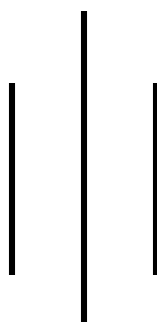


PARTICIPATORY GOVERNANCE PRACTICES IN IRRIGATION MANAGEMENT

**At Shardikhola Puranchaur Irrigation System, Puranchaur VDC
Kaski District**



**A Dissertation Submitted to the Department of Sociology/ Anthropology,
Prithvi Narayan Campus, Tribhuvan University, Kathmandu Nepal
for the partial fulfilment of the requirement of the
Master's Degree of arts in Sociology**



Presented by

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LETTER OF RECOMMENDATION

This is certified that Mr. Surya Bahadur Thapa has completed the dissertation entitled “ **Participatory Governance Practices in Irrigation management at Shardikhola Puranchaur Irrigation System, Puranchaur VDC of Kaski** district Nepal under my supervision and guidance. To the best of my knowledge, the study is original and carries useful information in the field of knowledge on Participatory Governance Practices in Irrigation management of Water User Committee at Shardikhola Puranchaur Irrigation System, Kaski District of Nepal.

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LETTER OF ACCEPTANCE

This dissertation “*Participatory Governance Practices in Irrigation management at Shardikhola Puranchaur Irrigation System, Puranchaur VDC of Kaski*,” Nepal accomplished by Mr. Surya Bahadur Thapa has been accepted as partial fulfillment of the requirement for the Master’s Degree of Humanities in Sociology.

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Acknowledgement

First of all, I would like to express my sincere thanks to, Mrs Shanti Bhusal, Head of Department of Sociology/Anthropology, Tribhuvan University Prithvi Narayan Campus for granting me authority to study on the topic “Participatory Governance Practices in Irrigation management at Shardikhola Puranchaur Irrigation System, Puranchaur VDC of Kaski District.

Specially, I would like to express sincere thanks to my supervisor Dr. Prakash Upadhya, of Department of Sociology/Anthropology, Tribhuvan University Prithvi Narayan Campus, who provided theoretical and intellectual guidance throughout the research to complete the thesis.

I would like to extend my sincere thanks to External examiner Prof. Dr. Bishwa Shrestha for his kind support and suggestion to finalize the thesis. I would also like to express my appreciation to my Campus chief and all professors and other colleagues at the Prithvi Narayn Campus for their support during my academic career.

I would like to extend my heartfelt gratitude to my brother Mr. Bal Bahadur Thapa, who always inspired me for academic career development and to accomplish this study.

I am very gratitude to the Chairperson Mr. Dipak Poudel, Secretary Mr. Gobinda Poudel, and all users of Shardikhola Puranchaur Irrigation User Committee, Irrigation System, Puranchaur Kaksi who are also the part of this study for their kind support and co-operation to accomplish the field task effectively. I am also grateful to Irrigation Divisional Office, District Development Committee, and Village Development Committee of Puranchaur that provided me a lot of information.

I would like to extend my sincere thanks to Mr. Ashok Kumar Shahi, Lecturer, Department of English, Prithvi Narayan Campus, Pokhara for his kind support and suggestion to edit the languages of this thesis.

At last but not the least, I appreciate the support from my family members, my spouse Mrs. Pramila Thapa, son Prasan Thapa and Sumin Thapa for their support to accomplish the study.

Surya Bahadur Thapa

2013

Abstract

This study was carried out in the Shardikhola Puranchaur Irrigation Project area Puranchaur VDC of Kaski District to assess the participatory governance practice in User Committee in the perspective of common property. In the research both primary and secondary data were collected as required by the objective of the study. The field data were collected using 25% random sample with questionnaire and focus group discussion was conducted to collect the primary data and secondary data were collected from relevant literatures, previous study reports and project records.

The study is carried out in the base of theory of Garrett Hardins “Tragedy of Commons” There is water scarcity during the period of seed sowing, paddy sowing and irrigation but people are using water in rotation basis due to the limited resource. Some farmer wants more water from canal but they are binding in rule and regulations and Chitaidar regularly monitor the irrigated water. The theory “Tragedy of Commons” argues that people want more water and they always want to break the rule for irrigation water. But in this Irrigation Project the theory “Tragedy of Commons” is not applicable because if the common property is utilized properly by individuals, project is well maintained. The people involvement is vital in maintaining the order.

There is also exception that Chairperson of this project is continuing till the project start which may have some positive and negative attribute but people have rights to change their leadership in general assembly, but people are satisfied and continuing their leadership. There is good operation and Maintenance fund collection system in justifiable manner in the ropani basis. Now there is Nrs. 200.00 per ropani collection system as operation and Maintenance fund. This fund is utilized for the payment to wages for Chitaidar and minor repair and maintenance of canal. There is Nrs. 5,00,000.00 (five lakh rupees) in the fixed deposit in Janahit Cooperatives and more than one lakh in the saving account. There is a commercial vegetable farm established after completion of the project. There is more than 12 farmers, who profit more than Nrs. 3,00,000.00 (Three Lakh Rupees), which shows the successful impact of the project. Lastly, the project is very successful project of the NISP supported hill irrigation project. This canal served many people has brought drastic change in the economic condition of people. The cropping

pattern in the field is totally changed. Farmers have started vegetable farming commercially and changed millet to paddy and potato. It changed farmers' life economically and socially.

The Irrigation system is properly maintained and community people are very pleased to its donor agencies. Irrigation Water User Committee is registered and regularly renewed, General Assemble and meeting were held as per constitutions of Water User Committee. People now started to have commercial vegetable and visible change in socio-economic conditions of community people. So it can be said that Irrigation system is successful projects amongst the hill irrigation projects and it is due to effective participatory governance practices.

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ACRONYMS

ADB	Asian Development Bank
ADBN	Agriculture Development Bank of Nepal
BCC	Branch Canal Committee
CBS	Central Bureau of Statistics
CCO	Canadian Cooperation Office
CDO	Chief District Office/ Officer
CDR	Central Development Region
CIDA	Canadian International Development Agency
DASU	Decentralization Advisory Support Unit
DDC	District Development Committee
DIDP	Dhaulagiri Irrigation Development Project
DOA	Department of Agriculture,
DOI	Department of Irrigation
FC	Field Canal
FIWUD	Farm Irrigation and Water Utilization Division
FMISs	Farmer-Managed Irrigation Systems
GON	Government of Nepal
ICA	Irrigation Command Area
ICM	Indian Cooperation Mission to Nepal
IIMI	International Irrigation Management Institute
ISF	Irrigation Service Fee
JMP	Joint Management Program
MCC	Main Canal Committee
MF	Membership Fee
MFD	Main Field Ditch
MHDP	Mechi Hill Development Program
MOLD	Ministry of Local Development
MoWR	Ministry of Water Resources

NDI	National Democratic Institution
NISP	Nepal Irrigation Support Project
O&M	Operation and Maintenance
POWER	Participation of Women Enabling their Real Representation
SFD	Special Field Ditch
TA	Technical Assistance
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VDC	Village Development Committee
WECS	Water and Energy Commission Secretariat
WUC	Water Users' Committee

Glossary of Local Terms

<i>Ropani-</i>	A unit of land measurement, (approximately 0.05 hectare).
<i>Chitaidar-</i>	Watchman or Guard, also acts as a messenger.
<i>Halo-</i>	Plough
<i>Kulo –</i>	Canal
<i>Nahar-</i>	Canal
<i>Parma-</i>	Exchanged labor system
<i>Puja-</i>	Worship
<i>Roti-</i>	Bread

CHAPTER - I: INTRODUCTION

1.1 Background of the study

Nepal is a landlocked country with an area of 147,181 square kilometers. It is surrounded by Tibet of China in the North and India in the south, east and west. The country stretches between 80°4' E to 88°12' E longitude and between 26°22' N to 30°27' N latitude. The population of Nepal as per the national census of 2011 is 26.49 million with annual growth rate of 2.4 %. The country is divided into three parallel longitudinal regions from east to west namely plain (Terai), hill (Pahad) and alpine (Himalayas). These regions differ greatly from one another due to topographical and climatic variations. The Terai with the elevation of 75 to 300 meters above mean sea level covers an area of about 17 % (25,020 square kilometers) of the total land area of the country. The hill gradually rises to a height of 3,000 m above mean sea level and covers an area of 68 % (100,080 sq km) of the total area of the country. The Himalayas covers an area of 15 % (22,081 sq km) of the total area. It rises up to 8,848 m above mean sea level.

Agriculture has an important role in the economy of the country; Nepal. About 83 % of the population is dependent on agriculture and it contributes to 39.48 % of GDP (CBS 2011). Only about 20 % of the total land area is under cultivation. Out of the total cultivated land, the Terai, Pahad and Himalya account for 41.6, 49.9 and 8.5 percent respectively. Six major food crops – rice, maize, wheat, millet, barley and potato occupy nearly 84 % of the gross cropped area (Shukla and Sharma, 1997). Although agriculture visibly dominates the national economy, its contribution is rather declining. The contribution of agriculture sector has fallen steadily from 70 % to 43 % in last 18 years of 1974/75-1992/93 (Thapa and Rosegrant, 1995).

Productivity index of major food crops have been declining. Nepal, once a food grain exporting country has now become food deficit country and has to import food grains frequently to meet the domestic consumption. Tenth five-year plan has given top most priority to agricultural development and sustainable development of the natural resources. The total estimated irrigable area in the country is about 42.9 % of total cultivated area (17,66,000 ha) and the land, which gets irrigation water throughout the year, is estimated to be only 1,150,184 ha of this (10th Five-Year Plan, 2059:2063/64). Out of this, it is recorded that, till the 3rd year of tenth year plan achievement 8, 61,785 ha and 2, 88,399 ha (Planning, Design and M&E section Department of

Irrigation, Lalitpur) have been irrigated by government/agency manage and farmers manage systems respectively. Approximately 57.1 % of the cultivated areas of the country grow crops under the rain-fed condition, which produces crops with low yields and poor quality food grains resulting food deficit in the country.

In Nepal, about 71% of the area is irrigated during monsoon season and only 38% in winter and pre-monsoon seasons. More than two-thirds of the area actually commanded by irrigated systems is in the terai, a little over a quarter in the hills and less than 5% in the mountains (Sharma, 1998).

Good Governance practices (Participation, Transparency, Accountability & predictability) decentralization and evolution are dominated themes in global development paradigmatic shift offering desirable on ground of equity and social justice (Fisher et all, 2001). Consequently many countries drafted their legislative and policies for implementing decentralization and evolution in one way or another. This has virtually been adapted in water resources policy and irrigation management throughout the world. In general, decentralization with evolution provides a means by which local people can more actively participate in decisions affecting their lives.

Many studies have revealed that the elite users and executive community members ignore poor, dalit¹ and women users' preferences, concerns and interests. Poor and marginalized users are mostly excluded in decision-making processes and plugged to them on unavailability information of process and institution of the Water User Committee (WUC). The circumstances found unaccountable towards each other between executive members and users are frequently reported in Water User Committee (WUC). Similarly, once established, Water User Committee (WUC) need further institutional strengthening so as to ensure smooth function of groups democratically, however, they often receive only minimal institutional support from the Department of Irrigation (DoI). In this context, this study is proposed to assess the fabric dynamics within Water User Committee (WUC) and between Water User Committee (WUC), state and local government through cardinal elements of participatory good governance.

The systems have been handed over to the Water User Committee (WUC) from Nepal government Western regional directorate of Irrigation, where Water User Committee (WUC) has been actively involved in irrigation management. Representation has increased in Shardikhola Puranchaur Irrigation System. This representation denotes participation of the people both male and female.

1.2 Statement of the problem

The government had realized that the irrigation development is not possible alone without the participation, transparency, accountability and predictability of water users. In 1988, the government had introduced a working policy that emphasized the participation of farmer' beneficiaries at all stages of irrigation development (Planning, Designing, Implementation and O&M). This policy was further refined and reiterated to the Irrigation Policy of 1992. Followed by Water Resources Act 1992 and Water Resources Regulation 1993, Department of irrigation (DoI) amended irrigation policy in 2002. This further emphasized participatory approach to develop irrigation systems. But, ineffective implementation of legislature consequently leads the low involvement of women and small farmers.

Nepal is a pioneer among the developing countries as the best adopted global development paradigmatic shift through in devolution irrigation management authority to local users. The major thrust of devolution of irrigation management and utility authority and responsibility is to develop win-win solution in natural resource management among the government, local people and biodiversity as felt by every segment of government, donor and local people. The win-win situation is virtually a condition of socially just and sound governance i.e. good governance established in terms of effective and efficient management of water resources and problems in response to the critical needs of farmers.

Effective democratic form of governance relies on public participation, accountability, transparency and predictability. The characteristics such as clearly defined roles, responsibilities and authority at each level and of stakeholders, balanced power of relationship vertically and horizontally, access to information, equity and justice, prompt service delivery system are prerequisite for the establishment of good governance within Water User Committee (WUC) and between water users and government officials once the management authority and responsibility devolved (Gautam 2000). Various authors noted that recent policy shift in

devolving authority have not support much more establishing governance practice as expected as socially just and accountable inclusive governance. Womens participation is also a major factor.

Nepalese economy is fundamentally agrarian in nature. In Nepal, women play a major role in the agricultural sector. Selection of seed, plantation and harvesting of the crop are the prime job of women throughout the country. They are the major water users both in the field as a farm labor and in the household consumption in the kitchen. The other areas of major water consumption are washing dishes and clothes, feeding the clearing animals, which are done mostly by women. However, women participation is minimal in all sector.

Considering all the above-mentioned issues, this study was focused on the following research questions:

1. What is the present cropping pattern of their field?
2. What was cropping before project?
3. What is yearly agro-based income in the area?
4. Is there any change in livelihood after completion of project?
5. What is level of participation of users in the meeting?
6. How the decision disseminated to the user?
7. Is there any special consideration to the pro-poor and marginalized users?
8. Are the users satisfied with decision made by Water User Committee (WUC)?

In addition, the government has made tremendous effort for the formulation of the irrigation policy, and act alone. Even though, the management and Operation and Maintenance (O&M) of the large-scale irrigation systems are operated by the government, their performance is low due to O&M budget constraints, poor irrigation services, no water users' participation in water delivery, canal operation and maintenance and lack of ownership feeling of users. Finally, the irrigated area has gradually decreased. Consequently the production has also decreased but the level of investment has increased. The government had realized that the irrigation development is not possible alone without the participation of water users. In 1988, the government had

introduced a working policy that emphasized the participation of farmer' beneficiaries at all stages of irrigation development (Planning, Designing, Implementation and O&M). This policy was further refined and reiterated to the Irrigation Policy of 1992. Followed by Water Resources Act 1992 and Water Resources Regulation 1993, Department of irrigation (DoI) amended irrigation policy in 2002. This further emphasized participatory approach to develop irrigation systems. Under the participatory approach, the farmer beneficiaries were considered as a partner for the development of irrigation.

1.3 Objectives of the study

The main objective of this study is to explore participatory governance mechanism of Shardikhola Puranchaur Irrigation Water User Committee.

Moreover, the specific objectives of the research are:

1. To trace out the structural factors influencing participatory governance.
2. To trace out the composite factors of (leadership, policies) in Shardikhola Puranchaur Irrigation Water User Committee.
3. To explore socio-economic and cultural factors and gender issues in Shardikhola Puranchaur Water User Committee.
4. To find out the interactive factors of participatory governance at Shardikhola Puranchaur Water User Committee.

1.4 Operational Definition of Key terms used in Study

Operational definitions and measurement of selected concept/variables are as

Governance is defined as “the manner in which power is exercised in the management of a groups’ economic, environment and social resources for development”. Governance includes increasing democratic norms and practices within the groups & organizations.

Good Governance practices include: Increasing women participation with a focus on pro-poor, disadvantaged and women development, coalition building in Water User Committee with Department of Irrigation, Federation of Water User Committee Nepal and with the farmers' beneficiaries and conflict mitigation through negotiation and mediation, and advocacy.

Advocacy is defined as “winning the support of key constituencies in order to influence policies and spending, and bring about social change”. Accountability and transparency are basic constituents of good governance.

Leadership: In the user groups refers to the representation of women, Dalits and poor in the key positions (chair, vice-chair, secretary and treasurer) of executive committees in Water User Committee

Participation is defined as “the basis for democratic processes whereby all stakeholders have opportunity to participate directly, or are proportionally represented, in decision-making processes for egalitarian self-governance”.

Active participation: refers to the number of members of group taking part in raising their issues, needs and concerns to influence the decision making process. This was measured as the percentage of Water User Committee members (at least 51% of total general members) actively participating in general assemblies. Data were collected through selected case studies, interview, observing meeting proceedings, and meeting minutes.

Representation: is defined as the participation of women, dalits and poor in the executive committee, who are capable of raising their respective issues, needs and concerns thereby contributing in the decision making process. Particularly the percentage of women, dalits and poor will be recorded. Poor will be identified using participatory well-being ranking and the size of land holding. Data will be collected through selected case studies, which will use methods like interview, observing meeting proceedings, and meeting minutes.

Participatory approach: refers to participation of users in operational plan preparation and revision. It was measured as the number of general assembly’s held, at least once during operational plan preparation; participation of at least 51% of total general members in general assemblies and addressing of concerns/needs of women, Dalits and poor in the operational plan.

Predictability: is defined as "the consistency and reliability of institutions, their staff and their actions based on the institution's stated objectives, policies, rules and regulations" or "to be able to foretell on the basis of observation, experience, scientific reasons or stated processes". The opposite of predictability is "variability, inconsistency, and arbitrary decision making." Predictability is prerequisite for private sector investment.

Transparency: is defined as “an attitude and approach to implementation whereby all actions, and particularly transactions of finances, revenues and benefits, are visible, clear and fully disclosed to all stakeholders”. There is no ambiguity in actions or concealment of information.

Public Audit: is a process where expenditure and performance auditing of any activity is done in presence of all the beneficiaries or target population or the members of the group by consensus. Public audit is a very good process to ensure accountability and transparency. This will be measured as the number of irrigation management committees practicing public audit.

Accountability: is defined as the degree to which public officials, elected as well as appointed, are responsible for their actions and responsive to public demands;

Government: is body of structure that is responsible to made policies, rule and implement it to cause of public.

Bureaucracy: the way policies are administered and implemented by civil servants

Civil Society Organization: arena in the political system is where persons get familiar and interested in public issues and how rules tend to affect the articulation of interests from society.

Fairness: the degree to which rules apply equally to everyone in society regardless of status.

1.5 Conceptual Framework of Research Study

This research study adopted the participatory governance of irrigation water user committee model prepared by researcher based on the experience gained in long period as a facilitator expert of the Irrigation and drinking water user committee management (pre and post construction). The framework is based on following notions.

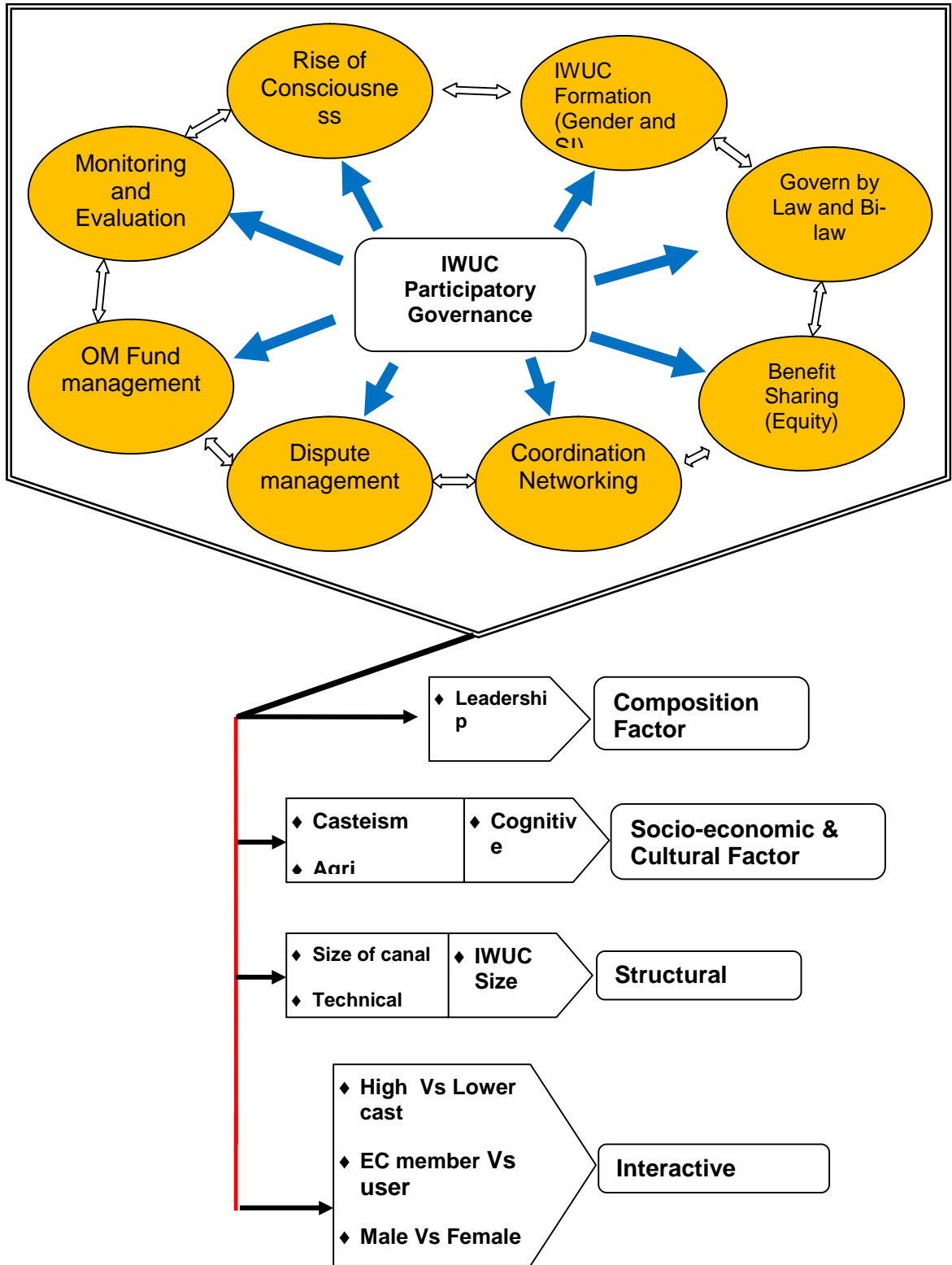
a) Rise of consciousness in evolution of the project

Participatory governance of the project may belong to its evolution whether the project is evolved by some elite of community or consensus made with all community people.

b) Formation of Irrigation water user committee in the aspect of gender and social inclusion

The participation in Water User Committee from the different caste, religion, economic group may asses the participatory governance practice of Water User Committee.

Figure 1.1: Conceptual Framework



- c) *Water User Committee govern by Law and Bi-law* instead of verbal law of member
Law and bi-law exist in written form with consensus of all users and their applications in equitable manner also measure the governance practice of the Water User Committee.
- d) *Equity in participation and resource distribution*
Equitable community participation in contribution in kind and cash or distribution of resource (water) in equitable manner is also one of the major factors to assess the participatory governance system of Water User Committee.
- e) *Coordination and networking capability* of Water User Committee with different stakeholders
Coordination and networking capability to different leveled stakeholders and amount of resource pooled for operation and maintenance of the system may also indicate the participatory governance system of irrigation water user committee.
- f) *Dispute management practices adopted*
Previously and currently raised dispute and its management practice, mechanism and reward and punishment system applied in the system also assess.
- g) *Generate and utilization of Operation and Maintenance fund*; Operation and maintenance fund collection system and its mobilization and utilization practice also assesses in the research work

Based on the above independent variable of the study there is also assessed the dependent variable in the study.

