 Km west from city centre. Goldhunga VDC in the north, Kathmandu metropolitan city in the east, Sitapaila and Ramkot VDC in the south and Bhimdhunga VDC in the west surrounded this VDC. As the VDC shares its broader with Kathmandu city, the area is being developed as residential area. There are running two community managed Drinking water project they are Dholunge, Scheme-1 and Tindhara Scheme-2, both cover ward no 1-6 of the Ichangu VDC.

1.2 Statement of the Problem

Nepal is one of the smallest countries but faces the biggest development challenges in the world. One of the most important of these challenges in the maintenance and operation of rural drinking water supply. Nepal is a rural country occupies about 86 percent population are rural residents. By this nature, government efforts to provide drinking water are not all over successful. In order to cope with this problem, Nepal has introduced the concept of community managed drinking water supply as the strategy to kick-out misuse and zero use of drinking water. Many people are living the life of morbidity because of the lack of pure drinking water. The water borne diseases affects them. People have to spend much of the time in carrying water.

Since drinking water is vital for human existence, it has been managing by different sectors. Among them, community managed is universally accepted as the sustainable drinking water project. Community itself in stare house of integrity, where community sentiments are existed. Thus, for sustainable management of drinking water, community oriented project is taken as the best in Nepal. It is said that drinking water provided by community itself is showed that agency made and government made is not sustainable in comparison so community drinking water supply is also called a sustainable strategy for drinking water management. In Nepal, water source is viewed as one of the important natural resource for national development, but at the same time the problem related to quantity and quality of available water are very acute. This is due to lack of proper water resource management measures. In the public water, drinking water infrastructure will not care by local people because there is not acquired the concept of ownership of local people as a result they eschew it immediately. Local people individually do not maintain it by themselves. They look forward to the agency of government. Indeed, public

water taps are not well functioned and more over, these taps are widely dominated by elite person of a community. To dropout this problem, community managed drinking water supply project is a cook bone one. Nepal is less developed country in the world, so all the people are unable to establish private water tap because lack of sufficient resource is a great threat. Government has allocated heavy budget in social sector but output of that is zero. Because of corruption culture, only some elite are beneficial from it. In the same way in drinking water, government has allocated the huge budget in the name of health improvement, but there is no progress in this sector.

Due to lack of health education people do not understand the importance of safe drinking water. People are still suffering from water borne diseases like diarrhea, cholera, typhoid and skin disease. Many people are staying in rural areas in Nepal and the majority of them still lack of safe water facilities. As the demand for safe water supply increase, there is an evident rise in the level of competition for sharing of available resources.

Most rural water and sanitation projects have been implemented solely by DWSS, with some donor support. In the past, there was a tendency toward over-programming due to pressures at local and central levels for more projects than could be constructed under the budget. As a result, project completion periods extended for up to a decade, and there was considerable waste in the form of investment tied up in partially completed, non-functioning schemes. Even after completion, many schemes failed to provide the water expected, and some provided none at all. This was partly due to inferior initial construction but also due to inadequate arrangement for organization and maintenance. It becomes clear that sustainability requires more community involvement in organization and maintenance.

The increasing population in Ichangu VDC demands more drinking water than ever before. Consequently, the supply of drinking water needs to be increased. As the increased demand has not been met by corresponding in water supply, Ichangu has been experiencing some water shortage in recent years. This is due to lack of proper water resources management measures. Moreover, after implementation of the projects related to the community managed drinking water supply, this VDC has gained hiking successful stories in order to allocate the water. Since the word 'community' has been becoming the buzz, community drinking water project operated in this research study area is a vital for extension of the modality throughout the country.

1.3 Objectives of the Study

The general objectives of this study is to inquire the role of community manage drinking water supply in communities. Whereas specific objectives are;

- ❖ To dig out the effectiveness of community managed drinking water.
- ❖ To compare community managed drinking water and agency or government managed drinking water.
- ❖ To suggest community managed drinking water as an alternative option for drinking water management.

1.4 Significance of the Study

Nepal is a country where most of the people are lacking basic infrastructure. Since, Nepal is the second rich country in terms of water resource however till now majority of the rural people do not have access to drink pure water. As a result, to supply the pure drinking water equally, government managed, individual-managed and community-managed projects have been operating. The former both are not suitable due to un-sustainability and scarcity of resource. That is why community managed drinking water supply is crucial to curb the problem mentioned above. It is the best modality project developed through the world and now Nepal has been experiencing to it that can be met in the 10th plan document too.

For the successful implementation sustainable development, it is essential to understand the importance of people's participation in the rural water supply at the micro level. The people's participation could be better understood at the micro level then at the macro level from this study. Besides, that this study has been useful to the water supply program on the basis of which they will implement their projects carefully in future. This report has been useful to the policy makers and other student who writes their dissertation in future.

1.5 Limitation of the Study

Community managed drinking water supply has been taking as the maser piece to fulfill and equally allocate the requirement of drinking water. Due to constraints of time and budget, this study has done in Ichangu Narayan VDC in ward no. 1, 2 and 3 operated under Dholunge drinking water project funded by Drinking water Corporation, Kathmandu. In addition to this data, availability is the important factor to study it. This study area covered 52 households out of the total beneficiaries of community-managed drinking water.

This study only general overview of the community managed drinking water in the Ichangu Narayan VDC. Whilst, it had virtually limited in Ichangu Narayan community managed drinking water of Kathmandu. As a result, it could not be generalized as a whole but merely indicative to the country for ameliorating the condition of community people.

1.6 Organization of the Study

The study is organized into 6 chapters. The first chapter deals with introduction, second literature review, third research methodology, fourth with description of the study area, fifth with presentation and analysis of data and the sixth with summary, conclusion and recommendations respectively.

For the first chapter of introductory part includes background of the study, statement of the problem, objective of the study, significance of the study, and limitations of the study and organization of the study. The second chapter includes literature review.

In the third chapter, research design, rationale of the selection of the study area, nature and source of data, sampling procedure, source of data collection tools and techniques, and data analysis.

In the fourth chapter description of the study area has been presented. This consists of physical setting and social setting including several sub-chapters.

In the fifth chapter, presentation and analysis of the data has been presented. This consists of socio-economic characteristics of the respondents, including other sub chapters. Systems of CMDW, source of water drinking by respondents, I/sufficiency of source of water used by respondents, collection of water by respondents, preference DWMS by respondents, respondents view on CDW, water borne diseases by using CMDWSS, CMDW helping to respondents, participation of respondents in DW decision making process, water used respondents besides

drinking. CW is helping to religious purposes, according to respondents' quality of DW, Average consumption of DW, farness of source, establishment of taps and responsibility for operation and maintenance are presented.

In the sixth chapter the summary, conclusion and recommendation of the research study has been presented.

CHAPETER – TWO

REVIEW OF LITERATURE

Water is one of the most important and precious of natural resources and a regular and plentiful supply of clean water is essential for the survival and health living organisms. Drinking water and sanitation is widely studied in Nepal. The earlier studies concerned mainly in technical field and in providing the piped drinking water supply in the country. Majority of rural people obtain water from ponds, springs, rivers, stone spouts and wells. Various research works, has been conducted in the field of drinking water, irrigation, community managed, government managed water supply system, methods techniques, and finding out their effectiveness but only a few research have been done about community-managed water supply in Nepal.

2.1 Community

As we define community, there is a grouping of people who resides in a specific locality and who exercise some degree of local autonomy in organizing their social life in such a way that they can, from the locality basis, satisfy the full range of their daily needs.

Community is the buzzword in the present context. Scholars as well as institutions use this word quite loosely. In the common sense, if we talk community, it means the indigenous people, people from rural areas, back word people, disadvantage groups etc, but in the strict sense, community gives us quite broad meaning including the meaning of common sense. Community means the group of person living in a locality with their unique identification including the social solidarity and integration. Any crowd or mob cannot be considered as the community according to the above-mentioned definition of the community.

The World Book Encyclopedia has defined community as: “In the social science, it is a group of people who may live in the same area. The community ranks second only to the family among the oldest and most human institutions. Emotional bonds link member of a community. They share a sense of belonging and feel an obligation towards other member of the group”. Similarly, Boards has defined as; “community is a social group with some degree of ‘we feeling’ and living in a given area” (Kunwar, 2064).

From above definitions, we can say that the community may big or small, one small community can be the part of big community. Community is concerned with any geographical area. It is relatively stable but it is not stable for thousand and thousand year. In community there are ‘we feeling’ which creates the social integration among the members of the community. It is natural created crowd cannot be called as community. The community is developed naturally. The whole life of person can be completed within the community. There are common sentiments in the members of community. Community is therefore a geographical area having common centers of interests & activities as well as common objectives. A community is essentially an area of social living market by some degree of coherence. Some common life is living including variety of social associations and institutions in a circle. Hence, community is the total organization of social life with in limited space.

2.2 Concept of Participation

Participation approach has been emerged in response to the failure of official development efforts. Evidently, involvement of people in the project cycle has the records of better performance and sustainability. Participatory development process calls for increased empowerment of citizens. Only the sufficiently organized and strong family communities interest group and pressure groups are to exert greater say in public policy agenda and provide effective check on unnecessary interventions as well as enforce transparency and accountability in the decision-making (Bongart and Dahal, 1996).

A participatory process can be hence he defined as one which deeply respects the knowledge of all categories of the local people- poor, marginalized, woman, man, boys, girls, vulnerable and creates an environment in which such people can understand their potential their capacity and come to develop their self-esteem. The word participation became public in the development

sector only in late 60s and early 70s, the time when some development models, such as growth in income and social progress failed to reach the poor and marginalized population in developing countries like Nepal. While the Growth in Income model defined development as the growth in per capita income through transfer of huge capital from the North to the South, the Growth in social progress model put emphasis, along with the ongoing emphasis on economic means such as education, health, and other social factors, for development in the South. However, because none of these models had put any space for people in general and poor and marginalized in particular in the whole development process, the benefits were more shared and enjoyed by limited groups of people. The elites, local leaders, and those who were already better off in the societies for various socio-political reasons and thus powerful were the ones who benefitted more from all the development efforts made in this era further widening the gap between the rich and the poor. Participation as a process that allows even poor and marginalized people, along with others, to be actively engaged in all stages of development activities, such as need identification, planning, designing, implementation and monitoring and evaluation. This process is based on a completely people centered approach in which the focus for development is on several aspects- cultural, environmental, political, economic, human and social, which all combined can be instrumental in eradicating poverty in any developing country. Participation is nothing but a transformation in people's traditional attitude, perceptions, and understanding as a shift from 'doing for people' to 'doing by people' poverty is rampant everywhere in developing countries like Nepal at present. In this context, participation needs to be viewed as a means to uplift poor and marginalized people from the vicious circle of poverty that they are trapped in so that every such citizen can think of and live a life with dignity. With this understanding of participation, a participatory process can hence be defined as one, which deeply respects the knowledge of all categories of the local people- poor, marginalized, women, men, boys, girls, vulnerable- and creates an environment in which such people can understand their potential, their capacity and their power, and come to develop their self- esteem (Regmi- Participation, 2002).

Participation does not mean getting people to do what outsiders think is good for them. Many so called 'participatory' programs do not go beyond taking advantage of cheap labor for construction work or involve token consultation with village chiefs in order to gain the consent of the population. Participation is useful only if it serves to help achieve national economic and political objectives. The focal components of the people's participation in water supply schemes

development in Nepal until 1992 had been the contribution by the beneficiaries mostly in the form of free labor (Bhattati, 2006).

2.3 Community Participation/ Management in Drinking water

A definition of community participation proposed at a Rapid Rural Appraisal (RRA) workshop is that “the collective effort by the people concerned to put their efforts and other resources together to attain objectives they set for themselves”. In this regard, participation is viewed as an active process in which participants take initiatives and action that is stimulated by their own thinking and deliberation and over which they can exert effective control. On the other hand, in the passive participation people are put into actions that have been designed and controlled by external agencies. The factor, which influences people’s participation in the community development projects, is mainly local leadership, communication and the level of awareness. These three components are interrelated and have joint significant influences a part from their respective individual effects (Mc Pherson, H.J, 1993, pp. 17(4):294-301).

After the restoration of democracy in Nepal in 1990, communities have been divided according to the different ideologies of various political parties, which are ruining the unity in community development activities. People contribute either labor or cash, which is only a temporary affiliation with the overall activities. Community participation can also be defined as a process of people’s involvement to achieve societal goals through self-reliant efforts. Unity, shared vision and understanding each other are most essential for social mobilization and sustainable development. People’s participation will be enhanced when their felt needs and choices match with the activities. Awareness and sense of livelihood is another influencing factor of participation. Awareness can be enhanced due to access and informal information. Development workers can visit community. Supporting agencies also visit villages and contact with the key persons and call meetings to elicit the required village information.

