

COMMUNITY BASED NATURAL RESOURCE MANAGEMENT PRACTICES

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## AN ABSTRACT OF THE DISSERTATION OF

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Title: *Community Based Natural Resource Management (CBNRM) Practices*

Abstract Approved by: \_\_\_\_\_

Binod Prasad Pant

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When debates are visible on different political issues, people from rural communities are struggling for the equal access to natural resources. Meanwhile, this study highlights the existing practices of natural resources management at the community level.

This study was carried out at Juphal Community of Dolpa District, in Mid Western Development Region of Nepal, focusing on exploring CBNRM practices, especially Non-Timber Forest Products (NTFPs) management, transmit of knowledge, skills and experiences, and contribution of Environment education at the community level. As a strategy of inquiry, it follows ethnographic study by applying interpretative paradigm under qualitative research method.

The study explores the systems like compounding, fencing, plantation, thinning, pruning, singling and weeding, fire-line construction, khet and barilands irrigation turn-taking through *limb* (lottery) system, and appointing *Herala-Nwarala*<sup>1</sup>, as ongoing practices. Even though, the communities are accustomed to such practices;

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<sup>1</sup> A community defined person with limited authority taking care of forest and farmland.

they look for financial and technical supports especially the trainings and technologies from other institutions including government organizations.

The community people have the knowledge that natural resources help their livelihood and they need to protect the natural resources. However, they do not transform their knowledge into practice. Therefore, there is a need to enrich their capacity, as gaps are there, on optimum utilization of resources to promote sustainable resource management.

The study shows the local people need to build their capacity, so that they can transfer and preserve the knowledge, skills and experiences and environment education (EE) is one of the effective tools to widen the wise utilization of resources which can be furthered to achieve the sustainable use of resources practically.

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Narendra Bikram G. C.

December 31, 2012

Degree Candidate

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## DECLARATION

I hereby declare that this dissertation has not been submitted for candidature for any other degree.

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Narendra Bikram G. C.

Degree Candidate

## DEDICATION

To the people of Karnali and those dedicated to nurture the nature.

*Master of Education in Environment Education and Sustainable Development*

dissertation of *Narendra Bikram G. C.* presented on December 31, 2012.

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I understand that my dissertation will become part of the permanent collection of the library of Kathmandu University. My signature below authorizes release of my dissertation to any reader upon request for scholarly purposes.

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## ABBREVIATIONS AND ACRONYMS

AAE	Agriculture and Environment
AFO	Assistant Forest Officer
AHSS	Adarsha Higher Secondary School
ANSAB	Asian Network for Sustainable Agriculture and Bio-resources
APA	American Psychological Association
CBFEs	Community Based Forest Enterprises
CBNRM	Community Based Natural Resources Management
CBS	Central Bureau of Statistics
CC	Climate Change
CDC	Curriculum Development Centre
CF	Community Forestry
CFAP	Community Forestry Action Plan
CFOP	Community Forestry Operational Plan
CFUGs	Community Forestry User Groups
CITES	Convention on International Treaty of Endangered species of Wild Fauna and Flora
CPR	Common Pool/Property Resources
DADO	District Agriculture Development Office
DAG	Disadvantaged Group
DDC	District Development Office
DEPROSC	Development Project Service Center
DESERT	Dolpa Educational, Social and Environmental Researches Team
DFO	District Forest Office

DFRS	Department of Forest Research and Survey
DLAGSP	Decentralized Local-Autonomous Government Support Program
EC	Executive Committee
EE	Environment Education
ES	Economic Survey
FAO	Food and Agriculture Organization
FECOFUN	Federation of Community Forestry Users Nepal
FNCCI	Federation of National Chamber of Commerce and Industries
FNSCI	Federation of Nepal's Small Cottage Industries
FPS	Forest Products
FSC	Forest Stewardship Council
GDP	Gross Domestic Products
GHT	Great Himalayan Trail
GoN	Government of Nepal
HC	Horticulture Centre
HHS	House Holds Survey
HMG	His Majesty's Government
HPE	Health Population and Environment
I/N/GOs	International/Non/Governmental Organizations
ICIMOD	Integrated Centre for Integrated Mountain Development
IGAs	Income Generating Activities
ITK	Indigenous Traditional Knowledge
KAFCOL	Kathmandu Forestry College
KIRDRC	Karnali Integrated Rural Development and Research Center
KRP	Key Research Participant

KSE	Knowledge Skills and Experiences
KU	Kathmandu University
LCC	Local Community Capacity
LRMP	Land Resource Mapping Project
MAPs	Medicinal and Aromatic Plants
MDGs	Millennium Development Goals
MEDEP	Micro-Enterprise Development Program
MOA	Ministry of Agriculture
MPFS	Master Plan for Forestry Sector
MSMEs	Micro, Small and Medium Enterprises
NAF	Nepal Agro-forestry Foundation
NFC	Nepal Food Corporation
NPC	National Planning Commission
NTFPs	Non-Timber Forest Products
RP	Resource Person
SEDA	Sustainable and Equitable Development Academy
SFM	Sustainable Forest Management
SPNP	Shey Phoksundo National Park
SSHSS	Shree Saraswati Higher Secondary School
TSPC	Temperature Seed Production Centre
TU	Tribhuvan University
VDC	Village Development Committee
WFP	World Food Programme
WLCTP	Western Landscape Complex Terai Project
YG	Yarcha Gumba

## CHAPTER I

### INTRODUCTION

#### **Chapter Overview**

This chapter begins with the background of the study followed by the statement of the problem, research questions, and rationale of the study. It also introduces the study area along with natural resources and its management practices.

#### **General Background**

While we are debating for the new Nepal via national consensus, stability, and good governance, thousands of people are fighting for the rights, access and benefit sharing of the natural resources throughout the nation.

Nepal is blessed with the benignity of nature. But, unfortunately we have just been able to market a fringe of it. Beside the stupendous Himalayas, we have rich forests, perennial rivers, unimagineous and enthralling lakes, mystical and rich religious and enthralling culture and tradition (Chand, 2003).

The piloting of policy tools not only creates conducive environment for the policy change but also strengthens stakeholders' capacity for effective implementation (Western Terai Land Scape Project, 2012).

The earth is our home and home to all living beings. Earth itself is alive. We are part of this evolving universe. Human beings are the members of an independent community of life with a magnificent diversity of life forms and cultures. We are humble before the beauty of the earth we have received from the past generations and embraced our responsibilities to present and future generations.

## Natural Resources

Being uninterrupted by the mankind, natural resources are etymologically relentless phenomena available. In a broader sense, natural resources are characterized by amounts of biodiversity, geo-diversity in various ecosystems and derived from the environment. Moreover, materials or compounds found within the environment are natural resources.

Among various natural resources, intermediate resources under earth are petroleum, gas, coal, fossils because these are formed through living and utilized as non-livings. They can be regarded as earth materials because these materials are formed within the earth and used to produce heat, electricity, gasoline, etc. Besides, other earth materials are coal, uranium and so on. Among the earth materials, nonmetallic resources like sandstone, granite, clay, soil, etc. are used whereas metallic natural materials like iron, copper, tin, aluminum, silver, gold, etc. are used. Those resources that can be replaced and reused by nature are termed as renewable resources e.g., air (wind), fresh water, soil, living organisms (trees), sunlight, etc. On the other hand, the resources that cannot be replaced are termed as non-renewable resources, e.g., fossil fuels (coal, oil, and natural gas), diamonds and other precious gems and minerals, types of metals and ores (DOE, 2005). For the survival of the mankind, the problems are threatening to the planet resulting from the increased consumption of the energy, water and raw materials. Global resources consumption is equal to global resources excretion. The world economy uses 60 billion tones of resources each year to produce goods and services which we consume. In Europe 36 kg of resources are extracted per person everyday whereas consumption per person a day is 43kg. The European needs resources from other world to maintain their level of consumption. Consumption is even higher in the other regions of the world. Each North American

consumes around 90 kg per day whereas inhabitants of Oceania about 100kg per day. An African consumes 10kg of resources per day whereas a Latin American uses 34 kg of resources per day. We Asians use 14 kg of resources per day. There are huge differences in per capita consumption of natural resources. Rich countries consume 10 times more natural resources than those in the poorest countries (Schmidt-Bleek, 2009).

Each person in the planet uses on average over 8 tons of natural resources per year or 22 kg per day. Resources extraction is very unevenly distributed across the world. The resource extraction depends on several factors like size of the continent, availability of resources, the size of population and the level of affluence.