- a) Composite factor - Leadership and policies
- b) Socio-economic and Cultural factor - Casteism, Cognitive knowledge, Production and Gender
- c) Structural factor - Size of Canal, Size of Water User Committee and structural details of the project
- d) Interactive factor - High caste Vs Lower caste, Executive Committee member Vs User, Male Vs Female, Water User Committee Vs Government Line Agency, Non-governmental Organization and Line agencies

1.6 Rational of the Study

The study highlights crux of participatory governance resulting from devolving irrigation management authority to the irrigation beneficiaries. Governance has been international development issue over past two decades. While governance is a relatively new concept, it is now considered very imperative in improving democratic system along with enabling the sustainable management of resources in general and natural resource management in particular. However, governance is not getting required attention in broader term on water resource management.

Nepal is recognized as a pioneer among the developing countries to take dramatic step in institutionalizing the governance thrust through devolving irrigation management authority from government to the local users. On the other hand, the Decentralization act gives local governmental units control over all natural resources within their administrative area. Thus, here a major question; is compatible policy arrangement existed here to accommodate governance in Irrigation is always remained unanswered and this study is expected to examine the query analytically. Participatory issues are very vital in the success of a project, but participatory governance by securing users participation has become a sweet rhetoric in paper. Hence, this study will explore the issues of participation and highlight the barriers and positive issues. So, this study is fully rational.

Many organizations are meant to work in strengthening governance and democratic system of promoting demand side at water users associations and enhancing supply side at macro level government institutions aiming at establishing socially just and inclusive good governance. Reinforcing the development thrust organization applying the variety of approaches including advocacy and right based empowering the local community for their rights. However, the appropriateness of empowering at micro and democratizing at macro still has to determine consistently.

The present research is undertaken for the partial fulfillment of requirements for the post-graduate degree. The research findings will be fruitful to the planners and policy makers in the related field that will be helpful in program development and implementation to achieve better result. This study seeks to assess (that in the name of people's participation), whether men or women are equally involved in the decision making in Irrigation management activities or not.

1.7 Scope of the Study

The study is focused for the partial fulfillment of Masters Degree of Sociology (MA) paper of the researcher. It focuses on participatory governance practices in Water User Committee with the perspective of women participation and transparency system in irrigation management and resource mobilization for maintenance of the irrigation system, use of water, water allocation and distribution, participation in decision-making process and public auditing system. The finding of the study will be helpful for planner and policy makers for their use in irrigation management for focusing women's increased role and transparency system in resource management. Similarly, the recommendations of the document will be useful for development organizations for their approach how to increase better governance practice in User Committee.

1.8 Research Hypothesis

- Better the policy arrangement; ample the opportunity in exercising democratic process eventually establishment of good governance practices.
- Win-win situation in Irrigation management evolves where the farmers (users), executives body of Water User Committee and local government sectors are accountable each other.
- The more strengthening the marginalized users, higher the inclusion in decisions making consequently greater practices of democratic norms.
- Maintaining transparency in decision making as well financial management by Water User Committee is vital for smart participatory governance.

1.9 Organization of the study:

This study has been organized into seven chapters. Chapter one deals with Background, Statement of problem, Objective of the study, operational definition, Conceptual frameworks and Rational. In chapter two literatures has been reviewed including public auditing in Nepal, efforts in development and review of previous research and study. In chapter three, Rationale of the selection of the study area, Research Design, Nature and sources of data, Universe and sampling, Data collection techniques, Reliability and Validity of the data and Measurement of selected concepts/variable, data processing and analysis and limitations of study has been made. Chapter four presents the introduction to study area and the people i.e. an overview of Kaski district, an overview of Shardikhola Puranchaur Irrigation System, and Overview of public

auditing. Chapter five presents the Participatory Governance in Irrigation Management and Chapter six presents interactive factor of Participatory Governance practices study and Chapter seven presents summary conclusion and Recommendations and suggestions received from the respondents.

1.10 General Characteristics of the Respondents

Based on the rationale of the research, the respondents of the study were selected from four sectors; government offices, local bodies, Water User Committee executives body and farmers beneficiaries. From the above sectors, the office heads and sector heads of governance program were selected for the interview. In the case of group discussions, concerned community having high involvement in planning, implementation, monitoring and evaluation process of the relevant activities from the beginning, were selected for discussion. As per the concept of common pool theory (tends to maximum utilization of common resource by users), the past, present and future prospect of the roles of those different sectors were discussed and the perception towards expected roles from different players like; actor and audience has been captured. Based on the concept of common pool theory, different information of roles for utilization of resource, were selected for diversified information.

1.11 Limitation of the study

Every research study has its limitations and the present study is not exception to it. The main limitations existed during the study period were as follows:

- The study has been conducted as case of study Shardikhola Puranchaur Irrigation System, Kaski district for the partial fulfillment of the Master degree in Sociology. Detailed research was not possible due to the limited time and resources.
- NISP program have phase out therefore it was an constraint for the study as there may be greater study demand of group gathering for the discussion and information collection.
- This study covers only the Implication of participatory governance in Irrigation user committee with the perspective of transparency. Hence may not represent for the condition of irrigation management as a whole in the nation.
- Insufficient financial matters and time unavailability was also one of the causes to make fruitful the study findings.

CHAPTER-II: REVIEW OF THE LITERATURES

2.1 Theoretical Review

This chapter mainly focuses on the studies done by different scholars at past in the field of governance in irrigation system management. A number of literatures both from Nepal and abroad have reviewed analyzed and quoted in relation to the context of the present research. This chapter develops confidence in the student and guide student to be concentrated in the main importance of the study.

2.1.1 Tragedy of Freedom in a Commons

The study adopted the theory "The Tragedy of the Commons" by Garrett Hardin (1968). This is the summary of the theory present by the Hardin in 1968 in science journal.

The rebuttal to the invisible hand in population control is to be found in a scenario first sketched in a little-known Pamphlet in 1833 by a mathematical amateur named William Forster Lloyd (1794-1852). We may well call it "the tragedy of the commons," using the word "tragedy" as the philosopher Whitehead used it: "The essence of dramatic tragedy is not unhappiness. It resides in the solemnity of the remorseless working of things." He then goes on to say, "This inevitableness of destiny can only be illustrated in terms of human life by incidents which in fact involve unhappiness. For it is only by them that the futility of escape can be made evident in the drama." The tragedy of the commons develops in this way. Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy.

As a rational being claims Hardin (1968), each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, "What is the utility *to me* of adding one more animal to my herd?" This utility has one negative and one positive component.

1. The positive component is a function of the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly + 1.
2. The negative component is a function of the additional overgrazing created by one more animal. Since, however, the effects of overgrazing are shared by all the herdsmen, the negative utility for any particular decision making herdsman is only a fraction of - 1.

Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another, but this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.

Some would say that this is a platitude. Would that it were! In a sense, it was learned thousands of years ago, but natural selection favors the forces of psychological denial. The individual benefits as an individual from his ability to deny the truth even though society as a whole, of which he is a part, suffers. Education can counteract the natural tendency to do the wrong thing, but the inexorable succession of generations requires that the basis for this knowledge be constantly refreshed.

In an approximate way, the logic of the commons has been understood for a long time, perhaps since the discovery of agriculture or the invention of private property in real estate. But it is understood mostly only in special cases which are not sufficiently generalized. Even at this late date, cattlemen leasing national land on the Western ranges demonstrate no more than an ambivalent understanding, in constantly pressuring federal authorities to increase the head count to the point where overgrazing produces erosion and weed-dominance. Likewise, the oceans of the world continue to suffer from the survival of the philosophy of the commons. Maritime nations still respond automatically to the shibboleth of the "freedom of the seas." Professing to believe in the "inexhaustible resources of the oceans," they bring species after species of fish and whales closer to extinction.

The vital concern is what shall we do to common property? We have several options. We might sell them off as private property. We might keep them as public property, but allocate the right to enter them. The allocation might be on the basis of wealth, by the use of an auction system. It might be on the basis of merit, as defined by some agreed upon standards. It might be by lottery. Or it might be on a first-come, first-served basis, administered to long queues. These, I think, are all objectionable. But we must choose -- or acquiesce in the destruction of the commons that we call our National resources.

2.1.2 Common Pool Resource

A resource, such as water or pasture, that provides users with tangible benefits. A major concern with common resources is overuse, especially when there are poor social-management systems in place to protect the core resource. Common resources that are not owned by anyone are called open-access resources

Common-pool resources are systems that generate finite quantities of resource units so that one person's use subtracts from the quantity of resource units available to others (Ostrom, ardner, and Walker 1994). Irrigation systems are among the most important type of common-pool resource (Ostrom, 1992). Most common-pool resources are sufficiently large that multiple actors can simultaneously use the resource system and efforts to exclude potential beneficiaries are costly. When the resource units (e .g., water) are highly valued and many actors benefit from appropriating (harvesting) them for consumption, exchange, or as a factor in a production process, the appropriations made by one individual are likely to create negative externalities for others. The "tragedy of the commons" will occur, therefore, in open-access commons where those involved and/or external authorities do not establish an effective governance regime. Governance regimes regulate one or more of the following:

- Who is allowed to appropriate resource units;
- the timing, quantity, location, and technology of appropriation;
- who is obligated to contribute resources to provide or maintain the resource system itself;
- how appropriation and obligation activities are to be monitored and enforced;
- how conflicts over appropriation and obligation activities are to be resolved; and

- how the rules affecting the above will be changed over time with changes in the performance of the resource system and the strategies of participants.

A self-governed common-pool resource is one where actors, who are major appropriators from the resource, are involved over time in making and adapting rules within collective-choice arenas regarding the inclusion or exclusion of participants, appropriation strategies, obligations of participants, monitoring and sanctioning, and conflict resolution. Some extremely remote common-pool resources are governed entirely by appropriators and are not governed at all by external authorities. In most modern political-economies, however, it is rare to find any resource systems—including the treasuries of private for-profit corporations—that are governed entirely by participants without rules made by local, regional, national, and international authorities also affecting key decisions (Ostrom 1991, 1997). Thus, in a self-governed system, participants make many, but not necessarily all, rules that affect the sustainability of the resource system and its use. The Conventional Theory of Common-Pool Resources since the important early studies of open-access fisheries by Gordon (1954) and Scott (1955), most theoretical studies by political-economists have analyzed simple common-pool resource systems using relatively similar assumptions (Feeny, Hanna, and Mc Evoy, 1996). In such systems, it is assumed that the resource generates a highly predictable, finite supply of one type of resource unit (one species, for example) in each relevant time period. Appropriators are assumed to be homogenous in terms of their assets, skills, discount rates, and cultural views. They are also assumed to be short-term, profit maximizing actors who possess complete information. In this theory, anyone can enter the resource and appropriate resource units. Appropriators gain property rights only to what they harvest, which they then sell in an open competitive market. The open access condition is a given. The appropriators make no effort to change it. Appropriators act independently and do not communicate or coordinate their activities in any way. In this setting, as the incisive analysis of Gordon and Scott demonstrates, each fisherman will take into account only his own marginal costs and revenues and ignores the fact that increases in his catch affect the returns to fishing effort for other fishermen as well as the health of future fish Stocks; economic rent is dissipated; economic overfishing, which may also lead to ecological overfishing, is the result (Feeny, Hanna, and Mc Evoy 1996). Many textbooks in resource economics and law and economics present this conventional theory of a simple common-pool resource as the only theory needed for understanding common-pool resources

more generally (Dasgupta and Heal 1979, Baland and Platteau 1996). With the growing use of game theory, appropriation from common-pool resources is frequently represented as a one-shot or finitely repeated, Prisoner's Dilemma game (Dawes 1973; Dasgupta and Heal 1979). These models formalize the problem differently, but do not change any of the basic theoretical assumptions about the finite and predictable supply of resource units, complete information, homogeneity of users, their maximization of expected profits, and their lack of interaction with one another or capacity to change their institutions. A sufficient number of empirical examples have existed where the absence of property rights and the independence of actors capture the essence of the problem facing appropriators that the broad empirical applicability of the theory was not challenged until the mid-1980s. The desertification of the Sahelian area, the massive deforestation in tropical countries, and the collapse of the California sardine fishery and other ocean fisheries confirmed the worst predictions to be derived from this theory for many scholars. Garrett Hardin's (1968) dramatic article in *Science* convinced many non economists that this theory captures the essence of the problem facing most common-pool resources in the world. Since appropriators are viewed as being trapped in these dilemmas, repeated recommendations were made that external authorities must impose a different set of institutions on such settings. Some recommend private property as the most efficient form of ownership (Demsetz 1967; Posner 1977; Simmons, Smith, and Georgia 1996). Others recommend government ownership and control (Ophuls 1973). Implicitly, theorists assume that regulators will act in the public interest and understand how ecological systems work and how to change institutions so as to induce socially optimal behavior (Feeny, Hanna, and Mc Evoy 1996).

Until recently, the possibility that the appropriators themselves would find ways to organize themselves has not seriously been considered in much of the economics literature. Organizing so as to create rules that specify rights and duties of participants creates a public good for those involved. Anyone who is included in the community of users benefits from this public good, whether they contribute or not. Thus, getting "out of the trap" is itself a second-level dilemma. Further, investing in monitoring and sanctioning activities so as to increase the likelihood that participants follow the agreements they have made, also generates a public good. Thus, these investments represent a third level dilemma. Since much of the initial problem exists because the individuals are stuck in a setting, where they generate negative externalities on one another,

it is not consistent with the conventional theory that they solve a second- and third-level dilemma in order to address the first-level dilemma under analysis(Hardin, 1968).

Until the work of the National Academy of Sciences' Panel on Common Property (National Research Council 1986), however, the basic theory discussed on common property was applied to all common-pool resources regardless of the capacity of appropriators to communicate and coordinate their activities.

The growing evidence from many studies of common-pool resources in the field called for a serious rethinking of the theoretical foundations for the analysis of common-pool resources (Berkes 1986,1989; Berkes et al. 1989; Bromley et al. 1992; Mc Cay and Acheson 1987). The consequence of these empirical studies is not to challenge the empirical validity of the conventional theory where it is relevant but rather its generalizability.

The structure of Gordon's time-independent model (1954) has been used as the foundation to create a series of baseline laboratory experiments where the number of appropriators is fixed at eight (Walker, Gardner, and Ostrom 1990). In this experiment, all subjects are similarly endowed with either 10 or 25 tokens in each period of a finitely repeated game. Any or all of these tokens can be invested in a joint activity with the mathematical structure of a quadratic production function (the common-pool resource) or in an alternative activity that generates a fixed return per token (similar to investing time in wage labor). Subjects are privately paid at the end of the experiment based on the total returns obtained during the experiment and earn between \$15 to \$25 per experiment lasting from 1 to 1.5 hours. In this stark institutional setting, appropriators are not allowed to communicate. Given the 4 payoff parameters, a group investment of 36 tokens yields the optimal level of investment. The non-cooperative Nash equilibrium for a finitely repeated game is for each subject to invest 8 tokens in the common-pool resource (regardless of the number of tokens provided as an endowment). Thus, the predicted outcome is for a total group investment of 64 tokens. The outcome reached at the predicted Nash equilibrium is 39% of the joint optimum that could be earned. Complete rent dissipation is not the predicted outcome, since the number of appropriators is fixed by the experimental design. In these baseline experiments, subjects make investment allocations to the common-pool resources that are well above optimum. Significant rent dissipation occurs as

predicted. The Nash equilibrium is the best predictor of aggregate outcomes for low-endowment experiments. In the high-endowment setting, aggregate behavior is far from Nash in early rounds but approaches Nash in later rounds. In this series of experiments as well as others (Ostrom, Gardner, and Walker 1997), virtually no evidence supports the prediction of appropriators using individual Nash equilibrium. Investments in the common-pool resource across rounds are characterized by an unpredicted pulsing pattern in which investments increase leading to a reduction in yield, at which time subjects tend to reduce their investments in the common-pool resource and their yields increase. This pattern reoccurs across decision rounds within an experiment. The variation across rounds tends to diminish as the experiment continues. A further result that is not predicted by the theory is that the amount of tokens invested by subjects is affected by token endowments. Yields as a percentage of optimum are much lower in the high-endowment (25-token) experiments than in the low-endowment (10-token) experiments.

Over all, the prediction of excessive appropriation from a common-pool resource by appropriators who are constrained not to communicate but unconstrained by prior appropriation rules is supported by evidences from experimental studies. These conditions are roughly analogous to unorganized, large groups of actors appropriating from an international commons. Many common-pool resources, however, are contained within a single country where a smaller number of actors may be able to communicate, coordinate strategies, and even find means to enforce these strategies themselves as in the case of irrigation management systems in Nepal.

Related to Self-Governance of Common-Pool Resources in the field, many common-pool resources are characterized by substantially higher levels of complexity than the base theory of homogeneous appropriators taking one type of resource unit from a resource system that generates a predictable flow of units. As mentioned above, the rich case-study literature illustrates a wide diversity of settings in which appropriators dependent upon common-pool resources have organized themselves to achieve much higher outcomes than is predicted by the theory described above (Corde II 1989; Wade 1994; Ruddle and Johannes 1985; Sengupta 1991).

Small- to medium-sized irrigation systems come closer than many biological resources to approximating these conditions and are, thus, an appropriate setting in which to examine these patterns of relationships quantitatively. One resource unit—water—is the focus of efforts to

organize and coordinate activities. Recent research on small- to medium-sized irrigation systems in Nepal has found a very substantial difference in performance between those systems owned and governed by the farmers themselves as contrasted to those systems owned and operated (but in some cases, not governed) by a national governmental agency.

While most farmers own land in Nepal, most own very small parcels of less than 1 hectare. They are relatively homogeneous with similar preferences in regard to obtaining water for rice production during the monsoon and winter seasons and various crops during the spring. Farmers in Nepal have long had the authority to create their own water associations, construct and maintain their own systems, and monitor and enforce conformance to their rules (Benjamin et al. 1994; Lam, Lee, and Ostrom, 1997). The irrigation systems constructed and maintained by farmers tend to rely on low-tech construction techniques including building nonpermanent headworks from mud, trees, and stones. International aid agencies have provided considerable funding to government agencies in an effort to upgrade the engineering standards.

In a detailed analysis of data from 150 farmer-governed and national governed irrigation system in Nepal, Lam (1994, forthcoming) develops three performance measures:

1. the physical condition of irrigation systems,
2. the quantity of water available to farmers at different seasons of the year, and
3. the agricultural productivity of the systems.

Using multiple regression analysis techniques so as to control for environmental differences among systems, Lam (1994) finds several variables strongly related to these dependent variables. One is the form of governance of the system. Holding other variables constant, irrigation systems governed by the farmers themselves perform significantly better on all three performance measures. This variable has the largest explanatory power of any variable in Lam's analysis, including the physical size of the system, terrain characteristics, and the number of farmers.

Thus, farmers with long-term ownership claims, who can communicate, develop their own agreements, establish the positions of monitors, and sanction those who do not conform to their own rules, are more likely to grow more rice, distribute water more equitably, and keep their systems in better repair than is done on government systems. While there is variance in the performance of Nepali systems, and also among the farmer-governed systems in the Philippines described by de los Reyes (1980), few perform as poorly as government systems holding other relevant variables constant.

Since many of the government systems rely on high-tech engineering, the capability of farmers to increase agricultural production on their "primitive systems" while they also provide the labor to maintain and operate the system, is particularly noteworthy. On the Origin of Self-Governed Common-Pool Resources, evidences from different field researches challenges the generalize of the conventional theory. While it is generally successful in predicting outcomes in settings where appropriators are alienated from one another or cannot communicate effectively, it does not provide an explanation for settings where appropriators are able to create and sustain agreements to avoid serious problems of over appropriation. Nor does it predict well when government ownership will perform appropriately or how privatization will improve outcomes. A fully articulated, reformulated theory encompassing the conventional theory as a special case does not yet exist. On the other hand, scholars familiar with the results of field research substantially agree on a set of variables that enhance the likelihood of appropriators organizing themselves to avoid the social losses associated with open-access, common pool resources (M c Kean 1992, 1996; Wade 1994; Schlager 1990; Tang 1992; E. Ostrom 1990, 1992a, 1992b; Baland and Platteau 1996; E. Ostrom, Gardner, and Walker 1994). Drawing heavily on Ostrom (1992b: 298-99) and Baland and Platteau (1996: 286-89), considerable consensus exists that the following attributes of resources and of appropriators are conducive to an increased likelihood that self governing associations will form.

Attributes of the Resource:

- **Feasible improvement:** Resource conditions are not at a point of deterioration such that it is useless to organize or so underutilized that little advantage results from organizing.
- **Indicators:** Reliable and valid indicators of the condition of the resource system are frequently available at a relatively low cost.
- **Predictability:** The flow of resource units is relatively predictable.
- **Spatial extent:** The resource system is sufficiently small, given the transportation and communication technology in use, that appropriators can develop accurate knowledge of external boundaries and internal microenvironments.

Attributes of the Appropriators:

- **Salience:** Appropriators are dependent on the resource system for a major portion of their livelihood.
- **Common understanding:** Appropriators have a shared image of how the resource system operates (attributes R1, 2, 3, and 4 above) and how their actions affect each other and the resource system.
- **Discount rate:** Appropriators use a sufficiently low discount rate in relation to future benefits to be achieved from the resource.

The attributes of a resource affect both the benefits and costs of institutional change. If resource units are relatively abundant (R 1) , there are few reasons for appropriators to invest costly time and effort in organizing. If the resource is already substantially destroyed, the high costs of organizing may not generate substantial benefits. Thus, self-organization is likely to occur only after appropriators observe substantial scarcity. The danger here, however, is that exogenous shocks leading to a change in relative abundance of the resource units occur rapidly and appropriators may not adapt quickly enough to the new circumstances (Libecap and Wiggins 1985).

The presence of frequently available, reliable indicators about the conditions of a resource (R2) Affects the capacity of appropriators to adapt relatively soon to changes that could adversely affect their long-term benefit stream (Moxnes 1996). A resource flow that is highly predictable is much easier to understand and manage than one that is erratic. In the latter case, it is always difficult for appropriators (or, for that matter, for scientists and government officials) to judge whether changes in the resource stock or flow are due to overharvesting or to random exogenous variables (Feeny, Hanna, and Mc Evoy 1996). Unpredictability of resource units in micro settings, such as private pastures, may lead appropriators to create a larger common-property unit to increase the predictability of resource availability somewhere in the larger unit (Netting 1972; Wilson and Thompson 1993). The spatial extent of a resource (R4) affects the costs of defining reasonable boundaries and then of monitoring them over time.