A participatory index has been designing to measure community participation in Drinking water supply schemes. According to previously mentioned definition of participation would be incorporate in planning, implementation, operation, maintenance, and the overall decision making. The presence of user’s views, decisions in alternatives and knowledge in each stage of the project is a real participation. The scale of participation index varies from zero to one, where

one represents the full participation and zeros the least participation. Some result shows that INGO installed DWS projects have higher participation in compared to NGO and GO. Participatory index of NGO, INGO and GO installed schemes are 0.66, 0.73 and 0.42 respectively. Since government, agencies have traditional practice to install schemes through contractors, obviating less participation. NGO and INGO have a practice to install DWS schemes at the request of users or demand driven approaches which obviously leads more participation as compared to GO. (Sustainability of Community Managed Rural Drinking Water Supply System in the Mid Hill of Nepal, B.S. Bhandari, S Watanable and D. Manandhar)

Introduction to development phase prior to implementation allows for genuine participatory decision-making and prepares community to take charge. The beneficiary community is sensitized, mobilized and organized to resolve conflicts and prepare in collective decision of implementation. Every project has made it mandatory to include all willing potential beneficiaries for equitable benefit regardless for wealth, caste and gender. Non-formal education is targeted on poor and disadvantaged groups to bring them in the main stream of decision-making process. Again, development phase establishes a self-selection process for scheme allocation with demonstrated transparent criteria while preparing conflicts and prepare. Several participatory tools such as self-esteem, associative, resourcefulness, action planning, responsibility and participatory Rural Appraisal (PRA) are used during the development phase and prior to the implementation phase. In the development, phase and prior to the implementation phase Water Supply and Sanitation Users Groups (WSSUGs) and Water and Sanitation Users Committees (WSSUCs) are formed and registered under the Water Resource act in the district's Water Resource Committee (Bhattarai, 2006).

2.4 History of Water Supply Development in Nepal

The history of England becomes relevant to talk about the development of water supply technique. After the 'Industrial Revolution', many private companies were established to provide drinking water in the cities of England, USA, Germany and France. In England, the private companies used to dig road and peoples private lord to put water pipes according to their own will but later those companies were made to take the permission from parliament. Those companies whose sole motive is profit, used to supply water to the rich families (Dixit, 2059 BS).

In 1800 AD, out of 10 lakes population of London, only one-fourth families had their own private taps. There used to be supplied to their houses thrice a week with one hour a day. Other families/people had to take water from the public taps. So, poor people got less priorities there. The question of equity was raised there, by this kind of activities of private companies.

Since, the ancient times people of Nepal have tried to manage water resources from rivers or streams for drinking. The history of water supply development in Nepal dates back to as early as the Lichhavi days when stone spouts, commonly known as *dhunge dhara* were constructed to bring water near to the settlements. Constructed in the elaborate manner, some of these *dhunge dhara* have lasted until date for centuries. The first drinking water project inaugurated in 1891 BC, which was constructed under supervision of English Engineers, came from Calcutta, was the first Drinking water project in Nepal. Supply known as BirDhara Modern water project the water taken from "Madhav Khola" used to be collected on a tank made in Maharagunj from there the water used to places and houses of high standard officials. At that time, many public taps were also established for locals. After four years, another Bir Dhara tap also has built at Bhaktapur in 1895 BC, Dev Shamsar established many pure drinking tap in "Vikshya Pokhari" for the public purpose, which was imagined by his late wife, and he gave fixed shape, he also made another tap in Bhimfedi later. He also constructed another tap of his dead son remembrance in 1921 BS. Prime Minister Chandrashamsar's first wife gave order to established tap in her own native village Jagarkot in 1924 and at that time, another drinking water completed in Dhankuta. Becoming the Prime Minister after Chandra Shamsar, Bhim Shamsar made "Shree 3 Bhim Dhara" in Kathmandu in 1932, Khadaga Shamsar banished person from nation also established another water project in Palpa at Tanshen, the resource was in "Bhulya Khola" in 1930, and another water project established in far western region Doti that was supervision form Indian side (Dixit, 2059 BS).

Most of Nepalese used to suffer from water because the water centre areas were located in remote area. The water had to bring by female, male never bring at all they had to wait many hours for water. The duty was child and they took water, thus the education of children and rest was not available they were deprived. Home near tap was easy to fill water but those who did not have. In water, carrying process women were only does. In Nepal, lack of pure drinking water many disease came in local people's health and many died form it too. There were two streams

in Drinking Water project but they conducted in their own way. The first stream completed which was by Drinking Water and Sanitation department. There were only opened in urban area and where the peoples number was out of 1500 and they were focused group. Local department donated the survey, design and money and counselors of 'Design Section' constructed other function. Local people were deprived form repairing and sanitation. The sanitation depart gave item instruct to repair and made them conscious about Drinking Water project. However, in spite of these facts they were unable to go to the 'focused group' although large amount of money training also conducted but did not get anything. Another department was also built form government side. Local department took help form HELVATES and UNICEF and started to work for New project. The project plan helped the project gave training to local people about Health, life, and environment and to participate such program after that people got knowledge about Drinking water project. The drinking water project registered in 1989 and published instruction paper how to manage and so on (Dixit, 2059 BS).

So, we can say that, the modern water supply system, in which water is delivered through pipes, began in 1985 A.D. when a piped water supply system was constructed by the then Prime Minister Bir Shamsar by the name of Birdhara. Sporadic works were carried out after that in providing water supply services such as Karma Kumari Dhara (Amlekhganj), Dhankuta Pani Adda (Dhankuta), Balnarsingh Dhara (Pokhara), Dhirdhara (Birganj), Bhaktapur Pani Adda (Bhaktapur), Lalitpur Pani Adda (Lalitpur), Tri Bhim Dhara (Kathmandu), Hoske (Kavre), Tansen (Palpa), and Khalanga (Jajorkot) by the Rana Regime.

2.5 Drinking Water Supply and Sanitation in Periodic Plans

Planned development in Nepal was initiated only in 1956 when the first five-year development plan for the country was launched. The planned development of water supply sub-sector was commenced with advent of the Third Five Year plan (1965-70). However, the thrust in terms of institutional development, population coverage and increased level of investment came during International Drinking water supply and Sanitation Decade (IDWSSD, 1981-1990). The government gave and importance to optimum mobilization of non-governmental sectors, private sectors and public participation only form Eight Five Year Plan. The Eight Five Year Plan (1992-1997) set a target of 72 percent coverage for drinking water supply and 13 percent for sanitation to be achieved with in the plan period. The evaluation report of Eight Five Year

Development Plan, clearly mentioned that adequate authority has not been decentralized and sufficient financial authority has not been delegated to local agencies and user's communities. The capability of user's groups and local agencies has not been strengthened and effective co-ordination yet to be maintained among these agencies. However, government claims that population benefited by drinking water supply and the end of Ninth Plan 2001/02 was 71.6 percent and sanitation coverage was 27 percent. By the end of the Ninth Plan 71.6 percent of the total population has the access to drinking water. It was estimated that there are still 28.4 percent of the population deprived of drinking water facility, a basic need of life. The target of the Ninth Plan was to provide basic drinking water to all by the end of the plan period. During the period, increased involvement of the consumer's group as well as wider public participation in the construction, operation and maintenance of drinking water projects created favorable atmosphere to make project more sustainable. The sanitation programs related to health, education and public awareness were also launched during the plan period. In Tenth Plan (2002-2006), it was taken strategy in rural drinking water project on the basis community needs and demands the project under taken, with the involvement of user community for maximum utilization of locally available resources and means. Moreover, it was given emphasis on the conservation of local resources and operating rural drinking water projects through the consumer committees and NGOs such institution had also gave emphasis (Tenth Plan, 2002-2007).

In Economic Survey 2006/07 Community, development is taken "As the effort of government alone is not enough to expand the drinking water facilities, the policy of expanding drinking water facilities, through the involvement and partnership on the basis of their feasibility has been adopted. In order to ensure sustainability and certainty of projects and services, the concept of community management of rural and semi-urban projects was put forward to replace the concept of people's participation. Similarly, for ensuring and promoting the concept of community management, a provision of 20 percent contribution of the cost of execution of the project by the community has been made. However, in case of backward class and targeted groups of people, the policy to contribute only 10 percent of the costs of the costs by community has been adopted. Community based Drinking Water and Sanitation projects have been implemented in districts, which are lagging behind in respect of availability of drinking water and sanitation facilities and Human Development Index. Similarly, some provisions have been made to set aside a fixed amount of budget in order to ensure realization of expected benefit for drinking water and

sanitation facility and positive impact on public health and to develop health education program as an inseparable part of drinking water services. Facility extension programs, aimed at promoting public awareness towards sanitation are in operation as an integral part of drinking water projects. Against the target to complete 13 projects under Small Town Drinking Water Projects under Development of water supply in the current Fiscal Year (FY) that would provide service to 123 thousand people, only 10 projects have been completed and the overall progress is recorded at 78 percent (Economic Survey, 2007).

2.6 Ministerial Level and Policy upon the Water Supply and Sanitation Sector

Government of Nepal has made several policy interventions in the water supply and sanitation sector. As for the water supply sector, although some major works were carried out to provide services to prominent township like Pokhara, Dhangadi and Hetauda, it took more than 16 years to establish a separate department to deal with water and waste water services in the country. Department of Irrigation and Water supply that was established in 1966, was divided in two in 1972 into Department of Water supply and Sewerage and Department of Irrigation. DWSS continued with its responsibility for larger systems, while Local Development Department, with UNICEF assistance started a program for Small rural water supply. Until the Seventh plan, all water supply programs were run under the Department of Water and Nepal Drinking Water Corporation. The government gave an importance to optimum mobilization of Non-Governmental sector; private sector and public participation only from Eight Five Year Plan. Ministry of Housing and Physical Planning (MHPP, 1989) had reported on the existing situation of the water supply systems in some town of Nepal. It has also highlighted the needs and investment required for the water supply. It has pointed out several shortcomings and forwarded many proposals for reforms. These include needs for more water treatment plants upgrading the existing supply, networks and proposals for the control of contagious water borne disease (Pant, 2002).

The most active provider of the services in the water and Environmental Sanitation (WES) sector are Department of Water Supply and Sewerage (DWSS), Local Authorities (DDCs & VDCs),

External Support Agencies (ESAs), Non-Governmental Organization (NGOs) private sector, Community Based Organization (CBOs), and User 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 allocating resources for the WES programs. The Ministry of Housing and Physical Planning (MHPP) is responsible for formulating 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, coordinating, 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 (Pant, 2002).

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 community Health Section under the Health Education, Information and Communication Centre 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 sectors.

The Department of Water Supply and Sewerage (DWSS), established in 1972, is the lead agency for the drinking water supply and sanitation sector of Nepal. It is working towards achieving the sector objective of Government of Nepal which is to achieve 'sustained improvement in health status and productivity for Nepalese people as a whole with particular emphasis on lower income group through the provision of adequate, locally sustainable water supply and sanitation facilities in association with improved personal, household and community hygiene behavior.

The figure for coverage of population by mid July 2003 by drinking water supply was 71.6 %. In the period mid July 2003 to mid July 2007, additional 2.62 million people have been provided access to supply of drinking water thus increasing the coverage figure to 80.4 % of the population. In this 1 million are covered by programs implemented by DWSS and the rest by other agencies working in the sector. The figure for coverage of population by basic sanitation is about 46%.

These figures, however being through secondary sources, the task of having actual database on status is started from the fiscal year 2062/63. This database, besides providing the real picture on where we are in terms of actual coverage and overall sectoral status, will also help in identifying areas of urgent attentions. Date report will be produced towards end of by 2064/65 (www.dwss.gov.np, 2008).

The term water laws refers to both municipal and international laws, norms, values and principles which project the right of people to access to water resources for various purposes. General speaking, water laws are rules enacted or provide by a legitimate authority that regulate the sectoral use of water. The search for principles governing water resources are motivated by two basic concepts:

Concept of Development Need: To ensure economic development by providing sufficient water for drinking health and sanitation, irrigation, electricity and industry.

Concept of Pursuit of Justice: To ensure the equitable and reasonable allocation, distribution and utilization of water resources.

In this context, water law plays a principal role in:

Protecting the right to water as a basic human right;

Ensuring access to water for drinking health and sanitation;

Ensuring access to water for food production;

Meeting the water needs of industry and commerce;

Resolving and preventing disputes over the allocation distribution and use of water resource;

Facilitating the implementation of effective water policy and

Ensuring water quality by controlling pollution (Nepal, 2005).