In 2005, the largest share of resources extraction took place in Asia (48%), where more than half of the world's population lives. North America ranked second 19% followed by Latin America and Europe 13%, Africa 9% and Oceania 3% (Behrens, Giljum, Kovanda, & Niza, 2007).

Natural resources management has different perspectives and dimensions. One was state-owned management and the next market-owned which were leading up the last century. The scholars, who believe in the welfare state building approach, supported the first idea and the following believe in the open market economy. The latter one is emerging in the third world like Nepal believing it as the most popular approach in Community Based Natural Resources Management (CBNRM).

## **Natural Resources in Nepal**

Nepal is rich in natural resources. Some of the important resources of Nepal are forest, water, soil or land and minerals. It has quite the same history of it as there is in the developing countries.

Nepal is rich for fresh water and forest. It is widely accepted that Nepal is the second richest country for water resource after Brazil. For drinking and irrigation purpose we can see good practices of community based resources management systems in the villages all over the country. Therefore, we can proudly say that Nepal is rich in natural resources and biodiversity as well. This country is popular for its water and forest resources. However, we are unable to maximize its potentiality in terms of better use and market access so far.

Community forestry in Nepal has a well-documented history of over 25 years. It is now widely perceived as having real capacity for making an effective contribution towards addressing the environmental, socioeconomic and political problems raised Nepal's rapid progression from a feudal and isolated state into the modern, globalized world (Forest Action Nepal, 2007).

From the discussions, we can say that Nepal is rich in natural resources and bio-diversity and need to preserve and protect for the sustainability.

## **Natural Resources Management in Nepal**

Community-based forest protection and management by rural people has a long history in the hills of Nepal. In many parts of the hills and mountains of the country, local people have established their own indigenous systems of forest management although there was not any government institutional and policy support in those days. However, the government of Nepal nationalized all the privately owned forests (in excess of 1.2 ha in the hills and 3.5ha in the Terai) through the Private Forest

Nationalization Act of 1957 (Kanel, 1995). Because of this act, people gradually lost interest in the conservation, use and management of forest and this led to the gradual degradation of forest in the hills of Nepal. The government has realized that the forest cannot be managed and conserved without the active participation of local communities and therefore, it has enacted the Forest Act of 1961 and again amended this in 1978, incorporating the provision of community forestry in Nepal. 'The Master Plan for the Forestry Sector 1989' has further recommended that the community forestry should be the priority program of the forestry sector in Nepal (Kanel, 1995). Similarly, the Forest Act of 1993 and Forest Rules 1995 have further empowered the local Forest user groups by legally allowing selling forest products and raising their funds by obtaining grants/donation and through income generating activities.

### **Natural Resources in the Study Area**

The lofty mountains and stupendous Himalayas are described as the benignity of nature. Nepal, therefore, extravagantly boasts of its avaricious natural resources especially water and forests.

There are many more natural resources in my study area. Water, soil and forest are the key resources out of them. More specifically, lakes, mountains, hills, hot springs, beautiful pastures and Yarchagumba collection patches are the main natural resources in the context of Dolpa.<sup>2</sup> In addition, forests, various NTFPs, river, hot springs, soil and water are also the major resources in my study community.

Today's Dolpa was named as Tholmo previously, then, its name changed into Dolpo from Tholmo in 2018 BS due to inconvenience of pronunciation (Hirachan, 2008).

Dolpa is much more discussed for its development process, and social change.

Moreover, unending discussions have been running regarding natural resources and

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<sup>2</sup> The largest district of Nepal located in Karnali Zone, Mid Western Development Region



their better utilization and supporting livelihood. Forest is important for this locality, since Non-timber forest products (NTFPs) are the main basis of better livelihoods for the people of Dolpa so far. Overall, the whole Karnali,<sup>3</sup> known as the *herbal zone* is renowned for the NTFPs rather than timber products.

In Nepal, all forest products other than timber, fuel wood and animal fodder are regarded as NTFPs. For subsistence livelihoods in the Middle Hills, NTFPs have important roles in health care and in the maintenance of nutritional standards between agricultural harvests.

The local people have been collecting, using and selling non-timber forest products (NTFPs) such as Yarchgumba, Jatamashi, Attis, Bojho, Chiraito, silajit, Dalechuk, olive, etc since many decades. Therefore, I would like to simply highlight water resources and especially NTFPs under forests resource in connection with my research questions.

In this context, Non Timber Forest Products (NTFPs) are taken for the better livelihood of the Nepalese hilly people. In this line, Acharya (2009) said,

NTFPs are also important parts of the biodiversity and are considered as component of livelihoods in terms of their economic, social and ecological value. As history shows, local communities have used these resources for food security and trade for centuries. The Master Plan for Forestry Sector (MPFS) (1988) claims that 15% of the Gross Domestic Product (GDP) of Nepal has been contributed by the forestry sector because of population growth and shrinking of the forest area (p. 58).

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<sup>3</sup> One of the remote zones of Nepal

### Physical Setting of the Study Area

Studying on CBNRM, I have narrowed down the topic as a NFTP and I have selected Juphal, Dolpa as my prime study area because it is a gateway to Dolpa and at an easy access on the one hand, on the other, it has a number of unique CBNRM practices out of various CFUGs in Dolpa in the mountain region. This study was carried out in Juphal VDC of Dolpa district of Nepal, which is the entrance point of Dolpa via flight visit. This district, covering an area of 7889 Square Kilometers, belongs to Karnali zone of Mid-western Development Region. The entire area of the district falls in the mountain. It is located between 82°24' to 83°38' E to 28°24' to 29°43' N. (DDC, 2008). The climate of the district is cold throughout the whole year. The maximum temperature is up to 22°C and minimum up to -10°C. The recorded maximum rainfall is 2,687 mm, whereas, the lowest limit of it is 1300 mm. Its altitudinal variation ranges from 275 m to 3018 m. Forests excluding shrubs and grazing land in the district cover 28.2 per cent and 56 per cent when shrubs and grass are included.

The Himalaya has the rugged topography, complex and fragile nature of the geological structure, soft and shallow soil covers, high intensity rainfall in the monsoon season and frequent and common earthquakes activities. Juphal<sup>4</sup> community is also located along with these specialities in Juphal Village Development Committee (VDC), North mid-western remote area of Dolpa district out of 23 VDCs. Mainly, bunched type settlement is found from the very beginning but some bunches of settlements locally known are Juphal, Shahigaun, Airport, Kamitole, Sarki Banda, Bahuntola, Dangibanda, Motipur, Bhatti, Kalagaunda and Palanga, Which together

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<sup>4</sup> Name of the VDC and a small community as well

form VDC from ward no 1 to 9 of Juphal Village Development Committee. Dunai, the headquarters of Dolpa is in the east south.

Rukum, Jajarkot, Jumla, Mugu and Mustang are the neighboring districts of Dolpa. Mustang to the east, Mugu to the west-north, Rukum and Jajarkot in the south. The total population of the district is 36700 and males are 18238 and females are 18462. Only 2279 are the population of my study area of Juphal VDC, representing 1108 males and 1171 females out of 522 households (CBS, 2012).

Most of the people are Hindus. Besides, Buddhists and Christians also reside there. Some people are Buddhists and very few are Christians which ranked the second and third respectively. Agriculture is the major occupation of the people. They also follow labor oriented task, business, and seasonal business. Many people go to collect Yarchagumbha, whereas some people collect and sell NTFPs throughout the year. However, they follow agriculture as the main profession; it does not economically support them for the whole year. Therefore, they need to do other works together.

Gradually, young youths go to Kathmandu and other cities of Nepal to seek better opportunities and conduct business as well. A few people also join in Government services. Some of the youths are engaged in national and local level NGOs. A few national-leveled and local public contractors have been creating employments and providing job opportunities.

The quality, abundance and accessibility of natural resources such as soil, water, and growing seasons are constraining issues in hillsides and mountain areas. Forest may, where ecologically possible, provide a buffer for poverty (ICIMOD, 2005). The high altitude region suffers from remoteness (Forest action Nepal, 2009, p.13)

This area is very much rich in MAPs. Local people have planted many medicinal plants there. Some people have key professions of collecting those medicinal plants and selling approaching various market channels. It has appropriate climate for different Flora and Fauna. Most of the products are categorized as high value low volume. Therefore, this district is popularly known as 'Herbal Zone' (DFO, 2069).