The attributes of the appropriators themselves also affect their expected benefits and costs. If appropriators do not obtain a major part of their income from a resource (A1), the high costs of organizing and maintaining a self-governing system may not be worth their effort. If appropriators do not share a common understanding of how complex resource systems operate they will find it extremely difficult to agree on future joint strategies. Given the complexity of many common-pool resources, especially multispecies or multiproduct resources—understanding how these systems work may be counterintuitive even for those who make daily contacts with the resource. In resources that are highly variable, it may be particularly difficult to understand and to sort out those outcomes stemming from exogenous factors and those resulting from the actions of appropriators. Of course, this is also a problem facing officials as well as appropriators. Appropriators with many other options, who thus discount the importance of future income from a particular resource, may prefer to "mine" one resource without spending resources to regulate it. They simply move on to other resources once this one is destroyed, assuming there will always be other resources available to them. Appropriators who possess more substantial economic and political assets may have similar interests to those with fewer assets or they may differ substantially on multiple attributes. When the more powerful have similar interests, they may greatly enhance the probability of successful organization if they invest their resources in organizing a group and devising rules to govern that group. Those with substantial economic and political assets are more likely to be a member of K and thus have a bigger impact on decisions about institutional changes. Mancur Olson (1965) long ago recognized the possibility of a privileged group whereby some were sufficiently affected to bear a disproportionate share of the costs of organizing to provide public goods (such as the organization of a collectivity). On the other hand, if those with more assets also have low discount rates related to a particular resource and lower salience, they may simply be unwilling to expend inputs or actually impede organizational efforts that might lead to their having to cut back on their productive activities.

Appropriators who trust one another to keep agreements and use reciprocity in their relationships with one another face lower expected costs involved in monitoring and sanctioning one another over time. Appropriators who lack trust at the beginning of a process of organizing may be able to build this form of social capital (Coleman 1988; Ostrom 1992) if they initially adopt small changes that most appropriators follow before trying to make major institutional

changes. Autonomy tends to lower the costs of organizing. A group that has little autonomy may find that those who disagree with locally developed rules seek contacts with higher-level officials to undo the efforts of appropriators to achieve regulation. With the legal autonomy to make their own rules, appropriators face substantially lower costs in defending their own rules against other authorities. Prior experience with other forms of local organization (A7) greatly enhances the repertoire of rules and strategies known by local participants as potentially useful to achieve various forms of regulation. Further, appropriators are more likely to agree upon rules whose operation they understand from prior experience, than upon rules that are introduced by external actors and are new to their experience. Given the complexity of many field settings, appropriators face a difficult task in evaluating how diverse variables affect expected benefits and costs over a long time horizon. In many cases, it is just as difficult, if not more so, for scientists to make a valid and reliable estimate of total benefits and costs and their distribution.

The growing theoretical consensus does not lead to a conclusion that most appropriators using common-pool resources will undertake self-governed regulation. Many settings exist where the theoretical expectation should be the opposite: Appropriators will overuse the resource unless efforts are made to change one or more of the variables affecting perceived costs or benefits. Given the number of variables that affect these costs and benefits, many points of external intervention can enhance or reduce the probability of appropriators' agreeing upon and following rules that generate higher social returns. But both social scientists and policymakers have a lot to learn about how these variables operate interactively in field settings and even how to measure them so as to increase the empirical warrantability of the growing theoretical consensus. Many aspects of the macro institutional structure surrounding a particular setting affect the perceived costs and benefits. Thus, external authorities can do a lot to enhance the likelihood and performance of self-governing institutions. Their actions can also seriously impede these developments as well. Further, when the activities of one set of appropriators, A, have "spillover effects" on others beyond A, external authorities can either facilitate processes that allow multiple groups to solve conflicts arising from negative spillovers or take a more active role in governing particular resources themselves.

Researchers and public officials need to recognize the multiple manifestations of theoretical variables in the field. Appropriators may be highly dependent on a resource, for example,

because they are in a remote location and few roads exist to enable them to leave. Alternatively, they may be located in a central location, but other opportunities are not open to them due to lack of training or a discriminatory labor market. Appropriator's discount rates in relation to a particular resource may be low because they have lived for a long time in a particular location and expect that they and their grandchildren will remain in that location, or because they possess a secure and well-defined bundle of property rights to this resource (Schlager and Ostrom 1992). Reliable indicators of the condition of a resource may result from activities that the appropriators themselves do—such as regularly shearing the wool from sheep (Gilles and Jamtgaard 1981) or because of efforts to gather reliable information by appropriators or by external authorities (Blomquist 1992). Predictability of resource units may result from a clear regularity in the natural environment of the resource or because storage has been constructed in order to even out the flow of resource units over both good and bad years. They may have autonomy to make their own rules because a national government is weak and unable to exert authority over resources that it formally owns, or because national law formally legitimates self-governance—as is the case with Japanese inshore fisheries.

When the benefits of organizing are commonly understood by participants to be very high, appropriators lacking many of the attributes conducive to the development of self-governing institutions may be able to overcome their liabilities and still develop effective agreements. The crucial factor is not whether all attributes are favorable but the relative size of the expected benefits and costs they generate as perceived by participants. While all of these variables affect the expected benefits and costs of appropriators, it is difficult—particularly for outsiders—to estimate their impact on expected benefits and costs given the difficulty of making precise measures of these variables and weighing them on a cumulative scale. Further empirical analysis of these theoretical propositions is, thus, dependant on the conduct of careful comparative over-time studies of a sufficiently large number of field settings using a common set of measurement protocols (see E. Ostrom and Wertime 1994).

In addition to the consensus concerning the theoretical variables conducive to self-organization, considerable agreement also exists about the characteristics of those self-governing systems that are robust in the sense that they survive for very long periods of time utilizing the same basic rules for adapting to new situations over time (Shepsle 1989).

The particular rules used in the long-surviving, self-governing systems varied substantially from one another. Consequently, it is not possible to arrive at empirical generalizations about the particular types of rules used to define who is a member of a self-governing community, what rights they have to access a common-pool resource and appropriate resource units, and what particular obligations they face. It is possible, however, to derive a series of design principles that characterize the configuration of rules that are used. By design principles, I mean an "element or condition that helps to account for the success of these institutions in sustaining the [common-pool resource] and gaining the compliance of generation after generation of appropriators to the rules in use" (Ostrom 1990). Robust, long term institutions are characterized by most of the design principles listed in Table 1. The farmer owned irrigation systems in Nepal analyzed by Benjamin et al. (1994) and Lam (1994), for example, are characterized by most of these design principles. Fragile institutions tend to be characterized by only some of these design principles. Failed institutions are characterized by very few of these principles (Schweik, Adhikari, and Pandit, 1997; Morrow and Hull 1996;

These principles work to enhance the shared understanding of participants of the structure of the resource and its appropriators and of the benefits and costs involved in following a set of agreed-upon rules.

Design Principle 1 having rules that clearly define who has rights to use a resource and the boundaries of that resource ensures that appropriators can clearly identify anyone who does not have rights and take action against them.

Design Principle 2 involves two parts. The first is congruence between the rules that assign benefits and the rules that assign costs. The crucial thing here is that these rules be considered fair and legitimate by the participants themselves (Mc Kean 1992). In many settings, fair rules are those that keep a relative proportionate relationship between the assignment of benefits and of costs. In irrigation systems, for example, rules that allocate water to different farmers according to the amount of land they own as well as allocating duties for costs of operation and maintenance using the same formula, are usually considered by farmers to be fair (as well as effective from an agricultural perspective).

The second part of this design principle is that both types of rules be well-matched to local conditions such as soils, slope, number of diversions, crops being grown, etc.

Design Principle 3 is concerned with the collective-choice arrangements used to modify the operational rules of regular operation of the resource. If most appropriators are not involved in modifying these rules over time, the information about the benefits and costs as perceived by different participants is not fully taken into account in these efforts to adapt to new conditions and information over time. Appropriators who begin to perceive the costs of their system being higher than their benefits and who are prevented from making serious proposals for change, may simply begin to cheat whenever they have the opportunity. Once cheating on rules becomes more frequent for some appropriators, others will follow suit. In this case, enforcement costs become very high or the system fails.

No matter how high the level of agreement to an initial agreement is, there are always conditions that tempt some individuals to cheat (even when they perceive the overall benefits of the system to be higher than the costs). If one person is able to cheat while others conform to the rules, the cheater is usually able to gain substantially to the disadvantage of others. Thus, without monitoring of rule conformance

Design Principle 4—few systems are able to survive very long at all. The sanctions that are used, however, do not need to be extremely high in the first instance. The important thing about a sanction for an appropriator who has succumbed to temptation is that their action is noticed and that a punishment is meted out. This tells all appropriators that cheating on rules is noticed and punished without making all rule infractions into major criminal events. If the sanctions are graduated

Design Principle 5, however, an appropriator who breaks rules repeatedly and who is noticed doing so, eventually faces a penalty that makes rule breaking an unattractive option. While rules are always assumed to be clear and unambiguous in theoretical work, this is rarely the case in field settings. It is easy to have a disagreement about how to interpret a rule that limits appropriation activities or requires input resources. If these disagreements are not resolved in a low-cost and orderly manner, then appropriators may lose their willingness to conform to rules because of the ways that "others" interpret them in their own favor

Design Principle 6, Design Principles 7 and 8 are related to autonomy. When the rights of a group to devise their own institutions are recognized by national, regional, and local governments, the legitimacy of the rules crafted by appropriators will be less frequently challenged in courts, administrative and legislative settings. Further, in larger resources with many participants, nested enterprises that range in size from small to large enable participants to

solve diverse problems involving different scale economies. By utilizing base institutions that are quite small, face-to-face communication can be utilized for solving many of the day-to-day problems in smaller groups. By nesting each level of organization in a larger level, externalities from one group to others can be addressed in larger organizational settings that have a legitimate role to play in relationship to the smaller entities.

In addition to the consensus concerning the variables most likely to enhance self-organization and the design principles characterizing successful, long-term governance arrangements, many unresolved theoretical issues still exist about the self-governance of common-pool resources. Two major theoretical questions relate to the effect of size and heterogeneity.

The effect of the number of participants facing problems of creating and sustaining a self governing enterprise is unclear. Drawing on the early work of Mancur Olson (1965), many theorists argue that size of group is negatively related to solving collective-action problems in general (Buchanan and Tullock 1962). Many results from game theoretical analysis of repeated games conclude that cooperative strategies are more likely to emerge and be sustained in smaller rather than larger groups (see synthesis of this literature in Baland and Platteau 1996). Scholars who have studied many user-governed irrigation and forestry institutions in the field have concluded that success will more likely happen in smaller groups.

On the other hand, several studies of multiple sites have not found that size was positively related. While most of the 37 farmer-governed irrigation systems studied by Tang (1992) were relatively small, ranging in size from 7 to 300 appropriators, he did not find any statistical relationship within that size range between the number of appropriators or the amount of land being irrigated and performance variables (1992). In Lam's multiple regression analysis of the performance of a much larger set of irrigation systems in Nepal ranging in size up to 475 irrigators, he also did not find any significant relationship between either the number of appropriators or the amount of land included in the service area with any of the three performance variables he studied (1994). Further, in a systematic study of forest institutions, Agrawal (1996) has not found smaller forest user groups as able to undertake the level of monitoring needed to protect forest resources as moderately sized groups.

One of the problems with a focus on size of group as a key determining factor is that many other variables change as group size increases (Chamberlin 1974; R. Hardin 1982). If the costs of

providing a public good related to the use of a common-pool resource, say a sanctioning system, remain relatively constant as group size increases, then increasing the number of participants brings additional resources that could be drawn upon to provide the benefit enjoyed by all (Isaac, Walker, and Williams 1993).

Marwell and Oliver (1993) conclude that when a "good has pure jointness of supply, group size has a positive effect on the probability that it will be provided." On the other hand, if one is analyzing the conflict levels over a subtractable good and the transaction costs of arriving at acceptable allocation formulas, group size may well exacerbate the problems of self-governing systems. Since there are tradeoffs among various impacts of size on other variables, a better working hypothesis is that group size has a curvilinear relationship to performance.

Many scholars conclude that only very small groups can organize themselves effectively because they presume that size is related to the homogeneity of a group and that homogeneity is needed to initiate and sustain self-governance. Heterogeneity is also a highly contested variable. For one thing, groups can differ along a diversity of dimensions including their cultural backgrounds, interests, and endowments (Baland and Platteau 1996). Each may operate differently. If groups coming from diverse cultural backgrounds share access to a common resource, the key question affecting the likelihood of self-organized solutions is whether the views of the multiple groups concerning the structure of the resource, authority, interpretation of rules, trust, and reciprocity differ or are similar. In other words, do they share a common understanding (A2) of their situation? New settlers to a region may simply learn and accept the rules of the established group, and their cultural differences on other fronts do not affect their participation in governing a resource. On the other hand, new settlers are frequently highly disruptive to the sustenance of a self-governing enterprise when they generate higher levels of conflict over the interpretation and application of rules and increase enforcement costs substantially.

The conventional theory of common-pool resources, which presumed that external authorities were needed to impose new rules on those appropriators trapped into producing excessive externalities on themselves and others, has now been shown to be a special theory of a more general theoretical structure. For appropriators to contemplate changing the institutions they

face, they have to conclude that the expected benefits from an institutional change will exceed the immediate and long-term expected costs. When appropriators cannot communicate and have no way of gaining trust through their own efforts or with the help of the macro institutional system within which they are embedded, the prediction of the earlier theory is likely to be empirically supported. Ocean fisheries, the stratosphere, and other global commons come closest to the appropriate empirical referents. If appropriators can engage in face-to-face bargaining and have autonomy to change their rules, they may well attempt to organize themselves. Whether they organize depends on attributes of the resource system and the appropriators themselves that affect the benefits to be achieved and the costs of achieving them. Whether their self-governed enterprise succeeds over the long-term depends on whether the institutions they design are consistent with design principles underlying robust, long-living, self-governed systems. The theory of common-pool resources has progressed substantially during the past half century. There are, however, many challenging puzzles to be solved, nevertheless this theory will prepare the major ground for the current study on irrigation system.

2.2 Concept Review

As Alan Fowler (1997) suggests these two dynamics at macro and micro level are supposed to be ideally, in harmony to establish the socially justice, accountable, inclusive and eventually good governance.

In the context of Water User Committee, irrigation management in Nepal, macro and micro level attributes that address to establish good governance are:

a. Macro Level:

Policy arrangements: compatible policy framework on decentralization/devolution

State and local government's responsiveness

Transparency (access to information decision, program, processes, resources allocation),

Participation in decision-making system/process accountability towards Water User Committee and water users are the key component.

b. Micro level:

- Executive committee members' responsiveness.
- Transparency (access to information, decision, program, processes).
- Accountability of each other committee member and general users.
- Participation of women, marginalized and dalit in decision-making process.
- Equitable benefit sharing intra Water Users.
- Linkage and networks between government & other organization.
- Govern by law
- Dispute Management
- Fund Management
- Reward and punishment system

Water Resources Act 1992, and Irrigation Policy 1996

In the historical overview it became clear that the Water Resource Act was the latest and biggest change in irrigation policy in Nepal. Since this research is about the Water Resource Act, this policy will be discussed in more detail. This section is divided into two main parts. The first part is about the registration of the Water User Committee at the District Irrigation Office (DIO). The second part is about the responsibilities of the District Irrigation Office (DIO) after registration.

Registration of the Water User Association (WUA) at the District Irrigation Office

After the introduction of the Water Resources Act (WRA) farmer organizations can register at the District Irrigation Office (DIO). According to the registration procedure farmers have to hand in a constitution. The amended constitution should be endorsed by two third of the general assembly of the newly formed Water User Association (WUA). Different engineers working for the District Irrigation Office (DIO) have to check the papers of the constitution with the help of a model constitution written in the Water Resource Act (WRA). After the general assembly and

the District Irrigation Office (DIO) have accepted the constitution, the Water User Association (WUA) is registered at the government.

The farmers are often helped by the District Irrigation Office (DIO) with the formulation of rules and regulations in the constitution. The engineers make sure that the constitution handed in by the farmers will be formulated as prescribed in the model constitution written in the Water Resource Act (WRA). In the end the constitution of the Water User Association (WUA) and the one written in the Water Resource Act (WRA) will look very similar²[6]. The similarities of the two documents gives the idea farmers still have little to say how “their” constitution will look like. In the following pages parts of the model constitution will be discussed. The discussed parts will have the same focus as this research: The organization of the farmers, water distribution, maintenance and the collection of water fees.

The model constitution: Regulations on organization and management

In the first part of the model constitution is about the organizational structure of the Water User Association (WUA). According to the model constitution the Water User Association (WUA) should have a general assembly, Water Users Management Committee (WUAMC) and, depending on the size of the system, branch and system committees (point 5+7). The farmer organization or Water Users Association (WUA) will obtain rights and responsibilities regarding water distribution, regulation and maintenance, collection of water fees and membership fees, charges and mobilize the governments resources the moment the Water User Association (WUA) is registered at the DIO (point 1). The obtained rights and responsibilities will be spread over the different organs in the Water User Association (WUA).

The general assembly shall be composed of all members of the association. It should have meetings at least twice a year. In these meetings the general assembly has to approve the annual program, audit report and annual budget of the Water User Association Management Committee (WUAMC). It also has to frame and promulgate by laws and regulations for the construction, regulation, maintenance and repair of the irrigation system. Another task of the general assembly is to elect the officials of the Water User Association Management Committee

(WUAMC) (point 6). The general assembly can be seen as a group of representatives of all the farmers with the right to elect and supervise the members of the Water User Association Management Committee (WUAMC).

The Water User Association Management Committee (WUAMC) will be the executive body of the farmer organization. For the Water User Association Management Committee (WUAMC) a chairperson, vice chairperson, secretary, joint-secretary, treasurer and a couple of members are elected by the general assembly (point 7). The Water User Association Management Committee (WUAMC) is responsible for planning, making programs, nominating officials for executing posts and the budget of the association (point 8). The tasks of the elected officials written in the model constitution are mostly related with meetings, voting, implementing programs, keeping administration and finances. Little is discussed in relation with maintenance, water distribution and the collection of water fees. The model constitution prescribes an organization structure for the Water User Association (WUA) in Nepal. Part of the organization has supervision and election responsibilities while the other part has executive responsibilities. This model constitution is not very specific about how different irrigation activities should be handled by the executive part of the organization. Very little is written about how punishment, water distribution, regulation and maintenance of canals and the collection of water fees should be managed.

Irrigation Policy 1996

The Irrigation Policy 1996 is more specific about water management activities. In the policy is written that water-user farmers shall participate in all stages of the construction and rehabilitation projects of irrigation systems, including need assessment, project identification, construction, repair and maintenance, and monitoring and evaluation of irrigation projects. The Water User Association (WUA) shall bear a specified share of the costs for all irrigation rehabilitation projects. In Irrigation Policy 1996 is mentioned that the Water User Association (WUA) is responsible for the collection of irrigation service fees (or simply water fees) in their irrigation system. Farmers have to pay fees on the basis of the size of the irrigated field. If the Water User Association (WUA) is not able to collect more than 80 percent of the fees it shall

only be allowed to get half of the amount 3[8]. Besides the responsibility to mobilize cash the Water User Association (WUA) have to make sure that water users will participate in repair and maintenance activities. (Irrigation Policy, Nepal 1996)

Before the introduction of the Muluki Ain in 1854 water was not really considered an important resource. There was very little government involvement in water. Most rules and regulations came from a local level. Pre-1854 regulations were about protection of water sources, senior rights of prior appropriators and obligations to repair and maintain the canals. Local elites taxed some of the water users.

With Muluki Ain the government became involved in regulation of water sources for the first time in Nepali history. However, government involvement in irrigation still remained very limited with the introduction of Muluki Ain: The Muluki Ain gave farmers who helped with the construction of irrigation canals the right to irrigate. Farmers had to give their land for the construction for canals or dams without any compensation. New canals could only be constructed upstream if water supply downstream would remain sufficient. Irrigation water should still be able to reach the same lands as before the new canals were constructed (Prahdan 2000, Poudel 2000). The limited regulations on irrigation management in Muluki Ain left some space for older customary and local law. The Muluki Ain does not discuss how rights to water are established, how they are allocated and how irrigation canals had to be repaired. These regulations had to come from local and customary laws. Regulations for water management differed in every local community, but some regulations were very common 4[5]. Fields closer to the water source often were allowed to irrigate before fields further away, and that tenants were obliged to maintain and repair canals for the local elites are two examples of regulations which were very common.

Between 1950 and 1960 there were no big changes in government policy regarding irrigation. In 1952 a second Muluki Ain was introduced. After the introduction of this Muluki Ain farmers had to be compensated if they had to give their land for the construction of canals or dams. The Ain was very clear that farmers had to provide labor for canal repairs or they would be evicted

from their lands. Thus, customary law had become official law (Pradhan 2000). During the Panchayat system many acts regarding irrigation were introduced. The most important regulations were the Canal Act of 1961, the Muluki Ain of 1963 and the Canal, Electricity, and Related Act of 1967. With the introduction of the Canal Act of 1961 the state became the owner of all the water resources in Nepal, such as rivers, streams, ponds and lakes. By controlling the natural resources the state would make sure that the water resources would benefit the Nepali population (Pradhan 2000, Sharma 2001). After the introduction of the Muluki Ain of 1963 tenants could no longer be evicted from their land because of a change in the tenurial rights of landholders. The Act of 1967 tried to introduce legislation on multiple water use (Pradhan 2000). Individuals or groups could still construct irrigation schemes. However, when existing irrigation schemes hindered the state, the government was empowered for action. Licensing and payment of irrigation service fees were also incorporated in the act. This was the first legislation that stipulated government agencies had the authority to control irrigation facilities that received state investment

The most important policy change after abolishment of the Panchayat system are the Water Resources Act of 1992 and Irrigation Policy 1996. Since these policies are the central focus of this research, it will be discussed in detail.

Irrigation Development

Farmers in Nepal have been developing and managing irrigation since time immemorial that appears to have contemporaneous with agriculture. Although Nepal has a long history of irrigated agriculture, the importance of irrigation has been realized only in the recent years with the advancement in the irrigated agricultural technology.

The government started plan way in irrigation development began only after 1951. The Department of Irrigation (DoI) came into existence in 1952. Before this period, the irrigation needs for the country were met by several Farmer-Managed Irrigation Systems (FMISs) and a few state supported irrigation canals. FMISs are more than 300 years old. The Raj Kulo in Palpa district was constructed by Mani Makunda Sen, the first Sen Rajah of Tansen, which makes it over 300 years old. Likewise, Soraha and Chattish Mauja Kulos in Rupandehi district are other notable examples of very successful irrigation systems built and operated under Farmer-

Managed Irrigation Systems (FMIS). A recent statistic indicates that about 17,700 units of FMISs exist, scattered throughout the country and account roughly 75 % of the total irrigation systems. (CARE Training manual, 2002)

Irrigation Management

The Tenth Five-year Plan (2002-2007) has also given priority to Farmer-Managed Irrigation Systems (FMIS) in which users' group participatory approach has been emphasized. There is no doubt that the broad goal of irrigation project is achieved through proper institutional development of Water User Committee and equal participation of women as men in the irrigation activities for sustainable irrigation development and management.

Recently, the role of gender in irrigation has become a global agenda for the development practitioners. It is believed that equal participation of both sexes in irrigation enhances the performance of the irrigation

The International Irrigation Management Institute (IIMI) defines irrigation as the totality of the means employed by people to control the supply of water to the soil, for the purpose of enhancing the production of crops (NEDA, 1997:4). Both human and physical aspects interact continually and profoundly in irrigation and cannot be well understood without consideration of their mutual relationships (Uphoff, 1986:4 and Mollinga, 1998).