Government of Nepal has made several policy interventions in the water supply and sanitation sector. The government has introduced the water Resources Act 1992 (2049 BS). This is an umbrella Act, governing not only drinking water, but other uses of water and overall water resource management in Nepal. The Act gives priority to the right to use water for drinking purposes over any other domestic or commercial use. There are two regulations under the Act, for drinking water purposes the water Resource Regulation 1993 (2050 BS) and the Drinking water Regulation 1998 (2055BS). The Water Resource Act have following features; proper utilization of water resources; government ownership in all water resources; and guidelines and instructions for the use of water resources to minimize the negative impact on the environment. According to the Act, all Water User committees should be registered with their respective district administration to legalize their action. This act is the umbrella Act governing water resource management. It declares the order of priority of water use. The water resource is vests ownership in the state. It provides, for the formation of water users associations, established a system of licensing, and prohibits water pollution (Nepal, 2005).

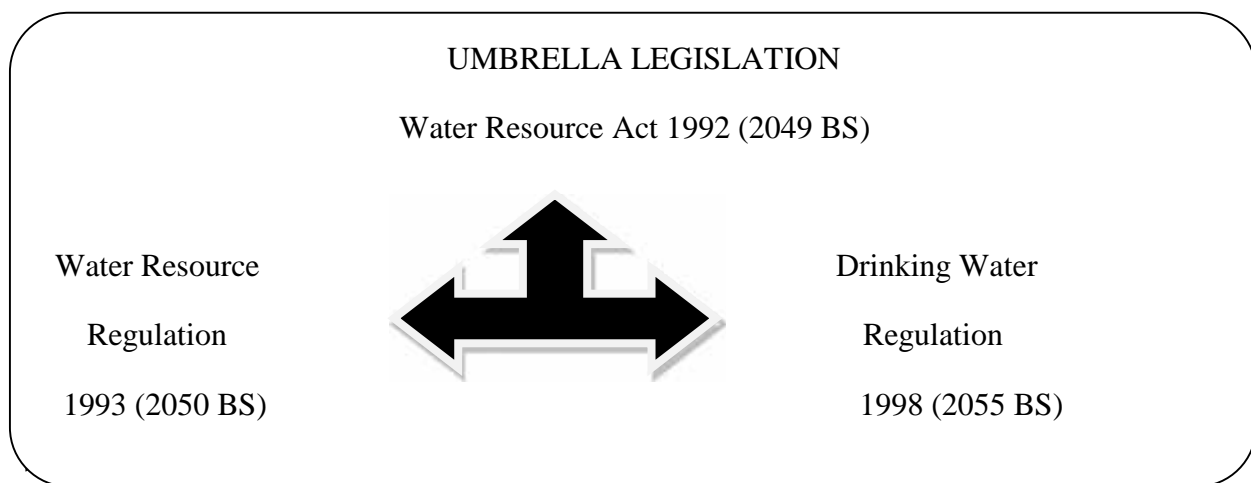
The Water Resource Regulation 1993 (2050 BS) is an umbrella regulation covering all uses of water and providing procedural mechanisms for the implementation of the Water Resource Act 1992 (2049 BS). The Regulation covers the formation of Water User Associations and District Water Resource Committees licensing provides a dispute settlement mechanism in relation to water use service charges, stress out the process to be followed by the State in relation to land acquisition and compensation and provides some forms in the schedules to the regulations for certain administrative procedures.

The Drinking Water Regulation 1998 (2055 BS) specially deals with drinking water sanitation as it affects drinking water. Among other things, this Regulation regulates DWUAs, the quality of drinking water and drinking water supplies.

The other major pieces of legislation governing drinking water are the Nepal Water Supply Corporation Act 1989 (2046 BS). This Act establishes the NWSC as a public corporation responsible for providing clean drinking water and sewerage services to the urban public. The

scope of work of the Corporation has been determined by HMG by notification in the Gazette. This Act establishes the right of people to drinking water and sanitation and imposes a duty on the state to provide drinking water and sanitation.

Drinking water is also mentioned on by other legislation not necessarily specifically enacted for that purpose. The Local Self Governance Act 1999 (2055 BS), which primarily deals with the decentralization of government, also gives local bodies some responsibility in relation to the utilization, conservation and management of water resources and the maintenance of sanitation facilities and waste management.



2.7 Efforts of INGOs and NGOs in Community Managed Drinking Water Supply in Nepal

Besides governmental organization a wide range of international and national non-governmental organization (NGOs & INGOs) are working on water and sanitation delivery services since 1990s.

United Nation, The World Bank, The Asian Development are given emphasis in Community Managed Drinking Water. They are providing donation and aid in this sector. In different Five Year Development plans are giving emphasis in the community drinking water. Some time, they are giving conditional aid in the water sector. These agencies have been still making great attempts to ourbentith the drinking water related problems.

Washington, June 1, 2004 – The World Bank today approved two separate projects aimed at poverty reduction through community-led and managed initiatives in Nepal. A US\$25.3 million credit was approved to extend water supply and sanitation to over 800,000 people in rural areas of the country. A second US\$15 million grant was also approved to the Poverty Alleviation Fund, a pilot initiative created to bring increased opportunities for income generation and access to basic services and infrastructure to poor communities in rural areas.

"While the Government of Nepal struggles to provide effective support to marginalized groups, it also recognizes that some NGOs, community based organizations and donors have implemented a number of successful programs to reach out to the marginalized groups, through community-managed infrastructure, says Ken Ohashi, the World Bank's Country Director for Nepal. "Thus the government has wisely decided to turn the Poverty Alleviation Fund over to those who know how to run it best and to scale up the provision of safe drinking water to the rural poor through mechanisms successfully demonstrated by the Rural Water Supply and Sanitation Fund Board."

Poverty in Nepal is pervasive with about 40 percent of the population living below the poverty line. The poor live predominantly in rural areas and engage in subsistence agriculture on small plots of low quality land, have limited access to credit, infrastructure, markets, and basic social services, such as water and sanitation. Ethnic minorities and lower caste communities in remote areas, and women, especially female-headed households, lag seriously behind in terms of incomes, assets, and most human development indicators in Nepal. [http://go.worldbank.org/July 20, 2008](http://go.worldbank.org/July20,2008)

UNESCO, in 2003, also mentioned about the millennium development goal for access to drinking water which was reconfirmed at world summit for sustainable Development. It stated that the summit set the target for access to sanitation, i.e. halving, by 2015, the portion of people who do not have access to basic sanitation. In the publication of UNDP in 1994 mentioned that in order to attain these goals, each country should immediately initiate engineering and feasibility studies on projects that considered to one of highest priority, and are based on a cost-effective technology appropriate to local conditions, with community participation, a good management and provision for operation and maintenance. Asian Development Bank will continue to support community initiatives in small towns to develop water supply facilities to be maintained by local

community or private enterprisers. Private sectors management contract for urban water supply and sewerage services in Kathmandu valley, under World Bank assistance in 2000, will be an important milestone for further processing for Asian Development Bank assistance for the Melamchi Water Supply project, a 2000 project (Bhattarai, 2006).

2.7.1 Nepal Water for Health (NEWAH)

Nepal Water for Health (NEWAH) is a national level non-governmental organization (NGO) that specializes in drinking water, health promotion and sanitation. Established in 1992, it has been working actively in partnership with local NGOs to serve poor communities secure basic services of water and sanitation, strengthening the capacity of these partners to undertake further development activities. It has an executive body comprising of 7 members and is affiliated with the Social Welfare council - the governing body of NGO sector in Nepal and is registered with the District Administratin office.

NEWAH operates in selective districts of Nepal from the East to the Far West through its three regional offices located in three development regions (Eastern, Central and Mid Western region) of the country with the support of 93 professional regular staff. Each year NEWAH supports around 60 community based self-help water supply, health promotion and sanitation projects. The community receives financial, technical and capacity building support from NEWAH. So far, NEWAH has worked in 50 districts of the country serving over one million people (estimated to be 3% of the national populations) through 1,013 projects working in partnership with 465 local partners (As of November 7, 2007). Social inclusion and equity is promoted all across NEWAH (both at program and at organizational level) by adopting an approach of Gender and Social Inclusion (GSI) although most of its works are carried out in rural areas. it is gradually trying to extend the services for the rapidly expanding semi urban poor areas. NEWAH perceives itself as a 'Learning Organization' and continues to increase its focus on innovative and low cost alternative technologies, approaches as well as learning around water and sanitation such as Fog Water Collection, Rain Water Harvesting, Community Led Total Sanitation (CLTS), School Led Total Sanitation (SLTS), Integrated Water Resource Management etc. to contribute in improving sector's performance. Scaling up gender and poverty-sensitive community management of water

supply and sanitation systems requires institutional commitment, resources, time and long-term support. NEWAH has clearly demonstrated all of these over the past few years. What is significant is NEWAH's ability to change institutional attitude in accepting and implementing approaches to enhance gender sensitive and pro-poor community management. It is essential to view women and men in a community as equal, regardless of caste or class, and to respond to their needs. This important dimension has been addressed in all stages of NEWAH's project cycle. Addressing gender and poverty issues can substantially contribute to achieving equitable access and sustainability for poverty reduction. We can certainly look forward to these contributions in the next ten years with NEWAH's innovative and valuable work in the development of communities in Nepal. NEWAH conducts subjective researches at regular intervals to identify areas requiring improvement and for enhancing service standards and recommending on new, appropriate and alternative technologies and approaches. In the recent years various studies such as the Water Consumption Study, Sustainability of Hygiene Behaviors, Long Term Sustainability Study, Public Latrine studies, NEWAH Participatory Assessment II, Socio-Economic Impact of WHS projects, etc. have been carried out. These kinds of researches and studies have given basis for new learning, improvements and providing better services and will be continue in the future, although Nepal is naturally bestowed with ample water resources only 82 percent of population has access to safe and clean drinking water. Improved services such as piped water and covered wells make up for almost 93 percent of water coverage in urban areas and 79 percent in rural areas (with 6.7 percent water piped to the house, 32.5 outside the house and 39.6 percent using covered wells). The remaining has to depend upon the conventional sources like unsafe wells, lake, river, spring, etc. A UNICEF report in 2006, estimates that around 13,000 children die every year due to water related diseases before they reach their fifth birthday. Thus, to support rural communities have access to safe drinking water NEWAH supports approximately 80 projects a year through all its regional offices. NEWAH's water supply system mainly consists of Gravity flow and Tube well systems that serve communities with drinking water in the hills and Terai respectively (www.newah.org.np, 2008).

2.7.2 Rural Water Supply and Sanitation Fund Development Board

Rural Water Supply and Sanitation Fund Development Board (RWSSFDB) is promoting demand-driven community based approach in water supply and sanitation sector in Nepal by

mobilizing non-governmental and private sector organizations in assisting communities to implement water supply and sanitation schemes. To increase ownership, sustainability, beneficiary communities represented by water supply and sanitation users' committees (WSUCs), implement schemes with the assistance of SOs. The community-based demand-driven approach to scheme identification, design, construction, operation, and maintenance moves the emphasis from the conventional supply driven development approach in order to increase beneficiaries' participation in decision-making, in implementing their decisions, and in sharing the benefits of the schemes.

The Board provides grant assistance to communities and SOs for the implementation of rural water supply and sanitation programs, which also integrates the following components:

1. Community organization and mobilization;
2. Non-formal education (NFE);
3. Health, hygiene and sanitation education (HSE);
4. Capacity building of SOs/SAs and communities;
5. Environmental management;
6. School sanitation program;
7. Skill-based training;
8. Women's technical support service linking to income generation;
9. Micro-irrigation; and
10. Other programs to support sustainable and cost-effective water supply and sanitation development;

On 14 March 1996, the government of Nepal created the Rural Water Supply and Sanitation Fund Development Board to promote sustainable and cost effective demand-led rural water supply and sanitation services in facilitation of Non-governmental and Private Organization to provide full emphasis on community ownership in conformity with the government's Eight Plan

(1992-97), Ninth Plan (1997-2002) and Tenth Plan (2002-2007). Sector policies which aimed at fundamental changes in rural water supply and sanitation services delivery mechanism in the country. The Ministry of Physical Planning and works in the line ministry for the Board.

The Board, has completed its First Phase (1996-2003) successfully and entered in Second Phase (2004- 2009) to support rural communities on implementation of water supply and sanitation schemes. The Board is being funded by World Bank and DFID (www.rwss.com, 2008).

2.7.3 Action Aid Nepal (AAN) in Community Managed Drinking Water

Action Aid Nepal has been implementing water projects in hilly rural areas of Nepal since 1984. Over the period, AAN has been learning from its experience and also from those of similar organizations involved in community development. Different approaches and policies have been adopted and the present approach has actually evolved from experience.

From 1989, AAN changed its working procedures. Some responsibility of project implementation was given to the users. Project planning and prioritization were given by the AAN themselves. Community mobilization, site and store management mason and worker management, project implementation, and decision making once the project was started were taken up by the community. Maintenance fund collection was made compulsory. Priority was given to training, meeting and workshop with users with the purpose of enabling them for qualitative outcomes from the implementation of the project. This helped slightly in improving ownership feeling among users, but was not satisfactory.