### **Socio-culture**

This community is multi-ethnic, multi-cultural and multi-lingual. It is neither traditional nor modern. Young people seem like modern, many people are mostly engaged in agro-farming and animal husbandry. The majority of the population is dominated by the castes of Shahi-Thakuri<sup>5</sup> community and the castes like Budhathoki, Khatri, and others types of Chhetris are in the second position. Dalits<sup>6</sup> (Damai, Kami and Sarki) also reside in this study, practicing their traditional occupations which are directly linked with natural resources available in the community. Very few Brahmins also stay there. People speak Nepali language, but they use different tones and tunes while speaking. Most of the words they speak are of national variety commonly used in many parts of Nepal. Their voices and way of pronouncing words, known as idiolect, are quite different. Likewise, there persist the regional varieties embodying idiolect and dialects of same Nepali language in Dolpa. These are also influenced by both cultural and linguistic varieties of the society.

The mountainous characteristics include a high degree of fragility, inaccessibility, marginality, diversity, specific niche opportunities, and human adaptation systems historically evolved by communities to address the local imperatives. These conditions (with significant intra-mountain variations) not only

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<sup>5</sup> One of the castes of Chhetri/Malla category (Royal class)

<sup>6</sup> so called low caste people

shape the pace and patterns of change, but determine the degree of relevance and effectiveness of development/welfare interventions in the mountain areas. Most of the aforementioned characteristics have biophysical, socioeconomic and political dimensions, as well as inter-linkages, which call for an integrated approach to the planning and execution of interventions in mountain areas (ICIMOD, 2006).

### **Statement of the Problem**

The community people have been facing many challenges despite the fact of having rich natural resources, such as Karnali is richer in MAPs and NTFPs. "In Nepal all forest products other than timber, fuel- wood, and fodder are classified as NTFPs. In addition to the traded NTFPs, some 800 other species have substantially used as foods, spices, herbal medicines, tannins, dye-stuffs, gums, resins, incenses, oils, fibers, and as construction materials" (Edwards, 1996, p. 384).

Most of the local people are familiar with the understanding of the uses of NTFPs that may contribute for their livelihood. However, these NTFPs are not well-managed by the CF users, rather mostly overexploited by the locals. Two related factors may work against such a development: NTFPs cannot always be managed effectively as common property resources and, when they can, forest user groups are not always the best institutions to manage NTFPs (Ibid, p. 391). In such line, Community Forest Operational Plan (2008) also aims at increasing the participation of the local people in NTFPs, but local people are not using the non-timber forest products as expected by the CFOP (2008). In such a situation, how do people use the NTFPs? Do they also think of conserving such resources? Have they created a market for such products?

Conclusively, my problem statement is; "How the Community Based Natural Resources Management (CBNRM) is practiced in the community."

### **Research Questions**

I have narrowed down and focused on the following research questions from my broad research problem based on the proposed problem statement:

1. What are the existing practices of community based natural resources management (CBNRM) in the study area?
2. How do senior people transmit knowledge, skills and experiences to the new generation?
3. How does Environment Education contribute to the management of natural resources in the local area?

### **Rationale of the Study**

This study particularly deals with Community Based Natural Resources practices focusing on different natural resources inventory. It further attempts to explore their knowledge and seeks the role of the senior people to transfer the knowledge in the community. This study explores the major underlying causes of environmental pressure and challenges and constraining factors, process and economic interpretation of natural resources from different perspectives and therefore, it may be useful to policymakers, planners, I/N/GOs for policy design or reform, program implementation and advocacy. Moreover, the methodology and instruments developed and used in this study would offer important reference to the researchers and aspiring candidates for similar future studies in different conditions, and in natural settings.

The traditional practices in the community are lagging behind with the development activities. There has been changing in agriculture patterns as well as forest and water resources management and irrigation system in the context of climate change. It is expected that this study would be helpful to explore the existing

practices, identify the problems and prospects of Community Based Natural Resources Management (CBNRM) and to recommend the concerned agencies for further improvement of

### **CBNRM in the study area**

More specifically, the study focused on finding out the management difficulties of CBNRM and contribution of environment education to address those difficulties. I also tried to seek direct and tangible link between the rural people and natural resources in order to identify the key traditional practices of local level in recent days that how they are really coping their lives by managing the Community Based

### **Natural Resources**

Next, it may help the policy makers and development planners to design periodic policies of Community Based Natural Resources Management. Therefore, being a student of environment education and sustainable development, I am interested in studying the local level practices, stakeholders' perception and institutional preparedness and lived initiatives on the education for sustainable development issue. I have chosen the issue of natural resource management practices because of its evergreen value and scope which is ever-debatable matter. Moreover, this has a direct link with the community people and is an integral part of the environment and development along with the ground realities of the human life and nature with the effects of fast changing pace of melting Himalayas, global warming and climate change. People's livelihood is directly connected with the community-based natural resources and their better uses.

### **Limitations and Delimitations of the Study**

The study mainly focused on lived traditional and management practices of CBNR of the Community people of Juphal, Dolpa. So, I have limited my study within Juphal VDC of Dolpa district by covering only two resources, i.e. forest and water.

Since my research questions are open, I would like to delimit my study only selecting only five NTFPs for deeper discussions regarding question number one. I confined delimiting on natural resources management related KSEs transmission to handle the second research question. For the third research question, I have bound to secondary level HPE curriculum and the learning of the high school students.

Results and discussions have been analyzed; however, it would not be true or applicable to all areas of Nepal. The study mainly concentrates on natural resources, moreover, centralizing CBNRM practices and its merits and challenges.

Environmental knowledge and awareness level have been sought during exhuming the interpretation, analysis and findings. Only seven key informants were selected for the in-depth interview representing and balancing among different castes, genders, age-groups and experiences of the local level along with social actor, farmer, DAG representative, teacher and student. Since I have been following ethnographic strategy, I took one whole year for my purposive study and observation on different issues.

The most established traditional practices have been explored and sought out regarding first research question. Cultural practices are also considered under traditional ones. Besides highlighting common property resources and comparing with examples and experiences of the other nations, other districts and other communities, I would like to delimit only on Non-timber forest products (NTFPs) regarding first research question i.e. CBNRM. While taking theme from the second research



question, I have drawn out trends, traditions, prospects, and practices regarding the transfer of knowledge, skills and attitude focusing on community-based natural resources management along with the KSE associated with their livelihoods. I considered the mature and old people as senior people for their respect in this study. To address final research question, secondary level environment education and the curriculum had been taken as a research sample model. I strictly concerned with the mountain issues exploring the Trans-Himalayan changing trend of Dolpa selecting only Juphal Community having comparison with Dangibanda<sup>7</sup> Community Forest Users Groups (CFUGs) covering between the periods of 2011 to 2012 A.D.

### **Chapter Summary**

General background along with my experiences and interest directs the dissertation story highlighting the major concern of research in CBNRM. Then, I have introduced the statement of the problem and setting research questions to simplify the problem followed by rationale of the study.

In this first chapter, I simply explored the present scenario of natural resources and its importance in the local context and rationale of the study. It also introduces the study area along with natural resources and its management practices. It has also follows limitations and delimitations.

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<sup>7</sup> A small community of Dangis

## CHAPTER II

### LITERATURE REVIEW

#### **Chapter Overview**

This chapter starts with the review of the literature related to the research area and themes of the study. The previous knowledge on the concerned issue has helped me to shape the study by searching what is studied and what is to be studied.

Mainly, I have relied on various articles, journals, reports of the academic documents, books related to the contents, electronic publications, abstracts, periodicals, indexes, dissertations, legal documents and policy papers as well. I collected and reviewed the themes based on research questions. Similarly, theoretical and conceptual framework and a brief description of the study area have been enclosed. I also reviewed general literatures as well as thematic literatures followed by conceptual framework. In general literature review, I had raised many issues to back up background of my study related to research area concept, evolution, practices, prospects, trends, benefits, challenges and possibilities regarding the burning issues in the same natural settings. Under thematic reviews, I have screened the issues associated with natural resources, forest, NTFPs, and rural livelihood.

#### **Thematic Literature Reviews**

Thematic literature has focused on digging out the themes of the research questions to substantiate the basic assumptions regarding the key themes guided by problem statement and based on research questions.

I collected three major themes addressing my research problems viz. existing practices on the CBNRM, generation-wise local knowledge transmission and possible

contribution of environment education to it. Existing practices are the key holes on human experiences. People learn from their long experiences which are seen at the existing practices. Again, existing practices come from the ground reality of the structures and institutions of the society and social knowledge, skills and behaviors. Therefore, in this study, I have plunged into the problem through the existing practices of my study area.

