

CHAPTER- I

GENERAL INTRODUCTION

1.1- Introduction

Though, Nepal is often said to be a rich country in terms of water resources with immense potentiality of hydropower generation, but there is scarcity of safe drinking water to serve the majority of the population. Different approaches and modalities have been experimented at different times in implementing projects to provide the safe drinking water. Particularly prior to 1997, water supply projects were generally selected, designed and implemented by central government agencies without adequate consultation and participation of beneficiaries, which resulted to less effectiveness of the projects in terms of its longevity, operation and maintenance. Realizing this fact, water supply projects were designed and implemented with the consultation and participation of beneficiary groups linking with other activities such as sanitation, income generating and institutional capacity building. Such demand driven participatory approach has been considered as a potential way to provide long term service which often called as sustainable approach. However, due to lack of reliable monitoring tools, low capacity of local government and local implementation partner, lack of resources and motivation, the success or sustainability status of recently implementing Community Managed Water Supply and Sanitation (CMWSS) projects is not well known.

It is widely realized that community managed demand driven participatory approach needs to understand the factors affecting for smooth operation of the project. It is often mentioned that policy makers and planners should take into account the social structure, level of awareness and geo-physical structure of the particular project site in order to understand the possible problems arising for the smooth operation of such projects. This study, therefore, attempts to explore the factors affecting the success or sustainability and the role of social capital in sustainability of CMWSS projects in Nepal.

The term ‘sustainability’ is used here as synonym of ‘success’ and it simply refers to the longevity of CMWSS projects. In other words, a CMWSS project is considered to be

successful, when the project is technically, economically, socially, institutionally and environmentally sound and functioning well since its completion.

1.2- Statement of Problems

Nepal is one among the poorest countries in the world with an estimated population of about 27.7 million in 2006¹. Though, the country is small with an area of about 147 thousand Sq. Km., it has significant human and geographical diversities. Two-third of the country is Hilly and mountains and one-third is plain. Nepal has poor transport and communication facilities and social infrastructures including water and sanitation.

It is estimated that in 1997 about 61percent of the rural and 62percent of the urban population have access to safe water supplies, whereas the sanitation facility is estimated about 16percent and 51percent in rural and urban population respectively. A high incidence of water related diseases contribute in lowering the productivity in Nepal. Rural productivity is also constrained directly through high time cost of collecting water, often more than five person hours per household in many Hill and mountain areas.²

In addition to this, the built water supply systems are not properly maintained and operated. The prevailing system often supplies the poor quality water. As reported by Rural Water Supply and Sanitation Development Fund Board (RWSSFDB), about 92 percent of the piped water supplies and percent of the tube wells are reported to be either out of operation or are in need of rehabilitation. Sanitation coverage is also poor and the people are largely ignorant about the relationship between sanitation and health. This situation had raised a serious question on success or sustainability of built water supply and sanitation system.

During the past years, the selection and implementation of projects were considered as responsibility of central government. Projects were designed according to government's guidelines without adequate review of local needs and resources. Less attention had been given to financial and institutional requirements for the sustainable operation of the built facilities. The government expectation seemed that communities had to maintain systems built by it, which were faultily designed and poorly constructed. Adequate efforts were not made to enable communities to undertake maintenance and operation of the system.

¹ http://devdata.worldbank.org/AAG/npl_aag.pdf

² Rural Water Supply and Sanitation Development Fund Board (RDSSFDB)

Many development projects are now implementing with higher emphasis giving to the broader or mass participation of beneficiaries from project planning to implementation and operation, in which drinking water supply and sanitation projects implemented under various programmes are few examples in Nepal. It is obviously a matter of interest about the sustainability of these water supply and sanitation projects built under the participatory approach. It is also realized that social capital can play significant role to make more success of such projects. Because community managed projects are primarily guided by the motive of welfare of the particularly community rather than business perspective. In this regard, cooperation, trust, coordination and reciprocity among the beneficiary groups which are significant parts of social capital are important in order to operate and deliver public services. This study thus intends to analyze the role of social capital linking with the success of drinking water supply and sanitation projects implemented in various parts of the country.

1.3 - Objectives of the Study

The overall objective of the study is to explain the relationship between social capital and success or sustainability status of CMWSS projects. The specific objectives are as follows:

-) To measure the degree of social capital and the level of sustainability in CMWSS projects.
-) To assess the factors affecting the success / sustainability of the CMWSS projects and the level of social capital in the project areas.
-) To compare the sustainability status and level of social capital between rural and urban setting, and homogeneous and heterogeneous communities.

1.4 – Significance of the Study

Social capital, which simply defines as the outcome of interaction and cooperation between various individuals, groups, communities and institutions, has become the concern for the development planners and policy makers. A couple of studies have claimed that community having higher degree of social capital can perform better in implementing development project. More recently, it is released that investment in physical, financial and human capital as well as social capital is inevitable for effective implementation and operation of the development projects. A number of empirical

evidences show that the level and degree of social relation, networking, cohesion, attitude, norms, values, and so on affect social capital which also contribute to the development performance. However, remarkable studies have not been carried out so far linking the social capital to drinking water projects. In this context, this study intends to fill the gap on the success factors and correlation between social capital and success or sustainability of CMWSS projects with comparison between different geographical and rural / urban locations.

1.5 – Limitations of the Study

The scope of the present study is basically limited to the requirement fulfillment of Mas Degree in Sociology. The major part of the study is bordered within the major activities such as assess of performance of project and social capital measurement, sample survey, analysis of information, findings, and the discussions. However, this study does not cover the demographic and socio/economic information of the study area. It basically focuses on the functionality or utilization of service or facility as well as networking and solidarity among the people for proper utilization the scarce water resource.

The term “sustainability” used here is limited in relation to drinking water supply projects and it does not cover the broader aspect of sustainable development. This study does not reflect the impact of the project at the community level after several years of completion.

This study is constrained by many circumstances. Selection of sample projects was limited by accessibility, travel cost and time constraints. Furthermore, the sample projects may not be fully representative of all projects as the situation or circumstances varies with the geographical location and socio- economic and cultural environment. Hence the results and recommendation may not be solely generalized and equally applicable for all projects in Nepal.

CHAPTER- II

LITERATURE REVIEW

In Nepal, particularly prior to 1990, the social dimension in development projects was neglected. More emphasis was given to the technical and financial aspect of the project with less priority on social aspects and local participation, which adversely affected the success of the project. The development approach has been changing over time. The past experiences have revealed that the development activities under the conventional models, which were basically designed and implemented by central authority, could not properly address the local context. Realizing this fact, development approach has now been sifted from top-down to bottom-up as well as from purely economic and technical concept to multidimensional concept including social component. Rural drinking water supply projects implemented by different agencies adopting the participatory approach, particularly onward 1990, in Nepal illustrate the shifting paradigm of development approach.

More recently, social capital that basically embedded on social relations, network and norms, is often considered as important aspect in planning and implementation of development programmes. There is growing concern in the investment of social capital in addition to physical, economic and human capital for the sustainability of the development projects. Many scholars are of opinion that different forms of capitals including social capitals should be viewed as complements rather than substitutes. They further argue that social capital plays key role in successful implementation of different development projects. For example, Spance et al. (2003) consider the social capital as a tool for expanding small and medium enterprises. Many studies have shown that social capital affects the sustainability of the projects as it facilitates to establish and strengthen the institutional linkage, network and trust, and enhances collective action.

Although, different scholars define social capital in different ways, the central elements of these definitions are social relation, network and values. For Coleman (1990), social capital should define by its function having two common characteristics- the first, it should have social structure and the second, it should facilitate certain action of individuals, which is productive. Putnam (1995) and Fukuyama (1995) have considered

the social capital as collective action and further argue that the greater degree of network and trust lead to higher level of cooperation and action for mutual benefit.

A couple of studies have highlighted on the positive role of social capital on local development. According to Peter (1996), synergy is inevitable and the active government and mobilized communities can enhance each other development efforts. Lam's (1994) comparative study on effective functioning of irrigation systems in Nepal and Taiwan has claimed that the presence of dense network of social relationship among staffs and farmers have contributed to better performance of irrigation system in Taiwan than in Nepal. According to the sustainability study of RWSS (2001), rural drinking water supply projects in Nepal funded by the World Bank and managed by Water Users' Groups were found more effective and sustainable in delivering services in homogenous ethnic communities in comparison to heterogeneous ethnic communities, perhaps due to higher cooperation and trust among the beneficiaries in homogenous ethnic groups.

Besides the role of social capital in local development, it is often linked with the political performance as well. Putnam's (2001) experiment on performance of regional governments in Italy reveals that among the 20 regional governments established in 1970, few regions where the level of social capital is high, emerge more efficient and successful while others remain corrupt and failure governments. A couple of other studies have established empirical evidences that higher level of social capital contributes towards the better performance and outcome of different sectoral development projects such as agriculture, micro credit, forestry, water and sanitation in developing countries. For instance, Mladovsky and Mossialos (2007) applied the Social capital theory in order to understand the effectiveness of community-based health insurance and argued that the success of the project was affected by the elements like solidarity, trust, community network, vertical civil society links and state-society relation.