In the beginning, AAN had implemented projects directly at the request of the users. There was no assessment and prioritization system which involved the community. Even there was no thinking about the project sustainability. Therefore, the feeling of ownership among the users was lacking. As a result in the initial days AAN had to undertake the task of maintenance and repair itself.

After 1993 onwards, the main responsibility for project selection and implementation has given to users. AAN has providing budget and technical support only. The community has taken up material management decision-making and community mobilization responsibilities. Users are exposed and oriented to the market for the material purpose. Local trained human resource is

mobilized from the very beginning of the project implementation which has supported in confidence building in them. Priority has been given to users' awareness on health and sanitation, importance of DWS its sustainability, problem, source and environment protection, use of maintenance funds and so on. This has shown good signs on users' ownership. (Bhattati, 2006)

2.8 Water Resource Strategy on Drinking Water

Strategic planning aims to improve one's current situation in order to attain a higher level goal within a given timeframe. In the water sector, although strategic planning has been increasingly used as the national and sub-national levels, it has proved to be a complex and time consuming process. Although considered highly desirable, few countries have been able to formulate an integrated national water resources strategy.

Despite the lengthy process, national water resources strategy formulation considered a necessary and worthwhile participatory process. It provides a systematic framework in which to develop and manage water that embodies all the varied facets of resources, and to achieve a specified set of objectives over the long term. In the absence of such a framework, development has been ad hoc and sub-sectoral because respective policies are often too general and slip into sub-sector biases.

Since conditions do change as change of time, a water resources strategy must remain dynamic, with updates typically required every five years. Creation of the initial strategy for development and management of Nepal's water resources is the great challenge. The decision to formulate a national water resources strategy was taken by former HMG/N in 1995.

Despite its huge water resources potential, one third of population does not have access to safe water. In the past ten years, significant efforts have been made to improve access to water supply and these efforts need to continue if full coverage is to be achieved. Although statistics are not well documented, regarding private sector and community contributions to capital investment and operating costs, there is clearly an increasing shift away from reliance on the public sector. Overall in the water sector, capital investments from the private sector and communities have

reportedly been low. Domestic Water supply and sanitation coverage for rural water supply has increased steadily because investment requirements are low; however, imperfect sustainability of schemes may erode some of the gains. If sustainability is maintained, full coverage for rural water supply is feasible in the next 10 to 15 years (Nepal Government of Water and Energy Commission Secretariat, 2002).

Given the enormity of the challenge of environmentally sustainable development, it is recognized that significant progress can only be made with a high level of community participation and ownership. Achieving this goal will require increasing awareness through the delivery of education programs these will in turn lay the basis for communities to take the initiative for watershed management and protection of aquatic ecosystems. In this way, government agencies will simply facilitate the process through the provision of technical advice and channeling of government funding. In addition, for water resource projects, communities should be made partners in the development to ensure that environmental and social impacts are properly identified and mitigated. In fact, many projects can support programs to enhance environmental and social benefits, if coordinated and designed with consideration for the needs to the surrounding communities (Nepal Government of Water and Energy Commission Secretariat, 2002).

Drinking water is a basic human need. Every Nepali should have reasonable access to potable water. In addition, since provision of adequate potable water is not enough by itself to ensure better health conditions, there should be widespread education regarding hygiene and access to appropriate sanitation facilities. In the strategy adopted by former HMG is by the end of 25 years, all people will be benefiting from adequate water supply and sanitation, with related health improvements.

Former HMG had initially targeted 2001/2002 as the date by which reasonable access to safe water would be provided to the entire population; this goal could be achieved so quickly. The Water Resources Strategy has adopted the following targets for water supply and sanitation:

Year	Access to Safe Water Supply		Provision of Safe Sanitation
	Basic Services	Good Services	

2007	85%	40%	60%
2012	100%	60%	80%
2017	100%	85%	100%
2027	100%	100%	100%

Source: *(Nepal Government of water and Energy Commission Secretariat, 2002)*

The main focus of the Water Resources Strategy will be to provide basic levels of coverage to all rural areas as quickly as possible. Thereafter, the emphasis will shift to improving the level of services. Good progress has been made since the past ten years, but one-third of rural people still lack even basic water supply services and the vast majority lack basic sanitation. Another concern is to ensure that the communities can maintain water supply schemes otherwise coverage could eventually decline. The strategy will be to:

-) Support and strengthen CBOs and WUSCs;
-) Maintain and coordinate rural water supply development programs;
-) Promote/support good sanitation and hygiene awareness; and
-) Support and strengthen DWSS as a core government organization.

In rural areas of Nepal, Villages are small and housing is often scattered. Accordingly, rural water supply schemes tend to be quite small and aim to provide water at collection points that are no further than 250 m from the beneficiaries. CBOs and/ or communities selected by beneficiary groups constitute the best method of implementing and managing those schemes. Nepal will continue to vigorously endorsed this approach and will provide support to strengthen CBOs and WUSCs in areas where new water supply schemes are planned (Nepal Government of water and Energy Commission secretariat, 2002).

2.8.1 Drinking Water and Sanitation in Interim Plan (2007/08- 2009/10)

There has been a wide increase in the involvement and participation of the user's groups in the construction, operation and maintenance of water system. According to the Nepal Demographic

and Health Survey, 2006, nearly 90 percent households in urban areas and nearly 80 percent rural households have access to drinking water. In the same way, in case of sanitation, about 37 percent in urban areas and about 20 percent in rural areas (households) have been using improved latrines, from the administrative records, about 77 percent of the people have access to drinking water and about 46 percent people use 16 proper latrines. In the field of drinking water and sanitation, legitimization and coordination are deficient in the works of different agencies. In many places, necessary services have not been provided, in addition, adequate attention has not been paid to improve the quality of the available drinking water, and proper repair and maintenance of the constructed water supply system could not have been done. During this period an additional 400,000 of the population had the facility of drinking water and sanitation facilities were made available to 319,000 people of Nepal. In the FY 2002/03, the Local Infrastructure Development Policy was approved. According to this, works under seven sectors (rural roads, suspension bridge, small irrigation, community water supply and sanitation, etc.), have been developed and conducted through local bodies. However, during this period, notable progress could not be achieved in the area of decentralization and devolution due to conflicts in the country and the absence of local representatives.

Population with access to improved drinking water 77- 85 (percentage) in the tenth plan. In order to make local bodies gradually responsible for basic water supply services, water supply and sanitation schemes serving less than one thousand people have been devolved to them. During the Tenth Plan period, drinking water schemes were implemented with due priority given to improvements in water quality and service standards. There has been a gradual increase in the participation of common masses and the involvement of the government and community based organizations for the development of water supply and sanitation services.

The process of transferring water supply management to the private sector has been initiated in case of the Kathmandu Valley.

Basic Drinking Water Service in Tenth Five Year plan was targets total benefited population was 22,680 (in '000), percentage of benefited population 85, But the achievement was benefited population was 20,434 (in '000) Percentage of benefited population 76.6.

The quantitative targets of the TYIP in the water supply and sanitation service coverage by the end of the TYIP period have been envisaged as mentioned below:

Indicators Status by 2006/07 TYIP Targets;

A) Basic Drinking Water Service

- Total Benefited Population (in '000): 24,327

- Percentage of Benefited in Total: 85

B) Medium and High Level Drinking Water Service

- Total Benefited Population (in '000): 4,293

- Percentage of Benefited to Total: 15

Strategies to attain the objective, during the TYIP period, will include the following:

- Execute simple technology based water supply schemes for extending the basic drinking water supply services.
- Ensure sustainable water supply services through rehabilitation and extension of previously executed old and damaged water supply schemes.
- Gradually improve the quality of drinking water in accordance with the Drinking Water Standards, 2007.
- Gradually extend the service standards as per the Water Supply and Sanitation Policy, 2004.
- Promote and extend sanitation facilities through public awareness at the rural and urban areas with the participation and contribution of the local government and Users' communities.
- Introduce necessary policy, institutional and legal reforms for adopting the Sector Wide Approach through effective coordination between the stakeholder agencies.
- Strengthen organizational capacity for effective and result oriented plan implementation, monitoring and evaluation.

- Update and arrange for the dissemination of data and information on population with or without having access to water supply services.

- Priority will be accorded to complete the on-going drinking water schemes under construction within the three-year period through active participation of the users' groups.

New projects will be selected, based on selection criteria that also evaluate the proportion of peoples' contribution, and priority will be accorded to the execution of those schemes that assure high peoples' participation. In order to ensure sustainable development and management of water supply and sanitation schemes, preparatory stage activities will be compulsorily undertaken prior to the commencement of construction works. 'Coordination Forums' for drinking water users' committees and forest users' committees will be established to strengthen the financial management aspects as well as for conserving the sources of water. The responsibilities for operation, management and repair and maintenance of all the completed schemes will be handed over to the concerned users' committees. The policy regarding subsidy given for operation of the schemes handed over will be modified. The drinking water system (schemes) that are completed but presently not in operation due to lack of proper repair and maintenance will be rehabilitated for service delivery with the initiation and participation of the users' communities. Similarly, in the case of new schemes, provisions of Joint Investment Fund and Advance Repair Maintenance Fund will be made mandatory. (Nepal G. o., December, 2007).

There are many Literatures regarding to community Drinking water, however they are not sufficient to provide such kind of information, which is related to comparison between community tap and public tap. Due to this research is based on community oriented drinking water project of above-mentioned VDC; the literatures it reviewed are empirically related to this field. They focused on other areas too such as health and sanitation, policy etc. It is found that most of the studies are failed to explain about the level of local people's participation. Even though all literatures regarding to this topic are valuable to generalized the condition of whole country. At last our literatures conclude that community Managed Drinking Water is the best option to combat with water scarcity Zone and sustainable drinking water management.

CHAPTER – THREE

RESEARCH METHODOLOGY

This chapter presents the research methodology adopted for the study.

3.1 Research Design

Exploratory as well as descriptive research designs have been performed for this research. However, exploratory modes of methodology dominate over later. Besides, the research had also study the trend of awareness, participation; advantage groups, disadvantage group, stakeholders, experiences, size, existing condition and the investigation of explored finding have been described. Because the selected area will be, described with the help of descriptive research design. In addition, case study research designs were applied to generate grounded data of the study area.

3.2 Rationale of the Selection of Study Area

Nepal is a poor country where unsafe drinking water is the greatest problem. Community managed drinking water supply has been taking as a model to fulfill and equally descriptive the requirement of drinking water. Due to constraints of time and budget, this study was done in Ichangu Narayan VDC in ward no. 1 to 3. Because it is, near for the researcher to collect primary data. Nepal is a rural dominant country, it is virtually seen in rural zones as rust, and this study has selected rural areas near to the Kathmandu valley. Moreover, this area is composed of multi-casts, linguistics, ethnics and as completely socio-cultural and economic diversities. The dominant caste of this area is Newars who are ethnics of the Kathmandu. Besides it, due to easy

to access data resources and agglomeration of different types of characteristics in terms of environment is a rationale of selection. Thus, with a view to generalize the result, this study area was selected.

3.3 Sources of Data Collection

On the basis of nature, both qualitative and quantitative data were agglomerated. This primary data were collected from the interview, observation, schedule, key informant interview checklist etc. agglomerated during the fieldwork are the primary data to be generated. Similarly, the secondary data were also used for the study which was collected from VDC record published and unpublished written documents like books, are the secondary data needed during the study. There were also some data collected from the Central Bureau of Statistics.

3.4 Sampling Procedure

The universe of the study is the Ichangu Narayan VDC of Kathmandu district; from the total 7516 populations, the researcher has been selected ward no 1, 2 and 3 out of 9 wards of VDC 1873 populations by purposive sampling. Among the total population 52 person beneficiaries of the community- managed drinking water were selected by simple random sampling.

3.5 Data Collection Tools & Techniques

This study is limit on the following data collection tools and techniques.

3.5.1 Interview

To generate factual data from the household survey for this study, structured questionnaire were prepared and requested to fill-up the questionnaire. Similarly, unstructured questionnaires were asked those respondents who could not fill-up the questionnaires. The information provided by them were written by the researcher himself.

3.5.2 Key Informant Interview

To generate accurate primary data, key informants were involved by the semi or unstructured interview methods. The interview was taken as cross checking to obtain data from the

questionnaire. The informants were interviewed related to community-managed drinking water users associated as key informant interview.

3.5.3 Observation

As the study is a case study, the households selected in sampling were visited and the whole VDC was observed and observation of the condition of public and community tap and its utilization. To know how much the community managed drinking water is effective.

3.5.4 Focus Group Discussion

As a tool of PRA Focus Group Discussion was applied for this study by making homogeneous group. It also benefitted to those who cannot put their inner view ahead of experts or their seniors.

3.6 Data Analysis

Data obtained from the study area were analyzed by the help of computer programs such as; MS-Word and MS-Excel, the quantitative data gathered from the study were analyzed simple statistical tools such as tabulation. In case of qualitative data, descriptive method was applied.