### **Global Scenario**

Community-Based Natural Resource Management (CBNRM) is an approach of natural resource management by, for and with local communities with the objectives of improving livelihood and security of local people, empowering them, and enhancing conservation efforts. CBNRM is an approach to the management of land and natural resources, which is relevant to, and has the potential to provide solutions to some of the problems found within the communal lands, where the majority of people live with, and depend on, natural resources (ICIMOD, 2006).

Community Based Natural Resources Management has three main objectives: a) Improving ecosystem integrity; b) Improving the well being of impoverished people; and C) Developing the capacity of local people to manage own natural resources sustainably, where institutions and individuals learn and work together and flexibly adjust their management strategies in response to new information. It has emerged as a complementary concept of Community Based Natural resources management (CBNRM). In CBNRM, the emphasis is often on rights and power relations, whereas adaptive co-management emphasizes cooperative governance, learning, adaptability and capacity development. Animistic religious belief systems have strongly influenced the use of natural resources and hence the livelihoods of the ethnic tribes in this biodiversity hotspot of the Indian subcontinent.

These require local people's central role in natural resources management by bringing their local community capacity (LCC) to bear on external project interventions.

### **CBNRM in Nepal**

Sustainable CBNRM depends on the participation of local communities and they perform NRM activities only when they see tangible benefits, and unobstructed access. Sustainable CBNRM demands that it should be based on indigenous knowledge of local people, their motivation to conserve natural resources and strong local organization to undertake the initiatives.

CF program has emerged in Nepal as a successful NRM initiative and has raised the hope of conserving, use and management of natural resources, particularly forest resources in a sustainable manner with the involvement and active participation of Forest Users Groups. Management of forest resource users has been realized increasingly as a better strategy for protection, conservation and sustainable use of forest resources in the hills. It is clearly demonstrated that women, due to their interaction with the natural resources, have developed vast indigenous knowledge, skill and technology regarding the protection, use and management of these resources. Similarly, globalization has different effects and changes in the eco-socio features in the third world after 90s. I have also explored the practices of the CBNRM and its difficulties linking with education and environmental awareness.

### **Linking Education and Health**

Arguably, the most important human capital initiatives are education and health. For generations, especially in rural areas, they are in shortage of proper educational services when families cannot reduce their social risk through education for children; they seek to enhance their protection by breeding more children as a source of cheap

labor for economic slumps and as a “household safety net” for the parents’ old age (United Nations Development Programme, 2001).

Education is crucial in both generations where parent's literacy is highly essential for their generation as well as the number and development of their children either. The common belief is that a country first has to become rich, and then it can provide good social conditions and welfare for its people. It goes hand in hand. Maintenance of the welfare society is very difficult without regulation of the market (UNDP, 2001, p.80). Empowering women, and strengthening their abilities, knowledge and competence to help them is the way of proceeding towards eradication of poverty (UNDP, 2006, p.85).

In our society, market is expanding as well as affecting people gradually. The formal attempts on development issues are naturally influenced by the market and its character.

The fact that people are taken care from the womb to the tomb is one of the triumphs of the western civilization (Ibid. p.86). Our society is gradually changing the practices on caring, protecting and educating their new generations to come in these years more than earlier.

Altogether, 29025 square kilometers (19.7 per cent) land area comprising; National Parks, wildlife conservation, protected areas, games conservation, and buffer zones has been declared as protected areas and is being managed accordingly. So far, 1.230 million hectares of forest area has been handed over to 14559, Forest user Groups (FUGs) formed under the community Forestry program directly benefitting 1.66 million households (MoF, Economic Survey, 2009/10, pp.151-162).

Next, to improve the socio-economic conditions of rural populations, CBNRM interventions should have the important goal to assure a high degree of sustainable

use of natural resources. Sustainable use in both ecological and socio-economic terms of these resources implies a high degree of involvement and active participation of community-based forest protection and management by rural people has a long history in the hills of Nepal. In many parts of the hills and mountains of the country, local people have established their own indigenous systems of forest management although there was not any government, institutional and policy support in those days. However, the government of Nepal nationalized all the privately owned forests (in excess of 1.2 ha in the hills and 3.5 ha in the Terai) through the Private Forest Nationalization of 1957 (Kanel, 1995). Because of this act, people gradually lost interest in the conservation, use and management of forest and this led to the gradual degradation of forest in the hills of Nepal. Therefore, the Government has realized that the forest cannot be managed and conserved without the active participation of the local communities. As a result, the government has enacted the Forest Act of 1961 and again amended this Act in 1978, incorporating the provision of community forestry in Nepal. The Master Plan for the forestry sector (1989) has further recommended that the community forestry should be the priority program of the forestry sector in Nepal (Kanel, 1995).

From all these provisions, we can say that the government has focused more on natural resource conservation and environmental protection. Moreover, the need of community forest is equally felt by the government itself, for conserving and managing at a time.

The relationship between communities and forests is imbedded in the products and services provided by the forests. With limited access to market and alternative sources of necessary domestic supplies, communities depend on the forests for fire-wood, food, fodder, timber, medicines, dyes, tannins, and so on. As market and

infrastructure develop and the population increases, demand on the resources further evolves. Indigenous management systems evolved to accommodate new economic and environmental pressures. However, as both internal and external pressures from markets, new government rules and regulations, population changes and new preferences increases, the ability of indigenous institutions to adapt to these changes decreases.

Appropriate reinvigoration of these local institutions would result in protection of traditional knowledge, information and a threatened resource base and improvement of the communities' capabilities to control the transition to a market economy while generating income. Forests, the principal asset of many mountain communities, need to become a source of income while meeting the local demands for food, fire-wood, fodder, medicines, and so on. Those things which are useful or necessary to human are natural resources. They may be renewable, replenishable and non-renewable.

The major environmental problems in Nepal are caused by land degradation, deforestation, and population. Poverty is the root cause of environmental degradation. Land and forest resources are overexploited because of heavy dependence on the natural resources base, while water and mineral resources identified are underutilized owing to lack of financial resources and infrastructure (Dhungana, 2009).

### **Existing Practices of CBNRM in Nepal**

Nepal has become famous, in recent years, amongst advocates of local resource management for handing over rights 'though not ownership' to some 400,000 ha of national forest to more than 7,000 community forest user groups. This has been accompanied by progressive changes in forest related policy. With very little investment by government, community forest management capacity has been

enhanced, some of the mid-hills forests are now richer, and wildlife has significantly increased. Recently, a national federation of forest users groups has been formed. Wildlife conservation policies, however, have not been so community-sensitive till very recent past. Issues similar to India's have been raised here too. Some PAs have in fact been protected by the then Royal Nepal Army, whose role has been "effective" from the wildlife point of view, but controversial with regard to local communities. These are signs of change, the strongest recent measures assisting in devolution of management responsibilities to communities in so-called conservation areas, mostly in the mountains.

The large Annapurna Conservation Area, for instance, is managed by an NGO and involves communities at various levels. In plains, legal amendments have mandated revenue-sharing with communities surrounding PAs. While experiencing with these measures is relatively new.

There are two types of benefits observed across sites internally and nationally. It has some direct benefits such as access to some subsistence and commercial products, share of revenues from hunting, tourism concessions, sales of timber and valuable non-timber forest products (NTFPs), employment, support for alternative livelihood activities, more productive resource-based infrastructural development in schools, clinics, roads, etc.

It has some indirect benefits such as organizational development and strengthening new alliances (e.g. with NGOs), new channels of communication with government, technical and managerial capacity building, diversification of livelihoods/income, political empowerment and greater visibility



### **Constitutional Provisions Regarding Environment and NRs**

Sub-article (O) of the article 33 under obligations of the state in "The Interim Constitution of Nepal" has made guarantee that, "To use natural means and resources including water resources of the country in the interest of the nation. Similarly, Sub-article (5) of the article 35, in part 4 states that, "The state shall make such arrangements as may be required to impacts in the environment from physical development activities by increasing the awareness of the general public about environment and special safeguard of the rare wildlife. The state shall make arrangements for the protection of, sustainable uses of, and the equitable distribution of benefits derived from, the flora and fauna and biological diversity (GoN, 2007, The Interim Constitution of Nepal)."