Generally irrigation management means to acquire water from the source to deliver water to the rice field. In between there are many aspects required (physical, social, and technical) for water control and water use. Uphoff (1986:42) describes the three main irrigation management activities involve: (i) physical system activities, such as maintenance, operation and construction; (ii) water use activities, such as acquisition, allocation and distribution of water; and (iii) Organizational activities, such as resource mobilization, decision-making and conflict management. Coward (1991) also explains the rules, roles and groups to execute different irrigation tasks.

Some of the important topics related to the study are reviewed in this chapter. The topics are from historical background of good governance, decentralization and devolution is crux of good governance and irrigation management as entry point for governance is reviewed.

2.3. Empirical Review

Good governance is being a hot issue in the country Nepal, as well as all over the world. There are conducted lots of studies, different professional have written valuable article and published in different publications regarding the issue and different agencies have made different concept, plan and strategies concerning the issues of governance and good governance. The roles of different actors like government, civil society and private sectors have also defined by different agencies on the context of different areas. The relevant findings of different publications are reviewed and elaborated in the section below.

2.3.1 Good Governance

As per the collective perspectives of different agencies, the cooperative humanitarian contribution of public representatives on collective workload of human welfare is called good governance. The human lives in the society and the societies stands with separate states. The state have own controlled area, citizen and government with having own state rules, regulations. The government plays the role of public services management and control in discipline of the state based on the rules, regulations and procedure. For this process, the government uses power and authority and the procedure of using authority and power is the good governance. Required rules and regulations formulated and reviewed in the state through the authorized institutions and the government and complementary institutions use the rules and regulations for the performing their role in the state. Government is the responsible actor to perform the role of direct, control and regulate the state and formulates required different units at top to grass-root level to perform the role and responsibility. In democratic system, public representatives develop rules and procedures for the state and government take action for its application.

Definition of the concept of governance is different in the view of different social scientists and institutions. They analyzed from their long experiment and different prospect in the terms of governance, which is very important to know the terms governance from different perspective. Some social scientists have viewed good governance is a traditional concept to which the marketing mechanism expands some other scholars have accepted good governance, which is an art which conducts interaction among government, NGO and civil society organization. But the scholars who are familiar towards constraints of developing countries, good governance is necessary for generating public goods and services. UNDP concluded that good governance is

the exercise of political power to manage nation's public affairs. Robinson (1997) has mentioned that good governance applies to the exercise of power in varieties of institutional contexts, the object of which is to direct, control and regulates activities in the interests of people as citizens, voters and workers. Thomas J. Bierstaker (1996) has agreed, governance is essentially purposive and should be distinguished from order, which does not require conscious purpose or intention. Order can exist without governance, but governance requires some form of order. Different views found on governance but the gist is that good governance "is the use of political power for the management of public issues. (CARE Training manual, 2002)

Meaning of good governance mentioned in oxford dictionary is legally control an equally as its people and be responsible for introducing new laws organizing public services. United Nation Economic and Social Commission for Asia and Pacific viewed (www.unescap.org/huset/gg/governance.htm, 2009) good governance as the process of decision making and the process of decision are implemented.

World bank viewed in the definition of good governance that good governance is the use of political power for control the diversified activities in the state. As per the above views, the term governance is a process of handling authority for performing the role and responsibility in the state or institutions. The authority uses objectively on the way of direct, control and regulate to public and institutions in the state maintaining equitable treat in access to resources and managing human right for public welfare through public affair (<http://www.worldbank.org/gc.2004>)

2.3.1.1 Participation

Participation can be defined as a process through which stakeholders' influence and control to a certain extent development initiatives and the decisions and resources, that affects them.

Participation is defined as a voluntary contribution of the people in one or another of the public interventions supposed to contribute to national development, but the people are not expected to take part in shaping the program or criticizing its contents (Economic Commission for Latin America, 1973). Participation includes people's involvement in decision-making processes, in implementing programs their sharing in benefits of development programs and their involvement in efforts to evaluate such programs (Cohen and Uphoff, 1977).

What gives real meaning to people participation is the collective effort by the people concerned to pool their efforts and whatever other resources they decide to pool together, to attain objectives they set for themselves. In this regard participation is viewed as an active process in which the participants take initiatives and actions that are stimulated by their own thinking and by deliberations over which they exert effective control. The idea of passive participation, which only involve the people in actions that have been thought, out or designed by others and controlled by others is unacceptable (Task Force and Working Group on Rural Development Program Harmonization, Rome 1978).

People's participation is essentially to do with economic and political relationships within the wider society; it is not just a matter of involvement in project activities but rather the process by which rural people are able to organize themselves and through their own organization, are able to identify their own needs, share in design, implement, and evaluate participatory action (FAO, 1982). Community participation is an active process by which beneficiary or client groups influence the direction and execution of a development project with a view to enhancing their well being in terms of income, personal growth, self-reliance, or other values they cherish (Paul, 1987).

The need for a better understanding and incorporation of the objectives and knowledge and capabilities of the local users in irrigation management is more and more recognized. This recognition is based on the result of the poor performances of irrigation and drainage systems constructed with conventional engineering approaches (FAO, 1982; World Bank, 1996; Boelens, 1998). Furthermore, participation can be regarded as one of the elementary conditions for sustainable irrigation development. The FAO (1982) states “Many government agencies lack skilled staff who know how to work with farmer groups; the staff is not familiar with the philosophy and policies of dealing with farmers.” (CARE Training manual, 2002)

Participatory process in the development and management of public sector irrigation brought into a new strategy, aiming at solution to ever increasing constraints on the government to improve the performance of irrigation sector to achieve full potential of public sector irrigation

schemes. The strategy has been largely based on the philosophy of community ownership, users' organization, and effective and reliable resource mobilization, decision-making and conflict management through the participatory Irrigation Management. In connection with, the government started Irrigation Management Transfer Project (IMTP) in 1995 for 13 large-scale irrigation systems in Terai with the loan support from ADB. Under this project, Joint Management and Turnover programs have been undertaken. The joint management program seeks shared O&M responsibilities between water users and the District Irrigation Office. While turnover aims at total management responsibilities of the Department of Irrigation (DOI) transfer to water users. Likewise, two major investment projects, the Irrigation Sector Project (ISP) and Irrigation Line of Credit (ILC) started in 1988/1989 with the aim of streamlining the government's efforts in existing FMISs, development of new small and medium scale irrigation schemes. (CARE Training manual, 2002)

There are also contemporary examples of participatory approaches in irrigation development and management tried and implemented at different times by several governmental and non-governmental agencies, other than District Irrigation Office . These include Farm Irrigation and Water Utilization Division (FIWUD) of Department of Agriculture, Irrigation Component of Ministry of Local Development (MOLD), and Special Public Works Program (SPWP) of ILO, SINKALAMA Irrigation Program and Community Surface Irrigation Program (CSIP) of ADB/N and CARE/N. In addition to that there are more than ten Integrated Rural Development Programs implemented in different parts of the country under the bilateral and multilateral assistance broadly based on participatory approach.

2.3.1.2 Transparency

The concept of public auditing is developed for community development activities transaction for verification and examines the whole process and system among beneficiary gathering for their endorsement. Public auditing is emerging as an important empowerment tool to monitor whether the desired outputs of a project are tracked. Public auditing also helps to maintain transparency and accountability of the stakeholder at all level. In Nepal the history of public

auditing is very short. Despite the fact that public auditing is accepted practice and is applied as a tool to strengthened good governance. (CARE Training manual, 2002)

Public auditing is important component of good governance and enhances accountability. It opens access to the printed (and audiovisual) world (and word) and to the preservation, systematization, manipulation and transmission of symbols in a way, which would not be possible within the oral tradition. Public auditing opens up transparency beyond the primary beneficiary groups. (CARE Training manual, 2002)

Although various bodies have been testing different models of public auditing in the context of development in Nepal for the last ten years, a uniform model of implementation has not been adopted. To make this more effective, the community should lead the process and projects / program with outsiders only playing a facilitator's role. (CARE Training manual, 2002)

Another concept of public auditing is accountability and transparency tool for maintaining of good governance system. Auditing is a part of an accounting exercise that aims to assess the fairness of the overall financial management and empowerment process. Until few years back people used to look upon this activity as only a mechanism to maintain check and balance in financial management of the institutions, but in recent years, this concept has undergoes a keeping tabs on public and private institutions to make them more accountable, responsive and transparent. (CARE Training manual, 2002)

When auditing began to be viewed in relation to governance discourse, efforts have begun to divorce it from its traditional domain. Debaters and practices have commenced with focus on exploring out "instrumentalist dimension" of the auditing activity. As a result, civil society government and private sector are now more conscious to link up auditing with good governance and anti-corruption notions. Effective and vigilant public auditing can contribute greatly to the achievement of social development programs by minimizing corruption and strengthening accountability of the responsible agencies. (CARE Training manual, 2002)

As a practice and tradition together, the supreme audit institutions like office of the comptroller and Auditor general at the national level carry out auditing. It measures up accuracy and fairness of the public purse annually, but the public auditing here doesn't mean auditing done by the government agencies. Rather, it is a collective exercise or activity conducted by the people themselves concerned stakeholders and the general public themselves are made active and

critical participants in the public auditing process. For instance beneficiaries and stakeholders of a particular development program can conduct public auditing of the accounts of the institution implementing the development program. It will help unveil corruption or irregularity or any other kind of impropriety incurred clandestinely. Public auditing is modeled on public hearing operation structure. - (Himal south Asian magazine, 2007 Vol - 8)

The root cause of the crisis of good governance is widely spread corruption. The trend of corruption is rising in geometric ration in the country and at first it influenced the political leaders on its promotion. The very poor social and economic status of serve a huge amount of cash to their followers, during the election to play a vital role is influencing uneducated and poor people. A normal Nepali cannot do this and without this he cannot win the election therefore, he has to collect cash from every business. Almost all professionals like engineers, auditors, lawyers, and doctors are not following the code of conduct in their services, which is a major reason for increase in the corrupt environment in the country. These are the critical issues in Nepal on developing smooth environment for national development. This is a time for all stakeholders who want to see a better Nepal to analyze the situation and improve it. (CARE Training manual, 2002)

CARE Nepal has lunched Accessing Services for Households (ASHA) program for nine districts in far and mid western Nepal, which is funded by Department for International Development (DFID). The ASHA is contributing to poverty reduction in the remote areas of Nepal through the development, application and dissemination of effective strategies at the local and national level. The CARE/CSP-ASHA or hope in Nepali was launched in nine remote conflict-affected districts to provide immediate relief for local communities; particularly the poor, women, Dalit (so-called lower castes) and others excluded communities through temporary employment opportunities and enhancement in access to basic services in order to improve their living conditions. This project aims to generate employment opportunity employment opportunity by engaging local people in the construction and development of basic infrastructures such as temporary employment generation, agricultural support, drinking water supplies, school buildings, trial health institutions support. Accessibility to these services will is enhanced though obtaining the following objectives. (CARE Training manual, 2002)

Equitable access for all: We are addressing the basic needs of communities by increasing the availability of basic services such as drinking water and irrigation facilities, rehabilitees of

schools and health posts and providing access to these services even in the most conflict affected areas.

Strengthening communities: By working direct with the local community and with local institutions and giving them more control over the planning, implementing, monitoring and resources management this has led to increased ownership of activities, particularly for user groups.

Increased social protection: Mobilization of local resources, both human and materials and use of local technology is effective in terms of allowing for greater mobility and access of staff from local institutions and user group members within the project area.

Improved awareness on social access: The provision of immediate benefits from the provision of immediate benefits from the project activities such as temporary employment brings relief to the community and especially the most marginalized households. This is critical in the context where migration has been steadily increasing due to the security situation, leaving a vulnerable population in most of the project areas to fend for themselves under increasingly harsh economic conditions.

Institutional governance of Shardikhola Puranchaur Irrigation System, Kaski is guided by the following principles, values and beliefs in both of its internal control system and while working with the people. Hence, Shardikhola Puranchaur Irrigation System has been institutionalizing these principles, values and beliefs in its institutional governance system.

Participation: Participation includes people's involvement in decision-making processes, in implementing programs their sharing in benefits of development programs and their involvement in efforts to evaluate such programs

Transparency: Shardikhola Puranchaur Irrigation System (SPIS) makes all efforts for maintaining transparency. For Shardikhola Puranchaur Irrigation System (SPIS), transparency means explaining honestly and openly to the farmers and the stakeholders who is Shardikhola Puranchaur Irrigation System (SPIS), what does Shardikhola Puranchaur Irrigation System (SPIS), what does Shardikhola Puranchaur Irrigation System (SPIS), do, why and what Shardikhola Puranchaur Irrigation System (SPIS), has done, why and how SPIS, has mobilized and utilized resources and listening to what others have to say.

Accountability: SPIS is accountable to the people whom it serves. SPIS makes its every effort that its institutional system and practices reflect the values and essence of accountability towards the farmers on the matters of leadership, water distribution, operation and overall management of the Shardikhola Puranchaur Irrigation System.

Predictability: is defined as "the consistency and reliability of institutions, their staff and their actions based on the institution's stated objectives, policies, rules and regulations" or "to be able to foretell on the basis of observation, experience, scientific reasons or stated processes". The opposite of predictability is "variability, inconsistency, and arbitrary decision making." Predictability is prerequisite for private sector investment.

Democratic practices: Shardikhola Puranchaur Irrigation System (SPIS), strongly believes in, follows an advocate for democratic practices in the institutional process. SPIS, ensures democratic processes within itself through a non-hierarchical but a team approach in leadership, participatory decision-making and role division practices. Likewise, SPIS, follows domestic norms in membership distribution and formation of the executive committee.

Combating corruption: SPIS believes that corruption in any form and at any place is an unseen but powerful foe of the society. Therefore, Shardikhola Puranchaur Irrigation System (SPIS) combats corruption within the organization and in the society at large. SPIS, is always conscious to follow strictly the policies, procedure and systems to ensure no corruption and misuses of resources and authorities

All these earlier works provides valuable guidance to present study, Shardikhola Puranchaur Irrigation Water User Committee strongly believes on the rule of law of public audit. It stands against the discretionary power in running an institution. Irrigation Water User Committee ensures rule of law in the institutional processes by formulating. Shardikhola Puranchaur Irrigation Water User Committee has been making its level best efforts to make it committed to just society. It, believes on social equity, respect for human right and human dignity for achieving equality, peace and prosperity.

CHAPTER - III: RESEARCH METHODOLOGY

3.1 Study Site and Rational of the Selection of the Study Area

The study was carried out in Shardikhola Puranchaur Irrigation Project, Kaski district in western part of country. The project is purposively sampled because this project is one of the successful projects of hill irrigation project under the Nepal Irrigation Sector Project (NISP), and Western Regional Irrigation Directorate of Government of Nepal (GoN).

The researcher has been working as a Training facilitator in Irrigation and Drinking water User Committee management Training for LILI/Helvetas, WARMP/Helvetas, Community Support Program CSP/DFID and CARE Nepal in Nucleus for Empowerment through Skill Transfer (NEST) and NGOs working in the field of capacity enhancement. Researcher is also one of the customers of the vegetable, which is produced by the water irrigated from that irrigation project.

The findings of this system would be applicable to most of the Hill Irrigation systems. Diversity of socio economic status, women representation and participation and ethnicity as well as geographical representation of this irrigation system is also the one of rational of selecting study area.

This research will describe the prevalent condition of user committee, farmers and women in that particular irrigation system command area in relation to their work pattern and gender status. With a view to develop a better understanding of women's participation at different levels and to develop an action plan for enhancing their participation at various levels the related personnel were interviewed including District Irrigation Office (DIO). In addition, secondary data were used to make comparisons and draw conclusions. Close observation, key informants interviewing, several data collection, Focus Group Discussion (FGD), data analysis, verifying the data etc methodology are be applied for this research. Considering a background, understanding the relevance of the selected topic in area and access to and familiarization of the areas has led to select the district for study.

3.2 Research Design

The methodology of this research is solely based on exploratory cum descriptive research design in consultation with Water User Committee members, Ministry of Water Resources, Department and district offices, local government officials and community based organization as well as other support organization related to community irrigation system.

Exploratory design helped to find out specific objective of research, which helped to clarify concept, establishing priorities, find out variables and information gathering on practical experiences and carrying out research setting. The descriptive design helped to understand and document the causal relationships between different variables. Furthermore, the descriptive research describes the characteristics of the governance among stakeholders' i.e. Water User Committee and beneficiaries. It is a scientific value, though it can't be generalized to apply it in all situations.

3.3 Nature and sources of data

The primary data are gathered by direct involvement of researcher himself by following different methods i.e semi structured interview, observation and case studies. Quantitative data were gathered from standard format created by researcher, sample households of beneficiaries through focused group discussion with Water User Committee, Users, VDC secretary and District Irrigation Office personnel. The secondary information are collected through sources such as office records, groups meeting minutes, journals and published and unpublished reports.

3.4 Universe and sampling

In the Shardikhola Puranchaur Irrigation system is functioning with one Water User Committee having six branch canals coordinators with various activities including good governance strengthening and irrigation management activities. This study examined in the multi strata governance at intra Water User Committee governance and outside Water User Committee with local government organizations, which eventually gave whole picture of participatory governance regime at irrigation management. The following criteria were considered while selecting the Water User Committee for the research purpose. However, some prerequisite criteria for both categories of group were considered before sampling, which are;

- a) Main Canal Committee (MCC) functioning as a whole responsible for irrigation system and having experience in irrigation management common property resources were treated as beneficiary farmers.
- b) Branch Canal Committee (BCC) having heterogeneous users in terms of caste, ethnic, economic and education and having responsibilities only for their branch canal irrigation management.

Out of the 11 Water User Committee members 5 member were selected randomly including Chairperson and Secretary as respondent. Out of total 230 users from 6 branch canals 25 percent were selected as respondents.

Table 3.1: Sampling

	WUC	BCC	User						
			BCC1	BCC2	BCC3	BCC4	BCC5	BCC6	Total
Total beneficiaries	11	6	42	49	37	34	26	42	230
Sample Size	5	3	10	12	11	7	8	10	58

Source: Field Survey, 2012

Hence out of total 230, 58 beneficiaries were selected for the study based on random sampling.

3.5 Data Collection Techniques

In the study, the following methods are carried out to collect relevant data.

Semi structured Interview: Semi structured interview with sampled respondents were carried out with the flexible loosely structured questionnaire.

Focused Group Discussions: To cater the qualitative as well as some quantitative data focused group discussion with sampled irrigation users were carried through participatory governance assessment and issue base meetings.

Observation: As a key information gathering method, observation of meeting, group works of sampled water users groups were carried out. Participant observation and non-participant observations were carried.

Case studies: To some extent researcher collected the individual and group level mini cases, and incorporated in the report to reinforce the major findings.

Meeting and workshop: Wherever possible, researcher tried to participate in the meetings and workshops further collecting qualitative information.

Secondary information collection: Through sources such as office records, meeting minutes, journals and published and unpublished reports and secondary library sources.

3.6 Reliability and validity of the data

Reliability is an extent of accuracy of the instrument and tools used during the study and validity is the degree to which instrument measures what it is supposed to be measured. In order to better ensure the extent of accuracy and validity of information and data, the proposed research tools and instruments were out field tested. Then tools, techniques including questionnaires were made necessary corrections and rectified.

3.7 Data Processing and Analysis

Collected data and information were thoroughly checked and grouped on the basis of types of the respondents and its basic variables then analyzed critically, carefully tabulated and compiled. Compiled quantitative data were processed and analyzed by simple statistical tools as mean and percentage was used for data analysis whereas qualitative information was critically analyzed as substantive guidance of advisor. The analysis of primary and secondary data was presented through tables, pie-diagram and bar diagram.

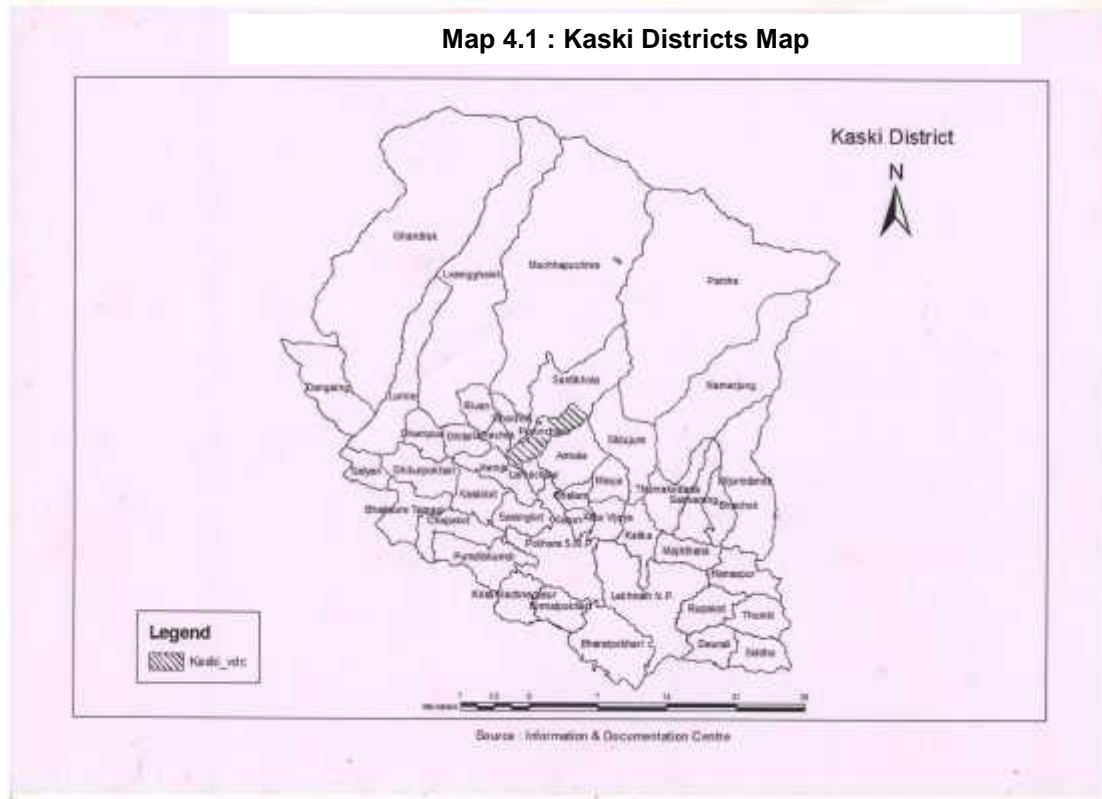
The study was more focused on exploratory design, the topic and its variables were new for respondents and the questions were quite tough for easy understanding of the respondents, therefore, the respondents were selected from more experienced persons and actives person of Water User Committee. They had already played different roles related to subject matter like players and actors into their committee. Basically, they had played planning, implementation, monitoring and policy formation and reformation task into their irrigation system and launching development activities, which were formally or informally related with subject matter of the study.

CHAPTER - IV: DESCRIPTION OF STUDY AREA

The chapter covers the general description of the study area. A brief profile of Kaski district is presented. Descriptions about the Water User Committee and Shardi khola Puranchaur Irrigation System in the district are also given and the general areas of works of the respondents are also included.