Chapter: Four

Description of the Study Area

Ichangunarayan VDC lies in the west of the Kathmandu district on the lap of Nagarjun Royal forest. There are nine wards in which wards numbers 1, 2, 3, are surrounded by hill regarded as the tiny valley of this village. It is the rural in nature however due to excessive migration in the period of political conflict; this village has changed into semi-urban Zone. Among the 3,915 VDCs of Nepal, this village abounds heterogeneous characteristics. Previously, this is the settlement of Rajputwars of Newars cast but now, it is inhabited by diverse caste having different status. Ichangunarayan VDC has named just after the Janaandolan -1 of 1990 as the indication of Ichangunarayan temple. Ward numbers 15 and 16 of Kathmandu metropolis touch its border. Majority of the people of this area are farmers' i.e. agricultural society. Indeed, unity in diversity is the overall features of this village. People of this area have been posing their ways of life by converting traditional agriculture into commercial one.

Though this village has predominantly occupied by farmers, there land holding size is very minimum. In this research work, the researcher found that almost all have not more than 10 ropani of the land. This land too has possessed by the property owners since the centuries old and the local people are working in this land as Talsins. They were worried with property owners because land would be returned back if property owners angry with them.

4.1 Physical Setting

The study zone of this research has physically diverse topography. It is surrounded by the Nagarjun Royal Forest in the northern part. This VDC is located about 3km far from the main town of Kathmandu valley. Due to fertile land in ward numbers 1, 2, and 3 the settlement is becoming compact day by day and bit by bit. This VDC has possessed various community

forests, crusher industries etc which provides employment opportunities to the local people. These are 1620 households. The structures of the houses are variety in nature. It taken only half an hour to reach in the top of the VDC from the Sywambhu by vehicles and 1hour on foot. Ichangunarayan VDC is urban orient VDC, there are most of the services are getting by the local people.

4.2 Social Setting

This village is decorated with multiple casts and according to the Census Report 2001, Putuwars and Tamangs are in majority. Brahmines and Kshetries in the village have settled mostly in ward numbers 5, 6, 7 and in other wards, they are in minority. Therefore this society is the different casts where Newars, Tamang, Gurung, and other castes. Since, Nepal itself is renowned by diversity in caste. This village also does not reject it.

Ichangunarayan VDC is itself old Newars Community where Shrestha, Putuwars, Nagarkoti, Balami of Newars are settling. The village has also occupied by Tamang, Kshetries, Brameens, Magars, Gurung etc. like other community in Nepal, this community has also its own cultures, tradition, festivals and the so on. It is the composition place of Hinduism and Buddhism in which cooperation is seen between them.

Ichangunarayan VDC ward no. 1 is the storehouse of various festivals than other wards. Mahalaxmi Ganesh Jatra celebrated in Ghodejatra in this locality is one of the special festivals of Newars. This VDC has surrounded by the Nagarjun Forest in the north and the east. It has one Ichangunarayan temple where one month fair is an operated after the Kojagrat Purnima of Dashain. This the famous religious place of the village. According to the census 2001, in Kathmandu district there are 10, 81,845 population. There are 5,76,000 male and 5, 05,845 female of the total populations. Even though, there are many cast and religious people there is religious and cast co-ordinate within the place and people.

4.2.1 Population Distributions and Settlement Pattern in Ichangunarayan VDC

Population distributions and settlement patterns of Ichangunarayan VDC is as described under in the table.

Table: 4.1 Population Distributions and Settlement Pattern:

Ward No.	House hold no.	Population			Eligible voters	Literacy %	Main Cast and Community	Telephone No.
		Female	Male	Total				
1	131	361	384	745	481	75	Tamang, Newar	35
2	155	349	357	706	527	80	Tamang, Newar, Bhramin, Chettri	15
3	99	226	236	462	318	75	Tamang, Putuwars	17
4	191	439	503	942	813	90	Tamang Bhramin, Nagarkoti,	95
5	166	321	354	675	515	90	Nagarkoti, Chettri Tamang, Bhramin,	55
6	400	699	740	1439	1139	95	Chettri Tamang, Bhramin	180
7	122	370	369	739	366	85	Chettri Tamang, Bhramin, Newar	27
8	143	352	388	740	356	85	Chettri Tamang, Bhramin	29
9	213	508	560	1068	512	90	Chettri, Thakuri Tamang, Bhramin	35
Total	1620	3625	3891	7516	5027			

Source: (Ichangu Nararayan VDC, paush, 2062)

This table shows that, the sampled area of this study are Ward numbers 1, 2 and 3 of Ichhangu Narayan VDC, there the majority of casts is existed of Tamang and Newar, Tamang and Putuwar respectively. Among which ward number 2 contains the compact settlement pattern. Ward number 2 contains the higher literacy rate than the rest wards.

4.2.2 Population Distribution on the Kathmandu district by Religion, Ethnic Group, and Mother Tongue

Population distribution in Kathmandu district by religion, ethnic group and mother tongue are mentioned in the following table chronologically.

Table: 4.2 Population Distribution on the Kathmandu district by Religion, Ethnic Group, and Mother Tongue

Religion	Percentage	Ethnic Group	Percentage	Mother-tongue	Percentage
Hindu	75.49	Newar	29.60	Nepali	54.87
Buddha	21.66	Bhramin	20.51	Newar	26.19
Muslim	1.11	Chettri	18.76	Tamang	7.33
Kirant	0.70	Tamang	8.54	Hindi	1.63
Christian	0.79	Magar	3.24	Gurung	1.55
Other	0.25				

Source: *District Profile, Kathmandu, 2062*

The above table shows that Kathmandu district falls as a majority residence of Newars. However, it is not out of the mix of other casts. Out of total population, 75.49 percent are Hindu dominated. Furthermore, it has occupied by diversity castes and religion too.

4.2.3 Population by Cast /Ethnic Group for Ichangu Narayan Village Development Committee

Following table shows that, Ichangunarayan VDC of Kathmandu is also a dominated settlement of the Newars. Besides it, other castes are also settling in a bit numbers. Tamang is the second biggest caste settling in the Ichangunarayan VDC. So it is become clear that highest population of the Ichangunarayan VDC is of the Newar and the second highest of Tamang, followed by chettri , Braman-Hill, Magars and others.

Table: 4.3 Populations by Cast /Ethnic Group for Ichangu Narayan Village Development Committee

Caste	No. of Person	Percentage
Newar	2829	37.42
Tamang	2076	26.98
Chettri	928	12.06
Brahmin-Hill	593	7.70
Magar	448	5.82
Gurung	252	3.27
Thakuri	131	1.70
Rai	100	1.29
Sherpa	92	1.19
Bhote	44	0.57
Unidentified caste	38	0.49
Tharu	36	0.46
Muslim	33	0.42
Kami	20	0.25
Limbu	13	0.16
Sanyasi	12	0.15
Churaute	10	0.12
Yadhav	7	0.09
Kumnar	5	0.06
Others	27	0.35
Total	7694	100.00

Source: *C B S, November 2002*

Above table signifies that Ichangunarayan VDC of Kathmandu district is also a dominance of Newar in settlements but other castes are also existed in prosperous condition in the society. Newars cover 37.42 percent followed by Tamangs 26.98 percent, Chhetris 12.06 percent and Brahmins 7.70 percent as major. The other castes such as Magar, Gurung, Thakuri, Rai, Sherpa, Bhote etc. 18 castes in total exist in the VDC prosperously.

4.2.4 Populations by Mother Tongue in Ichangu Narayan Village Development Committee

Populations' number of person and percentage by mother tongue in Ichangunarayan VDC is mentioned in the table below. The majority of mother tongue covers by Nepali followed by Newari.

Table: 4.4 Populations by Mother Tongue in Ichangu Narayan Village Development Committee

Mother Tongue	No of Person	Percentage
Nepali	3541	46.02
Newari	2599	33.78
Tamang	1111	14.44
Sherpa	110	1.43
Magar	103	1.34
Gurung	98	1.27
Others	46	0.60
Bantawa	37	0.48
Maithali	26	0.34
Tharu	23	0.30
Total	7694	100.00

Source: CBS, November 2002

The above table indicates that the majority of the population falls on mother tongue Nepali 46.02 percent, followed by Newar 33.78 percent, Tamang 14.44 percent and rest of the mother tongue populations are Sherpa, Magar, Gurung etc. The populations of Mother tongue Nepali is higher than other it is because of the use of Nepali as mother tongue by Newars too.

4.2.5 Populations by Religion in Ichangu Narayan Village Development Committee

Populations' number of person and percentage by religion in Ichangunarayan VDC is mentioned in the following table chronologically according to the major religion.

Table: 4.5 Populations by Religion in Ichangu Narayan Village Development Committee

Religion	No of Person	Percentage
Hindu	5453	70.87
Bouddha	2066	26.85
Islam	43	0.56
Kirant	11	0.14
Jain	1	0.02
Christain	105	1.37
Sikha	4	0.05
Bahai	0	0.00
Not Stated	11	0.14
Total	7694	100.00

Source: *C B S, November 2002*

The above table shows that the majority of the religion in Ichangu Narayan VDC is of Hindu religion covering with 70.87 percent, followed by Bouddha 26.85 percent; people followed by other religions are very least in the VDC.

4.2.6 Populations by 5 Years of Age Group and Sex for Ichangu Narayan Village Development Committee

Population is the major factor of economic gain and loss. The active population of 20 to 45 signifies the strength of the village or society or the nation. Population by 5 years of age group and sex in Ichangunarayan VDC is mentioned in the following table.

Table: 4.6 Populations by 5 Years of Age Group and Sex for Ichangu Narayan Village Development Committee

Age Group	Population		
	Both	Male	Female
0-4	591	314	277
5-9	832	449	383
10-14	981	510	471
15-19	966	510	456
20-24	903	441	462
25-29	752	376	376
30-34	645	334	311
35-39	498	267	231
40-44	385	206	179
45-49	314	172	142
50-54	246	141	105
55-59	175	93	82
60-64	130	62	68
65-69	97	47	50
70-74	84	49	35
75 & Over	95	45	50
Total	7694	4016	3678

Source: CBS, June 2002

The above table indicates that the majority of the population in the VDC is of 10-14 age groups, it could be generalize that the majority population is of children but it is engaged in getting education. The second is of 14-19 age groups which is known as very active population for the economic purpose.

4.2.7 Households Having Agricultural Land, Livestock and Poultry in Ichangu Narayan Village Development Committee

Landholding, population of livestock and other profession is a powerful tool of social status in our society. It determines several ways of celebrating festivals and other occasions. Households having agricultural land, livestock and poultry in Ichangunarayan VDC is mentioned below with number of households and percentage of them.

Table 4.7: Households Having Agricultural Land, Livestock and Poultry for Ichangu Narayan Development Committee

Household Having	No. of HH	Percentage
Agricultural Land	387	23.02
Livestock	26	1.55
Poultry Only	27	1.61
Land & Livestock	168	9.99
Land & Poultry	62	3.69
Livestock & Poultry	26	1.55
Land, livestock and Poultry	246	14.63
None of All	739	43.96
Total	1681	100.00

Source: CBS, June 2002

The above table indicates that 387 households 23.02 percent have the agriculture lands; it further shows that the majority of the population is depended on agriculture as main occupation. Rests of the households are adopting other occupation as their main occupation.

4.2.8 Number of Households, Population by Sex in Ichangu Narayan VDC

Numbers of households, population by sex in Ichangunarayan VDC, are mentioned in the following table with ward numbers respectively.

Table: 4.8 Numbers of Households, Population by Sex for Ichangu Narayan VDC

Ward No	1	2	3	4	5	6	7	8	9	Total
House Holds	140	150	119	372	158	360	105	360	249	1688
Total Population	702	714	506	1604	720	1607	542	1760	1209	8269
Male	361	364	266	866	379	847	271	871	600	4169
Female	341	350	240	738	341	760	271	889	609	4100

Source: District Profile, Kathmandu, 2062

Above table shows that, the highest households exist in Ward no. 6 and 8 of the VDC. The least households are existed in Ward no. 7 other wards contain the moderate households.

4.2.9 Irrigation and Drinking Water Supply in Kathmandu District in Terms of Sources and way of using

Irrigation and drinking water supply in Kathmandu district in terms of sources and way of using is mentioned below in the table with benefited households, irrigation and land mass of irrigated.

Table: 4.9 Irrigation and Drinking Water Supply in Kathmandu District in Terms of Sources and way of using.

Source of Drinking Water	Benefited Households	Irrigation	Hector
Tap/Pipe	2,03,851	Total Arable Land	19,205
Well	14,717	Total Irrigated Land	13,336
Tube well	13,448	Total Land to be Irrigated	5,868
Public Tap	6,002		
Khola	195		
Source not Stated	1,381		
Other	1,617		

Source: *District Profile, Kathmandu, 2062*

Above table indicates that the number benefited households by using tap/ pipe 203851 and irrigated arable land by using tap/pipe is 19205 hector, it is the highest number of households and largest hector of the land in comparison to other sources and way of using water. Secondly, the well water they use for households and irrigation purposes. Thirdly, they are benefited by the use of tube well water for households and irrigation purposes and respectively others such as public tap and stream.