### **Provisions in Economic Survey**

Though there is not clearly discussed about the natural resources, however, the current economic survey of fiscal year 2009/10 has put special emphasis under the title of Energy and Forestry (ES, 2009/10, pp. 151-162). It has stated objectives focusing to ensure regular availability of timber, wood, fodder and other forest products through development and implementation if sustainability development program in People's active participation contributes to agricultural production through coordination between forestry and agricultural system; and protects the country's land area soil erosion, flood and landslides, desertification, and other environmental imbalances. Forest areas are managed and operated with the following objectives in Nepal. It maintains ecological balance through scientific management of forests, plants, watersheds, conservation of biodiversity, and protection areas; and at the same time empowers ultra poor and voiceless communities socio-economically by ensuring their access and rights to forestry products through sustainable enhancement of forest

resources. Similarly, it helps to promote domestic and export markets by creating employment opportunities through the promotion of forestry products based industries and businesses; and support in poverty reduction and creation of equitable society through judicious distribution of forestry products by raising level of income of men and women belonging to ultra poor Dalits, Adivasi,<sup>8</sup> Janjatis,<sup>9</sup> Madhesis, the depressed, the physically challenged, and people of other backward communities. It enhances participation and access especially to the ultra-poor, women and dalits, sustainable management of Non-Timber Forestry Products (NTFP), makes proper utilization, promotes the private sector investment, and promotes export of forestry and non-timber forest products (p. 157).

### **Forest Harvesting and Revenue Collection**

The Forest Act and Rules grant full freedom to the community forestry users group to harvest the forest products so long as they abide by the work plan and their actions do not cause significant adverse impact to the environment. This is one of the greatest strengths of the community forest program in Nepal. These legal initiatives were guided by the aims and objectives of the MPFS under which the community forest was also supposed to contribute to economic and social progress of the community, besides meeting their basic needs. When this was operational, people began to feel that their rights, which were taken away not very long back, have been restored. They also took it as an opportunity for resource generation for overall development of their village. It also enhanced the institutional development of the community. It is the freedom which, in fact, made the community forestry program of Nepal a model by itself a much more attractive and people friendly program compared to the Joint

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<sup>8</sup> Ethnic tribes

<sup>9</sup> Indigenous people

Forest Management initiated in India and other forms of participatory Forest Management in South Asia (Bhattarai & Khanal, 2005).

The Department of Forests (DoF) is responsible for the protection, sustainable development and promotion of all types of national forests. It has 74 district forest offices (DFOs) all over the country except in Mustang district of the western development region in the Himalaya. One of the principal objectives of the DoF is to fulfill national demand for forest products such as log, fire wood, household construction timber and small timber for agriculture implements through its district offices. As the cutting of green trees is prohibited, the department currently obtains logs from dead, fallen or uprooted trees. In addition, district forest offices harvest forest products when trees are removed during the development at works.

### **Key Valuable NTFPs Species**

Medicinal and aromatic plants are essential parts of traditional health care systems. Their gathering and cultivation provide a critical source of income for many rural communities, especially landless poor and marginalized farmers. MAPs are also inextricably linked to the region's natural biodiversity. Unfortunately, MAPs are threatened by various environmental, socio-economic and institutional problems, while attempts have been made, both at local level and national levels, to address these issues.

Non-Timber Forest Product (NTFP) is an important source of income for poor communities in the hills of Nepal. The most important category regroups Medicinal and Aromatic Plants (MAPs) used by herbal medicine and essential oil industries. According to Edwards (1996), in some rural areas the cash obtained from the harvest of NTFPs is the only income obtained from forest land, but may still contribute over 50 percent of the annual average household income. However, the situation of NTFP

is vital, little research or development has been carried out into any aspects of Nepal's NTFPs. NTFPs are also important parts of the biodiversity and are considered as component of livelihoods in terms of their economic, social and ecological value. As history shows, local communities have used these resources for food security and trade for centuries. The Master Plan for Forestry Sector [MPFS] (1988) claims that 15% of the Gross Domestic Product (GDP) of Nepal has been contributed by the forestry sector.

Lessons learned would be the knowledge and understanding gained by the experiences, whether they could be positive or negative. A lesson identifies what went well or what wrong. It must be significant, valid, applicable or replicable, and new. Lessons must be presented clearly and exemplified appropriately so that others can use them in other contexts. Clearly documented lessons construed to save the resources and time that would otherwise be invested in re-inventing the proverbial wheel. Since the piloting of policy tools not only creates conducive environment for the policy change, but also strengthens stakeholders' capacity for effective implementation (WTLP, 2012).

As a result of the population growth and shrinking of the forest area, the pressure upon the existing forest and pasture is being increased. Indiscriminating collection of NTFP is not only a cause, but undaunted regulatory procedure or recognized management practices have threatened the survival of some species and the quality of NTFPs. On the basis of the MPFS, Government of Nepal has formulated policies and logical arrangement for promotion of NTFPs in coordination with different stakeholders as well as local communities.

In recent years, people involved in forestry sector development have recognized the potential of NTFPs in contributing national economy, especially

through the medicinal and aromatic plants and felt the need of conserving this valuable resource.

### **Practicing Community Forestry**

Community forestry (CF) was initially defined by Food and Agriculture Organization (FAO) as, "...any situation which intimately involves local people in a forestry activity" (FAO, 1978). Community forestry can be a vehicle for the sustainable forest management addressing livelihood needs of people. Mountain ranges in the region have a history of disasters triggered by some. The Himalayas straddle some of the world's poorest region.

Community Forestry Guidelines and Manuals clearly specify the stepwise process for the identification of forests and users, formation of user groups, legal registration, and the handing and talking over process of forest management responsibility (ICIMOD, 2006).

It was based on protecting and planting trees to meet the forest product needs of the local people based on the principle of 'gap analysis'. Despite the hurdles and difficulties, CF has been advancing well in Nepal. There is no unique model for participatory or community based natural resource management. Different approaches, such as social forestry, joint forestry management, leasehold forestry, and buffer zone management have evolved in different countries in different social and political contexts and have their own strengths, weaknesses and specialties (ICIMOD, 2006, p. 5).

Initially, the main aim of the community forestry program was to protect greenery and fulfill the subsistence need of forest product for the rural people. This aim has almost been achieved up. At present, a number of CFUGs are stepped into economy enhancement in addition to fulfill their basic forest products needs. The

balance of timber in CF, current level of marketing and problems associated, role of different stakeholders, possibilities of improved marketing, and impact of current and proposed policies needed to be studied to boost up the timber marketing from CFs. The community forests are making money from selling the surplus forest products outside the CFUGs and contributing to several community development works, such as in activities like school, water supply, irrigation facilities, trail road construction, etc.

The Community Forestry has led to the expansion and deepening of the greenery and local communities are getting various benefits from forest products and funds, however, many challenges are also lying ahead of the program. These challenges could be assessing the contribution of the program, pro-poor orientation, and emphasis on income generating activities, focus on forest management for high demand products, involvement of local government, and the matter of good governance including inclusion, equality and equity.

#### **Provision in the Existing Laws (Acts, Rules and Regulations)**

The Forest Act, 2049 and Forest Regulation, 2051 have formed the legal bases for the community forestry as a progressive one. The legislation identifies the role and rights of the forest user groups and gives them legal rights to protect, manage and use forest resources according to an operational plan (OP) prepared by themselves. Out of 5.5 million ha. of forest of the country, 61% of them are identified as potential CF (MPFS 1989). 14,389 CFUGs has been formed covering 1.2 million hector of forest which is benefiting 38% of the people all over the country (DoF, 2008).

### **Local Level Initiatives and Occupational Priority**

Different types of natural resources have been discussed along with the practices which were found in the study area and it has linked with my research questions and derived possible themes followed by the key concerns of problem statement.

The main programs which are being implemented in Dolpa district are: Decentralized Local-Autonomous Governance Support Program (DLAGSP), Dolpa Institute, WFP, RCIW, UPAP, PUSEC, DRILIP, DESERT, DEPROSC NEPAL, SEDA NEPAL, DSBS DOLPA, KIRCDARC, DAGTAG, REAP, DECADE, HIMALI PROJECT, GHT, Friends of Dolpa, etc. ( FOKSUNDO AAWAJ, 2066).