In conclusion, many empirical studies have claimed that the community having higher level of social capital performs better than that community with low level of this assets and the better performance ultimately lead to the sustainability of the development project. Nevertheless, there are some empirical evidences which reveal that social capital does not necessarily play positive and constructive role in development performance. In

the word of Krishna (2001), “it is seen that having a high level of social capital does not always help to achieve high development performance. Stocks of social capital need to be drawn upon actively, and capable agency is necessary in addition to higher social capital”.

Definition of Social Capital: Before approaching to the meaning of social capital, it is worthy to outline briefly the different forms of capital. Though, different scholars have defined capital in a different way, the most commonly used forms of capital in international literature are: (a) *physical / economic capital*, which basically includes plants, infrastructures, bank deposits, machines etc; (b) *natural capital*, that comprises natural resources like environment, oil, forest, water; (c) *human capital* such as education, skills, knowledge, problem solving ability and ; (d) *Social Capital*, which basically refers to the social relations, mutual trust, attitude towards cooperation and so on.

Main elements of definitions of social capital are social relations, networks and values. However, different scholars define social capital in different way. For instance, Coleman (1990) describes it as social relation that emerges through relationship between individuals when they seek optimum use of individual resources. Likewise, for Laury, who introduced concept of social capital in economics, define it as the set of resources that emerge from the family and community relation (cited by Coleman, 1990), while Ben Porath (1988) introduced the concept of F-function that comprises families, friends and firms, and also argued that social organizations affect the exchange system. Coleman, (1990) emphasizes that social capital should define by its function with different entities and having two common characteristics: (a) it has some social structure, and (b) social capital facilitate certain action of individuals, which could be productive.

Regarding all these definitions, we can draw the conclusion that social capital is the outcome of interaction and cooperation between various individuals, groups, communities, organization or institutions and it is less tangible than other capitals such as physical, economic and human capital.

Level of Social Capital: Social capital can be viewed at different levels. According to Woodcock (1998), social capital can be distinguished into two levels-macro and micro,

for which he refers as top-down and bottom-up levels respectively. Micro level or bottom-up development initiatives emerge or take place at the local level or better to say grassroots and include individuals, households, small groups, and communities, which typically functions in and through social relations among people with common family, neighborhood, ethnic or religious ties (Woodcock,1998).

More recently, however, there is common practice among the contemporary sociologists to view social capital at micro, meso and macro levels. At micro level, social capital is private goods, at meso level, it is club goods and at macro level, it is public goods. The micro level includes the relations of ego with others, cooperation, personal trust, solidarity, loyalty, and access to sensible information. Likewise, meso level social capital includes social identity and belonging, collective interests association, inclusion of insiders in a common social circle and exclusion of outsider, organization; while macro level SC comprises civiness (Putnam,1993), systemic trust, shared norms and values (Fukuyama, 1995), rules of the game and membership in voluntary association.

Primary concern of this study is to assess the degree of social capital at community level more specifically at association i.e. at water users group level. Hence, the study will deal primarily with meso level social capital in order to appraise the degree and its role in sustainability of CMWSS projects.

Measurement of Social Capital: A couple of literatures reveal that measurement of social capital is complex task because of its multidimensional nature. It is often argued that the level and degree of social capital is based on level of social relation, network, cohesion, reputation, trust, morality, attitude, norms values and so on, which is difficult to capture in qualitative measurement due to its more subjective nature. Furthermore, existence of one indicator in different levels, for instance trust and reputation, makes difficult to measure social capital at different levels.

Social capital, in the words of Putnam (1995,p.67), is “features of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit”. Putnam measured the social capital in different region of Italy based on the measurement of density of membership in formal organization. Krishna (2001) applied six indicators, corresponding to membership in labour sharing group, dealing with crop diseases, dealing with natural disaster, trust, solidarity and reciprocity in order

to measure the level of social capital in 60 villages of India. He aggregated these six components into an index of social capital, which is able to capture more elements of social capital and seems appropriate index to measure it in the context of rural agrarian village of developing countries.

Success of Water and Sanitation Projects: The term success, as stated earlier, is used as synonym of commonly used term sustainability. Here the term ‘sustainability’ is used in connection to the success or longevity of Water and Sanitation project, which should be technically, economically, institutionally and environmentally sound and should function well since its completion till at least its design period. Sustainability is multidimensional phenomena and its monitoring is complex job which involves different dimensions. In this connection, Suaden (2003) argues as “the ability of a community to keep a water point operational over a long period of time is a complex mix of managerial, social, financial, institutional and technical issues. Each of these elements is often dynamic, inter-linked and interdependent”.

A framework for sustainability monitoring developed by RWSSFDB is among the few monitoring matrix extensively used to monitor the sustainability of rural water supply and sanitation project implement in Nepal by RWSSFDB.

Table-1: RWSSFDB Sustainability Study / Monitoring Framework	
Factors/Sub-factors	Description
1. Institutional	
1.1 WSUC ³	Existence, Functionality, Activeness, Ownership and Meeting
1.2 VMW	Availability, Skill, Training, Activeness, Continuity and Remuneration
1.3 Treasurer	Availability, Skill, Training, Activeness, Continuity and Book keeping
1.4 MCTG	Existence, Regular cleaning & operating of tap, O&M fund collection
1.5 WTSSG	Active in IGA, Use of WTSS fund in IGA
1.6 Coordination & Linkage	With local authorities and other agencies, training, dispute resolution
2. Social/Environmental	
2.1 Community Participation	In planning, decision-making, implementation and O&M
2.2 Health & Hygiene	HSE conduction, Latrine coverage, VHP working
2.3 Environment	Environmental mitigation measures, drainage
3. Financial	
3.1 O&M Fund	Existence, Bank Account, Use of O&M fund
3.2 Water Tariff Collection	Regular, Intermittent, As and when needed basis
4. Technical	
4.1 Source yield & Quality	Reliability, Adequacy, Depletion, Continuity, Physical, Biological and Chemical quality, Accessibility and chances of contamination
4.2 Design & Construction Quality	Design adequacy, Site & Technology selection, Condition and functionality of structures and system
4.3 Tap Functioning	Functionality of taps

Source: Bhattarai S. and Markus Starkl (2005)

³ WSUC: Water supply user group; VMW: Village Maintenance Workers; MCTG: Mother and Child Tap-stand Group; WTSSG: Women Technical Support Services Group; IGA: Income Generating Activities; HSE: Health and Sanitation Education; VHP: Village Health Promoter; O&M: Operation and Maintenance

CHAPTER-III

METHODOLOGY

3.1 – Research Design

This study is basically based on exploratory research design. The study approach is different in many senses. First, the questionnaire and checklist developed to collect the information are different from conventional ones. Questionnaires were developed with the view to quantify the qualitative data and the subjective judgment of the respondents. Various project performances and social capital monitoring indicators were developed and evaluated to get score at the project site during the field survey. Secondly, the study approach is applied appropriate participatory process and tools such as transect walk to inspect the major structures and general observation, opinion pool, focus group and key informants interview through an extensive field work. The study was conducted in different stages, which are dealt below under separate headings.

3.2 – Nature of Data

This study primarily based on the primary data collected from different rural and urban areas of Nepal. For this study some relevant primary data, which had been collected for Long Term Sustainability Monitoring of Water and Sanitation Projects conducted by Integrated Consultants Nepal (ICON), has been used.

Taking into the consideration of different objective of previous study, all the data is not relevant for present study. Furthermore, available data do not fulfill the requirement of present study as there are very few data related to social capital. Identifying the data gap some additional relevant data was collected from primary as well as secondary sources.

3.3 – Sampling procedure

This study is based on 3 projects sampled from different parts of Nepal using purposive random sampling method. Consideration was given in logical representation of the project from rural and urban locations. For the purpose of comparative study, 1 project from Rural and 2 projects from Urban areas have been selected.

S. No.	Project Name	District	Location (Rural/Urban)	Project Completion Date
1	Chapdanda	Syangja	Rural	1 August 2001
2	Lyaku	Bhakthapur	Urban	1 May 2002
3	Kapan	Kathmandu	Urban	1 August 2001

Regarding the sampling of the respondents all water users committee members were interviewed. Whereas, few water users were randomly sampled for focus group discussion.

3.4 - Indicator Development

After intensive literature review, monitoring indicators have been developed. As the two distinct components- success / sustainability and social capital- need to be assessed separately using different indicators, separate sets of indicators has been developed.

In order to monitor the social capital in project area, five indicators such as membership, coordination, trust, solidarity and ownership are included for the analysis. Each area consists two to four monitoring indicators. As such a total of 12 monitoring indicators are used under five areas to assess degree or level of social capital in the project area.

Factor/Key Indicator	Social Capital Monitoring Indicator
Membership	Existence and activeness/performance of socio-cultural organization/institution.
	Membership in community based organization/institution
	Willingness to participate in natural resource UG
Coordination	Coordination and linkage with local government and other agencies
	Coordination and information sharing among the beneficiaries
Trust	Social inclusion and equity
	Regularity of operation fund collection
Solidarity	Taking responsibility in WUC without remuneration
	Voluntarily labor contribution during project construction.
	Social cohesion and readiness to participate in development activity
	Participation in system operation and maintenance
	Existence, functioning and meeting of WUC
Ownership	Timely maintenance of the system
	Willingness for cash and kind contribution

Though the sample projects consists of major three components/areas- water, sanitation and hygiene, only water component has taken into consideration for the purpose of accessing the success / sustainability of the project. Furthermore, technical, social/environmental, financial and institutional aspect of water facility have been analyzed. Following indicators have been used to measure the success level of each project.