4.2.10 Availability of Water Sources in the Households Premises by Background Characteristics

Availability of water sources in the households' premises by background characteristics, percentage of households having and numbers of households are presented in the following table in order.

Table: 4.10 Availability of Water Sources in the Households Premises by Background Characteristics

Background/ Characteristics	Percentage of Households having				No of Households
	Piped line	Tube-well/ Borehole	Well/Kuwa	No water Source	
Place Of Residence					
Urban	85.5	26.9	12.2	7.2	1,373
Rural	35.2	7.7	16.6	46.4	627
Type of House					
Permanent	73.7	21.6	14.2	16.2	1,837
Semi- Permanent	29.8	14.6	6.9	49.7	133
Temporary	5.2	8.5	5.2	81.2	30
Ownership of House					
Private	61.9	18.4	12.5	27.3	1,095
Rented	79.4	23.9	15.1	9.5	886
Others	72.5	27.3	6.8	27.5	19
Caste/ ethnicity of the household head					
Newar	68.2	14.7	12.9	23.9	539
Brahmin	78.0	25.0	13.2	14.8	504
Chettri	66.8	22.8	13.5	17.9	363
Tamang	43.1	17.2	12.3	38.3	166
Gurung	89.3	22.7	17.4	4.2	68
Magar	61.1	10.3	21.2	23.1	66
Rai/Limbu	75.1	30.3	11.6	9.5	54
Sherpa	71.0	21.5	7.4	22.7	49
Others	75.1	27.5	16.0	11.9	192
Total	69.8	20.9	13.6	19.4	2,000

Source: A Report on Water Survey of Kathmandu, 2005

Above table indicates that majority of urban households have benefited by pipeline with 85.5 percent rather than other but majority of rural households have benefited by no definite water source 46.4 percent and secondly with pipeline water source, it covers 35.2 percent.

Table further indicates that the permanent houses contain the better facility of 73.7 percent with pipe water rather than semi-permanent and temporary. In case of ownership of house, the rented households have been getting better facilities than the private has and other types of houses.

In case of caste/ethnicity of the households head Gurungs have benefited 89.3 percent well with pipeline water than other. Secondly, the Brahmins have benefited with pipeline water covering with 78 percent. Thirdly, the households' head of Rai/Limbu have benefited with pipeline water covering with 75.1 percent. Other castes such as Sherpa, Newar, Chhetri, Magar, Tamangs and others 71.0, 68.2, 66.8, 61.1, 43.1 and 75.1 percent respectively have getting benefits of pipe water. Here the pipeline water has taken as major standard of drinking water way of using in households.

4.2.11 Main Source of Drinking Water Use by the Households by Background Characteristics

The main source of drinking water use by the households by background characteristics are mentioned in the following table.

Table: 4.11 Main Source of Drinking Water Use by the Households by Background Characteristics

Background Characteristics	Main Source of Drinking Water (%)							Number of Household
	Private Piped Tap	Public/ Neighbor's House	Tube-well/ Borehole	Well/ Kuwa	Tanker Water	Mineral Water	Others	
Place Of Residence								
Urban	81.7	7.8	5.5	1.8	1.5	1.1	0.6	1,373
Rural	35.2	54.4	2.1	5.0	0.5	0.0	2.7	627
Type of House								
Permanent	70.9	19.3	4.0	2.6	1.3	0.8	1.1	1,837
Semi-Permanent	29.8	52.0	9.4	5.7	0.0	0.0	3.1	133
Temporary	5.2	81.2	8.5	2.6	0.0	0.0	2.6	30
Ownership of House								
Private	58.8	29.9	4.7	3.1	1.6	0.8	1.1	1,095
Rented	77.5	13.0	4.1	2.5	0.6	0.7	1.5	886
Others	65.6	27.5	0.0	0.0	6.8	0.0	0.0	19
Caste/ ethnicity of the household head								
Newar	67.0	27.5	1.8	1.3	0.2	0.5	1.6	539
Brahmin	75.7	16.1	3.5	1.1	2.0	0.8	0.8	504
Chettri	64.7	23.2	5.3	5.3	0.9	0.0	0.6	363
Tamang	41.6	40.9	7.0	6.0	0.0	0.8	3.8	166
Gurung	79.9	7.6	3.8	1.9	3.8	1.9	1.1	68
Magar	59.1	26.7	7.1	7.1	0.0	0.0	0.0	66
Rai/Limbu	75.1	12.4	2.4	6.3	0.0	2.4	1.5	54
Sherpa	60.5	25.9	4.2	4.2	5.2	0.0	0.0	49
Others	69.7	12.9	10.1	1.5	2.0	2.7	1.1	192
Total	67.2	22.4	4.4	2.8	1.2	0.8	1.2	2,000

Source: *A Report on Water Survey of Kathmandu, 2005*

Above table indicates that majority of urban households have benefited by private piped taps with 81.7 percent rather than other but majority of rural households have benefited by neighbor's house 54.4 percent and secondly with private piped taps water source, it covers 35.2 percent.

Table further indicates that the permanent houses contain the better facility of private piped tap water 70.9 percent rather than semi-permanent and temporary. In case of ownership of house, the rented households have been getting better facilities than the private has and other types of houses.

In case of caste/ethnicity of the households head Gurungs have benefited 79.9 percent well with private piped tap water than other. Secondly, the Brahmins have benefited with private piped tap water covering with 75.7 percent. Thirdly, the households' head of Rai/Limbu have benefited with private piped tap water covering with 75.1 percent. Other castes such as Newar, Chhetri, Sherpa, Magar, Tamangs and others 67, 64.7, 60.5, 59.1, 41.6 and 69.7 percent respectively have getting benefits of private piped tap water. Here the private piped tap water has taken as major standard of drinking water way of using in households.

CHAPTER: FIVE

PRESENTATION AND ANALYSIS OF DATA

5.1 Socio-economical Characteristics of the Respondents

Nepalese society is a layer of the multiethnic groups of people living together in community with different races, language and culture. Even today, the multi-racial and multi-linguistic characteristics are quite visible in the population. In the present study, an attempt has been made to highlight on some of the social and economic characteristics of the study area. So far as the social study is concerned, it includes households and average family size, caste/ethnicity composition and educational status. The population of the sample households including age and gender, household's type, educational status, occupation has described in this section.

5.1.1 Caste Distribution

The social composition in any place is prime factor for the development of that particular place. In Nepal, there are many places where people of different caste and ethnicity live together and share their happiness and sorrows. It was found heterogeneous society with various caste/ethnicity groups of people, such as Newar, Lama, Chettri, Brahmin, Tamang, and Giri etc. The caste distribution of the respondents is shown below.

Table: 5.1 Caste Distribution

Category	Number	Percentage
Newar	22	42.30
Lama	9	17.31
Chettri	9	17.31
Brahmin	5	9.61
Tamang	4	7.70
Giri	3	5.77
Total	52	100.00

Source: *Field Survey, 2008*

Caste diversity is clear in the study area; six castes are there among the respondents. From the above table we can see that our total respondents are 52, and among them Newar represents the highest of the 42.30 percent, Lama and Chettri represents the 17.31 percent, Brahmin represents 9.61percent, Tamang represents 7.70 percent and Giri represents the 5.77 percent of the total

respondents. It can be known, that Newar are the majority groups in the majority group in the study area.

5.1.2 Age and Gender

Age play an important role for human beings. Man can achieve his target in a fix time of his age. If every man actively participates in economy, social, religious and other organization then he can achieve their goal for their life. By this, not only a single man but also a family, village and a country can run smoothly on the way of development. Without participating in these institutions, the country always remains underdeveloped. However, for active participation, the age of the human being is very important. Before 15 and after 60 it is not known as suitable age of active participation. It is like a universal truth that the age between 15 to 60 is suitable for participating in every economic and other activity. If this age group did not function properly then no any country can be developed. Population distribution of sample households by age and gender has described in the table 5.2

Table: 5.2 Population by Age and Gender of the Sample Households

Age/ group	population			
	Male	Female	Total	Percentage
0-16	1	2	3	5.77
17-60	23	18	41	78.85
60 and above	3	5	8	15.39
Total	27	25	52	100.00

Source: *Field Survey, 2008*

The above table shows that 5.77 percent of the populations were children, 78.85 percent were economically active population and 15.39 percent of the populations are above 60. Among the total respondents, 51.93 percent are male and 48.07 percent are female.

5.1.3 Household type of the Respondents

Mainly there were three types of households have been found, nuclear up to five, joint 6 to 9, and joint above 10. The table shows in below that 51.93 percent of the respondent's household's type is nuclear, 42.31 percent respondents are in joint 6 to 9 and 5.76 percent respondents are in above 10 joint family.

Table: 5.3 Household type of the Respondents

Family	Population	
	Number	Percentage
Nuclear (up to 5)	27	51.93
Joint (6-9)	22	42.31
Joint (Above 10)	3	5.76
Total	52	100.00

Source: *Field Survey, 2008*

5.1.4 Educational Status of Respondents

Education is a better means through which human beings may step into a brighter side of life. Education is a learning process. It is an acquisition of such knowledge and skill, as it will help the individual to earn his /her livelihood and find a place in adult society. It is a harmonious and all-round growth and development of human power of mental and physical. Education is an essential factor for the development of society. It also helps to achieve upward mobility.

As a means, it does various works for the benefit of the people. Education brings consciousness. For country like Nepal education plays vital role in developing knowledge and skill of people. Thus, education becomes one of the sources of economic development. The educational status in the study area was found satisfactory. Most of the people are positive towards the education and they think that education is most needed. Both male and female education is given equal priority. Form the table below we can see the educational status in the study area.

Table: 5.4 Educational Status of Respondents

Status	Population			
	Male	Female	Total	Percentage
Literate	8	13	21	40.38
Primary	1	0	1	1.92
Secondary	8	6	14	26.92
S L C	3	2	5	9.62
Intermediate	2	1	3	5.78
Bachelor	4	2	6	11.54
Master Degree	1	0	1	1.92
Illiterate	0	1	1	1.92
Total	27	25	52	100.00

Source: *Field Survey, 2008*

It reveals from the above table that most of the respondents are literate. Male were more literate than female. The data shows that 40.38 percent respondents are literate while 1.92 percent is in primary level, 26.92 percent are running in the secondary level, 9.62 percent respondents had completed School Living Certificate (S.L.C), 5.78 percent respondents had completed intermediate level, 11.54 percent respondents are in the level of Bachelor level, 1.92 percent had completed the Master degree level and it was found that 1.92 percent are illiterate. Only few people are found illiterate but most of them are aged male and female who didn't get chances to study at their time when they are young. All respondents think that education should be provided compulsory to their children for both boys and girls. The researcher found that most of the respondents are education so they are interested to send their children to the school.

5.1.5 Marital Status of Respondents

Most of the respondents are married. There were not found divorced, separated and widow respondents. There is shown in the table below that 84.62 percent respondents are married and 15.38 respondents are unmarried. There are not found any respondents of divorced, widow and separated.

Table : 5.5 Marital Status of Respondents

Marital Status	population			
	Male	Female	Total	Percentage
Married	20	24	44	84.62
Unmarried	7	1	8	15.38
Divorced	0	0	0	0.00
Widow	0	0	0	0.00
Separated	0	0	0	0.00
Total	27	25	52	100.00

Source: *Field Survey, 2008*

5.1.6 Main Occupation of Respondents

Agriculture is the main occupation of Nepalese people. In Ichangunarayan VDC majority of respondent were adopted agriculture as a main occupation. Respondents were adopting different occupation along with agriculture. Almost all the respondents are engaged in different types of occupation they also own land. The occupation status of respondents has been shown in table.

Table : 5.6 Main Occupation of Respondents

Main Occupation	population			
	Male	Female	Total	Percentage
Agriculture	12	15	27	51.92
Floriculture	1	3	4	7.70
Service	9	6	15	28.85
Retail Trade and Shop	4	1	5	9.61
Animal Husbandry	0	0	0	0.00
Others	1	0	1	1.92
Total	27	25	52	100.00

Source: *Field Survey, 2008*

The above table shows that the main occupation of 51.92 percent respondent is agriculture, 7.70 percent respondents have adopted floriculture as the main occupation, 28.85 percent were depend on service, 9.61 percent respondents have adopted main occupation as retail trade and shop, and only 1.92 percent have adopted different occupation as main occupation.

5.1.7 Secondary Occupation of Respondents

In the Ichangunarayan VDC majority of respondents were adopted floriculture as the secondary occupation. Respondents were adopting different occupation as secondary occupation along with floriculture. There was found that many respondents had taken land as lease and operating the floriculture. All the respondent who are occupying flower as secondary occupation export the flower to the Kathmandu Metropolitan city .