4.1. A glances of Kaski District

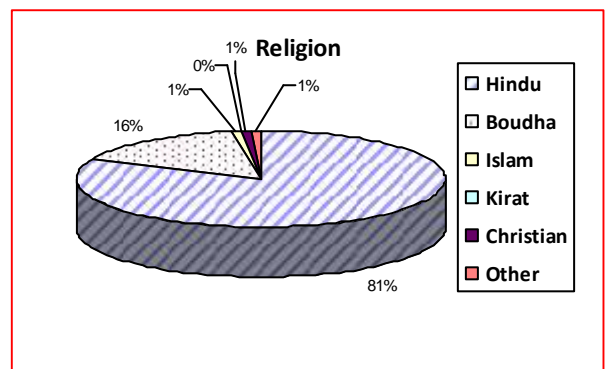
Kaski district is situated in Gandaki zone of western development region of Nepal. Among entire 6 district of Gandaki zone, this district is situated centrally. Kaski district is surrounded by



Parbat and Myagdi district in the north, Tanahun in South, Lamjung and Manang district in the east and Syangja district in the west. Pokhara is district headquarter of the district that is perceived as a tourism place. (District profile, Kaski, 2060).

Pokhara is known as city of lake, where three big lake (Phewa, Begnas and Rupa) and four small lake (Khaste, Maldi, Dipang etc) exist nearby city. There is also world famous tourism places Shanti stupa, Sarangkot and Kahun danda view point, Patali Chhango (Davies fall), Mahendra cave, Bat cave, Gupteshwor cave, Seti gorge and world

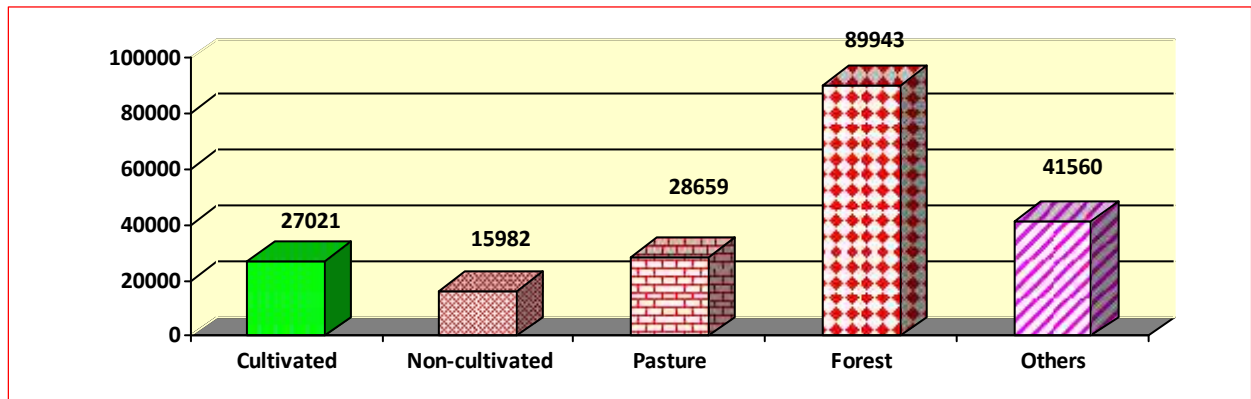
Figure 4.1: Religion in district



famous trail Annapurna trail. Beside that Mountain museum, British Gurkha Museum, Bindhya Basini Temple, Boudha Gumba Matepani are also famous religious and tourism places of this district. Beauties of Pokhara also mount from the Annapurna range of Himalaya and greenery mountains surrounding its periphery.

Total population of the district is 492098 out of which 48.03% are men and 51.97% are women

Figure 4.2: Distribution Land in Hectare



Source: Department of Survey, 2011

(Census 2011). Density of population is 189 /sq. KM. 91 % people living in the district are dependent on agriculture while remaining 9% are involved in business, trade, transportation and National and foreign employment. Literacy rate of this district is 72.10 % out of where men are 83.20% literate and women are 61.80%. In Pokhara there is one regional hospital and at different location Manipal Teaching Hospital, Phewa City Hospital, Sewa Hospital, Metro city hospital, and other Hospital including numbers of nursing homes are also available. (District profile, Kaski, 2060).

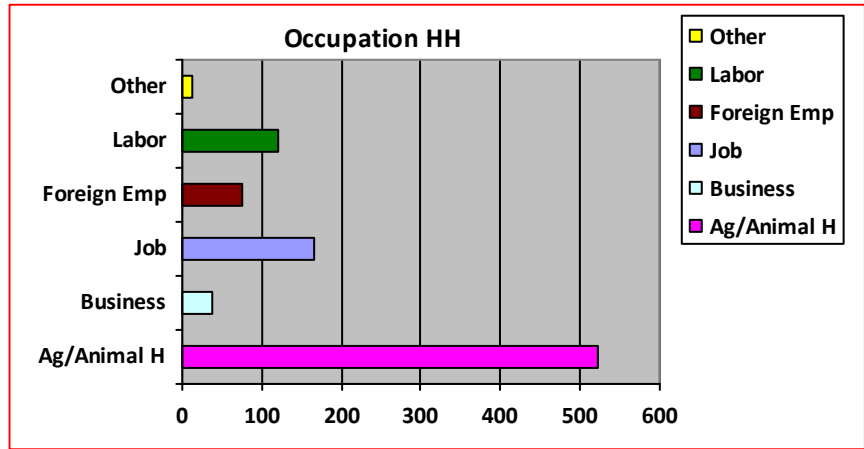
In this district 31.35% land is irrigated land The main Irrigation System are Begnas irrigation system, Fewa Irrigation System, Bijayapur Irrigation system and some of the traditional irrigation channel are the basic means of irrigation facilities. Main cereal crops in the district are Paddy, Maize, Millet, Wheat and Barley (District Profile, Kaksi, 2060)

The district stretches between 83°40' E to 84°12'E longitude and between 28°06' N to 28°36' N latitude. Total area of this district is 2017 sq. km. and the elevation of 450 to 8091 meters above from mean sea level. Climate of this district is differ due to the variance of height from sea level. Temperature maximum 37.4 and minimum 1.8 degree Celsius is recorded. Kaski is top

rainy area of Nepal as recorded average rainfall is 250 ml per year. Most of the rains occur by to east Manson. (District profile, Kaski, 2060).

Figure 4.3: Main Occupation VDC

The major religions are Hindu and Boudha, and castes in the district are Chhteri, Brahmin, Gurung, Newar and Dalits(BK, Sarki). Similarly, minor castes having low population are Tamang, Magar, (District Profile, Kaski, 2060).

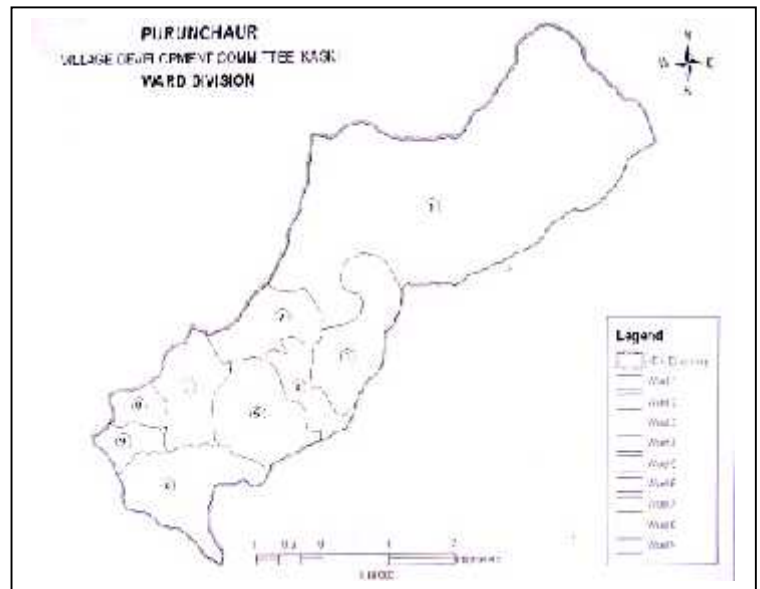


Source: District Profile Kaski, 2060

According to census 2011 Major Languages spoken in these areas are Nepali (76.79%) and Gurung(14.78%) Newar (3.12%), Magar (1.66%) Tamang (1.4%), Hindi (0.5%), Thakali (0.33%) . Main religions are Hindu and Buddha.

Map:4.2 Map of Puranchaur VDC

The trend of in-migration from rural areas to urban area as well as from the Syangja, Parabat, Tanahun, Myagdi, Baglung of the region is high. In the district, there are in total 136 government offices including administration, security, court, and other offices (District Profile, Kaski 2060).



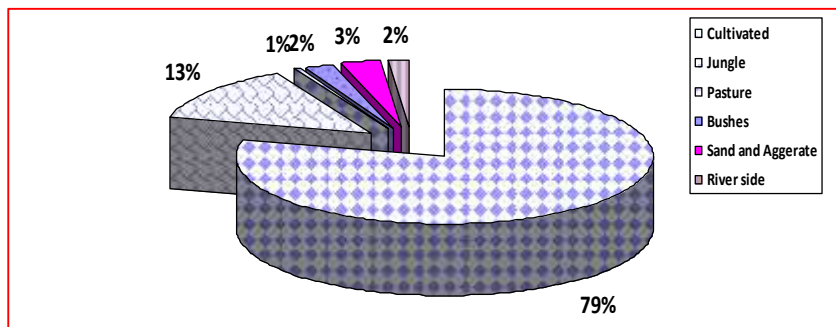
4.2. A glimpse of Puranchar VDC:

Puranchaur VDC is situated between 28⁰16'41" N to 28⁰ 20'28" N latitude and 83⁰56'04" E to 84⁰01'16"E longitude. Total area of VDC is 18.67 Sq Km and the elevation between 980 m to 2640 m above sea level. Climate of this VDC is semi-tropical and temperature minimum 3⁰ to maximum 33⁰ celsius. Average yearly rainfall in this VDC is 3353

mm. This VDC is surrounded by Armala VDC in east, Shardikhola, Lahachok, Ghachok VDC in west, Shardikhola in north and Hemja and Lamachaur in south. Total household of this VDC is 865 and population is 3597 where male population is 1641(45.62%) and female population is 1956(54.38%) (Census 2011). Main occupation is agriculture. Main caste in this VDC is Brahmin, Chhetri, Sarki, Gurung, Gharti, Newar, Kami, and Damai where religiously dominated by Hindu 99.26%, Boudha 0.64% and Christian 0.1%. Literacy rate of this VDC is 83.38% out of which men are 54.30% and female are 45.69%. Cultivated land of this VDC is 63.93 Sq km and non cultivated land is 11.16 sq km. There are one Higher Secondary School, one Lower secondary school and 6 Primary school serve 949 student out of which girls are 512 and boys are 437 (only govt. school)

Figure 4.4: Land Use pattern

Puranchaur VDC is having land use as 79% cultivated, 13% jungle, 3% sand and aggregate, 2% river side, 2% bushes, and 1% pasture. It shows that the Purnachaur VDC have land using as a cultivated for the cereal crops and vegetable which is more than overall land using pattern of Nepal.



Source VDC Profile

Photo 4.1: Comand area of Project



4.3 Project Description

Shardikhola Puranchaur Irrigation system is one of the successful irrigation systems among the hill irrigation system in Nepal constructed by Nepal Irrigation Sector Project (NISP). Before this

project farmer of Puranchaur were fulfilling their demand of water for the irrigation of their land by three small traditional seasonal irrigation canals. They are facing so many problem from that

temporarily prepared traditional irrigation canal like seepage of water from the canal course, inadequacy of water causes conflict within the community people. As resulting that their cropping pattern is non-water This project is initiated by local leader and Regional Divisional Engineer of Irrigation Office, Dr. Guna Nidhi Poudel, who is resident of Puranchaur VDC. The proposed source of this project is from Bhurjung khola. When the feasibility team is arrived, one local leader

from that village disagreed for that source and complaint to the District Administration office for the cancellation of that project. After facing legal problem people finally decided to do pre-feasibility from the alternate source as a

Photo 4.2: Glance of Shardikhola head works



Shardikhola, which is about four Km distance from that source. Technical team of the NISP were concerned about the cost per capita which is one of the major factor of the feasibility of

the project because of the lengthened canal length proposed than previously. People from Puranchaur were very much eager to construct canal for the change of their economic condition benefit from the improvement of cropping pattern and increase production value of the land.

Photo 4.3: Culvert Bridge over Bhurjungkola



After a long discussion made with project personal and users it was agreed to propose the lining of the canal in only critical area which reduce the project cost. There is also some deviation in actual land and proposed irrigated land in estimate which also take place to reduce the cost per capita of the project. After the completion of the design estimate community people, local leaders including Member of Parliament went to Kathmandu and visit several times at regional irrigation office for the make rise public pressure to the authority for the placement of project in National Planning Commission (redbook).

Present Puranchaur Irrigation System includes 9 KM main canal and design command area is 350 hectare including 150 hectare

Figure Photo 4.4: Earthen Canal near village

in Shardikhola VDC. There is one branch canal provisioned for Shardikhola VDC, because of the using source of Shardikhola. The main structures constructed in this projects are Headworks including desilting basin at Shardikhola, big culvert bridge about 30 m span at Bhurjungkhola and smaller in several placed, underground canal near village and water regulator gates, chaukidar quarter for water care taker near head works and



Water User Committee office and chaukidar quarter at village and lined canal.

4.4 Water User Committee of Shardikhola Puranchaur irrigation System

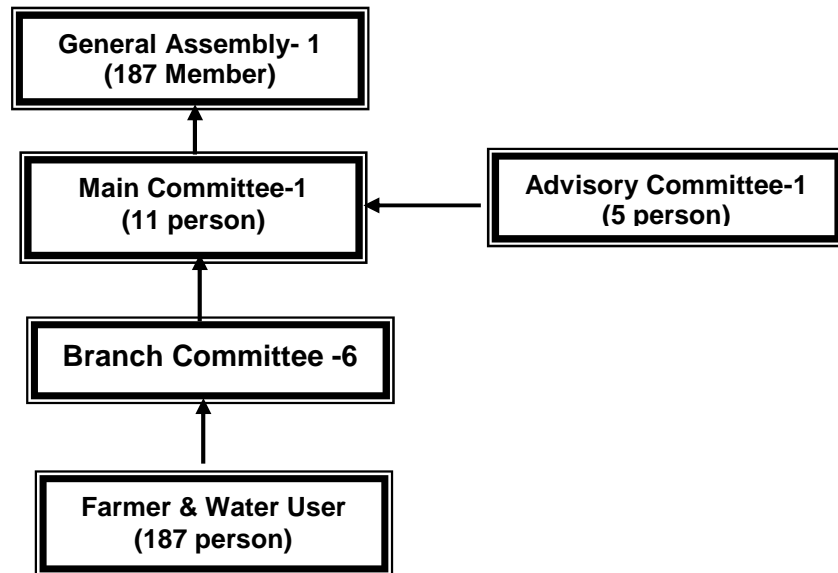
From the beginning there is the existence of unregistered locally acceptable Water User Committee operating the traditional irrigation management system in each small traditional small canal. As mentioned above that the canal is purposed to irrigate paddy in rainy season only. They are mainly responsible for tracking some small budget from the VDC body and manage local dispute among the farmer regarding the irrigating matter.

However after the establishment of the Project, the Irrigation system is managed and monitoring and operationalized by user committee, nominated by the mass meeting of users as guided by

the NGO act of Nepal. The system is one of the model systems of farmer managed irrigation system in Nepal. The Water User Committee govern every dimension of system (operation and maintenance, resource pooling, conflict mitigation, coordination networking, information sharing). This Water User Committee is registered in the District Administration Office, Kaski, as a NGO on 2050 under the NGO registration act 2034. Mr. Dipak Poudel, Chairperson of the Shardikhola Puranchaur Water User Committee, continuously chaired since the registration of this Water User Committee. Users of the irrigation system recognized his leadership from the beginning of registration as he is a leading social worker and Principle of higher secondary school as well. People are admiring him as a frontline leader and not challenged his leadership because of most of people think that his leadership is key factor for the regular and continuing availability of water from the canal which the main factor of change their socio economic condition. Some member of Water User Committee changed several times by the General Assembly but Chairperson is unchanged from its evolution which is also one of major elements for the sustainability of this irrigation project.

Organizational Structure of Shardikhola Puranchaur Irrigation System

Figure 4.5: Organizational Structure of WUC



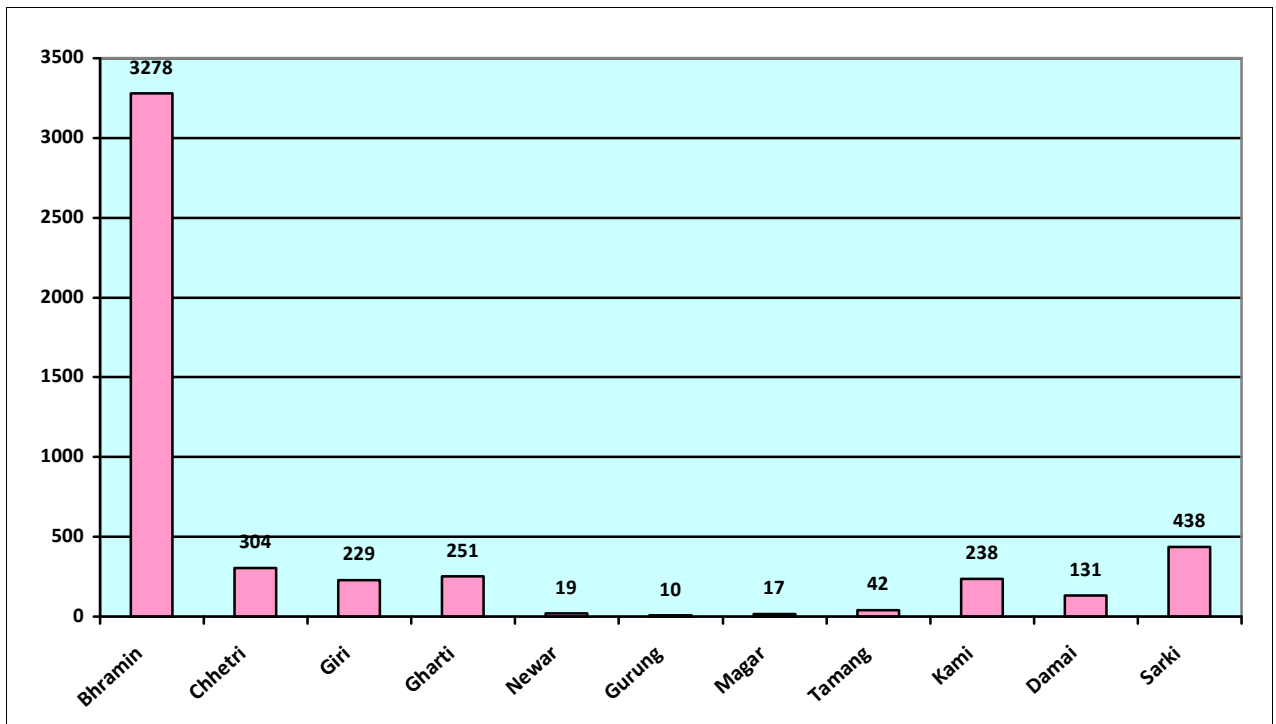
CHAPTER V: PARTICIPATORY GOVERNANCE IN IRRIGATION CANAL MANAGEMENT

The main aims of this chapter are to examine the participatory governance and the socio culture aspects of the irrigation water users and what kind of roles, women and men do in irrigation management and off-farm related tasks. It also tries to find out the factors that affect the involvement of women in irrigation and needed action for enhancing the participation of women in irrigation management.

5.1 Caste/ Ethnic Distribution

According to VDC Profile, total population of VDC is distributed as 3278 Bhramin, 304 Chhetri, 229, Giri, 251 Gharti, 19 Newar, 10 Gurung, 17 Magar, 42 Tamang, 238 Kami, 131 Damai 438 Sarki

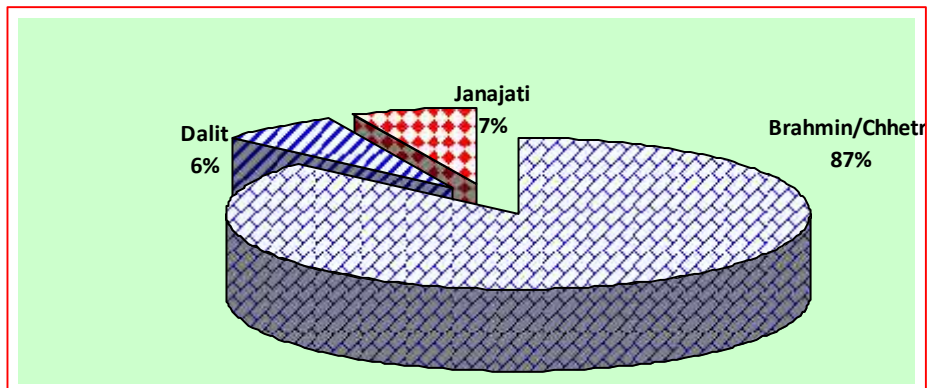
Figure 5.1: Caste distribution in Puranchaur VDC, Kaski



Source: VDC Profile Puranchaur, 2011

According to VDC profile Puranchaur VDC, 2011 is densely populated with Brahmin and Chhetri. In the Nepali context Brahmin and Chhetri are so called upper caste and their socio economic condition is comparatively higher than other caste. Before the Irrigation canal was complete the living condition of people was so poor but after the project they are involved in cash crop and produce high valued crop and rise the living standard. Eventually the high caste people has more land and they are benefitted more than other caste

Figure 5.2: Castewise households of users

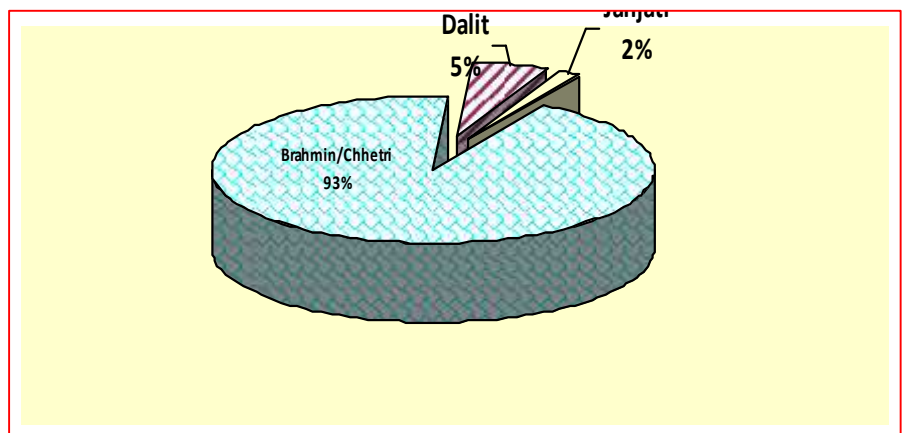


Source: VDC Puranchaur, 2011

Castewise Landholding

The landholding percent shows that brahmin chhetri hold 93% of land so that the benefit from that canal is ultimately for those people who have land. In my observation there is dairy cooperatives and vegetable cooperatives whis manage the market

Figure 5.3: Castewise land hold in Ropani



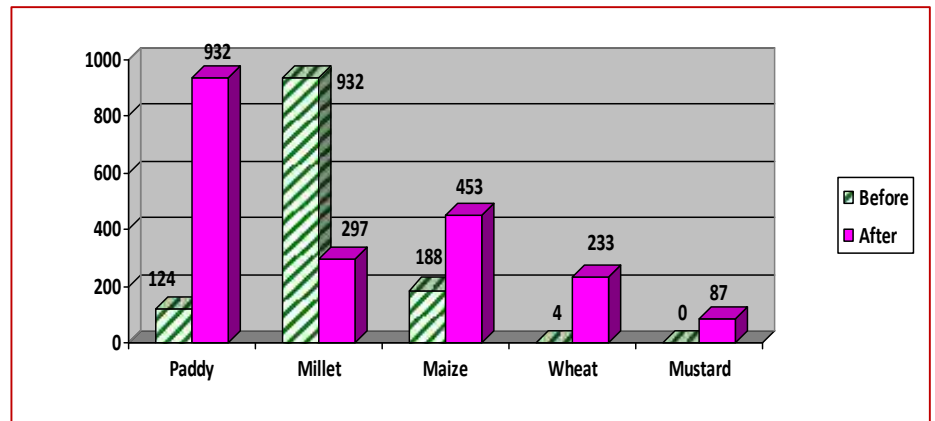
Source: VDC Puranchaur, 2011

for agri productions. In this context the irrigation canal change the socio economic condition of people.