Table -4: Sustainability Monitoring Indicator	
Area	Key Sustainability Monitoring Indicators
A. Water	Design flow is maintained at all water points throughout the year
	Targeted population is benefited from all the water point

Source: Water Aid- Nepal, 2008

3.5 – Data Collection Tools

Different participatory data collection tools were used during field work which included random sample inspection of tap stands/water point, direct observation during transect walk, key informant interview (Water User Committee members, Maintenance Worker etc.) and interview with beneficiaries. During the field work, the following participatory tools were used.

3.5.1- Questionnaire: A set of structured questionnaire has been designed in order to collect the information from key informants and beneficiaries. The questionnaire contains two parts which are related to the information regarding functioning of the projects and level social capital (Annex-1).

3.5.2 – Checklist: Besides the questionnaire a separate set of checklist had been developed which was used during village walk and community meeting (Annex-1).

3.5.3 – Interview: Water User Committee members, maintenance worker and beneficiaries were interviewed using questionnaire in order to collect the relevant data/information regarding the functioning of the projects and social capital in the project area.

3.5.4 - Observation: Direct observation is another tool that was used during the field visit. Information related to physical condition of major structures/components of water supply project was collected through observation.

3.5.5 – Key Informants: Water User Committee members, Maintenance Worker and local knowledgeable persons including teachers were consulted as key informants during field visit.

3.6 - Data Analysis

Information collected through field work using different participatory tools was analyzed separately for each project. Spreadsheets had been developed in MS Excel for this purpose.

CHAPTER- IV

DATA ANALYSIS AND FINDINGS

This chapter is devoted for data analysis and findings of the study regarding the success or sustainability status of the projects and level of social capital in project areas based on the aggregated score of the various indicators. The sustainability or success status of the projects and social capital level are accessed based on multi criteria analysis (MCA).

4.1- Indicators

The monitoring framework is developed separately for each project for assessing the performance of the projects and measuring community based social capital. Monitoring framework is based on score or numerical value of various indicators to judge both the performance level of the projects and the level of social capital.

In order to assess sustainability status, an integrated framework is developed which includes technical, socio-economic, financial and institutional aspects of the projects. The indicators used in sustainability or success monitoring framework and social capital measurement framework are presented in Tables- 5 and 6, that also include various participatory tools used for different indicators to acquire the information or to assess the status of indicators.

Table 5: Sustainability Indicators		
Criteria	Sub-factor	Tools
Technical	J Design, site and technology	O, WPSS, KII, FGD
	J Physical condition & functioning	O, WPSS, KII, DR
	J Surrounding condition / Drainage system	O, KII, FGD, PC
	J Maintaining Design Flow	O, FGD
	J Water fetching time / hardship	O, KII, VW
Social / Environmental	J Use by targeted people	O, KII, UI
	J Decision making, O&M	FGD, DR
	J Social inclusion	FGD, KII
	J Social equity	FGD, UI
Financial	J O&M fund and saving	FGD, DR
	J Regularity & transparency	UI, DR
	J Use of saving / fund	UI, FGD
Institutional	J Users committee existence	FGD, DR
	J Ownership & activities	FGD, DR, UI
	J Representation in UC	FGD, DR, UI
	J MC existence	O, KII
	J MC functioning	FGD
	J Co-ordinance with agencies	FGD
	J Trainings and others	FGD

Factor	Sub-factor	Tools
Membership	) Socio-cultural organizations / Institutions.	O, KII, DR
	) Membership in organization	
	) Willingness to participate	FGD, KII, UI
Coordination	) Coordination with agencies	KII, DR, FGD
	) Information sharing	FGD, UI
Trust	) Inclusion and equity	FGD, UI
	) Operation fund collection	FGD, KII, DR
Solidarity	) Responsibility without remuneration	FGD, DR
	) Voluntarily labor contribution	FGD, KII, UI
	) Participation in O&M	FGD, KII, UI
	) Social cohesion and readiness	FGD, UI
	) WUC existence and functioning	FGD, DR
Ownership	) Timely maintenance	FGD, UI
	) Willingness for cash and kind	FGD, UI

Note: O=Observation, WPSS= Water Point Sample Survey, KII= Key Informants Interview, FGD= Focus Group Discussion, DR= Document Review, LSS= Latrine Sample Survey, PC= Photo Capture, UI = Users Interview

4.2-Assessment Criteria

Since the success or sustainability of the projects is affected by couple of factors, multi criteria assessment method is adopted in order to assess the sustainability status. An integrated framework has been developed which includes technical, socio/economic, financial and institutional aspects of the sustainability (Table 7). Various indicators have been disintegrated into criteria, factors and sub-factors to judge the success level of the projects. Likewise, community based social capital is assessed using similar but separate framework which comprises the factors such as membership, coordination, trust, solidarity and ownership (Table 8).

Different weight has been allocated for each indicator for sustainability score calculation. Weight is allocated based on the strength of the particular indicator. All indicators contribute to the success of the projects, though the thrust of different indicators is different depending upon the local situation. For instance, the sample project area is

basically extreme water resource scarce area with limited access of safe drinking water; hence more weight has been given to the technical and institutional factors rather than financial factor. Details of weight distribution under different criteria, factors and sub-factors are presented in Table 7 and 8.

Table 7 and 8 also present the scoring system for weight calculation for sustainability status and level of social capital assessment. Each indicator is quantified using either three or four point grading system. For each grade, a specific score is granted.

Table- 7: Details of Factors and Weight Distribution for Sustainability Score / Index

Criteria	Factors	Indicator	Sustainability Status / Score Distribution Factor	Weight	Sub-score	Score
A: Technical	1: Physical Condition of System	1.1: Design, site & technology	Good =1 Fair = 0.7 Poor = 0.3	5	15	25
		1.2: Condition & functionality of system	Excellent = 1.0 Very Good = 0.8 Good = 0.7 Fair = 0.5 Poor = 0.3	5		
		1.3: Surrounding condition / Drainage system	Good =1 Fair = 0.7 Poor = 0.3	5		
	2: Meeting Demand	2.1: Maintaining Design Flow	Excellent = 1.0 Very Good = 0.8 Good = 0.7 Fair = 0.5 Poor = 0.3	5	10	
2.2: Water fetching time / hardship		Excellent = 1.0 Very Good = 0.8 Good = 0.7 Fair = 0.5 Poor = 0.3	5			
B: Social	1: Use of water facility	1.1: Status of use by targeted population	Excellent = 1.0 Very Good = 0.8 Good = 0.7	5	5	

Criteria	Factors	Indicator	Sustainability Status / Score Distribution Factor	Weight	Sub-score	Score
			Fair = 0.5 Poor = 0.3			25
	2: Community participation (beneficiary)	2.1: Decision making and O&M	Good =1 Fair = 0.7 Poor = 0.3	5	5	
	3: Social Inclusion and Equity (Among the beneficiaries)	3.1: Inclusion (ethnic group, disadvantaged group, Dalits etc.)	Good =1 Fair = 0.7 Poor = 0.3	10	15	
		3.2: Equity (young & old; reach & poor; men & women	Good =1 Fair = 0.7 Poor = 0.3	5		
C: Financial	1: Availability of Fund	1.1: Establishment of O&M fund & saving	Good =1 Fair = 0.7 Poor = 0.3	5	10	15
		1.2: Regularity & transparency	Good =1 Fair = 0.7 Poor = 0.3	5		
	2: Use of Fund	2.1: Use of saving / surplus fund	Good =1 Fair = 0.7 Poor = 0.3	5	5	
D: Institutional	1: Users' committee (UC)	1.1: Existence, Functioning & Meetings of UC	Excellent = 1.0 Very Good = 0.8 Good = 0.7 Fair = 0.5 Poor = 0.3	5	15	35
		1.2: Ownership & activities of UC	Good =1 Fair = 0.7 Poor = 0.3	5		
		1.3: Representation in UC	Good =1 Fair = 0.7 Poor = 0.3	5		
	2: Maintenance committee / Care taker	2.1: Existence	Very Good = 1.0 Good = 0.7 Fair = 0.5 Poor = .0.3	5	10	
		2.2: Functioning	Very Good = 1.0	5		

Criteria	Factors	Indicator	Sustainability Status / Score Distribution Factor	Weight	Sub-score	Score
			Good = 0.7 Fair = 0.5 Poor = .0.3			
	3: Coordination and Linkage	3.1: With local authority & other agencies	Very Good = 1.0 Good = 0.7 Fair = 0.5 Poor = .0.3	5	10	
		3.2: Training (related to water) & external support dispute resolution after completion	Very Good = 1.0 Good = 0.7 Fair = 0.5 Poor = .0.3	5		
Total Score				100		

Table 8: Details of Factors and Weight Distribution for Social Capital Measurement

Criteria / Factors	Indicator	Score Distribution Factor	Weight	Sub-score	Score
Membership	Existence and functioning of socio-cultural organizations / Institutions.	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	12	12	23
	Membership in Community Based Organization/group	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	6	6	
	Willingness to participate in natural resource UG	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	5	5	
Coordination	Coordination and linkage with local government and other agencies	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	7		12

Criteria / Factors	Indicator	Score Distribution Factor	Weight	Sub-score	Score
	Coordination and information sharing among the beneficiaries	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	5		
Trust	Social inclusion and equity	Good = 1 Fair = 0.8 Poor = 0.3	10		17
	Regularity of operation fund collection	Good = 1 Fair = 0.8 Poor = 0.3	7		
Solidarity	Taking responsibility in WUC without remuneration	Good = 1 Fair = 0.8 Poor = 0.3	5		36
	Voluntarily labor contribution during project construction.	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	3		
	Participation in system operation and maintenance	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	4		
	Social cohesion and readiness to undertake development activities	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	14		
	Existence, functioning and meeting of WUC	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	10		
Ownership	Timely maintenance of the system	Excellent = 1 Good = 0.8 Fair = 0.5 Poor = 0.3	7		12
	Willingness for cash and contribution	Good = 1 Fair = 0.8 Poor = 0.3	5		
Total					100

Based on the cumulative score of indicators each project has been classified into sustained, partially sustained and not sustained projects. The range of score and sustainability status is presented in Table 9.