Table: 5.7 Secondary Occupation of Respondents

Secondary Occupation	population			
	Male	Female	Total	Percentage
Agriculture	10	7	17	32.70
Floriculture	15	17	32	61.53
Service	0	0	0	0.00
Retail Trade and Shop	2	1	3	5.77
Animal Husbandry	0	0	0	0.00
Others	0	0	0	0.00
Total	27	25	52	100.00

Source: *Field Survey, 2008*

The above table shows that the secondary occupation of 61.53 percent respondents was floriculture, 32.70 percent respondents have adopted agriculture as secondary occupation, 5.77 percent are dependent on the retail trade and shop as secondary occupation.

5.1.8 Landholding Size and Food Sufficiency of Respondents

One of the major causes of the people's poverty is their ownership of the land as well as the ownership of limited quality land. Most of the agricultural land is in the form of 'khet' that lays irrigated category that is very limited. Rest of the other land is the poorest of all that lies in two categories, sim and Chahar of pakho. Land distribution patterns seem to be dependent upon the rank as given below table.

Table: 5.8 Landholding Size and Food Sufficiency of Respondents

Landholding Size	Population				
	No of Person	Percentage	Food Suffiencent	No of Person	Percentage
Less than 1 Ropani	16	30.77	3 Month	24	46.16
1to 5 Ropani	32	61.54	6 Month	20	38.46
5 to 10 Ropani	3	5.77	Year	4	7.69
Land less	1	1.92	Excess	4	7.69
Total	52	100.00		52	100.00

Source: *Field Survey, 2008*

The land holding size of the respondents and food sufficiency has been presented in the above table. According to the data, 30.77 percent respondents less than 1 ropani , 61.54 percent respondents have 1 to 5 ropani, 5.77 percent respondents 5 to 10 ropani, 1.92 percent respondents are land less. Similarly, 46.16 percent respondents have 3-month food sufficiency, 38.46 percent respondents have 6-month food sufficiency, 7.69 percent respondents have a year food sufficiency and 7.69 percent respondents have excess the food.

5.2 System of Community Managed Drinking Water

Management of the water supply system by local community is community managed water supply system. There is a water user committee for the sustainable development of the water supply. This is Ichangu Narayan Drinking Water Main Consumer Committee. Water User Committee is representative group of people selectee from large group beneficiaries deriving benefits from a water supply schemes. Such as a committee is generally formed prior to project implementation, is responsible for the successful implementation, and is responsible for the successful implementation.

5.3 Source of Water Getting by Respondents

In the causes of the under developed countries like Nepal it is found that in those places where are no any water supply programs were initiated, people get water from other sources like well, tube well, pounds, khola etc. In the field area, present water supply was constructed many year before under the fully control of government and it was handed to the community after many years. So before the water supply program people in the study area used to get from different sources like community tap, public tap, personal tap and khola. The researcher found that different kind of water sources. Many respondents are using the community tap as a drinking water. We can say that it is the most sustainable and reliable sources.

Table : 5.9 Source of Water Getting by Respondents

Source of Water	Population	
	Number	Percentage
Community Tap	41	78.85
Public Tap	8	15.38
Personal Tap	0	0.00
Khola	3	5.77
Total	52	100.00

Source: Field Survey, 2008

In the above table shows that, 78.85 percent people are using the community tap as a drinking water sources, 15.38 percent as public tap and 5.77 percent as khola are using as drinking water.

5.4 In/Sufficiency of Source of Water Used by Respondents

Water is the main causes to become a sick in the developing country, most of the people are using the unsafe sources of drinking water in their daily life. To run any types of community programs properly and sustain, the users or consumers must satisfied with the program. They should get benefit from the program. If people are not satisfied then that program cannot run in the future. In the case of this community water programme, most of the respondents are found satisfied. All the respondents who are using sources of drinking water now as community tap, public tap and khola are sufficiency or not or little only are shown in table below.

Table : 5.10 In/Sufficiency of Source of Water Used by Respondents

Source of Water	Yes	Percentage	No	Percentage	Little only	Percentage	Total	Total Percentage
Community Tap	32	78.05	3	7.32	6	14.63	41	100.00
Public Tap	2	25.00	4	50.00	2	25.00	8	100.00
Khola	0	0.00	2	66.67	1	33.33	3	100.00

Source: *Field Survey, 2008*

In the above table this shows that 78.05 percent respondent said that community tap is sufficient, 7.32 percent respondent said community tap is not sufficient and 14.63 percent respondent said community tap is only low sufficient. As same total respondent who are using public tap as drinking water 25 percent told public tap is sufficient, 50 percent told public tap is not sufficient and 25 percent told little only. The total respondent who are using the khola as drinking water source among them 66.67 percent told not sufficient and 33.33 percent told khola is little sufficient for drinking water. Among three sources of drinking water management, community managed drinking water showed high sustainability and sufficiency.

5.5 Collection of Water by Respondents

Water collection in Nepal is often considered as the responsibility of women usually and sometimes also of children which can be very time consuming and arduous work. The task thus leaves less time and energy for other essential activities. In the study area female in majority, households did water collection and in some households all member of the family collected it. The table presents collection of water by the represents has been presented in the table.

Table : 5.11 Collection of Water by Respondents

Gender	Population	
	Number	Percentage
Female Only	8	15.38
Male only	2	3.85
All Family	42	80.77
Total	52	100.00

Source: *Field Survey, 2008*

The above table shows that female collect water is in 15.38 percent households, 3.85 percent collect water by male and all together collect 80.77 percent respondents. It depicts that there is not high gender disparity. It is the indicator of social empowerment.

5.6 Preference Drinking Water Management Supply by Respondents

Different countries have their own rule, so they also made rule who should own the resources. In the same way in this 21st century the worldwide concept is local community manage and own their own local resources. In the below table it shows that water management of respondents preference of drinking.

Table : 5.12 Preference Drinking Water Management Supply by Respondents

View	Number	Percentage
Local Community	47	90.38
Government	4	7.70
Agency Manage	1	1.92
Total	52	100.00

Source: *Field Survey, 2008*

In the above table, 6.5 shows that 90.38 percent respondents told that water supply should manage by local community. 7.70 percent respondents told that water supply should manage by government according to them water is the basic needs of people and it is the duty of government. Therefore, it can run in sustainable manner similarly 1.92 percent respondents told that water supply should manage by agency because they can provide us pure drinking water by using modern technologies. However, among three domains, community or local managed has got top priority of the respondents.

5.7 Respondents View on Community Drinking Water

Management of the water supply system by the local community is community managed water supply system. There is a water user committee for sustainable development of the water supply. Water user committee is representative group of people selected from a large group of beneficiaries deriving benefits from a water supply scheme. People of the study area collected water from river, well, public tap in early time. The modern piped water distributed system was constructed in recently years. Respondents have presented their different views on community

managed water supply system. The table presents the respondents view on community managed water supply system.

Table : 5.13 Respondents View on Community Drinking Water

Water System	Population	
	Number	Percentage
Sustainable	38	73.08
Irregular	8	15.38
Insufficient	2	3.85
Sufficient	4	7.69
Total	52	100.00

Source: *Field Survey, 2008*

The table 5.13 shows that 73.08 percent respondents told community drinking water is sustainable they satisfied with this system because if the local community managed the system local resources will properly mobilize and utilize, not dependent to other, it also develop the feeling of ownership to the system and it also help to improve the overall improvement of local people. Likewise 15.38 percent respondents told community drinking water is irregular, 3.85 percent respondents told community drinking water is insufficient and 7.69 percent respondents told community drinking water is sufficient. In spite of various obstacles the majority view on community drinking water model for sustainable drinking water management.

5.8 Water-borne Diseases by Using Community Drinking Water Supply System

It is apparent that the community people are well aware of the diseases caused by the unsafe drinking water. This is because drinking water and sanitation should go hand in hand, as they are positively correlated. Many developing countries are facing problem of water borne disease because they are not aware about the pure drinking water and health activities. However, people now days are getting aware because of different media and news. It is shows in the below table that the respondents who are using community water are facing water borne disease or not.

Table: 5.14 Water Borne Disease by Using Community Drinking Water Supply System

Category	No of Person	Percentage
No	45	86.54
Yes	7	13.46
Total	52	100.00

Source: *Field Survey, 2008*

In the above table it is shows that 86.54 percent respondent are not facing any water borne disease even they are using community managed drinking water and 13.46 percent respondents are facing water borne disease due to using the community managed drinking water. Nevertheless, since little portion view about it causes dilemmas, it also will be removed by establishing water treatment plant recent in the resources area. That is why, community managed drinking water is comment free projects.

5.9 Community Managed Drinking Water Helping to Respondents

Before launched the water supply system in the study area people had to spend their valuable time to collect water. They had to go a long distance to collect water. After lunched the water supply system at the study area they can get easily water near their house. Availability of drinking water will save time spent on fetching water and people may use thus saved time for productive work and create additional economic gains. Use of saved time form any development endeavor is important to analyze. Per day time saved of the respondents by using the piped distributed water has been shown in the table.

Table : 5.15 Community Managed Drinking Water Helping to Respondents

Helping to Respondents	Population	
	Number	Percent
Time Saving	42	80.76
Children go to School	5	9.62
Improvement In Health Hygiene	5	9.62
Total	52	100.00

Source: *Field Survey, 2008*

In the above table, it is shows that due to using community water people use their time for different purpose. 80.76 percent respondents told children go to school, 9.62 percent respondents told children go to school and 9.62 percent people told it was improvement in their health and hygiene.

5.10 Participation of Respondents in Drinking Water Decision Making Process

Community participation in urban areas is more complex than in rural 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 open to self-help construction because of the community being involved formal wage earning activities and the schemes complexity. However, there still remain 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. People’s participation plays a vital role in the development of the particular place. Because development in for people and if the local people are not willing to participate and involve in the development process they will gain nothing. People participation shows that the real problem.

Table: 5.16 Participation of Respondents in Drinking Water Decision Making

Participation	No. of Respondents	Percentage
Yes	42	80.77
No	10	19.23
Total	52	100.00

Source: *Field Survey, 2008*

In the above table it is shows that 80.77 percent respondents told they are participate in the decision making process and 19.23 percent respondent told they are not participate in decision making process. In addition, it is concluded that participation in decision-making process is highly materialized.

5.11 Water Use Respondents besides Drinking

Although, it is said that the water program is mainly purposed to meet the drinking water requirement of the village, it is apparent that the water available is used in various purposes. Thus, the community is benefiting from other aspects of the water availability.

Table : 5.17 Water Use Respondents besides Drinking

Water Use	No. Of Person	Percentage
Yes	38	73.08
No	14	26.92
Total	52	100.00

Source: *Field Survey, 2008*

In the above table, it is shows that 73.08 percent respondents use besides drinking and 26.92 percent respondent do not use drinking water besides drinking. Those who used besides drinking purposes are doing various income generating activities such as floriculture, poultry farming, vegetable farming and so on.

5.12 Community Water is helping to Religious Purpose

Community water is one of the limestone's to the local people. Who directly involve in every step of the programme. In the below table it is shows that community water is helping to the religious purpose or not.

Table : 5.18 Community Water is helping to Religious Purpose

Religious Purpose	No. of Person	Percentage
Yes	41	78.84
No	11	21.16
Total	52	100.00

Source: *Field Survey, 2008*

In the above table 78.84 percent respondent told they used community, water is helping to religious purpose, and 21.16 respondent told community water is not helping except drinking to religious purpose.

5.13 According to the Respondents Quality of Drinking Water

One of the purposes of the community-managed drinking water is to supply pure drinking water, which also has made and objective of this project. It is essential to be hygienic for the development philosophy. As a result, this field survey has also collected information of respondents about their view on hygienic and polluted of this drinking water project.

Table : 5.19 According to the Respondents Quality of Drinking Water

Water Quality	No of Person	Percentage
Hygienic	40	76.92
Moderate	12	23.08
Total	52	100.00

Source: *Field Survey, 2008*

In the above table it is shows that 76.92 percent respondent told community managed drinking water is hygienic and 23.08 percent respondent told community managed drinking water is moderate.

5.14 Average Consumption of Drinking Water

Generally, when community managed drinking water is lunched then people use more water because they can bring water form very near place or they can pay fund to committee and made private tap in their houses. So they will use more water before than before. In the below table consumption of water before and after the community managed drinking water in the field area.

Table: 5.20 Average Consumption of Drinking Water

Categories	Gagri
Before Community Water	3.55
After Community Water	4.38
Increase in Consumption Percentage	23.38

Source: *Field Survey, 2008*

In the above, we can see that before the community managed drinking water respondents use average 3.55 Gagri water but after they use 4.38 Gagri water. It has showed that accessibility of drinking water in respondents has increased bit by bit.