The I/N/GOs implementing these programs are helping the target group people to be united in organizations, promote the income-generating activities, let involve in social mobilization, provide trainings, facilitate in working in novel ways, etc. To be more specific, let me present some exemplary works carried out by them. DRILIP has been helping for public road construction; DESERT has been working in the field of education and environment and also ventured in publicizing the Great Himalayan Trail; WFP provides food supplies for the workers who are involved in Jajarkot/Rukum<sup>10</sup> -Dolpa section road construction; etc. Most of the NGOS are working in poverty alleviation programs; by helping to form groups, raising awareness, issuing soft loan and monitoring them. In my study commentary too, DESERT, SEDA Nepal, DEPROSC NEPAL and other organizations are engaged in such activities.

The main occupations of people are agriculture and animal husbandry. Very few households have local shops from salt to gold, needle to noodle, eating items to drinking packages. A few are also engaged in government services like, Nepal Police,

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<sup>10</sup> Adjoining districts of Dolpa

Nepal Army, Armed Police Force, teaching professions and other civil services. The remaining population engages in private jobs in Nepal and abroad.

Since many people are engaged in business activities, herbs collection and sales, agriculture from long back, there is no trend to go abroad, especially in Gulf countries and the southern neighboring country, India. Yet, some students are in Germany, USA, UK, Belgium, and India for abroad studies. Therefore, agro-products and business economy are the major contributing factors for income generation.

### **Abundance of Nature and Natural Resources**

Water resources, wide and open coverage rangelands and thick forests are the strengths of the local resources. Microclimatic variation can be observed both horizontally and vertically. Currently available forest products in the north, which are main supporting livelihood of the people are fodder, fire-wood, timber, leaf litter and supplementary materials for making agricultural implements like the plough and its handle, the handle of sickle, trappings for wild beasts, etc.

The forest lies on a slope at an altitude of 1600 to 1800 masl with northern aspect and southern as well. There is not sufficient grazing land and rangelands in the northern site and very few is in the lower part of the village. People plant multipurpose foddors on the edges of their farmlands and homeland.

### **Role of Environment Education**

Environmental education is a process by which people develop awareness, concern and knowledge of the environment and learn to use this understanding to preserve, conserve and utilize the environment in a sustainable manner for the benefit of present and future generations.



Environmental education is intended for all types of learners, students, out-of-school youths, community leaders, policy makers and the public to develop appropriate environment-related skills.

Community knowledge represents a process of learning as much as a single body of information, Traditional knowledge is not just a system for the present, but sources of institutional memory about what practices have worked best over time. Such knowledge has been described as a ‘reservoir of adaptations’, a whole set of practices that may be used again if the need arises. Organic agriculture is based on ecological processes; knowledge of the agro-ecosystem is thus a prerequisite to any organic farm, farmers with traditional knowledge base are potentially better able to develop ecological processes to respond to the effects of climate change (AAE, 2009, p. 24).

The basic aim of environmental education is to provide different groups of people as well as graduates in a variety of professional fields with the knowledge needed to develop a sense of responsibility towards the environment and the rational utilization of its riches. This education should inculcate competencies needed for the solution of environmental problems and foster the highest cultural level of human in productive activity.

### **Other Related Literature Reviews**

Historical perspective of forest regulations in Nepal revealed that until the forest development Master Plan in 1989 recognized the importance of community participation in forest management, forest management rested in the hands of the government. However, the forest act and regulations ensured community participation in forest management. The community forest concept gave the local people a new

hope. By the end of 1996, 5300 user groups had been formed and had community forest areas handed over to them.

The forming of community forest user groups and handing over forests to the community management resulted in improving the condition of Nepal's forests. Community forestry also helped promote a number of other important policy objectives, such as fulfillment of people's basic needs, sustainable use of forest resources, and people's participation in decision making processes and gain sharing and general socioeconomic progress. Local people had to know about and be trained in community forestry, user group information, work plan preparation, active participation and program implementation; otherwise, the whole concept of community forestry, people's participation and gain sharing would remain mere provisions in the law and regulations. The efficiency of users group was the backbone of the success of the community forestry policy in Nepal. Government officials played a key role in educating the people about legal provisions concerning forest related matters. They guided, initiated and facilitated the activities of users group and took a lead role in institutional coordination, conflict resolution, work plan formulation and planning activities in the process of guiding the UGs. The federation of Community forest User Group was founded in 1995 (Widening Horizons, pp.33-34).

The African report considered the following conditions for success namely; Community is willing to invest in management measures. Community has ownership of their resources. Community is empowered to make key decisions affecting resource regeneration. Community uses effective approaches and technologies to ensure resource recovery. Community has by-laws and effectively uses them to manage sustainable off-take. Central government regularly provides communities and district

government with biophysical information derived from monitoring populations and ecosystems at larger scale. Government agencies provide consistent support to communities. Environmental issues remained unnoticed in the developing world. To the four great plagues of mankind-war, famine, pestilence and death can be added yet another environmental degradation (Subedi, 2009, p.143).

### **Common-Pool Resources or Common Property Resources (CPR)**

Common-pool resources (CPRs) are resources, to which more than one individual has access, but where each person's consumption reduces availability of the resource to others. Important examples include fish stocks, pastures, and woods, as well as water for drinking or irrigation.

On a larger scale, air and the oceans are common pools. Some common pools exist primarily due to technological properties of the resource. For example, difficulties in controlling people's resource usage prevent the transformation of a common pool resource into a private resource.

Naturally, occurring resources within environments which are not disturbed by mankind, and allow them naturally in the natural phenomenon are natural resources. Natural resources are characterized by amounts of biodiversity, geo-diversity in various ecosystems and derived from environment. Materials or compounds found within the environment are natural resources (Schilling & Chiang, 2011).

The global community had to wrestle with the causes and consequences violent domestic conflicts if they were to truly aid development. The growing awareness and implications of the long ignored subject of environment and climate change (Pandey, 2011, p.42). The LSGA had not paid enough attention to make the local institutions transparent, accountable, and responsible (Khanna, 2010).

Adhikari (2001) conducted a study with gender prospective on CBRM. He outlined that women develop vast indigenous knowledge, skills and technology regarding conservation, protection, use and management through interaction with natural resources. However, he revealed that women have very low participation on decision making forum on CF programs, which would hamper the success of the current community forest programme. Thus, this research identified the need of involvement of women for the success of CF programs.

Natural protection concept has been changed due the concept and practice of CBNRM and the Acts and Rules regarding environment conservation and protection should be dynamic and contextual (Dhungana et al., 2009, p.133).

Ostrom (1990) has challenged the conventional wisdom that common property is poorly managed and should be completely privatized or regulated by central authorities. Based on numerous studies of user-managed fish stocks, pastures, woods, lakes, and groundwater basins, Ostrom concluded that the outcomes are often better than predicted by standard theories. The perspective of these theories was too static to capture the sophisticated institutions for decision making and rule enforcement that have emerged to handle conflicts of interest in user-managed common pools around the world. By turning to more recent theories that take dynamics into account, Ostrom found that some of the observed institutions could be well understood as equilibrium outcomes of repeated games. However, other rules and types of behavior are difficult to reconcile with this theory, at least under the common assumption that players are selfish materialists who only punish others when it is their own interest. In field studies and laboratory experiments, individuals' willingness to punish defectors appears greater than predicted by such a model. These observations are important not only to the study of natural resource management, but also to the study of human

cooperation more generally. The two contributions are complementary. Williamson focuses on the problem of regulating transactions that are not covered by detailed contracts or legal rules; Ostrom focuses on the separate problem of rule enforcement. The overexploitation of common-pool resources is a well-known problem that has occupied social thinkers for at least two millennia and probably even longer. More than forty years ago, the biologist Garrett Hardin (1968) observed that over-exploitation of common pools was rapidly increasing worldwide and provided the problem with a catchy and relevant title, '*The Tragedy of the Commons.*'

In economics, two primary solutions to the common-pool problem have been suggested. The first is privatization. The feasible forms of privatization depend on technologies available for measurement and control. For example, if detailed monitoring of appropriation is prohibitively expensive, effective privatization may require concentration of ownership in the hands of one or a few agents.

Ostrom proposes several principles for successful CPR management. Some of them are obvious, at least with the benefit of hindsight. For example, i) Rules should clearly define who has what entitlement, (ii) adequate conflict resolution mechanisms should be in place, and (iii) an individual's duty to maintain the resource should stand in reasonable proportion to the benefits. Other principles are more surprising. For instance, Ostrom proposes that monitoring and sanctioning should be carried out either by the users themselves or by someone who is accountable to the users.