Table 9: Scoring System for Sustainability Analysis

Score Distribution	Sustainability Status
70-100%	Sustained
30-69%	Partially sustained
<30%	Not sustained

The scoring system of social capital in the project area measured through the above mentioned indicators is presented in Table 8. Based on the score distribution, the level of the social capital is distinguished into high, moderate and low (Table 10).

Table 10: Scoring System for Social Capital Analysis

Score Distribution	Level of Social Capital
70-100%	High
30-69%	Moderate
<30%	Low

Table 11 shows the summary of sustainability status of water supply and sanitation projects. Among the sampled project two of them fall under the aggregated score range of 70-100, while rest one falls under score range of 30-69. The results reveal that 66.67 percent of the sampled projects are sustained, whereas the rest 33.33 percent of the projects are partially sustained. However, it is to be noted that all the projects falling under sustainable category are not perfectly sustainable, as the sustainable projects have acquired different score within the score range of 70-100.

Table 11: Summary of Sustainability Status of the Projects

Success/Sustainability Status	Score	No of Projects	Overall %
Success/Sustained	70-100	2	66.67
Partially Success/Sustained	30-69	1	33.33
Not Success/Sustained	< 30	0	0

The level of community based social capital is assessed based on aggregate score of various indicators under major five factors- membership, coordination, trust, solidarity and ownership. The summary of the findings of social capital is presented in Table-12. All the 3 sampled projects have obtained score ranged from 70 to 100. This implies that cent percent of the projects have high level of social capital.

Table 12: Summary Level of Social Capital in Project Area

Level of Social Capital	Score	Number of Projects	%
High	70-100	3	100
Moderate	30-69	-	-
Low	< 30		

Table 13: Sustainability Status of the Projects

	Projects	Score	Sustainability Status
Rural	Chhapdanda, Syngja	67.3	Partially Sustained
Urban	Lyaku, Bhakthapur	79.90	Sustained
	Kapan, Kathmandu	70.66	Sustained

Table-14 presents the distribution of the projects by geographical location, age, technology used, overall success or sustainability status and social capital score of each project. Here the overall sustainability of the project is evaluated based on the aggregated score of different criteria.

Table-14: Sustainability Status of Project and Level of Social Capital in Project Area

Project Name	Hill/Tarai/Urban	Age (Years)	Technology	Sustainability Score	Social Capital Score
Chapdanda, Syangja	Rural	10	Gravity	Partially Sustained (67.3)	High (70.20)
Lyaku, Bhaktapur	Urban	9	Well	Sustained (79.9)	High (84.10)
Kapan, Kathmandu	Urban	10	Gravity	Sustained (70.66)	High (78.80)

4.3- Sustainability status with respect to criteria and indicators

The success/sustainability status of the projects is judged under technical, socio-environmental, financial and technical criteria. Table 15 presents contribution of criteria and different weight assigned to each criterion. The highest weight is awarded for institutional criteria whereas the lowest weight for financial criteria. The region behind the unequal weight distribution to the different criteria is that the project areas are extreme water scarce area hence the role of financial criteria is limited as compared to the technical and institutional criteria in success of the project. The performance of different criteria contributing to the project is not alike. Lyaku Bhaktapur project, for example, has highest score in technical criteria, but acquires lowest score in financial criteria.

Table-15: Sustainability Score of the projects with respect to Criteria

Criteria	Weight	Chhapdanda Syangja		Lyaku Bhaktapur		Kapan Ktm	
		Score	%	Score	%	Score	%
Technical	25	15.45	61.80	23.35	93.40	18	72.00
Social/En	25	20	80.00	23	92.00	23	92.00
Financial	15	10.5	70.00	5	33.33	12	80.00
Institutional	35	21.35	61.00	28.55	81.57	17.66	50.46
Overall	100	67.3		79.9		70.66	

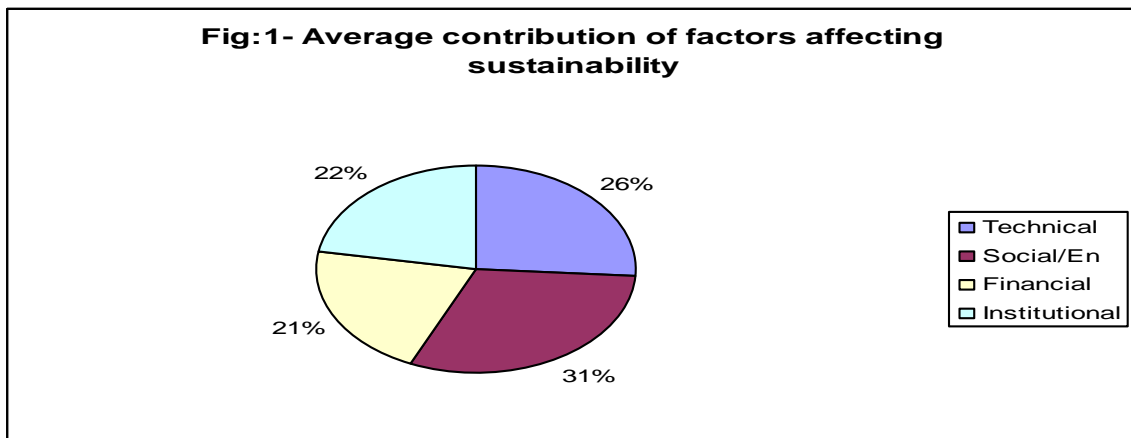
Source: Field survey, 2010

Under the technical criteria, all projects except Chhapdanda Syangja have gained score above 70 percent. Lyaku Bhaktapur has got highest score (93.4 %) in technical criteria, also it shows better performance among the projects. Regarding the socio-environmental criteria, all the projects except Chhapdanda Syangja acquire the score more than 90 percent. Performance of the projects in financial criteria is reported relatively weak. Kapan Kathmandu has acquired highest score of 80 percent while Lyaku has lowest score (33.33%). Likewise, the performance of the projects in institutional criteria is not encouraging as compared to other criteria. Among the sample projects, Lyaku Bhaktapur has gained highest (81.57%), followed by Chhapdanda Syangja (61%) in institutional criteria.

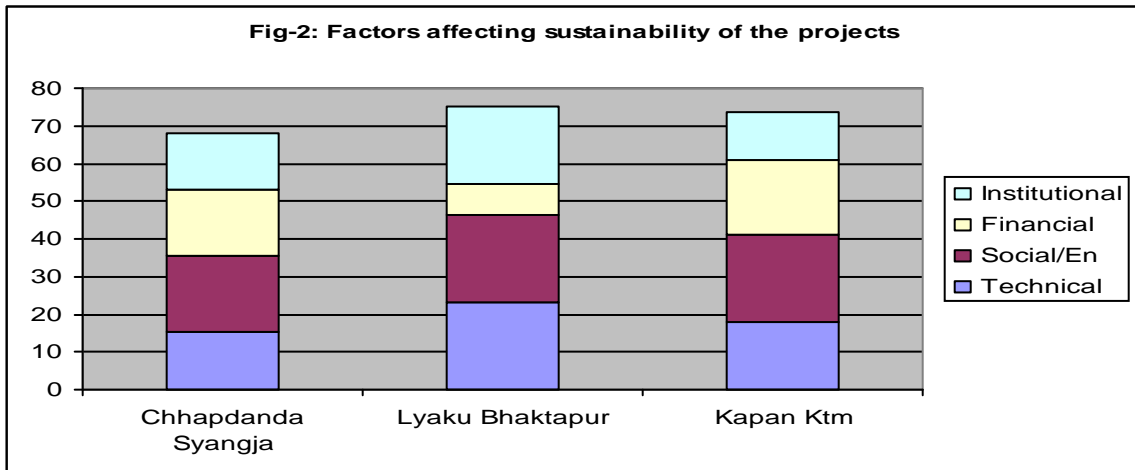
So far as the performance of the projects based on the rural urban location is concerned, performance of the rural project is found weak as compared to urban projects.

4.4- Factors Affecting the Success/Sustainability

In order to trace out the factors affecting the success/sustainability of the projects, various criteria are examined granting equal weight. The average score of various factors affecting the sustainability of the projects is illustrated in Figure 1. Comparison of the overall performance of the projects and the contribution of various criteria affecting the sustainability are also demonstrated in Figure 2. Assessing the level of performance of each criterion, various factors affecting the success/sustainability of the projects are identified. In other words, the weak performed indicators are considered the basis for identifying prominent factor affecting the sustainability of the projects.