5.2 Production

The data clearly mentioned that the cropping pattern of the command area is totally differ than before. People are changing from millet production to paddy and vegetable farming. Most of the households are involved in commercial vegetable farming and they are earning more and more money which has changed socio economic condition of the people of that area.

Figure 5.4: Production before and After Canal



Source: VDC Puranchaur, 2011

5.3 Cognitive

Nepal is full of mysteries. People in this country have local knowledge and believes. When canal work was in progress the contractor was digging a tunnel about 25 M length. They were trying to dig from both way but they are not able to met. When one priest suggest to them to pray god with a male goat. When they agreed to slaughter a male goat and worship god then fortunately the two end of tunnel was met and tunnel work was successfully completed. This is a simple myth of the peoples

Nag (Snake Puja) Worship

When Irrigation Project is completed there is problem in canal because of small slide in many places. People are suffered to escape from that problem. When they are facing too problem they decided to call faith-Heller request for solve the problem. He suggested them to worship the Snake(Nag) at intake area for escape from that problem. They worship the Nag in Nag-panchami in intake area. Fortunately after worship in the area they are not face that types of problem. Nowadys they collect some money and adding from IWUC for the worship by a Male Ram. They continue every year for worship God Nag (Snake) to save their Canal.

belief in god. This is reflected in the participatory governance pattern of irrigation canal.

For the irrigation water users participation ensures effective utilization of available resources, work in tandem towards achieving their objectives, make the project more cost-effective and deciding the objectives and strategies. All these improve efficiency and lack of people's involvement has been seen as one of the major causes of the failure of most projects in other part of Nepal, but not here in Shardikhola, Puranchaur VDC.

Many development interventions have been seen to create a kind of dependence syndrome. For instance, in Nepal, because of wide spread government development programs, people have started looking to the government for solutions to every problem that they face. If the local resources however both human and material are utilized on the basis of decision taken by the people themselves as in Puranchaur, the realization grows that many problems faced by the people have local solutions at their levels. With active involvement of the local people, it is possible not only to break the mentality of dependence but also to increase their awareness, self-confidence, and control of the development process.

In Shardikhola Puranchaur Participatory interventions are directed towards the up-liftment of the weaker sections of society. Despite professed target groups and attempts to cover the weaker sections, however, objectives have been at best only partially successful. The non-poor, the elite, and the powerful corner off the society more benefited. People's participation is a potent way of ensuring the flow of the benefits to the target group, cost-effective operations and ensure that resources available for wider coverage of the weaker sections of society than would otherwise be possible.

Generally, development interventions are funded either by government or by donors' agencies. Experience has shown that development interventions from the externally assisted projects fail to sustain the required level of development activity once support or inputs are diminished or withdrawn by the funding agencies. People's participation is regarded as an essential prerequisite for the continuity of the activities. But in the case of Puranchaur the involvement of the local people and the utilization of local resources generate a sense of ownership over the project by the people. The sense of ownership is essential for the sustainability of the interventions.

The irrigation tasks are inevitably related to agriculture activities. It does not exclude agriculture and household tasks while studying the role of women in irrigation. Therefore, there is a need to explore the involvement of men and women in different activities to understand whether or not the women have enough time for participating in irrigation and how much they are playing role in irrigation management.

5.6 Gender participation in Agriculture-related Activities

Agriculture is the main occupation of farmers of Shardikhola Puranchaur Irrigation System command area. The involvement of men and women in case of paddy crop and in different tasks, following table shows the scenario of their role in participation in agriculture related tasks.

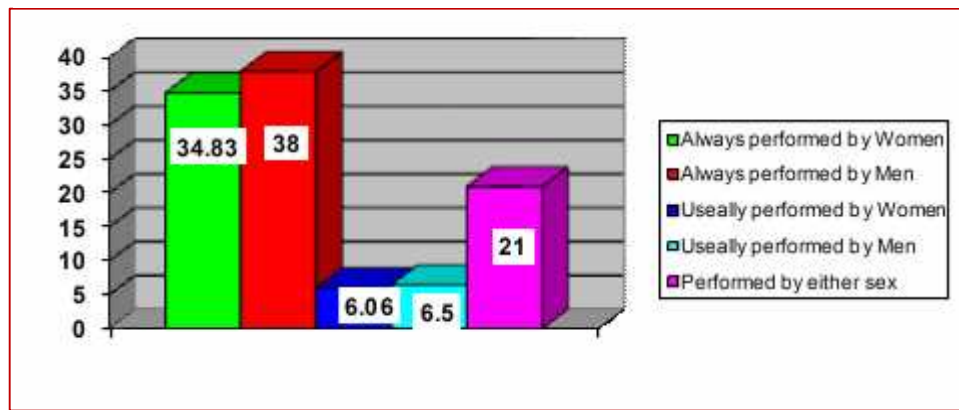
Table 5.1: Activities related to Agriculture

SN	Activities	Shardikhola Puranchaur I System				
		Always performed by		Usually performed by		By Either sex
		Women	Men	Women	Men	
1	Selection of seeds	11	50	7	7	25
2	Shifting of seeds	18	43	4	7	28
3	Preparation of seeds	18	43	11	7	21
4	Seed bed preparation	7	56	7	11	19
5	Field plowing	4	89	0	7	0
6	Ridging	10	54	7	10	19
7	Paddy transplanting	50	21	4	7	18
8	Weeding	61	7	14	7	11
9	Manure application	7	71	4	7	11
10	Crops harvesting	39	25	11	11	14
11	Threshing	0	79	0	7	14
12	Storing	64	14	7	4	43
13	Marketing/ selling	21	50	4	14	43

Source: Field Survey, 2012

The finding implies that agricultural works are not exclusively men tasks only as sometime perceived. More than half of the men take most of the agricultural decisions alone. Basically, women much more often do the labor

Figure 5.5: Work performance on Agriculture related activities



Source: Field Survey. 2012

intensive task of transplanting, weeding, storing, sweeping courtyards, food cooking, tending Children, grass cutting. But men exclusively controls major decisive and technology-intensive tasks such as Selection of seeds, Manure application, marketing selling, plowing, field preparation etc. Agriculture related activities are a preliminary and important task of farming which determines the production of crops. In the research area, most of the activities performed by men or by either sex. Low participation of women in this activity is mainly due to long patriarchal traditional and practices still exist in the community as well as low educational and awareness level among the women. In addition, respondent of the Shardikhola Puranchaur Irrigation System (SPIS) express that the reason for low women participation in the command area is negligent characteristics of men member towards women performances. Women spend about two-thirds of their time in performing the daily household chores. They wake up early in the morning to manage and handle all the household chores.

5.7 Gender Participation in Activities Related to Irrigation Management

In Nepal, the local people have their own strategies of choice, mechanisms and approaches to learn, cope and manage irrigation system and water norms, values, beliefs, perception, power, religious feeling. Culture and tradition also influence the participation of men and women in irrigation system. So it is equally important to understand the history of irrigation system and rules, modalities, uses and customs in this society, and the criteria on which they are based.

Without proper irrigation facilities, good production of crops is not possible. An irrigation system could be viewed as a combination of technical, organizational and social elements as it includes construction and management of different activities through interactions of people.

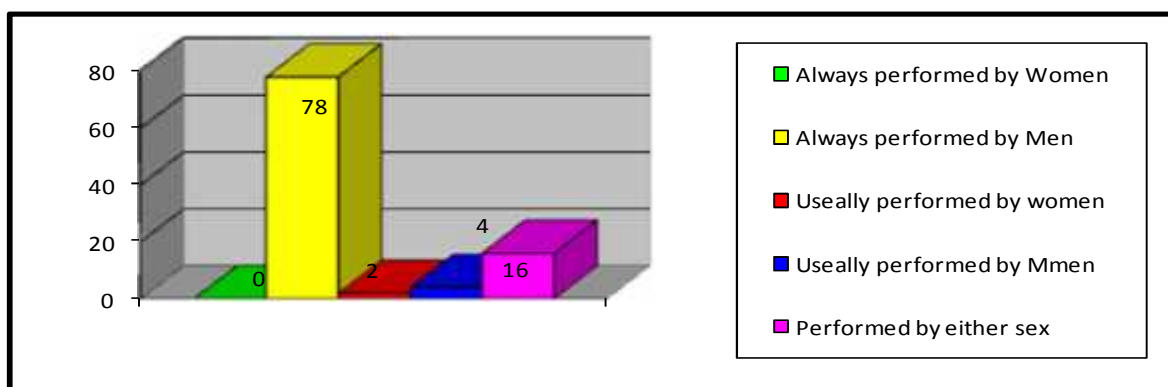
Table 5.2: Activities related to Irrigation Management

S N	Activities	Puranchaur Irrigation System				
		Always performed by		Usually performed by		By Either sex
		Women	Men	Women	Men	
1	Canal design	0	92	0	0	8
2	Operation & Management	0	74	3	5	18
3	Water acquisition, allocation & distribution	0	84	3	5	8
4	Applying irrigation	0	63	3	5	29
	Average % of Irrigation Management	0	78 %	2 %	4 %	16 %

Source: Field Survey 2012

Women Irrigators in the study area are small but hitherto, a rather neglected group. Beliefs on traditional practices and patriarchal sense, women are not considered as a beneficiary's co-worker for irrigation management as well as operation and maintenance functions. Only labor-intensive tasks are mainly women's chores that are not recognized as an economic undertaking properly in the society. The management functions of the irrigation system are taken over by the men segment of the society. Mostly in Shardikhola Puranchaur Irrigation System (SPIS), women are not confident to participate in mixed group meetings with men due to cultural inhibition and lack of knowledge about the distribution system. They also felt that they had been included as Water User Committee member simply to meet the government's mandated quota for women. During the discussion of information collection in SPIS, one of the poor women representing from the tail end of branch canal expressed that "if men farmers have taken water in turn of a women, then it is difficult for her to win the battle. For example, the other farmer will admit immediately that he is wrong but will not change his practice". In SPIS, more than 84 percent men control the Operation and Maintenance tasks whereas less than 16 percent men and women performed the task together

Figure 5.6: Activities related to Irrigation Management



Source: Field Survey, 2012

Table 5.3 : Performance related to organization

S N	Activities	Puranchaur Irrigation System				
		Always performed by		Usually performed by		By Either sex
		Women	Men	Women	Men	
1	Decision making	3	87	0	3	8
2	Communication	0	92	0	0	8
3	Resources mobilization	0	89	0	0	11
4	Conflict management	0	76	0	0	24
	Average % of Irrigation Management	0 %	86 %	0 %	1 %	13 %

Above table clearly shows that Women in the Puranchaur community are not involved in the management aspect of the irrigation project

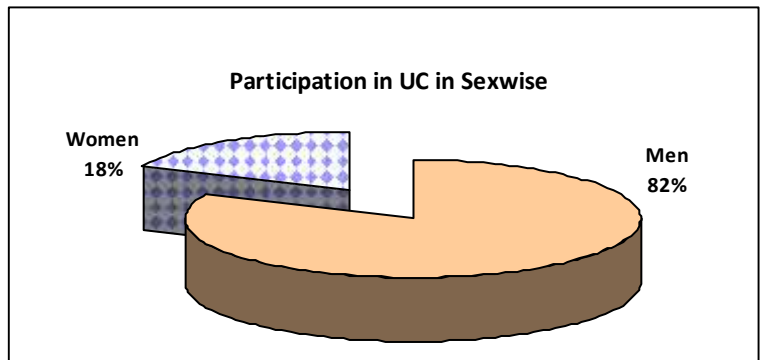
Table 5.4: Women's participation in WUC structure

Position	Main Canal Committee		Branch Canal Committee	
	Men	Women	Men	Women
Chairperson	1		6	
Vice-chairperson	0	0		
Secretary	1	0		
Treasurer	1	0		0
Joint Secretary	0	1		
Members	6	1		59
Total	9	2	6	0
%	77.78%	22.22%	100%	0%

In the structure of Irrigation water user committee participation of women is 22.22% which is lower than the instructed by the constitution of the Water User Committee 30%. There are no women in the Branch Canal Coordinators.

The tenure of the executive committee is five years. The main aims of formation of the Water User Committee are to mobilize farmers' participation in project preparation and implementation, raise farmers' contribution to irrigation development, and to prepare them to take over the future operation and maintenance of the irrigation systems after the completion of the project.

Figure 5.7: Women's participation in all WUC structure



Source: Field Survey, 2012

5.8 Prospects and Constraints for Women's Participation in Irrigation

5.8.1 Prospects for Women's Participation in Irrigation:

a. Government policy

The Irrigation Policy 2003 requires the participation of at least 33% women bearing in mind fair representation of dalits, disadvantaged and Janjati ethnic groups. This research which is based on the data available from respective sample from Water User Committee reveals that on an average 22 percent women were represented in Water User Committee. Women's role in irrigation was not realized well till late. It was only after the introduction of Irrigation Policy 1992 that women's participation was made mandatory and gradually farmers have realized that women's involvement in decision-making can make a difference. Positive results were noted where women were included in terms of regularity in attending Water User Committee meetings, conflict management, and better use of irrigation water. Training in gender too was found useful in changing the attitudes of men and women in getting more involvement of women in decision-making.

b. Agencies, Irrigation Water User Committee, Donor support

Men Farmers themselves generally manage the irrigation systems taking all the responsibility. As reported the respondent gender sensitive towards to building gender responsive water users' associations has been useful initiatives. The initiative has been instrumental in creating as innovative institutional structure women group as an aid Water User Committee amending the Water User Committee constitution to allow membership of wives and adults men and women children of landowning households and provide incentives for women's participation through training and leadership opportunities. They also took opportunities and necessity as a major scope of work concerning second-generation issues as a bridging development intervention. As a result the projects increased women's representation in Water User Committee. Moreover, as government policy enforced, Water User Committee themselves amended their constitution to have at least 33 percent of women representation, but still the involvement of women in this project is minimum.

Women Empowerment:

Empowerment is enhanced if poverty is reduced to a desirable level. Poor farmers had increased their bargaining power with the membership in Water User Committee. Singly they did not have access to water when they really needed. But membership in a Water User Committee had authorized them to take advantage of water distribution scheduling. Poor mostly as the tail ends in an irrigation system were the neglected segment of their neighborhood before they entered the Water User Committee (WUC) but once they entered the group, they were empowered by the Water User Committee constitutions. Forming Women Sensitization Groups (WSGs) supported broader goals of increased social and economical empowerment of women. Through their involvement in WSGs, women have expanded their network and increased their access to information and service.

At the individual level, capacity building training has enabled women to gain firm understanding of the irrigation system which in turn boosted their confidence to participate in decision-making processes and speak up in the Water User Committee meetings. With the support from the Water User Committee, the WSGs members participated in governance, institutional and management training in Shardikhola Puranchaur Irrigation System (SPIS), WSG members are initiated, economic empowerment is done through member based saving

credit scheme. In additions, women participation in different Water User Committee activities, meetings, training, and workshop has been increasing significantly despite several hitches.

5.8.2 Constraints for Women's Participation in Irrigation

a. Lack of recognition of Women as Irrigators and Water Users

The biggest impediment to establishing legitimacy for women's need for individual water rights is the lack of recognition of women as irrigators and water users. This is the partly due to the traditional thinking about irrigation, which has long neglect any consideration of users and users' needs. It has also strengthened the prevailing belief that women as a group, do not have to bet treated as serious actors in irrigation context and as serious competitors for irrigation land and irrigation water. It has, in short, allowed women to be treated as "different", instead of as "equal" to men. There were various factors that affected women's participation in the Water User Committee. The view of the respondents in SPIS is as follows:

Irrigation management was totally men dominated activity. Most of the men still feel that 'this is none of women's businesses'. When such attitude prevails what would happen to the household when there is no men member? How do they irrigate their land? In the question whether there are many problems for women-headed households to use water during cultivation time? Most of the respondents gave positive answer to this question. The widows and the women-headed households are facing problem due to the absence of men member in the family. When there is no proper water distribution system men got hold of water, mostly by those who are at the head side of canal system. When there is not enough water in the canal and then women would be victims of the scarcity. The women respondents revealed that men do not listen to women's voice they get least privilege when men are active in the canal. They get the chance only after the men have irrigated their land even if her land situates above his.

Table 5.5: Factors Constraining Women’s Participation in Water User Committee

Respondents/Conal System	MCs	BCCs
DIO personnel, Ex-VDC Chairperson	<ul style="list-style-type: none"> • Women from the Brahmin caste • Men dominated society • Backwardness • Poverty • Illiteracy, traditionally assigned • household chores 	<ul style="list-style-type: none"> • Household chores • Women are weaker than men. • Illiteracy • Less time • Disadvantaged groups have problems • Depended on husband • Men also do not cooperate
Men WUCs	<ul style="list-style-type: none"> • Not habituated due to tradition • Physical strength • Not active • Parda system • Non cooperation from men • Lack of self confidence among women 	<ul style="list-style-type: none"> • Domestic chores • Men domination • Buharis (daughter in-law) have problems in getting permission
Women WUCs	<ul style="list-style-type: none"> • No cooperation from family • Need help to create awareness • No one listens to our voices • If we speak they think we are smart and do not like it • Men do not like women to come in the front • They feel dominated if we come forward • They dislike smart women • Men pressure • Women are hesitant • Family pressure • Women do not cooperate themselves 	<ul style="list-style-type: none"> • Family do not allow • Problems in family • Dominating attitude of men • Women themselves are hesitant • Lack of awareness

Source: Field Survey 2012

5.9 Implication of Participatory Governance Practice

5.9.1 Understanding on Participatory Governance

The term "governance" is defined variously by different sector's professionals, which are very interesting. Definition of UNDP, ADB and World Bank (2004) that the good governance is a situation of well managed services, equal treatment to all citizen, maintained core value of the state at all level of structures of agencies and individuals, following rule of law in every step of action, appropriate use and management of natural resources, making decisions in participatory way and moving the state with winning moral among every citizen in the state. The above situation brings better environment, where being action of well partnership between government, civil society and private sectors in practicing the good governance. Mostly the views of NGOs and INGOs are found concentrated towards action side of the government institutions, civil society and private sectors. The expressions have mostly stressed the elements; transparency, participatory, rule of law, responsiveness, for establishing good governance in the state.

Based on the above views, the common definition of the term good governance in the context of Shadikhola Puranchaur Irrigation Project could draw that "Participatory Governance here is the situation of performing well partnership among people and people, government, civil society and different sectors in social development process of the society, where all actors perform their roles well as expectation of other players and audience, which reflects; accountability, transparency, participatory, efficiency, effectiveness and predictability in their actions with trustworthy environment in the society. The exercise and behavior creates the environment of happy and winning situation among all stakeholders and maintained dynamic social action in the society".

5.9.2 Political Situation

The successful Constitution Assembly (CA) election and first meeting of Constitution Assembly declare Nepal as a republic Nepal. Yet the moment coalition governments could not be able to maintain political stability in the country. Members of parliaments loosed their core values during course of performing their role in their respective institutions. Some Members of Parliaments were involved in Red Passport selling case. CA member were less interest in building constitution and only focused on preparation of government. Along with the partiality,

they started corruption in most of the case of government actions. Due to the situation, the tendency of being rich is raised among all politicians, it raised their ambition, increased personal conflict and at last some of the parties divided into different small parties. The situation has created a trustless environment in the society among politicians, political parties and people. At the same time, few elite classes and high level merchants captured the politicians to make every decision on their favor in the state than almost all poor and marginalized people left out from the main-stream of the development in Nepal. This political situation has created an adverse situation in the Shardikhola Puranchaur irrigation. People are divided on party lines still but seem working for the development of their project in user group.

The bureaucracy of Nepal could not be capable and independent on the basis of norms and value of the state. Always, the mechanism became unstable and drastically changed along with the changing pattern of government bodies. Unlikely only few (who stay around the authority holders) persons hold the public administration and service centers and took unlimited benefits. In this way, fair and right persons kept at backside, which created dissatisfaction and frustration among bureaucratic mechanism. Among these dissatisfactions, the influence of ministers affected the mechanism to practices partiality on providing their services and resources on the basis of inline and outline of their political ideology and membership of the parties towards the service receivers. This environment paralyzed all norms and values of public administration along with the aim of the constitution of the Nepal. This situation also increased intension for taking bribe from service receivers of government service mechanism because they had already lost the "carrot and stick" policy and performance appraisal system in right way. The country fell into high level of corruption, lost accountability, transparency, effectiveness, efficiency, responsiveness, rule of law into bureaucratic mechanism and created mistrusted environment between people and government service mechanism, which created a crisis of governance. The next very important and crucial perspective of program implementation is monitoring and evaluation, which is lacking in government mechanism.

There is limited access of poor, marginalized, women, Dalit and different ethnicity on the resources. They are left behind for participation of all decision making in development campaign. Only a few persons of elite classes have invisibly controlled the water resources on their personal interest and favor. There has been an overall impact of these political situations on different development projects including this Shardikhola Puranchaur Irrigation Project. The

respondent responses clarify that the wealthiest the loudest and the most powerful people have the demanding role in the Project, although the voice of common people is also heard.

5.9.3 Status of Decentralization and Peoples' Participation

The constitution of Nepal has given emphasis that the prime responsibility of the state is to maintain conditions suitable to enjoy the fruits of democracy through wider participation of the people in the governance of the country. Government has instituted Local Self Governance Act (LSGA) with the aim of decentralization of the development process to the local authority and performing development system with wider participation to achieve the ambition of constitution regarding wider participation of people in governance process. But now, the act is in very difficult position for its right way implementation. Still, all traditional guidelines and policies of different departments under different ministries are active and all district level government agencies are following them thoroughly and the ministers and department chiefs are strongly tracking it. This is in line with autocratic prospect and in favor of interest of bureaucrats. The high amount of state resources is passing through this channel. Likewise, all District Development Committees (DDCs) and Village Development Committees (VDCs) structures are out of leadership from past long duration due to completion of their tenure and problem of next election. During the period, when the representatives were in their respective institutions, the involvement of people in governance procedure of development process was not encouraging. There has not been practice of good exercise in cluster and ward level planning with the well involvement of Dalit, women and poor due to their low level of awareness. DDC and VDC level representatives were also not been able to practice LSGA in right way due to their low level of understanding on participatory development approach and having them high level of political biasness. Based on the scenario, the involvement of people in governance procedure was very poor. Different non-government agencies have paid a regular and high level of effort to raise awareness and building capacity of civic and local bodies but, due to being the low level of socio-economical status in Nepalese society, the achievement of the effort is very limited.