5.15 Farness of Source

The source of water to the 90 percent of respondents is 1 km far from their house. This was come to know from the respondents. Five percent told that they do not know and 5 percent of them have 2 km far from their house.

5.16 Establishment of Taps

Government had made most of these tap, but they were converted now a days into the community tap. Some community tap were in under the construction. Those tap which are community tap they had made before 20 years and some of them are more than 7 years. Many people now a days are getting much facilities form tap, these tap were near to the respondents from theirs house. 85 % have less than 50 m distance between respondents house and community tap.

5.17 Responsibility for the Operation and maintenance

According to all the respondent maintenance and operation was done by local people. It was found that they are so much care the water resources and tap. In these ward where the researcher done research done research was found the true participation on drinking water.

CHAPTER: SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Summary

Community managed drinking water supply in Nepal is a new concept. Drinking water as a prime element of life, we have to drink pure and clean drinking water for our health and hygiene. Most of the common diseases emerge frequently from impure drinking water in human body such as cough, diarrhoea, Jaundice, Indi gestation etc. Therefore, for the good health pure drinking water is very essential. Community managed drinking water supply system has become more significant to include local people's ideas, experiences, practices and joint effort to make available of pure drinking water by mobilizing the water resources in and around of their community.

Ichangunarayan VDC contains a community managed drinking water supply system named Ichangu Narayan Drinking Water Consumers' Committee. It can be taken as a model of community managed drinking water supply system practiced by the local people applying the tools, ideas, experiences, labor, fee contribution etc. themselves. The consumers' group contains 13 persons but each water-consuming household is responsible about the whole system of the drinking water. The whole drinking water consuming households' coverage is 234 households.

Ichangunarayan VDC of Kathmandu district falls as a majority residence of Newars covering 42.30 percent the second majority of the castes is of Lama and Chettri covering with 17 .00 percent. Other castes such as Brahmin, Tamang and Giri cover the 9.61 percent, 7.70 percent and 5.77 percent respectively. The majority of family pattern is of nuclear family pattern in this VDC. The literacy rate of the VDC is about 98 percent. Among them 40 percent people are only literate, 26.92 percent have completed secondary education, 9.62 percent have completed SLC and 19.24 percent have completed the higher education.

The main occupation of the people of Ichangunarayan VDC is agriculture, the percentage of main occupation agriculture is about 52 percent followed by the other service 28.85 percent, retail trade and shop 9.61 percent, floriculture 7.70 percent and others only about 2 percent. But

recent trend of secondary occupation is towards the floriculture it shows 61.53 percent population. The main cause of this among many others is because of the cash price of flowers.

The landholding size of people of Ichangunarayan VDC is as; 61.54 percent people have the land 1 to 5 ropani, 30.77 percent people have the land of less than 1 ropani, 5.77 percent people contain the land 5 to 10 ropani only the percent of land less is 1.92 percent. Food sufficiency is higher of those who have the largest landholding size i.e. 5 to 10 ropani.

The total population depended on the source of waterfalls as 78.85 percent by community tap, 15.38 percent by public tap and 5.77 percent by stream water. It further indicates that the majority of the population is using the community-managed drinking water. In the case of sufficiency or insufficiency of community tap for drinking water, the respondents said that by 78.05 percent sufficient and rest of them insufficient to drink. The study has found that mostly female are involved to carry the water tap to home. About 10 percents disliked the community the community managed drinking water system but rest 90 percent respondents expressed their view in favor of community managed drinking water supply system. According to the view of respondents' community, managed drinking water supply system is more sustainable than other managed system.

The study has found that community managed drinking water supply system is more safe to drink than other sources of water. About 87 percent respondents are not facing any water-borne diseases, which are using community drinking water, rest of the respondents 13 percent respondents are facing water borne diseases occasionally. People's participation and decision-making system in community managed drinking water system is very good than other managed system. Therefore, majority of the respondents about 81 percent respondents have accepted the good participation and decision-making system.

The community managed drinking water supply system of Ichangunarayan VDC is not only the source of drinking water but also the source of other uses such as agriculture, floriculture, poultry farming, vegetable farming, etc. about 73 percent households use water for other purposes including drinking water as major. About 27 percent respondents use water only for drinking water purpose. Besides this, the water is used for the religious purposes such as to worship in the year-round festivals and worshipping days.

The quality of community managed drinking water supply system has found greater than the other sources of drinking water. About 77 percent respondents agreed on the purity and hygienic of this drinking water system rest of the respondents about 23 percent claimed moderate quality of water. The study has found that the use of water in quality before and after community managed is increased. Before respondents used average 3.55 Gagri but after they use 4.38 Gagri, it is because of the convenience of water. The respondents are still energetic to manage drinking water further than this.

6.2 Conclusion

Community managed drinking water has reduced the drudgery of fetching water from very far resource. Further, it has reduced the time of investing in the collection of water. The people have lots of time to invest to other works i.e. income-generating activities. The most effective aspects of community managed drinking water supply system is that it has increased the household participation not only in drinking water system but also in other social activities. The next good impact of it has found on the health and hygiene of the people. They, themselves have claimed that they have improvements in their health and hygiene after managed by community.

The study has found that there are several strengths of community managed drinking water system than managed by government or other agencies. The process of maintenance in government managed system is very lengthy than managed by community. The community has felt 'Our drinking water supply in community managed system but community has felt 'of them' or 'government's' in other managed system. The next but very significant difference has found on resource mobilization. In government managed or other agencies managed system the resources were found to be used wastefully but punctually in community-managed system.

Nepal is a country where people have facing several problems including infrastructures such as transportation, communication, electrification, health and pure drinking water. One of the many causes of lacking infrastructures is the lack of policy to hand-over responsibilities to the local community. Most of the government owned programs have failed because of the lack of 'We' or 'Our' feeling of the local community. Therefore, community managed drinking water supply system has found very effective especially in management, maintenance, waste less mobilization of available resources, distribution of benefit sharing meaningful participation of local people,

our feeling on local people etc. are the major. The study has found some clues that community managed drinking water supply system improves the distribution system, reduces the cost of construction, improves the water quality because of the care of local people, reduces the burden of government etc. In an aggregate, it improves in health and hygiene of the consumers, which is great benefit of life as well as from economic perspective. Thus, community managed drinking water supply system is effective alternative option for drinking water management in Nepal.

6.3 Recommendation

Ichangunarayan Drinking water supply system is a locally managed system for the proper arrangement of drinking water to the local people. Because of the above-mentioned findings of community managed water supply system. I would like to mention the following recommendation.

- I. Government and other agencies have to promote the community managed water supply system.
- II. Government or other related agencies should provide technical assistance e.g. training for maintenance resource mobilization and support of protection etc.
- III. Political interference can mislead the project therefore; it must be free from political interests.
- IV. Community managed drinking water supply system is a people based or people managed system. It has found very effective in terms of resource mobilization, construction, maintenance, distribution, participation etc. Therefore, it reduces cost of construction. Moreover, it improves the quality of drinking water and further improves health & hygiene of the consumers. Therefore, it is recommended to adopt by other communities of the nation.
- V. The government of Nepal and other concern agencies are recommended to provide technical skills for this local community especially on the topic of integrated farming, i.e. floriculture Vs fish/ swan etc.

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APPENDIX-I

QUESTIONNAIRE FOR THE HOUSEHOLD SURVEY

Personal Information:

1. Name of the Respondents:.....

Caste:

Age:

Ward No:

Address:

Locality:.....

Religion:

2. Marital Status:

- I. Married: II. Unmarried: III. Divorced:
IV. Widow: V. Separated:

3. Education:

- I. Illiterate: II. Literate: III. Primary: IV. Secondary:
V. S.L.C: VI. Intermediate: VII. Bachelors: VIII. Master Degree:

4. Main occupation:

- a. Agriculture: b. Service : c. Animal Husbandry :
d. Retail Trade and Shop: e. If other (specify):

5. Secondary occupation:

- a. Agriculture: b. Service : c. Animal Husbandry :
d. Retail Trade and Shop: e. If other (specify):

6. Landholding size:

- a. Less then 1 Ropani: b. 1-5 Ropani: c. 5-10 Ropani: d. Land less:

7. Food Sufficiency:

- a. 3 Month: b. 6 Month: c. Year: d. Excess:

8. Household Members

Members	Age	Gender	Education	Primary Occupation	Secondary Occupation

9. Information about Family

- I. Nuclear Family (up to 5):
- II. Joint Family (6 to 9):
- III. Joint family (Large above 10):

10. Household Composition:

- I. Total number of Male:
- II. Total Number of Female:

11. How do you get drinking water to your family?

- I. Community tap: II. Public Tap:
- III. Personal Tap: IV. If others (Specify):

12. Is community drinking water supply is sufficient for your family?

- I. Yes: II: No: III: Little only:

13. Who has the ownership of source?

- I. Government lead: II. Individual lead:
- III. Organization or institution's lead: IV. If other (specify):

14. How far is it?

I. 1km: I. 2km: III. 3km: IV. Unknown:

15. Who are involving to supply this community water?

I. Dholunge: II. Tindhara: III. If others(Specify):

16. Does it contain pure drinking water?

I. Yes: II. No: III. Unknown:

17. When did this tap erect?

I. 2 years ago: II. 5 years ago: III. More than 7 years:

18. What is the distance between tap and your house?

I. 200 m: II. 100 m: III. 50m: IV. Unknown:

19. How long did it use to fetch drinking water prior to this community managed drinking supply project?

.....

20. Do you feel, is this community managed water contribute in gender development?

.....

21. Which kinds of drinking water management are preferred to you?

I. Community Managed: II. Agency Managed:
III. Government Managed: IV. If other (specify):

22. How much water does your family consume in a day?

Gagri..... Liter.....

23. How much water does your family used to consume prior to project?

Gagri..... Liter.....

24. How would you rank the present drinking water system?

a. Sustainable/ Reliable: b. Irregular: c. Insufficient:
d. Sufficient : e. Others:

25. How do you rank the quality of drinking water that you have been using?

I. Hygienic: II. Moderate: III. Others

26. Have you suffered with any water borne diseases due to the use of current community managed drinking water?

I. No: II. Yes:

If yes, what are they

27. How has the drinking water project been helpful to you?

I. Time Saving: II. Children go to school:

III. Improvement in health and hygiene.

How.....

28. Who is responsible for operation and maintenance of new community managed drinking water system?

.....

29. How was your participation in decision making of community managed drinking water project?

.....

30. What are the other uses of the drinking water besides drinking ?

.....

31. How has the drinking water facility been helpful during the various religious/ social events in the village?

If yes,

How?

.....

32. Is the distribution of water supply equal among rich and poor?

I. Yes: II. No:

33. What is your suggestion further its effectiveness and sustainability?

.....

.....

.....

APPENDIX-II

KEY INFORMANT QUESTIONS

1. Name of Respondents:.....
Age:..... Ward no:..... Cast..... Religion:.....
Designation:..... Organization/Institution.....
2. Which organization is funded to this project?
.....
3. What is the name of fund manager or field manager?
.....
4. How much fund is funded to this project by organization?

.....
5. What are the objectives of this project?

.....
6. How long this project will long last?

.....
7. Do you think this community managed drinking water project will sustainable?

.....
8. What do you feel in your work?

.....
9. How was the participation of community to this project?

.....
10. Do you get local people's assistance?

.....
11. what is your view about water filtration plant in resource area?

.....
12. How will be this drinking water project effective in future?

.....
13. Do you have any plan if the community becomes unable to operate the project?

.....
14. What are the positive and negative aspects of this project?

.....
15. What could be done to enhance the quality of the program and to make it more sustainable?

.....
16. What are the criteria for selecting the users committee?
.....
.....

APPENDIX-III
CHECKLIST FOR KEY INFORMATION

1. Name: _____ Date: _____
- Gender: _____ Cast/ Ethnic Group: _____
- Address: _____
2. Name of the village.
3. Water User committee Name.
4. No. of Households.
5. Total Population benefited.
6. Major problem of water user committee.
7. Water borne diseases.

8. Health and hygiene.
9. Social setting/major festivals.
10. Situation of people's participation.
11. No. of meeting of committees and attendance of the local people.
12. Problem associated with the water supply problem.
13. Way to overcome the problems and improving the distribution/ supply system.

APPENDIX-IV

Photographs



Photo - 1: A Public Tap, in the position of old, ragged and uselessness



Photo - 2: A Community Tap, in the position of daily use by the community people



Photo - 3: Position of questionnaires filled by a respondent of the study area



Photo – 4: Position of key informant interview with vice-chairperson of Ichangu Narayan Drinking Water Consumers' Committee



Photo - 5: Photograph of collection chamber of drinking water in under-construction position observed by researcher while collecting data



Photo – 6: Photograph of collection chamber of community managed drinking water in under-construction position



Photo – 7: A field of floriculture, position of observing floriculture field by researcher



Photo – 8: Photograph of Ichangu Narayan Drinking Water Consumers' Committee