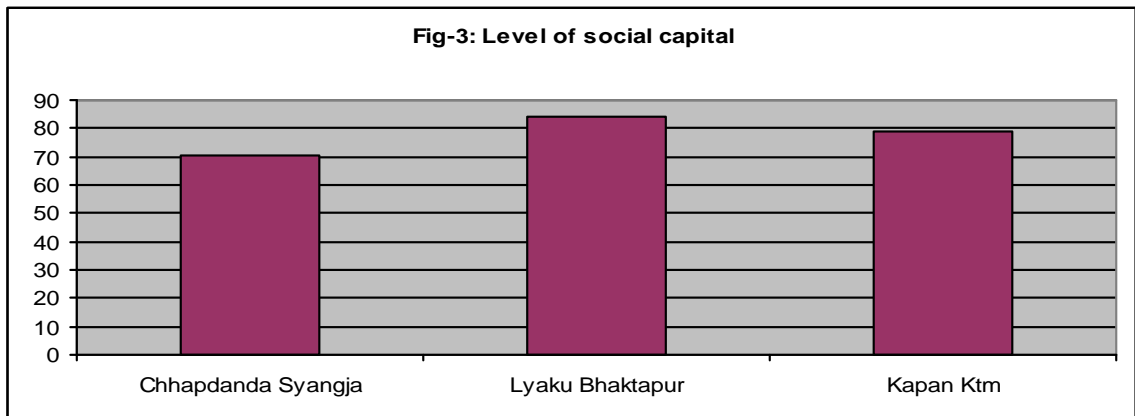


As the figure-1 shows, the contribution of financial criteria is 21 percent which is lowest among the criteria. Institutional criteria are second lowest performing criteria (22%) followed by technical criteria (26%). Socio-environmental is found to be the best performing criteria (31%). Hence the most common factors affecting the sustainability of the projects are related to financial and institutional aspects. The institutional factors related to capacity of Water User Committee such as coordination and linkage, representation in WUC, training, ownership and activity of WUC, existence and functioning of WUC, participation in decision making and O&M. Other more frequently occurring low scored factors are related to financial criteria such as regularity in fund collection, transparency in fund management, status of O&M fund, and savings. Timely maintenance and existence and functioning of Maintenance Committee are identified as another institutional weakness affecting sustainability.



4.5- Level of Social Capital with respect to factors

Contribution of various factors determining the level of community based social capital is demonstrated by Figure 3. The level of social capital is measured by aggregated score of various indicators under the five factors - membership, coordination, trust, solidarity and ownership. The score obtained by various factors and different weight offered to each factor is presented in Table 16. The findings of data analysis reveal that all three projects have secured score range of 70-100. This implies that cent percent of the projects have high level of social capital. However, the score range varies from 70 to 85 revealing that the level of social capital differs for different projects.



Lyaku; Bhaktapur is one of the projects having highest score (84) of social capital, whereas Chhapdanda is weakest one with lowest score (70 out of 100). High level of social capital in Lyaku project is due to better performance of all factors. Lyaku exhibits better performance in coordination factors which is related to the coordination and

linkage with the external agencies, local government; and information sharing among the beneficiaries.

Various factors contributing the level of social capital are assigned with different weight. Highest weight (i.e. 36) is allocated to factor solidarity which includes the indicators such as responsibility without remuneration, voluntary labor contribution, participation in system operation and maintenance, social inclusion and readiness to undertake development activity, existence and functioning of WUC. Likewise, the lowest weight is offered to two factors i.e. membership and ownership (12 weight for each).

The performance of the projects in all factors is not alike. On an average, the project exhibits the best performance in trust and ownership. Lowest average performance is reported in coordination factor. In almost all projects, the coordination and linkage with external support and funding agencies as well as local government were reported weak. However, coordination and information sharing among the beneficiaries were found slightly encouraging in some projects.

Table-16: Social Capital Score

Factors	Weight	Score		
		Chhapdanda Syangja	Lyaku Bhaktapur	Kapan Ktm
Membership	23	18.40	19.30	14.80
Coordination	12	8.10	11.00	9.60
Trust	17	11.90	14.90	14.00
Solidarity	36	22.70	29.80	29.80
Ownership	12	9.10	9.10	10.60
Overall	100	70.2	84.10	78.80

4.6- Factors affecting the level of social capital

Various factors influencing the level of social capital have also been examined giving equal importance to each factor. The average contribution of various factors in generating the social capital in project areas is reflected in Figure 4. Likewise, contribution of various factors in generating the social capital and score gained by each factor are demonstrated in Figure 5. The performance level of various indicators is

considered as the basis for identifying the factors affecting the level of social capital in project area. In other words, low scored indicators are considered as main factor affecting the level of social capital.

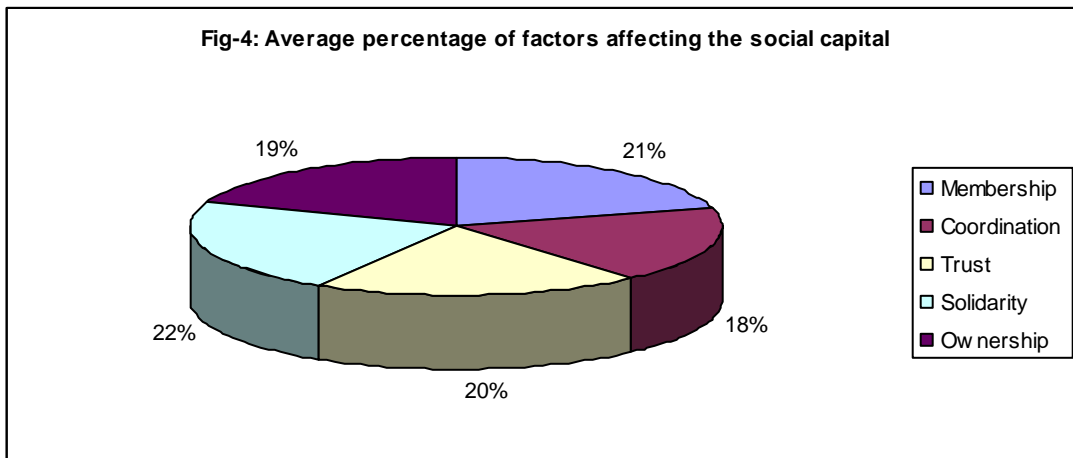
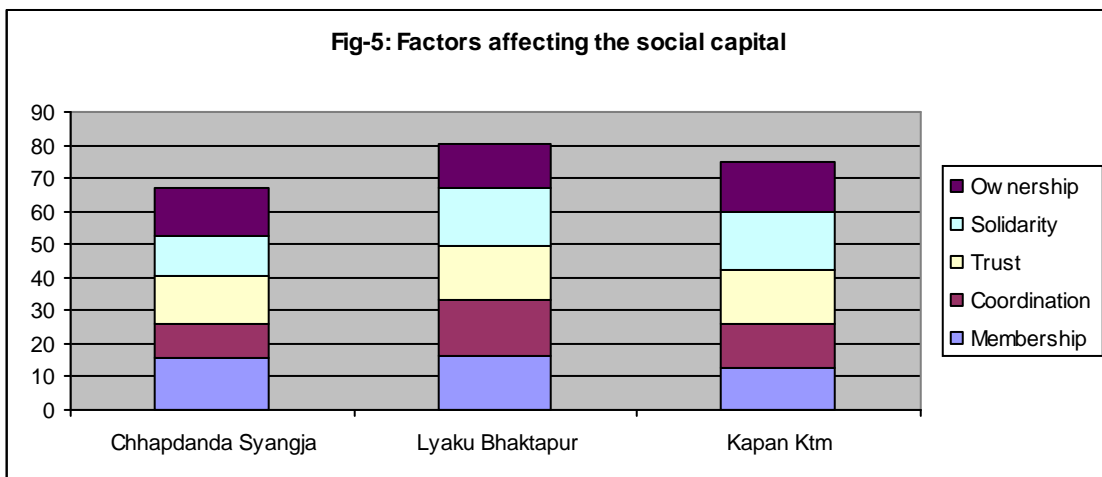


Figure 4 reveals that the average contribution of coordination factor is 18 percent which is lowest among the factors. Ownership and trust are found to be second and third lowest performing factors contributing 19 percent and 20 percent respectively, followed by membership (21%) and solidarity (22%). Hence, the major factors lowering the level of social capital are related with coordination, ownership and membership. The coordination factor consists of coordination and linkage with local government and other agency and coordination and information sharing among beneficiaries. Likewise, membership and ownership include existence and activeness or performance of socio-cultural organization; membership in community based organization/intuition; willingness to participate in natural resource user committee; timely maintenance of the system and willingness to pay cash and kind contribution.



4.7 - Comparative Analysis of the Findings

4.7.1- Sustainability status by geographical location

The sustainability status of projects by geographical location is shown in Table 17. It is obvious from the data that the performance of valley projects is better than Hill project. However, It may not solely generalized in case of all other projects and also may not perfect comparison because of very small sample size (i.e. only one project sampled from Hill).