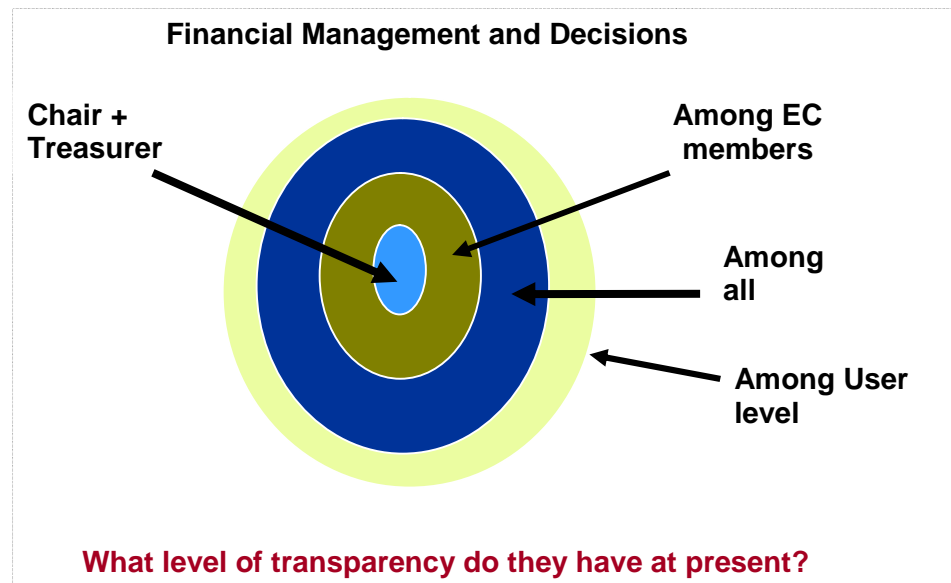
5.10 Governance Practices in Irrigation Management (Transparency)

In Shardikhola Puranchaur Irrigation Project information is freely available and directly accessible to those who will be affected by such decisions and their enforcement. Decisions taken and their enforcement are done in a manner that follows rules and regulations. I also mean

the dissemination of all types of information, program, budget, expenditure, implementation, decision, rules and regulation in accessible means to the all stakeholders and respective person.

One of the most important factors for maintaining a good governance and social harmony is maintaining transparency; public auditing is also the key element of transparency.

Figure 5.8: Transparency



Source: CARE Nepals Public auditing policies and Training Manual, 2002

5.10.1 Conceptual Framework of public auditing

The conceptual framework has been developed to find out the impacts of public audit in functional activity. In this regards the impact of public audit is considered as change in decision-making role and improved household livelihood. Similarly, increased awareness on social and economic issues, increased participation in functional activities, access to and use of resources, build up confidence and self respect, increased the account record keeping, verification and review of figure data are considered effect and efficient of public auditing program.

The conceptual framework tries to explain how the certain variables influence to the impact of build up transparent. Traditional role of public audit, changed roles in decision-making, perception, presentation about audit's involvement in Water User Committee in management in Shardikhola Puranchaur and other functional activity and influencing factors for public audit's

role were taken into account record keeping, verification of figure data and sufficient supporting documents for the analysis of findings.

5.10.2 Process of public auditing

5.10.2.1 Definition of Public Auditing:

Public audit is an examination of records to establish their reliability and the reliability of budget verses expenses statement drawn from them - (A.W. Hanson, 2002)

Public auditing is a systematic examination of the books and records of the program expenses in order to ascertain or verify and to report upon, the facts regarding its financial operation and the result (Montgomery, 2003).

Public auditing is an important development tool that fosters program improvements and works by increasing people's confidence in the development process and each other- (Dhruba Gautam, 2000)

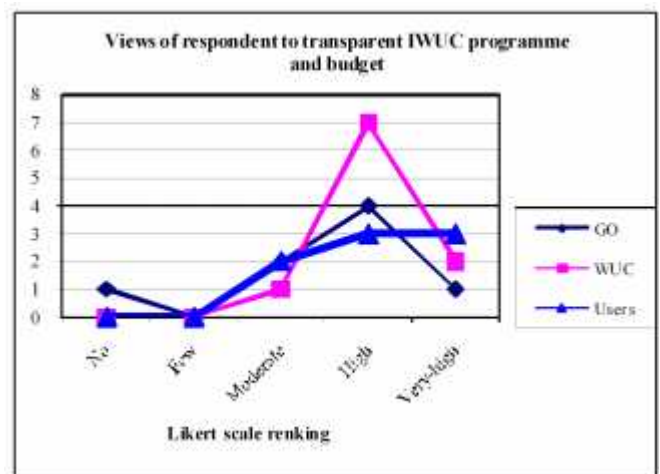
5.10.2.2 Resource utilization by household:

Control of elites on decision-making assessed and found that, people perceive it as good qualitative distribution. The irrigation user committee was increasingly fulfilling basic agriculture needs of the poor if compared with the old agriculture production management system, where the benefits were obtained by powerful and elite people. According to the majority of the respondents (55%), the condition of agriculture production is highly improved after completion of the irrigation canal project. Natural regeneration, composition and seasonal cultivation also increased. The user committee and beneficiaries has been distributing resources of irrigation as a proportionally. The user group was proportionally distributed resources based on present land implemented by Water User Committee of Shrdikhola Puranchaur Irrigation System.

5.10.2.3 Transparency Status on Program and Budget

Respondents perceived that maintaining transparency in User Group' program, budget,

Figure 5.9: Status of transparency



and process is one of the key areas for improving governance system in their institutions. In like scale ranking of their perception on the issues of finding gaps of governance components and giving emphasis on improving the system, total of 43 percent respondents perceive that to improve the transparency status in UG's institutions is a very important task and 98 percent perceive as a important task for enhancing governance status in their institution and to play role of promoting good governance by them in the society. Few of total respondents, 25 percent agree that it is a moderate need and three percent doesn't seen to give a major emphasis for enhancing further more transparency in their institution.

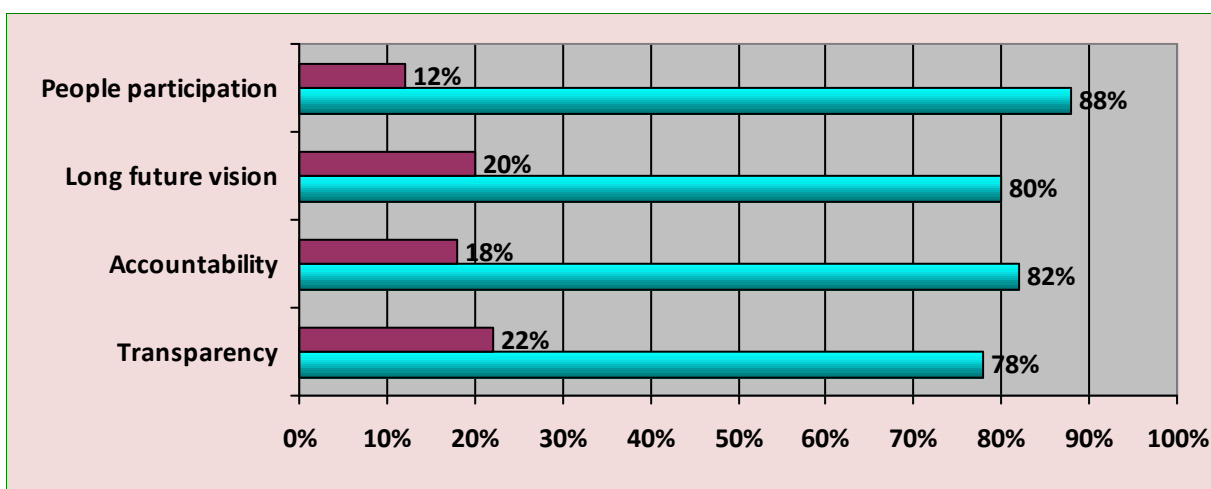
The level of emphasis of government on improving transparency status in Water User Committee society is little diverse. Government Organization advice to Water User Committee not be a bagger and to be accountable to civil society than donor. They also express some doubt on the reliability of Water User Committee reporting process, which they feel that the reports are more exaggerated than reality. Total of 60 percent respondents of government ranked their feeling that the Water User Committee have need to pay an important attention and 4% feel important for improving the level of transparency in their institution for achieving the status of well corporate governance.

Data shows that the status of transparency level into User Group is also in poor condition and the perception of all respondents has given high level of emphasis to enhance its status by bringing transparency in their program and budget. The Water User Committee society has also self realized the situation and diverted the aim of voluntarism because some Water User Committee are taking it as a personal business purpose. The right and encouraging thing is that the Water User Committee heartily accepted the weak areas of systems and procedures. Water User Committee also have given high importance to improve the working procedure of Water User Committee in transparent way but the Government Organization diversified views raised some question that either they are unfamiliar with the transparency process or they have some reservation to streamline in this movement.

5.10.2.4 Promoting Good Governance Practices in the Development Activities

Shardikhola Puranchaur Irrigation system User's Group is sincere about the participatory governance so that they maintained all the governance practice on community irrigation management practices. Perceptions on the transparency, accountability, future vision and people's participation are collected and analyzed. Transparency issue related to benefit flow is the subject of discussion due to local elites and in some cases every poor people also benefited, if not absolutely, worse off. So, transparency in opportunities (trainings, tours, benefit sharing) and punishments (abuse of rules and norms of operation project) studied. Rich and medium people agreed to the transparency in all processes, however, the poor were reluctant to answer (78 % strongly agreed, 22 % disagreed).

Figure 5.10: Perception of respondents about the governance practices



Source: Field Survey 2012

Beneficiaries 78% agreed with the transparency maintained, 82% agreed with accountability of committee members, 80% agreed with long future vision and the people participation 88% and they also disagreed as proportionally in percentage.

All beneficiaries of Shardikhola Puranchaur agreed that there was no maintenance taker who participated for every work that means users were followers of committee and they participated in irrigation development work if committee requested. It can be inferred from the result that if the committee had accountability and future vision and if they could have plans then the people would have been given the great support towards the Water User Committee of irrigation system.

5.10.2.5 Role to assist the user group in maintaining transparency

The large number (78 percent) of respondents representing the stakeholder, beneficiaries, community people and individuals from various social networks expressed the general view that user group has a vital role to ensure transparency in the Water User Committee overall functioning and responsibility. They have successfully completed in time with effective work performance.

Water User Committee found one step ahead regarding positive thinker, Water User Committee is building gradually their confidence to work more on this sector and Government official is also in positive way to work jointly with Water User Committee sector for improving their systems and procedure in transparent way.

5.10.2.6 Role to promote participatory action in governance

78% of the respondents concluded that Water User Committee have a significant role to influence the beneficiary in seeking widespread participation in its policies and program for the prevalence of good governance. Among the respondents from different sectors who attached an overly prominent role to the Water User Committee in influencing the government to seek widespread participation for good governance, the respondents of the Water User Committee (78 %). This percentage is the highest among the respondents attaching great importance to the role of Water User Committee for the said mission.

On the origin of the Water User Committee and the people centered development approaches being taken up by them, the respondents of different social sectors responded that almost all the Water User Committee has their roots of origin on community based welfare organizations, which are indigenous in their characteristics. This nature of the origin of Water User Committee has enabled them to acknowledge the problems and prospects of the people that they are working with. They have in turn been rated highly successful in seeking peoples' participation. This reality well explains the role that the Water User Committee can play towards influencing the community in its efforts towards seeking widespread participation for good governance.

5.10.2.7 Major concerns of Water User Committee members raised in the Public Audit

Most of the users raised the issues that the meeting of the Water User Committee was not held in regular basis as mentioned in the constitution. The Water User Committee meeting only focused in collecting fund from the users. They also said that main decisions were not share to

users properly. Some member are not settled advance and outstanding dues in time. Operation and maintenance plan which they made not properly and timely implemented. Water User Committee must have knowledge in account and book keeping.

5.10.2.8 Change role of public auditing in Water User Committee

Public audit means has a limited time in which to complete their work, so they concentrate on testing the validity of a sample of transactions and results rather than vigorously checking. Public assessment report has furnished the different role of public auditing between traditional and new change.

Table 5.6 : Changed role of Public Audit in Water User Committee

SN	Particulars	Traditional role of public auditing	New role process of public auditing
1	Representation	Formal representation of certain persons, but not all	Beneficiary, stakeholder, women, Dalit and Janjati actively represented in meeting
2	Participation	No active participation and no equal chance to speak	Increasing participation of women, Dalit, Janjati, poor and excluded.
3	Communication	No circulation to all and certain person received information and participated in meeting	Proper and effective communication circulation with all participants as per meeting schedules
4	Accountability	Public have not taken accountability, as they are not familiar with accountability	Public have been taking equal accountability to know about subject
5	Transparency	Public have not get full transparency of the program	Public have felt fully transparent and openness
6	Ownership	Public have not felt cordial ownership	All stakeholders and beneficiary felt ownership feeling
7	Decision-making	Not effective decision making practices	Influencing decision-making held in public auditing process
8	Cost sharing management	Proportionally cost sharing and not considered about poor	Equally cost sharing of project benefits to all as per households
9	Public audit concept	Not clear	Verification and correction of complete work and one type of evaluation

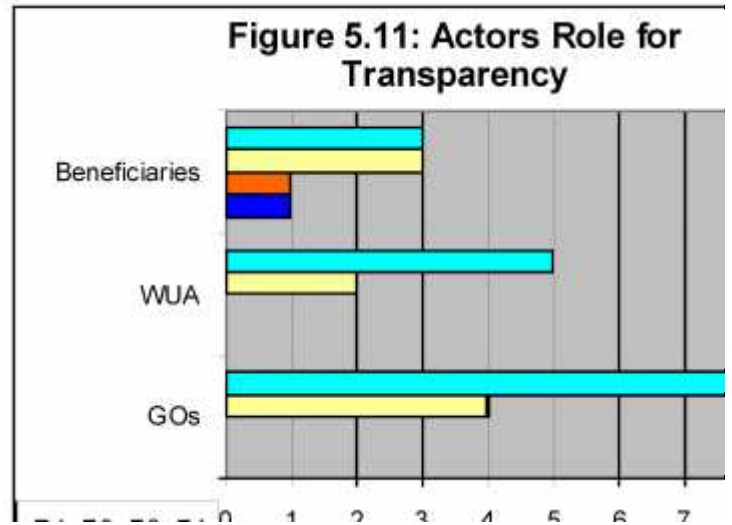
Source: Field Survey 2012

5.10.2.9 Role of actors for maintaining Transparency in Water User Committee

The large number (59%) of respondents representing the Water User Committee, bodies and individual farmers expressed the general view that Water User Committee has a pivotal role to ensure transparency in the Water User Committee overall functioning. Of the total 27 respondents, 16 asserted that the Water User Committee has maintained transparency in the work.

One interesting finding of the research is that on the question of Water User Committee role for ensuring transparency, a large number of respondents (71 percent) representing the that Water User Committee had the most important role in the task of ensuring transparency.

They viewed that the Water User Committee role to ensure transparency in the government's working procedure would be instrumental, if they were more aware about the transparency in their own institutions. However 15 percent respondents of government sector ruled out the role of Water User Committee on transparency. It means the government officials are less aware with Water User Committee working process and they do not like to be transparent. It shows that the government officials have been lacking accountability towards transparency and the government has not given priority towards it. It is also important that the government should adopt transparency as a program principle in the state.

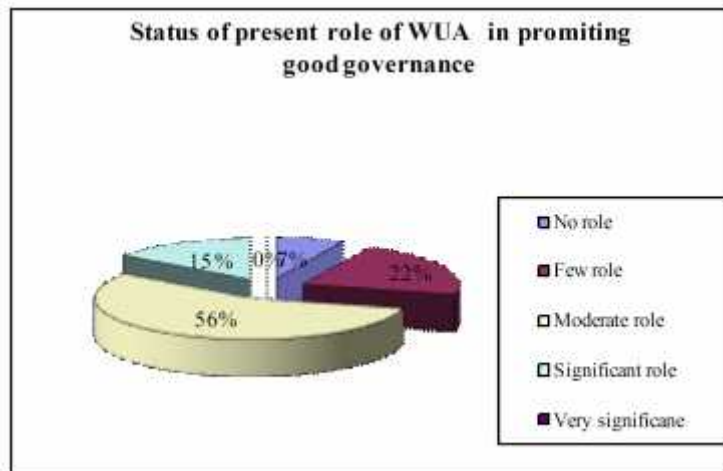


Source: Field Survey 2012

5.10.2.10 Present Status of Water User Committee Effort on Promoting Good Governance

Figure 5.12: Role of Water User Committee on Program

During these days, lots of Water User Committee is involving in community development and social transformation process in Nepal. It has formally or informally contributed on improvement process of governance. Very few of them are giving emphasis as objective of their organization on good governance initiatives.



Source: Field Survey, 2012

Data shows that 55 percent of different sector's interviewers perceived moderate role of Water User Committee being practiced towards good governance promotion in the society. The respondents remarked that mostly the Water User Committee have initiated their program since the mid of 1980 in Nepal and the activities were focused on community development. Especially, the Water User Committee emphasized the activities, which were directly related with their basic needs like; construction of bridge, foot trail, drinking water scheme, irrigation scheme, saving and credit program, non-formal education etc. But the Water User Committee were guided to increase participation of people with establishing their ownership in the program from the beginning phase of the program; therefore, the practice of governance has been initiated from starting phase of their program. The good governance initiative was started from the mid 1990, very few Water User Committee have taken it as a major objective. Therefore, only 15 percent respondents of Puranchaur agreed that the Water User Committee have a significant effort on this matter.

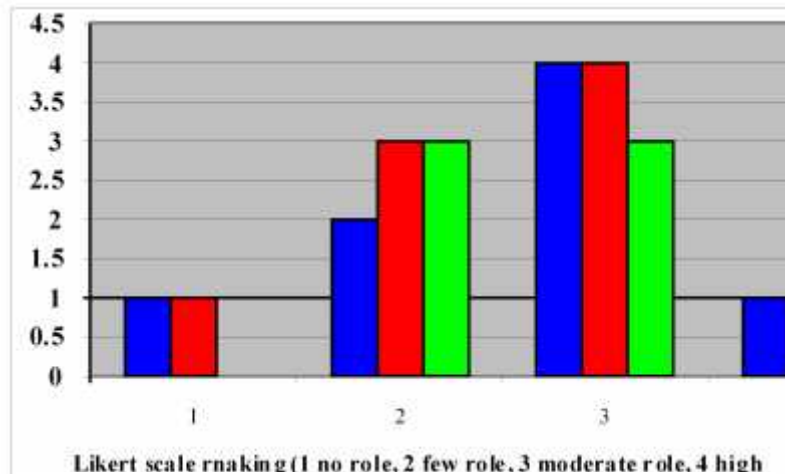
22% of total respondents of Puranchaur mentioned their view that the Water User Committee have few roles in present for promoting good governance and eight percent couldn't see any role on this regards. It is interesting that some government officials and Water User Committee

representatives are not positive towards Water User Committee program in the sense of good governance because they pointed out that some Water User Committee are not transparent in the society regarding their program and budget, what budget was available there for their program and what is the expenditure for the program.

5.10.2.11 Performance of Water User Committee in Maintaining Good Governance

Figure 5.13: Performance of Water User Committee

During data collection, the respondents expressed their views analytically based on the judgment of observations of Water User Committee working styles. Total of 18 percent respondents have the perception that the Water User Committee have a good status of governance. They stressed that,



Source: Field Survey 2012

the Water User Committee who are involved in Irrigation management in right sense; they are performing their role well. But, the Water User Committee who have another hidden objectives those, are crossing the role of governance. Another total of 41 percent respondents shared their impression of having moderate status of governance into the Water User Committee institutions. They expressed that they are unknown about their plan and budget of the program how many was planned and expended there and who monitored it, but some activities are conducting in the society and which are output oriented and positively perceived in the society. It is a considerable thing that 30 percent respondents perceived as poor status and 12 percent expressed worsened position of governance in their institution.

Remarkable things that the Water User Committee representatives itself are not satisfied with their present governance status. Out of total Water User Committee representatives, higher numbers (36%) opinion is having moderate status of governance in their institutions. Similarly, second higher number (27%) respondents' opinion is poor and 19 % perception is very poor, where only 18 percent respondents are agree to rank in the position of its good status. The respondents stressed that Water User Committee have not maintained transparency and

participatory process in their program and they pointed out that this situation is generated due to very week monitoring system of the Water User Committee, donors and government officials.

There is also interesting finding that 50 % of total respondents of government officials perceive moderate status of governance performed by Water User Committee (WUC) in present, which is higher percentage of positive ranking than Water User Committee self perception. Regarding the issue, 25 % respondents ranked poor status and 13 % very poor respectively. But, 12 % respondents perceive good status. The respondents express that most of the WUCs are not raised up from the thinking of their family, regional and ethnicity/Caste. Likewise, they are not free from the attachment of any political parties.

Opinions from different segments' respondents to find out their perception areas in different components of good governance for improving governance system into institutions have been collected during the study. The detail of the component-based analyses of response is elaborated separately below.

5.11 Conflict Management

The situation of conflict occurs primarily due to the scarcity of water for which there are several competing parties. The Chairperson of the main canal committee (MCC) and branch canal committee (BCC) concerned to solve all MCC and BC level disputes and conflicts concerning water respectively. Though, unresolved cases at the BC level, they referred it to Water User Committee (WUC) Chairperson. Water User Committee also solves the dispute arises between two BCCs and neighborhoods. Some cases of conflicts are forwarded to government Irrigation Division Office and administrative offices too. Sometimes quarrels arise when the farmers open the new intake, cut the land, or break the canal bund. Men, who are office-bearers of the Water User Committee, usually take the decision to settle the conflict. Recent trends of participation of women in such conflict resolution and other business of WUC in Shardikhola Puranchaur Irrigation System (SPIS) is negligible.

There are several types of conflicts related to water use found in study systems. These include: i) conflict between the BCC and BCC water users; ii) conflict between the head reach, and tail reach farmers of the MC and BCC.

5.11.1 Conflict between the Branch Canal Committee (BCC) Water Users:

In both study system, the conflicts are occurred between branch canals users over sharing of water from the branch diversion headwork. It generally happens during water shortage in the river and canal. In this situation, water is usually distributed under the rotational system (See in annex for water distribution schedule). Each Branch Canal Committee receives water for on the basis of command area branch canal. When big farmers rule against the rotational water distribution system dismissing the water distribution schedule ultimately, conflicts start from there.

5.11.2 Conflict between Head reach and Tail reach Farmers:

In the system, the similar types of conflicts are rose very often between head reach and tail reach farmers over water allocation and distribution. The head reach farmers not only receive more water but also take first water from the Main Canal. Whereas tail reaches farmers get water when it would have been late.

The head-tail inequity in water allocation is not just due to petty operating rules and tertiary level water allocation procedures, nor are they only due to water theft, breaching canal, technical constraints and conveyance losses is significant in SPIS. Generally such inequity is the result of overall poor governance in the irrigation system and a high level of institutional failure (not being able to function of set objectives) associated with public sector agencies Powerful head-end farmers are exerting undue influence on project authorities and thereby tapping a large share of water from the canals is a common phenomenon. In turn, the head reach farmers consume more water than planned during developing water distribution schedule by Water User Committee and agencies. They also grow relatively more water consuming crops and high value crops like sugarcane a properly structured incentive based cost recovery system (at least, full charges for operation and management costs) based on incremental benefits desired from irrigation access, are even a proxy form of volume or quantity based water fee, in principle, could potentially reduce such inequity in water allocation across the reaches. However, the transaction costs involved in monitoring and fee collections and relatively less suitable technology for small-scale farming are some of the major hurdles in implementing such policies

It is very clear from the above information and discussion that men have strong hold on all aspect of organizational activities such as decision making, communication, and resource mobilization, participation of women in main committee, branch committee, and tertiary committee and conflict management.