This principle not only challenges conventional notions whereby enforcement should be left to impartial outsiders, but also raises a host of questions as to exactly why individuals are willing to undertake costly monitoring and sanctioning. The costs are usually private, but the benefits are distributed across the entire group, so a selfish materialist might hesitate to engage in monitoring and sanctioning unless the costs are

low or there are direct benefits from sanctioning (Ostrom, 1990, pp. 94–98) documents instances of low costs as well as extrinsic rewards for punishing.

However, from Ostrom, Walker, and Gardner (1992) onwards, she came to reject the idea that punishment is always carried out for extrinsic benefit; intrinsic reciprocity motives also play an important role. Another nontrivial design principle asserts that (v) sanctions should be graduated, mild for a first violation and stricter as violations are repeated. Ostrom also finds that (vi) governance is more successful when decision processes are democratic, in the sense that a majority of users are allowed to participate in the modification of the rules and when (vii) the right of users to self-organization is clearly recognized by outside authorities in *Governing the Commons*.

Here, following table presents the sectoral laws and policies.

Table 1

*National Policy, Rules and Regulation on NTFPS*

S.N.	Sectoral Laws & Policy	Year
1	Master Plan for Forestry Sectors (MPFS)	1988
2	Forest Act	1993
3	Forest regulation	1995
4	Community Forestry Directives	1996
5	Non-timber Forest products (NTFPs) Policy	2004
6	Collaborative Forest Management Directives	2012

Cross-sectoral laws and policy, especially, tenth five year plan, Nepal

Conservation Strategy (1988), Forests Encroachment Control Strategy 2068

BS/2012 AD, Nepal Environment Policy and Action Plan (1993) and CITES and the

NTFPs regulation in Nepal emphasized on control in extraction, use, trade and

marketing. Some species of NTFPs are banned for extraction, while other are banned for collection, while other are banned for export in crude form. According to HMG, Nepal (2001), the following 3 species have been banned totally concerning collection, movement and export. Those species are: *Dactylorhiza hatagirea*, *Juglans regia* and *picrorhiza schophulariiflora*.

The following nine species have been banned for export without processing *Nardostachys grandiflora*, *Rauywolfia serpentine*, *Cinnamomum glaucensu*s, *Valeriana jatamansii*, *Permalia species*, *Abies stabilis*, *Taxus baccaca*, *Organic exudates* and *Cordiceps sinensis*.

Permit system has been designed to regulate the collection, trade, processing and marketing of NTFPs and forbid collection of banned plant products. There are some formal procedures that have to be fulfilled for collecting NTFPs from community or National forests. However, it seems that the concerned authority has not recognized the traditional rights to collectors to harvest NTFPs and as a result collection is undertaken in all accessible forests and pasture. Although, policy has emphasized involvement of local people in the management of forests resources, but it hardly seems to effect in reality due to implementation and monitoring capacity of the concerned authority. Depletion and overuse of the commercially exported species have been reported in several studies in Nepal.

Yarchagumba<sup>11</sup> is one of them. Its latin name is Cordyceps. Cordyceps is a parasite fungus, caterpillar fungus, medicinal fungus and entomogenous fungus. It is also fruiting body of fungus after mummifying the larva. There are species of Cordyceps throughout the world but mainly two types of cordyceps are very popular. The first one is Cordyceps Sinensis, which is supposed to be original and called true

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<sup>11</sup> Cordyceps Sinensis (Himayan herb with high economic and medicinal value)

type. Another is *Cordyceps Nepalensis*, which is duplicate and also known as false type.

Yarshagumba is available mostly in western and central parts of the Himalayan regions of Nepal, especially in Dolpa, Mugu, Jumla, Humla Darchula, Kalikot, Bajura, Manang, Mustang and also in some patches of higher belt Rukum, Rolpa, Dhading, Sankhuwasabha and Taplejung. We can get very few from the eastern higher part of Nepal. The popularity of Yarshagumba has been increasing year by year. However, there are various types of medicinal plants in Nepal. We can hear various type of local name if we visit and consult the different parts of Nepal where Yarshagumba is found. Chinese say, Dong Chong Xio Cao that means winter worms, summer grass. Tibeaten says "Yar Cha Gum Bo" here, Yar means summer, cha means grass gum means winters Bo means insect. Himalayan people of Nepal call with different names like Jara, Kira, and Jhar. Some people say Yarsha, some say even Chyau, some other say Jiwaon-Buti as life herbal, in general it is called either Yarchagumba or Yarshagumba or Kira or Jara.

Table 2

*Legal steps for activities responsible organization on export of NTFPS*

S. No.	Collection License	DFO/ CFUGs
1	Royalty payment	DFO/CFUGs
2	Release order	DFO
3	Export duty	DFO
4	Import duty	Department of industry, Customs, Nepal and other countries

(Source: HMG/N Forest Regulations, 1995). As being a signatory, Nepal

honors all the provisions set forth by convention on International Trade



### Conceptual Framework

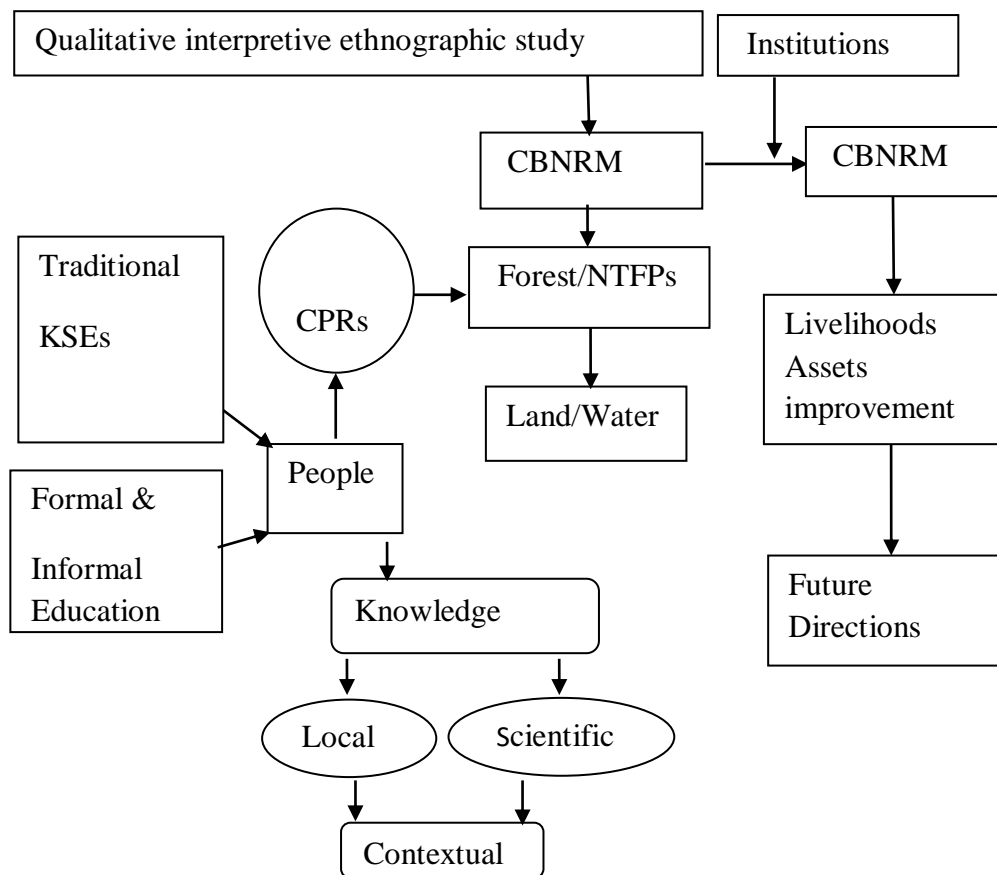


Figure 1. Conceptual framework of the study.

### Chapter Summary

I have described various literatures to highlight the problem statement. In this chapter, I have conceptualized different themes regarding CBNRM. Previous researches either carried out, in global context or national and local issues are explored with related theories.

I have concluded the chapter along with conceptual framework which deals how the whole research work was carried out. It also sought, what are the role of the community people along with the existing practices, challenges and difficulties faced by the community connecting three research questions with related themes.

## CHAPTER III

### RESEARCH METHODOLOGY

#### **Chapter Overview**

This chapter deals with the research methodology. I followed both theoretical and methodological approaches. I have discussed and collected required information based on ethnography strategy.

#### **Choosing Qualitative Method**

Being a social researcher, I have selected the humanistic model through which I have given emphasis on subjective meaning, by rejecting determinism and I claim such meaning of behavior is essentially personal and subjective. The learning and experiences of the people in the area are the sources of knowledge that I acquire. I believe that purposive frequent observations, meetings, interactions and discussions can explore the knowledge and share the experiences.