Table 17: Sustainability Status of the Projects by Geographical Location

Sustainability Status	No of Projects	Percentage
Hill Projects		
Fully Sustainable	-	-
Partially Sustainable	1	100
Not Sustainable	-	-
Valley Projects		
Fully Sustainable	2	100
Partially Sustainable	-	-
Not Sustainable	-	-

Table 17 reveals that the performance of Hill project is worse as compared to Valley projects. The only one sampled project (100 %) from Hill was found partially sustained; where as in case of Valley projects cent percent of them were found fully sustained. The weak performance of Hill project is mainly due to low score of technical criteria because the Chhapdanda is extremely water scarce area and there is no any reliable source of water.

4.7.2- Sustainability status between rural and urban areas

The findings on performance of projects by rural / urban areas is found exactly same in line with the result of Hill / Valley projects, because 1 project in Hill is from Rural area and 2 projects in Valley are from Urban area. Cent percent of Urban projects are fully sustained, where rural project is partially sustained. However, this finding may not be true for all cases and may not be generalized because the sample size is too small for the

comparison (1 rural project and 2 urban projects). Regarding the criteria wise performance; however, institutionally both the projects are in partially sustainable category. The low institutional performance is compensated by better performance of other three criteria.

4.7.3- Level of social capital by rural and urban areas

Urban projects are in better status in terms of level of social capital than rural project. However, it may not be perfect comparison because of very small sample size i.e. 2 urban and only one rural project. Lyaku Bhaktapur and Kapan Kathmandu are small projects located in small territory of urban area with higher level of social cohesion which contributed in generating the higher level of social capital. Both the Urban projects are ranked in high level social capital categories as they secured the score more than 70.

Regarding the rural project the project area of Chhapdanda is scattered over a many settlements with multi ethnic / caste groups, and hence exhibits moderate level of social capital.

4.7.4- Level of social capital by homogeneity and heterogeneity

The project areas vary significantly in terms of social composition. In general, Nepal is multi cultural, multi linguistic and multi ethnic country. The project areas also exhibit heterogeneity in terms of caste/ethnicity and linguistic population. However, some project communities are more homogenous in term of caste/ethnicity. For example, Lyaku, Bhaktapur is the original homeland of Newar community with almost all Newar inhabitants. The community exhibits high level of social cohesion, solidarity, cooperation and trust. Lyaku, Bhaktapur has acquired highest social capital score among the sampled projects. Likewise, Kapan project also falls under the category having high level of social capital. The beneficiaries of Kapan project are more or less homogeneous in terms of economic status and ethnicity/caste (the project area is basically settlement of landless families migrated form other districts).

Chhapdanda Syangja exhibits moderate level social capitals. The project areas is scattered over a wide geographical territory having many settlements and multi

ethnic/caste groups. In conclusion the finding of the study reveals that the project having homogeneous community also have high level of social capital rather than the project with heterogeneous community.

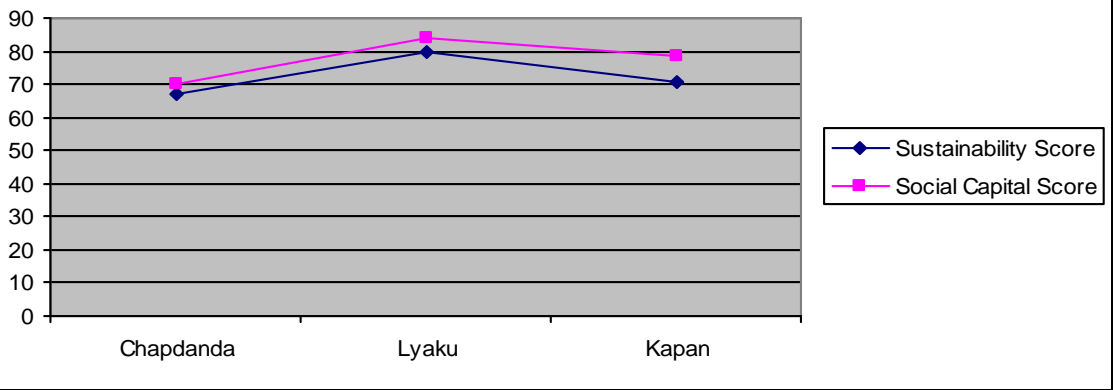
4.7.5- Sustainability of the projects and social capital

The sustainability status of the projects and the level of social capital in the project area are demonstrated in Figure 6. From the figure, we can draw the conclusion that level of social capital is directly related to the performance of the project. In the community where the level of social capital is higher the success status of Community managed water supply and sanitation projects is also higher.

Projects which have acquired the sustainability score range of 70-100 have also obtained more or less similar score range in social capital ranking. In other words those projects which have higher level of social capital are more successful or better to say sustainable.

In case of Chhapdanda, Syangja, the project is ranked in partially sustainable, even though the project area exhibits high level of social capital. It was observed during the field work that Chapdanda is extremely water resource scarce area. There is no reliable perennial source of water for gravity flow water supply system and the community people have experimented other alternative options such as source protection and rain water harvesting system. Here it is important to note that low level of success of the project is due to mainly weakness of the alternative technology adopted rather than the weak performance of the community or role of social capital.

Fig-6: Relation between Social Capital and Sustainability of the Projects



CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 - Summary

This study basically analyzes the factors affecting the sustainability and level of social capital and examines the role of social capital in success of community managed water supply and sanitation projects. Measurement of sustainability status of the projects and investigation of level of social capital are two primary tasks of the study in order to establish relation between sustainability status and social capital. The term “sustainability” is used here as synonym of “success” and simply refers to the longevity of the project.

Though, a couple of studies have established empirical evidence that degree of social relation, networking, cohesion, attitude, norms, and values determine the level of social capital also affect success of the project, remarkable studies have not been carried out yet linking to the social capital in community managed water supply projects. This study aims to fill the gap on sustainability factors and relation between social capital and success of the projects.

The overall objective of the study is to explore the linkage between sustainability status and social capital of CMWSS projects. More specifically, the study intends to appraise the sustainability status of the projects, to assess the level of community based social capital, to investigate the factors affecting sustainability and to assess the factors contributing the level of social capital.

The study is based on 3 projects sampled from rural and urban areas of Nepal.

An extensive methodological approach has been adopted in this study which basically includes the relevant literature review, project sampling, indicator development, field work, data analysis and report production.

Methodological approach of the study is unique in the sense that first, questionnaire and checklist are different from conventional ones which are developed with the view to

score or quantify the qualitative and subjective judgment of the respondents; second, an extensive field work with appropriate participatory process and tools such as transect walk for general observation, opinion pool, focus group and key informants interview and photo capture were adopted.

The findings of project reveal that 66.67 percent of the projects were found sustained/success while rest 33.33 percent partially sustained/success. The findings on the level of social capital, which was assessed based on aggregated score of various indicators under major five factors- membership, coordination, trust, solidarity and ownership, reveal that cent percent of the projects have high level of social capital.

Regarding the contribution of factors affecting the sustainability status of the projects, the score of financial criteria is lowest (21%), followed by institutional and financial criteria. Hence the most common factors affecting the sustainability in water facility are related to financial factors which comprise regularity and transparency, O&M fund and savings, and institutional factors that include coordination and linkage, representation in WUC, training, ownership, existence and functioning of WUC, level of participation in decision making and O&M.

Various factors contribute in generating the social capital in project area. Among them, the most prominent factors affecting the level of social capital are associated with the coordination, followed by ownership and trust. The coordination factor is basically related to coordination and linkage with local government and other agencies and information sharing among the beneficiaries. Likewise, other major factors affecting the social capital related to ownership and membership and that include existence and activeness/performance of socio-cultural organizations, membership in community based organizations/institutions, willingness to participate in natural resource users committee, timely maintenance of the system and willingness to pay cash and kind contribution.

The comparison of sustainability status with respect to geographical location reveals that the overall performance of the projects in Valley/Urban seems to be encouraging as compared to the project in Hill/Rural area. The comparison of level of social capital shows that the projects in Valley areas exhibit the higher level of social capital than Hill projects. Likewise, the urban projects are in better status in terms of level of social

capital as compared to rural projects. The homogeneous community exhibits higher level of social capital than the heterogeneous community.

The findings of the study reveal that there is positive correlation between level of social capital and success of the projects. The communities where the level of social capital is high, the success status is also higher.

5.2 - Conclusions

Contribution of various factors such as technical, socio-environmental, financial and institutional combined with social capital is crucial for sustainability or success of the community managed water supply projects. The institutional aspect is closely related to social capital as level of social capital is determined by the factors such as solidarity, cooperation, coordination, trust, ownership. Better performance of such factors also contributes to the better institutional performance that further enhances the mutual cooperation, transparency and social cohesion in the project area. Level of social capital also enhances the financial performance, particularly the regularity in financial and kind contribution for construction and O&M of the projects. Hence, the projects in valley in comparison to Hill were found to be more successful where the level of social capital was relatively high.

The general features of a successful or sustainable project were observed as- technical soundness couple with high level of social capital which is contributing for:

-) technical soundness - reliability and adequacy of source, effective technology;
-) financial regularity and transparency;
-) readiness for cash and kind contribution;
-) stable users committee and good governance;
-) high level of ownership feeling;
-) active participation and higher level of awareness;
-) enhanced social inclusion and equity and ;
-) community cohesiveness and cooperation;
-) homogeneous community with high level of harmony.

5.3 - Recommendations

Based on the findings of the study, the following recommendations have been suggested for success or sustainability enhancement of the ongoing and up-coming projects.