Neither are new technologies developed for women nor is there a proper mechanism for technology transfer to women so that their existing knowledge and skills, the present level of which is a barrier for their participation.

In sum, it is seen that mostly men perform those tasks that are heavy and physically tiring and women perform those tasks that are time-consuming and monotonous or repetitious whether it is in respect of farm work, or household chores. It is also seen that the tasks undertaken by men involve the use of heavy or mechanized machinery or equipment, for example tractor. whereas the tasks undertaken by women are generally performed by naked hands or with the help of small and light tools or implement, such as sickle or hoe. In addition, women have only negligible or inconsequential decision-making role in sharp contrast to men. Overburden of work is one of the primary factors that affect participation of women in water resource management in Water User Committee at Puranchaur.

CHAPTER-VI: INTERACTIVE FACTORS OF PARTICIPATORY GOVERNANCE PRACTICES

This section covers a summary gist of the interactive factors influencing the participation of the WUC members in participatory governance.

6.1 High Caste vs Lower Caste

Nepali society is dominant from Hinduism where there is a class between people in caste basis. Society of Puranchaur is also divided in two classes as high caste people and lower caste people. Comparatively the socio economic conditions of so called lower caste people is poor than so called high caste people. So that most of the interaction is happening between same caste people. Most of the lower castes people survive through the labor work of high caste people. Lower caste people have minimum quantity of land hold and they have only six (6) month food sufficiency from their own land, So that they are dependent over higher caste people. The interaction between two class people is in the occasion of their working time. They discussed about seasons for plough and planting of crops. Most of the lower caste people are working on yearly remuneration basis of the high caste people. This means the two caste people only interact in the occasion of work related to agriculture and irrigation water resource management.

Table 6.1 : Highs caste vs Lower Caste

SN	Particulars	High Caste people	Lower Caste People
1	Representation in UC	11	None
2	Communication	Access to information by interaction and from notice board	Limited interaction with High class people and not access to notice board due to the illiterate
3	Conflict	No conflict yet with lower caste people	No conflict yet with high caste people
4	Literacy	54 %	16 %

Source: Field Survey 2012

6.2 Executive Committee Members Vs Users

Executive members of Water User Committee are the water user so that the relation between and member and user is very good. All users respect the EC member because; they are

responsible for regularity of the irrigation project. That Irrigation project serve all people of that village so that relation between and Executive Committee (EC) member and user is excellent. That project is the main life changer of them. So there is two way communication practices between users and EC. When, some critical decision is made by EC the information is posted in the notice board of the EC. People get notice from the notice board. The users are also called in EC meeting if they are planning to made decision in critical issues. It means the relation and communication system is very nice. EC is the representatives of users so that they are always with users.

Table 6.2 : Executive Committee (EC) Members vs Users

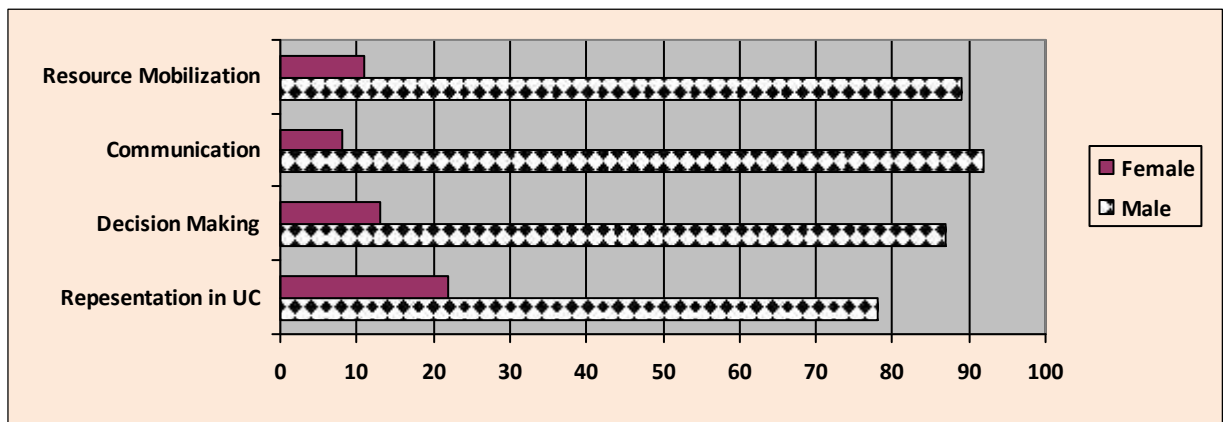
SN	Particulars	EC Member	Users
1	Communication	Communication flow through Secretary	From notice board
2	Decision making	Participatory decision making system	Not access
3	Participation	Participation in district leveled meeting and training in rotation basis	No participation in meeting but participated in commercial vegetable farming training
4	Conflict	No conflict within members	Some conflict in water irrigating time

Source: Field Survey 2012

6.3 Male Vs Female

In Nepali there are more discrimination between male and female. This problem is more in Brahmin Chhetri community. Puranchaur is Brahmin dominated community so that discrimination is higher, but nowadays women are aligning in the women group and they raise voices through the group. Female are also raise their voice through the women member of Executive Committee of Canal. Female are also educated and they also grow vegetable and sell. Some educated women are also involved in government job. So they are now in resource mobilization themselves by earning from jobs and selling vegetable so they are capable to solve their own problem so that the dependency level is decreasing. We can see in school that there are more girl than boys so that people are conscious that female education is important than male education, because if mothers is educated their whole family will be well educated. In society the work load for female is higher than male.

Figure 6.1 : Male Vs Female



Source: Field Survey 2012

6.4 Irrigation Water User Committee vs Government Organization

Irrigation Water User Committee is registered in District Administration Office and they are dully responsible as a Non-governmental Organization. Their audit report should be provided to District Administration Office (DAO) and renewed every year with recommendation from District Irrigation Office. So that relation between Water User Committee and Government line agencies should be well maintained. Irrigation Water User Committee is also having good relation with District Irrigation Office because of the District Irrigation Office is responsible to support for the maintenance of the irrigation system and rehabilitation work will initiate, if big maintenance needed. So the relation of District Irrigation Office and Irrigation Water User Committee is as father and children. District Irrigation Office technically support Irrigation Water User Committee for regulate canal in sustainable manner.

6.5 Irrigation Water User Committee vs Non-governmental Organization (NGO)

As I already mentioned that Water User Committee is registered in district administration office as an NGO so that relation between Water User Committee and NGOs is very crucial. Water User Committee is functioning as an NGO and similar responsibilities in the society. Water User Committee is invite in the general assembly of all NGOs and Water User Committee also invite all NGOs nearby their village in their general assembly.

6.6 Water User Committee vs VDCs

Irrigation Water User Committee and VDC have good relation. Each and every VDC council distribute some budget for maintenance of irrigation canal. Because of, this canal is the main crux of change socio-economic condition of people. This year FY 069/70 also gave one Lakh rupees for the canal maintenance, it shows that relations is good and continue. Because of the participatory governance system in the system is very good VDC also regularly provision budget for the maintenance of the canal.

6.7 Water User Committee vs DDCs

Water User Committee and DDC also have good relations. DDC is the main local government authority to regulate each organization in the District. DDC always support the organization as parent. DDC recommend renewing the organization each year. Because of that the canal is so big in the district and play valuable role to change the socio-economic condition of people. DDC also give financial support somewhere when they needed more amount of budget than Water User Committee capacity.

CHAPTER-VII: SUMMARY, CONCLUSION AND RECOMMENDATION

This section covers a summary gist of study, conclusion and recommendations of the study. A summary of details of the study is presented below.

7.1 Summary

This study was carried out in the Shardikhola Puranchaur Irrigation Project area Puranchaur VDC of the Kaski District. The study has assessed the participatory governance practice in Irrigation User Committee in the perspective of common property.

The conceptual framework has been developed by researcher as his experience in working with development agencies in rural area of Nepal to find out the impact of governance practice in IWUC for the change of socio-economic condition of community people. Both primary and secondary data were collected as required by the objective of the study. The field data were collected using sampled questionnaire and focus group discussion to collect the primary data. Secondary data were collected from relevant literatures, previous study reports and project records. The available data were analyzed and presented in the report. From the field study and assess of secondary information, it is concluded that the theory “Tragedy of Commons” is not applicable always and everywhere. The water is scarce during the period of seed sowing, paddy sowing and irrigation to paddy but people are using rotation basis due to the limited resource. Some farmer wants more water from canal but they are binding in rule and regulations and Chitaidar regularly monitor the irrigated water. The theory “Tragedy of Commons” is applicable somewhere because of people want more water and they always wants to breakup rule for irrigating water. There are also exception that Chairperson is continuing till the project start which may have some positive and negative attribute but people have rights to change their leadership in general assembly, but people are satisfied and continuing their leadership.

These are major findings of the study.

- **Rise of Consensus**

The Irrigation canal evolves by a group of leaders of community with local and Engineer who is working in Irrigation project. All people agreed the proposal and started the Project process.

- **Leadership**

From the beginning of the project Water User Committee is chaired by Mr. Dipak Poudel, Headmaster of Higher Secondary School of Puranchaur. In his leadership Water User Committee successfully completed project works and still working in best manner in the maintenance of Canal. His communal personality leads the IWUC as he is renowned local Headmaster, may be fruitful for the better run of the IWUC. In the sense of governance single man leadership may not be good but in the case of Puranchaur Water User Committee it is running in very good manner. It means that leadership of Water User Committee is very pretty in the Puranchaur.

- **Community Ownership**

There is one formal constitutions and rule and regulations exist which govern Water User Committee as well community people. The rule and regulations is practicing in very impartial way, which raise the faith of Water User Committee towards community. Meeting and General assembly of the Committee is in regular basis and presence of member and community people seems very encouraging.

- **Benefit Sharing**

There is very good practice in sharing benefit of the canal in justifiable manner. The rotation system to irrigate the paddy field is very systematic and there is no confusion within farmer. It is a better practice.

- **Coordination and Networking**

There is very good relation between District Irrigation Office and DDC. In this relation Puranchaur Irrigation Project get some budget for maintenance of Irrigation canal. Water User Committee also renewed in DDC in regular basis. It has also have good relation with VDC. In this relation Water User Committee get 1,50,000.00 (One Lakh fifty thousand rupees) this year and they support continuously from its construction period. They also have relation between NGOs, Cooperatives, CBOs and Women Group, which are situated in Puranchaur VDC.

- **Conflict Resolution**

Conflict resolution and dispute management practice in this Water User Committee is practicing very effectively. When some people are breaking rule and regulation of the Water User Committee they are punished. There is example of punishment for people for involvement in breaking canal, it is also mentioned in their minute book especially rules, regulations and penalty.

- **Operation and Maintenance Fund Mobilization**

There is good Operation and Maintenance collection system in justifiable manner in the ropani basis. Now there is Nrs. 200.00 per ropani collection system as Operation and Maintenance fund. This fund is utilized for the payment to wages for Chitaidar and minor repair and maintenance of canal. There is Nrs. 5,00,000.00 (five lakh rupees) in the fixed deposit in Janahit Cooperatives and more than one lakh in the saving account.

- **Impact in Livelihood**

There is a commercial vegetable farm established after completion of the project. There are more than 12 farmers, who profit more than Nrs. 3,00,000.00 (Three Lakh Rupees), which shows the successful impact of the project. Lastly, the project is very successful project of the Nepal Irrigation Sector Project (NISP) supported hill irrigation project. This canal served many people and change of their economic condition of people. The cropping pattern in the field is totally changed. Farmers start vegetable farming commercially, and changed millet to paddy and potato. It changed farmers' life economically and socially.

- **Communication/ Interactive Practices**

The every decisions of Water User Committee is published via information board which is very effective medium to convey message to users. In this manner user are very satisfied with the Water User Committee and there is no change in leadership in the long run. Despite many positive aspects of participatory governance instances of divergences, dissects factor and conflict at the time of benefit sharing were reported in the Water User Committee. It support for establishment of concept of tragedy of commons.

7.2 Conclusion

The Irrigation system is properly maintained and community people are very pleased to its donor agencies. Irrigation Water User Committee is registered and regularly renewed, General Assemble and meeting were held as per constitutions of Water User Committee. People have now started commercial vegetable farming and there are visible changes in socio-economic conditions of community people. So it can be said this Irrigation system is successful projects amongst the hill irrigation project and there has been no tragedy of commons with irrigation and it is because of the efficient participatory governance in the project. In fact this project depicts real participatory democratic exercise.

7.3 Recommendations

As I already mentioned that this project is successfully running and people participation in the maintenance work, water tariff collection and payment to maintenance worker is practicing very effectively. One single research may not covered all dimension of the Irrigation project so that I recommend to the further researches to focus on other grew areas as socio-economic status that;

- Positive and negative attribute of continuity in leadership of single person from the beginning of the organization need to be studied.
- Change in Socio- economic condition of community people, need further elaboration.
- Women are generally excluded from formal and informal meetings, in which rules and practices about water distribution are set and implemented. Water User Committee men members and Government efforts could be the remedy for the problem perceived in patriarchal male dominated society.
- Giving platforms for women to take leadership of different campaign towards establishing women rights may developed as catalysts which certainly contribute to develop inclusive development culture.
- Provide training for both men and women on awareness rising to increase meaningful participation of women in irrigation management system.

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ANNEX I : QUESTIONNAIRES AND CHECK LIST

Interview questionnaire for Water Users Association (WUC) members

1. General Information

Name of WUC:

Area of Irrigation system:

Address: VDC: Ward No:

Involved HHs: class a: class b: class c: class d:

Benefited population: Men: Women:

2. Description of group

User committee

WUC structure	Committee member	
	Men	Women
MCC		
BCC		
Total		

3. Background Information of Research Area

- Location & physical information (District, VDC/villages, Climate, Irrigation)
- Map of research area to indicate water source & command area
- Accessibility
- Caste/Ethnic composition
- Livelihood sources (Agriculture, livestock, small scale cottage industries, business, share cropping, etc)
- Literacy/Education
- Migration pattern
- Development history

4. Focus Group Discussion

Executive member (MC, BC, TC) and Water user's Group (M/F) and GO

S.N.	Name of the informants	Organization	Position
1			
2			

5. System Information:

1. History of the project?
2. When WUC was formed & whose initiatives?
3. Are the existing WUCs modified/new created after the intervention? (Yes/No)
4. Is it different from previous one? (Yes/No) If yes, what are the differences?
5. Are you satisfied with these changes? (Yes/No) If yes, how? If no, why.
6. Are members added on WUC? If yes, and how many?
7. Are you satisfied with the institutional changes? (Yes/No) If yes, what are good things? If not why?
8. Do you have general assembly (GA) meeting? (Yes/No)
9. If so, how many times a year does a GA meeting take place?
10. Are you satisfied with the management of election/selection procedure within the WUC? (Yes/No). What is the procedure? What are good & bad practices?
11. Is the WUCs registered in concerned government office? (Yes/No)
12. Are the rules & regulation of the WUCs written? (Yes/No)
13. Is there is any penalties for delay in meeting, absent in O&M work, water steal, damage of natural as well as mermanent structures? (Yes/No)
14. What types of works WUC does?
Records Keeping
 - a. What kinds of records does each WUC have?
 - b. Who keep the records?
 - c. Are these records are available for everyone? (Yes/No) If not, why?
 - d. Are you satisfied with the existing practices of record keeping & management? (Yes/No), If not why?
 - e. How women are involved in record keeping?
16. Leadership Pattern
 - a. Is the leadership frequently changed? (Yes/No) If yes why?
 - b. Are you satisfied with current leadership pattern? (Yes/No) If not, why?
 - c. Are there any women at leadership position (Chair, Vice Chair, Secretary and Treasure)?
 - d. Are their representations adequate at leadership position? If not what are the reasons and how it could be increased?
 - e. Are women playing greater role as a decision maker (Yes/No)? If yes, how?
 - f. If not, what are the reasons and how it could be improved?
17. Executive Committee
 - a. Do you think that committee does a good job? (Yes/No)? If not why?
 - b. Is there good co-operation between the farmers and the WUC (Yes/No) If not why?
 - c. Is there good co-operation between the WUC and project? (Yes/No)?

- d. What is the percentage of women on Executive Committee (EC)?
 - e. Women percentage is adequate at EC? if not what is the reason?
 - f. How women percentage could be increased at EC?
18. Meetings
- a. What type of meetings does WUC organized?
 - b. Are the meeting conducted regularly? (Yes/No)? If not why?
 - c. Who participates in the discussion?
 - d. Are you satisfied with the present trend of conducting meeting? (Yes/No)? If not why?
 - e. Does women participate in the decision making process? If not, what are the reasons (social, cultural, political, women's household, workload etc)? how it could be improved?
19. Conflict Resolutions and Management
- a. What are the water related conflicts?
 - b. Which type of conflicts frequently occurs?
 - c. How are conflict resolved?
 - d. Are you satisfied with the disputes resolution process? (Yes/No)? If not why?
 - e. What role women are playing in conflict resolution? Examples?
20. Resource Generations and Mobilization
- a. What type of resources are generated and mobilized and for which activities?
 - b. What are the norms for generating the resources?
 - c. Are you satisfied with present resource mobilization practices? (Yes/No)? If not why?
 - d. Are women involved in resource generation and mobilization? If not why?
 - e. What changes occur in resource mobilization, allocation and distribution of water after project's intervention?
 - f. What are internal resources for ex. ISF, MF and what are the external resources?
 - g. What are the impacts of external resources on development?
21. Communication
- a. Do you get right information (meeting/notice/others) from WUCs in time? (Yes/No)? If not what are the reasons?
 - b. Do women get right information (meeting/notice/others) from WUCs in time? (Yes/No)? If not what are the reasons?
 - c. Are you satisfied with present communication system? (Yes/No)? What are doing well and what is not?
 - d. How could improve present communication system?
 - e. What is the communication system from mail canal WUC to tertiary canal WUC?
 - f. Is it working well? If not why it is not working well?
 - g. Does women share information each other among women? If not what are the barriers?
 - h. What should be the role of women in communication system?

22. Water entitlement and distribution
 - a. Do you receive enough water in time? (Yes/No)? If not what are the reasons?
 - b. Do you think that the distribution of water between farmers is fair? (Yes/No)? If not what are the reasons?
 - c. Who notified the farmers about water scheduling?
 - d. Who supervises adherence to the schedule?
 - e. Who is responsible for conveying water to territory level?
 - f. Are women involved in water allocation and distribution? If not what are the reasons?
 - g. Are you satisfied with the current practices of water allocation? If not what should be the best practice?
23. System Operations and Maintenance
 - a. Who is responsible for the system operation?
 - b. Is the arrangement equitable? (Yes/No)? If not what are the reasons? How it could be improved?
 - c. Do WUC have skill to perform future maintenance activities? (Yes/No)? If not what skill they need?
 - d. Who does regular maintenance of structures?
24. Women headed household receives equal water as others receive or not?
25. What types of program needed for women development?
26. What types of skill development training will be required for capacity development of women?
27. Water acquisition and allocation
 - a. What types of technology used before the intervention?
 - b. What were the problems associated with it?
 - c. Are you satisfied with new technology? (Yes/No)? If not why?
 - d. Do you receive enough water in time? If not why?
 - e. Do you think that distribution of water between farmers is fair? (Yes/No)? If not how it could be improved?
28. What is the change in women status after the project intervention? How?
29. What is the change in yield of agricultural production after project intervention and how much?
30. What changes have been observed in the villages after the project?
31. Whether or not voices of women headed household is taken into account in the decision making process?
32. Are women farmers entitled to receive share of water and get membership of WUC from the project? If not why? What is the reason?
33. What kinds of mechanism are developed to ensure active participation of women farmers in all phases of project development?
34. Decision making process
 - a. How decisions are made in WUC?

- b. Do women actively participate in decision-making process or not?
 - c. If not what are the barriers and problems? How it could be improved?
 - d. What are the decision-making system at main canal WUC, branch canal WUC and tertiary canal WUC? Do they have any interlinkage between main canal, branch canal and tertiary canal on decision making?
35. What are the roles of users in Public Auditing Management?
37. Is there any legitimize authority of users and user's committee involves Public Auditing Management?

6. Checklist for Key Informants Interviews

DIO Chief, WUC Chairperson, VDC Ex-Chairperson, WDO, Women Social Mobilizers, Women, TA team staff

1. Formation of WUC and participation of farmers
2. Role of BCC, MCC and TCC
3. WUCs and their functions
4. Distribution of membership
5. Rules and regulation
6. Types of meeting and decisions made
7. General Assembly
8. Election procedure
9. Financial management
10. Record keeping system
11. Leadership development
12. Water acquisition, allocation and distribution repair and maintenance
13. Way to mobilize internal and external resources
14. Disputes resolution
15. Communication flow process within the organization

Activities	Yes/No	If not, what are the reasons
Policy formulation		
Water distribution		
Water control		
Canal operation		
Canal maintenance		
Resource mobilization		
Conflict resolution		
Group formation		
Membership distribution		

16. Women participation in the following:
17. Women headed household receives equal water as others receive or not?
18. What types of program needed for women development?
19. What types of skill development training will be required for capacity development of women?
20. Water acquisition and allocation
 - a. What types of technology used before the intervention?
 - b. What were the problems associated with it?
 - c. Are you satisfied with new technology? (Yes/No)?
 - d. Do you receive enough water in time?
 - e. Do you think that distribution of water between farmers is fair? (Yes/No)?
21. What is the change in women status after the project intervention?
22. What changes have been observed in the village after the project?
23. Whether or not voices of women headed household is taken into account in the decision making process?
24. Are women farmers entitled to receive share of water and get membership of WUC from the project? If not why? What is the reason?
25. What kinds of mechanism are developed to ensure active participation of women farmers in all phases of project development?
26. How do you see WUC relation with other organization?
27. Your suggestions for WUC betterment.

ANNEX II : NAME LIST OF USER COMMITTEE

Date of Formation: 067/02/01 by General Assembly

Chairperson : Mr Dipak Poudel
Vice chairperson : Mr Ram Prasad Acharya
Secretary : Mr Gobinda Poudel
Treasurer : Mr Krishna Prasad Poudel
Joint-secretary: Ms Bishnu Acharya
Secretary : Mr Padam Singh Gurung
Mr Rishiram Adhikari
Ms Indra Kumari Poudel
Mr Tej Bahadur Adhikari
Mr. Keshar Bahadur Adhikari
Mr. Gobinda Prasad Gautam

Advisors:

Dr. Guna Nidhi Poudel	Puranchaur # 6
Mr. Hemraj Poudel	Puranchaur # 7
Mr. Ram Prasad Adhikari	Puranchaur # 9
Mr. Chet Bahadur Gurung	Shardikhola # 1
Mr. Krishna Prasad Poudel	Puranchaur # 9

Branch Coordinator

1. Mr. Madhav Prasad Poudel
2. Krishna Poudel
3. Purna Giri
4. Liladhar Adhikari
5. Gobinda Prasad Kafle
6. Madhav Prasad Poudel

ANNEX III : PHOTOGRAPHS



View of Project area



Researcher with WUC Chairperson Mr. Dipak Poudel



Head works of Project



River Crossing at Bhurjungkhola