-) The study has suggested to some extent sets of indicators as well as sustainability monitoring and social capital assessment framework which can be useful for concerned agencies. There is still need modification and standardization of framework and indicators.
-) Proper consideration in social capital generating and enhancing activities as integral part of the integrated project.
-) Technology innovation. For example hybrid system such as rainwater harvesting and gravity especially in extremely water scarce area.
-) Emphasis on awareness raising programmes and income generating activities.

REFERENCES:

- Anirudra Krishna (2001), *Moving from the Stock of Social Capital to the Flow of Benefits: The Role of Agency*, World Development Vol.29, No.6,PP.925-943.
- Bhattarai, S. and Markus Starkl (2005), *Water Supply and Sanitation in Developing Countries, International Symposium on Analytic Hierarchy Process (ISAHP 2005 Proceedings, ISSN 1556-8296)*, Creative Decisions Foundation, USA.
- Chiesi Antonio M.(2007), *Measuring Social Capital and its Effectiveness. The Case of Small Entrepreneurs in Italy*, Oxford University press.
- Coleman James(1988), *Social Capital in the Creation of Human Capital* ,The American Journal of Sociology, Vol. 94, S95-S120.
- Coleman, James (1990), *Foundations of Social Theory, Chapter 12*, Cambridge, Mass., Belknap Press.
- Laura J. Spence, René Schmidpeter, André Habisch (2003), *Assessing Social Capital: Small and Medium Sized Enterprises in Germany and the U.K.*, Journal of Business Ethics 47: 17–29.
- Mladovsky Philipa, Mossialos Elias (2007), *A conceptual Framework for Community-based Health Insurance in Low-income Countries: Social Capital and Economic Development*, World Development vol. xx, no.x,Elsevir.
- MPPW and ICON (2005), *National Monitoring and Evaluation of Nepal's Rural Water Supply and Sanitation: Final Strategy Paper*, Ministry of Physical Planning and Works (MPPW and Integrated Consultants Nepal (ICON), November 2005.
- Mukherjee Nilanjana (2003), *Planning and Monitoring for Sustainability and Equity” in Braib Reed(ed.) Sustainable Environmental Sanitation and Water Service: proceedings of 28th WEDC Conference*, Loughborough University, UK, pp.464-467.
- NEWAH (2005), *A Report on NEWAH Looking Back Study (LBS)*, Nepal Water for Health (NEWAH), March 2005, Kathmandu, Nepal.
- Peter Evans (1996), *Government Action, Social Capital and Development: Reviewing the Evidence on Synergy*, Pergamon, World Development, vol,24, no.6, pp.1119-1132.

- Putnam, R.,(2001), *Bowling Alone: the Collapse and Revival of American Community*,
New York: Simon and Schuster.
- Robert D. Putnam(1993), *The Prosperous Community: Social Capital and Public Life*,
The American Prospect no. 13 (Spring, 1993)
- Sugden, Steven (2003), *Indicators for the water sector: examples from Malawi*,
WaTeraid Field Work Report (part of the Water and Poverty Dialogue Initiative at the
3rd World Water Forum, 2003, Japan, (available at www.waTeraid.org)
- RWSS(2001), *Sustainability Studies of 118 Rural Water Supply and Sanitation Schemes*
in Nepal, A Project Report prepared by Rural Water Supply and Sanitation Fund
Development Board, Panipokhari, Kathmandu, Nepal
- WAN (2006a), *Planning and Monitoring Framework*, Water Aid-Nepal.
- Water Aid (2006b), *Nepal Country Strategy 2005-2010*, Water Aid country Strategy,
September 2006.
- Wim van Oorschot, Wil Arts and John Gelissen,(2006), *Social Capital in Europe:
Measurement and Social and Regional Distribution of a Multifaceted
Phenomenon*, Acta Sociologica, 49(2): 149-167, SAGE publications
- Woolcock Michael (1998), *Social Capital and Economic Development: Toward a
Theoretical Synthesis and Policy Framework*, Theory and Society 27: 151-208,
Kluwer Academic Publisher.

ANNEXES-1

QUESTIONNAIRE

SECTION – I

On Site Sustainability Assessment Tables

Project Name: Total beneficiary (Present):	District: Date of Survey:	VDC: Village Name:
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A- Technical

Factors	Sub factors	Sustainability Status Assessment
1: Physical Condition of System	1.1: Design, site & technology	<p>Good: Design is sound, no problem reported, Site & location of Tanks, Transmission & Tap stand is fine, technology is appropriate, users fully satisfied</p> <p>Fair: Design is sound, no major problem reported, Site & Location of tanks, Transmission & Tap stand has no major problem, technology is some how appropriate, users not fully satisfied</p> <p>Poor: Problem in design, location or technology reported, needs rectification, users not satisfied</p> <p>) <u>Assessment Notes</u></p>
	1.2: Condition & functionality of system	<p>Excellent: No need of any immediate repair & functioning well</p> <p>Very Good: No repair is required to major structure but minor repair works are required for secondary component, functioning good (more than 90% tube wells are functioning well)</p> <p>Good: Minor repair required to major component but functioning (80-90% Tube wells are functioning well)</p> <p>Fair: Major repair to minor component & minor repair to major component, some how functioning (50-78% tube wells are functioning well)</p>

Factors	Sub factors	Sustainability Status Assessment
		<p>Poor: Requiring major rehabilitation (less than 50% tube wells are functioning)</p> <p><u>Assessment Notes</u></p>
	<p>1.3: Surrounding condition / Drainage system</p>	<p>Good: functioning drainage condition & clean</p> <p>Fair: partly clogged drainage condition & fairly clean</p> <p>Poor: not provisioned / clogged drainage & bad surrounding condition</p> <p><u>Assessment Notes</u></p>
<p>2: Meeting Demand</p>	<p>2.1: Maintaining Design Flow</p>	<p>Excellent: Fully maintained design flow, no shortage of water reported in any water points</p> <p>Very good: Somewhat maintained design flow, more than 90% average flow of water points are maintained</p> <p>Good: Design flow is maintained in more than 50% water points, all water points getting water</p> <p>Fair: Partially maintained design flow, less than 50% water points getting design flow, all points getting some water</p> <p>Poor: Not maintained design flow, less than 30% water points maintained of design flow</p> <p><u>Assessment Notes</u></p> <p>)</p>
	<p>2.2: Water fetching time / hardship</p>	<p>Excellent: Walking time less than 15 min, horizontal</p> <p>Very good: Walking time 15 - 30 min, no vertical movement</p> <p>Good: Walking time less than 30 min, but vertical & horizontal mixed</p> <p>Fair: Walking distance less than 30 min but all vertical</p> <p>Poor: Walking time more than 30 min, vertical more than 50m, horizontal more than 150m</p> <p><u>Assessment Notes</u></p>

B. Social / Environmental

Factors	Sub factors	Sustainability Status Assessment
1: Use of water facility	1.1: Status of use by targeted population	<p>Excellent: Used by all targeted population including disadvantaged groups what so ever</p> <p>Very Good: Used by >90% population, 100% disadvantaged group</p> <p>Good: Used by 70-89% targeted population, 100% disadvantaged group</p> <p>Fair: Used by 70-89% targeted population, more than 90% disadvantaged group</p> <p>Poor: Poorly used < 70% of targeted population, including disadvantaged group</p> <p><u>Assessment Notes</u></p> <p>)</p>
2: Community participation (beneficiary)	2.1: Decision making and O&M	<p>Good: Actively participating, > 80% beneficiary members as an when needed; of which more than 50% are women beneficiaries</p> <p>Fair: Somewhat participating, 40 – 79%; of which more than 33% women beneficiaries</p> <p>Poor: Not participating, < 40 %; of which less than 33% women beneficiaries</p> <p><u>Assessment Notes</u></p> <p>)</p>
3: Social Inclusion and Equity (Among the beneficiaries)	3.1: Inclusion (ethnic group, disadvantaged group, Dalits etc.)	<p>Good: Perfect inclusion of beneficiaries, 100% beneficiaries have access</p> <p>Fair: Fair inclusion of beneficiaries, >90 % beneficiaries have access</p> <p>Poor: Poor inclusion of beneficiaries, <90% beneficiaries have access</p> <p><u>Assessment Notes</u></p>
	3.2: Equity (young & old; reach & poor; men & women)	<p>Good: Perfect equity in community, all beneficiaries have access</p> <p>Fair: Fair equity in community, >90% beneficiaries have access</p> <p>Poor: Poor equity in community, <90% beneficiaries have access</p> <p><u>Assessment Notes</u></p>

Factors	Sub factors	Sustainability Status Assessment
		) There is no discrimination among the beneficiate members based on age, wealth and sex.

C: Financial

Factors	Sub factors	Sustainability Status Assessment
1: Availability of Fund	1.1: Establishment of O&M fund & saving	<p>Good: Established and maintained / funded by beneficiary</p> <p>Fair: Established once but no additional contribution / saving</p> <p>Poor: Not functioning</p> <p><u>Assessment Notes</u></p> <p>)</p>
	1.2: Regularity & transparency	<p>Good: Regular and Transparent / established saving system</p> <p>Fair: Not regular up to date and transparent</p> <p>Poor: Not regular and not transparent / do not know amount accumulated & spent</p> <p><u>Assessment Notes</u></p>
2: Use of Fund	2.1: Use of saving / surplus fund	<p>Good: Properly used for project maintenance as an when required, no voices of misuse reported</p> <p>required fund from beneficiary for maintenance</p> <p>Poor: Not used for project maintenance purpose, initial fund remained idle</p> <p><u>Assessment Notes</u></p>

D: Institutional

Factors	Sub factors	Sustainability Status Assessment
1: Users' committee (UC)	1.1: Existence, Functioning & Meetings of UC	<p>Excellent: Exists, functioning, regular, following rules and up to date</p> <p>Very Good: Exists and functioning but not regular, decisions recorded</p> <p>Good: Exists and functioning till last year</p> <p>Fair: Exists informal UC, but not functioning last two years</p> <p>Poor: Existed till completion of project / no meeting even after system is not functioning</p> <p>Assessment Notes</p> <p>) UC comprising 11 members is in existence. Meeting are regular, generally once a month (1 day of every month). Decisions are recorded but less transparent.</p>
	1.2: Ownership & activities of UC	<p>Good: High ownership & active</p> <p>Fair: Moderate ownership & some what active</p> <p>Poor: Less ownership & inactive</p> <p>Assessment Notes</p>
	1.3: Representation in UC	<p>Good: Well represented by Women, poor, Dalit and Janjati; out of which >50% women</p> <p>Fair: Moderate representation, all represented, women 33-50%</p> <p>Poor: Low representation by Women, poor, Dalit and Janjati; out of which <30% women</p> <p>Assessment Notes</p> <p>) Out of 11 members in UC 2 are women. There is representation from all caste/ethnic group.</p>
2: Maintenance committee /	2.1: Existence	<p>Very Good: Trained, equipped caretaker exists up to date</p> <p>Good: Trained, equipped care taker exists but not active</p> <p>Fair: initially formed but currently not exiting</p>

Factors	Sub factors	Sustainability Status Assessment
Care taker		<p>Poor: Not formed or never existed</p> <p><u>Assessment Notes</u></p> <p>)</p>
	2.2: Functioning	<p>Very Good: Functioning well, regularly & up to date</p> <p>Good: Functioning as an when needed</p> <p>Fair: Not functioning but care taker exists</p> <p>Poor: Not functioning & care taker does not exists</p> <p><u>Assessment Notes</u></p>
3: Coordination and Linkage	<p>3.1: With local authority & other agencies (Link with other dev. activities, Saving credit / TeleCenter etc.)</p>	<p>Very Good: Established & continued linkage with both</p> <p>Good: Established but not continued with other agencies</p> <p>Fair: Can be established as an when needed</p> <p>Poor: Never established linkage with local & other</p> <p><u>Assessment Notes</u></p>
	<p>3.2: Training (related to water) & external support dispute resolution after completion</p>	<p>Very Good: Undergone trainings & no dispute</p> <p>Good: Never trained & dispute resolved internally / no external support taken</p> <p>Fair: Never trained & dispute resolved with link of external agency</p> <p>Poor: Never trained & dispute exists, not invited / involved external agency</p> <p><u>Assessment Notes</u></p>

SECTION – II

Social Capital Assessment Tables

Criteria	Factors	Sub-factors	Sustainability Status / Score Distribution Factor
	1: Membership	Membership in WUG	<p>Excellent: 100 %beneficiary have membership in WUG</p> <p>Good: : More than 90% beneficiary have membership in WUG</p> <p>Fair: : More than 70% beneficiary have membership in WUG</p> <p>Poor: : Less than 70% beneficiary have membership in WUG</p> <p><u>Assessment Notes</u></p>
		Willingness to participate in WUC	<p>Excellent: 100% beneficiary are willing to participate in WUC meeting</p> <p>Good: 90% beneficiary are willing to participate in WUC meeting</p> <p>Fair: Occasionally involved</p> <p>Poor: less than 90% beneficiary are willing to participate in WUC meeting</p> <p><u>Assessment Notes</u></p>
	2: Coordination	Coordination and linkage with local government and other agencies	<p>Excellent: Established & continued linkage with both</p> <p>Good: Established but not continued with other agencies</p> <p>Fair: Can be established as an when needed</p> <p>Poor: Never established linkage with local & other</p> <p><u>Assessment Notes</u></p>
		Coordination and information sharing among the beneficiary	<p>Excellent: All beneficiary know WUC decision and other information</p> <p>Good: 80 % beneficiary know WUC decision and other information</p> <p>Fair: more than 50% beneficiary know WUC decision and other information</p> <p>Poor: Less than 50% beneficiary know WUC decision and other information</p>

Criteria	Factors	Sub-factors	Sustainability Status / Score Distribution Factor
			<u>Assessment Notes</u>
	3: Trust	Social inclusion and equity	<p>Good: Perfect inclusion of beneficiaries, 100% beneficiaries have access</p> <p>Fair: Fair inclusion of beneficiaries, >90 % beneficiaries have access</p> <p>Poor: Poor inclusion of beneficiaries, <90% beneficiaries have access</p>
		Regularity of operation fund collected	<p>Good: M&O fund is collected from all beneficiary in time</p> <p>Fair: M&O fund is collected from all beneficiary but not regular</p> <p>Poor: M&O fund is not collected due to lack of trust</p>
	4: Solidarity	Taking responsibility in WUC without remuneration	<p>Good: WUC members are not paid for their duty</p> <p>Fair: WUC members are not paid in cash but some incentive is given in terms of materials</p> <p>Poor: WUC members fully paid</p>
		Voluntarily labor contribution during project construction	<p>Good: voluntarily labour contribution by all beneficiary in project construction and maintenance.</p> <p>Fair: voluntarily labour contribution by more than 90% beneficiary in project construction and maintenance</p> <p>Poor: voluntarily labour contribution by less than 90% beneficiary in project construction and maintenance</p>
		Existence and Meeting of WUC	<p>Excellent: WUC exists and meeting held regularly</p> <p>Good: Exists and functioning but not regular meeting,</p> <p>Fair: Exists informal UC, but not functioning</p> <p>Poor: Existed till completion of project / no meeting</p>

Criteria	Factors	Sub-factors	Sustainability Status / Score Distribution Factor
	5: Ownership	Timely maintenance of the system	<p>Excellent: repair and maintenance done immediately and all the structures are sound and functioning well</p> <p>Good: minor repair done in leisure time but major structure are functioning well.</p> <p>Fair: repair is not done timely and the system working somehow</p> <p>Poor: System is not working properly</p>
		Willingness for cash contribution	<p>Good: cash collected immediately from all beneficiary as an when needed</p> <p>Fair: cash collected from all beneficiary but not in time</p> <p>Poor: cash is not collected</p>

ANNEX - 2

Sustainability Assessment Sheets / Checklist

Used during Village Walk for Observation of sample Water Points

Project Name:

District:

VDC:

Village Name:

Date of Survey:

Water Point (WP) Sample Survey Matrix

1: General Physical Water Quality

Mark at the Appropriate Box or Cell

WP Surveyed	111	22														
Grading																
Good																
Fair																
Poor																

Good water quality, no color, no odor & no turbidity / regularly tested, after project completion & within 1 year; **Fair** water quality no color, no odor & no turbidity / tested once after completion of project; **Poor** water quality, presence of color, or odor or & turbidity / never tested

2: Maintaining Design Flow

Mark at the Appropriate Box or Cell

WP Surveyed	111	22														
Grading																
Good																
Fair																
Poor																

Fully maintained: Fully maintained design flow, no shortage of water; **Somewhat:** Somewhat maintained design flow for all the months; **Not maintained:** Not maintained design flow / water shortage exits / water does not flow some months.

3: Water Quality (General physical)

Mark at the Appropriate Box or Cell

WP Surveyed	111	22														
Grading																
Good																
Fair																
Poor																

Good: Tested after completion & recently, Key elements within Gov. permissible limit / no presence of color, odor or turbidity; **Fair:** Tested once after completion / no test result document with UC, but UC knows tested once / key elements within limits / no presence of color, odor or turbidity / No information to users committee; **Poor:** Never tested / UC do not know / presence of color, odor or turbidity

4: Surrounding condition / Drainage system

Mark at the Appropriate Box or Cell

WP Surveyed	111	22														
Grading																
Good																
Fair																
Poor																

Good: functioning drainage condition & clean; **Fair:** clogged drainage condition & fairly clean; **Poor:** not provisioned / functioning drainage & bad surrounding condition

5: Water fetching time / hardship

Mark at the Appropriate Box or Cell

WP Surveyed	111	22														
Grading																
Good																
Fair																
Poor																

Excellent: Walking time less than 15 min, horizontal; **Very good:** Walking time 15 - 30 min, no vertical movement; **Good:** Walking time less than 30 min, but vertical & horizontal mixed; **Fair:** Walking distance less than 30 min but all vertical; **Poor:** Walking time more than 30 min, vertical more than 50m, horizontal more than 150m

6: Status of use by targeted population

Mark at the Appropriate Box or Cell

WP Surveyed	111	22														
Grading																
Good																
Fair																
Poor																

Excellent: Used by all targeted HH for the water point, including disadvantaged groups what so ever; **Very Good:** Used by >90% targeted HH, 100% disadvantaged group; **Good:** Used by 70-89% targeted HH, 100% disadvantaged group; **Fair:** Used by 70-89% targeted HH, more than 90% disadvantaged group; **Poor:** Poorly used < 70% of targeted HH, including disadvantaged group.