Therefore, I have chosen the ethnography as my research strategy.

Philosophically, I was aligned with the group who believe in the multiple realities. The reality is constructed and valued by the human beings. It cannot be experimented or verified easily, but can be described as in the natural settings. The researcher has employed a qualitative approach. The theoretical argument for employing this approach is that the title itself is about the CBNRM practices and experiences of real people who have experiences, knowledge, skills, dreams, aspirations and expectations as ordinary community people follow and still practice to tell stories, practices and problems from their own perspectives as they wade through, face and experience it especially those who are totally engaged in agricultural life and experienced all the

problems and situations. I also used both structured and open questionnaire in inception to understand the common problems, issues and experiences faced by these respondents and local community people.

The purpose of this questionnaire was to reveal ground realities and the changing trend regarding CBNRM in surface before entering into interview step during my observation. From this information, I screened only seven key respondents and conducted in-depth interviews.

Due to the feature of qualitative research, I found that this study could be an interdisciplinary, trans-disciplinary, and sometimes counter-disciplinary in nature. A qualitative research gives more meaning at the same time. Sometimes, it could be multi-paradigmatic in focus. Its practitioners are sensitive to the value of the multi-methodic approach. They are committed to the naturalistic perspective, and to the interpretative understanding of human experience. At the same time, the field is inherently political and shaped by the multiple ethical and political positions

Qualitative research is a complex process with definitions that change over time. In tracing the development of qualitative research through five historical moments, Denzin and Lincoln (1994) offer a 'summary' statement, which guides this study in naturalistic research, meaning arises out of social situation and is handled through interpretive processes (Creswell, 2003). In explaining qualitative research, Denzin and Lincoln (2005) state that, qualitative research implies an emphasis on processes and meanings that are not rigorously examined, measured, in terms of quantity, amount, intensity, or frequency. Qualitative research enters into its subject matters, applying and involving the interpretative naturalistic approach.

This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people

bring to them (using a) variety of empirical materials- case study, personal experience, introspective, life story, interview, observational, historical, interactional and visual texts- that describe routine and problematic moments and meanings in individuals' lives (Denzin & Lincoln, 1994). Creswell (2009) further said, 'Qualitative research takes place in the natural setting. The qualitative researcher often goes to the site of the participant to conduct the research. This enables the researcher to develop a level of detail about the individual or place and to be highly involved in actual experiences of the participants.'

Since my research problem and questions are open, the feelings and experiences cannot be retrieved through structured questionnaire or single survey within quantitative method and practices of the community people cannot be captured in one snap. Therefore, I have chosen the qualitative approach. Here, I collected data related to the outcomes of certain interventions using this approach as Creswell (2003) says, 'Qualitative research uses multiple methods that are interactive and humanistic.'

The methods of data collection are growing, and they increasingly involve active participation by participants and sensitivity to the participants in the study. Qualitative researchers look for involvement of their participants in data collection and seek to build rapport and credibility with the individuals in the study. They do not disturb the site any more than is necessary. In addition, the actual methods of data collection are traditionally based on open-ended interviews, observation and documentation. Now, it includes a vast array of materials, such as emails, scrap books etc. The data collected involve text (or word) data and images (or picture) data (Creswell, 2003).

## **Philosophical Considerations**

Three essential philosophical assumptions mainly ontology, epistemology and methodology of the research have been discussed briefly under philosophical considerations.

### **Ontology**

Ontology is related to the theory of reality. The interpretivists believe that the reality is subjective. The problem with discussing ontology is that it seems incredibly abstract with little to do with the concrete demands of everyday life. Ontology regards the nature and form of social reality. It links the problem to the more general philosophical questions of the existence of things and of the external world. Research participants' different perceptions, views and opinions are also my valid and acceptable realities in my study.

Reality is not "out there." apart from the minds of actors (Creswell, 2009, p. 248). For me the knowledge exists within their values, beliefs, attitudes and perception of the people within the context of my study areas. Moreover, Ontology deals with the nature of being and should answer 'What is truth?', 'How is it created and continued? And 'is it beyond actors or within them?' My belief is, truth is originated in and shaped by human beings. It is contextual and valued. Universality of truth is illusory when truth itself is human creation. So, truth can be found within the actors, knower and stakeholders.

### **Epistemology**

Epistemology is the branch related to the theory of knowledge. The interpretivists believe it as contextual. It is the study of knowing. It deals with the nature of knowledge. How do we know things, what do we know, why we know, is what we know true, and what could be the limits of knowledge. It is the relationship between

outcome of the relationship between the 'Who' reality and above all, focuses on the relationship between the observer and reality observed (Corbetta, 2003). The knowledge for my study is the information collected from the interaction of the participants. As I believe in the existence of multiple realities, the varieties of responses from the people of my study area is the source of knowledge for this study. Methodology regards how social reality can be studied and to technical instruments of the cognitive process (Ibid).

"How do I know the world?" what is the relation between the inquirer and known? Every epistemology implies an ethical moral stance towards the world and self (Denzin & Lincoln, 2005). I am highly influenced by the theories and principles of 'constructivism'. I believe that knowledge cannot be transferred from one individual to another. It is a matter of construction through social interaction.

Being a social researcher and being here and there during the ethnographic study, community people are the source of my knowledge. I would like to search knowledge from the societies and communities by probing the people up to saturated level scattered there on remained the cream of my dream within the stakeholders digging out their knowledge, skills and experiences, residents of my study area. Research should organize the knowledge remained within the actors and their experiences.

Knowledge organizes experiences, which first permit cognition of the world beyond the experiencing subject or organism. Experiences are structured and understood through concepts and concepts, which are constructed by this subject. Knowledge is constructed in process of social interchange, it is based on the role of language in such relationships, and above all, it has social functions. The eventualities

of the social processes involved have an influence on what will survive as a valid or useful explanation (Glaserfeld, 1995, as cited in Flick, 2006, pp.79-80).

My key sources of knowledge within this qualitative approach, would be beliefs (Superstitious, modern, post- modern), experiences (Personal and collective, Positive and negative and successful and failure), norms and values (Traditional and cultural) and thriving aspirations and expectations of the community people and the concerned actors.

### **Axiology**

Axiology is the theory of values. It refers to the value of people. Values are situational and relative. The inquiry is value bound. As respondents are different from one another, they do not look like the same, do not sound the same and they think differently. It deals with how people think and determine the value of different things. These values are specific items that people stand for, and believe in. On the basis of the governing norms, values and ethics of the environment human live in, people view their existence and the knowledge that surround them. People behave as their value guides them. It means people view their existence and the knowledge that surrounds them. I strongly agree with Cohen and Manion's (2002) understanding of the way in which the individual creates, modifies and interprets the world in which he/she finds herself/himself. This is how individuals compare things and how those values assigns; either represents or distorts reality, it is to decide which way of teaching and reading is good.

Richards (2003) says that all truths like all investigations and understandings are value-laden. Axiology of interpretive paradigm believes that everyone is guided by certain value and decides the worth of any knowledge and respects for every knowledge as no values in the society are wrong but they are only different.

Therefore, I tried my best to respect every one's value yet it involved filtering, processing, storing and analyzing data. The strategies of the learners are judged and chosen. Their unique pattern of thinking and assigning value is called their value structure. I valued the multi-layered realities. The reality is not outside, but is created by one's own mind using subjective interpretation. I valued experiential knowledge rather than the acquired one.

### **Research Design**

Positivism and Post-positivism believe single reality whereas interpretivism is based upon multiple realities. So different sorts of researches are designed to find out the specific realities concerned (Kelliher, 2005). I have maintained interpretivism in my research. According to Kelliher (2005), interpretivists believe that reality is not objectively determined, but is socially constructed. The underlying assumption is that by placing people in their social contexts, there is greater opportunity to understand the perceptions they have of their own activities (Hussey & Hussey, 1997, as cited in Kelliher, 2005). By its nature, interpretivism promotes the value of qualitative information in pursuit of knowledge. "In essence, this research paradigm is concerned with the uniqueness of a particular situation, contributing to the underlying pursuit of contextual depth" (ibid).

I found my position more close to interpretivism. The qualitative research design approach and ethnography as a methodological design have guided me to my queries.

### **Interpretive Inquiry**

I adopted the interpretive paradigm and ethnographic approach. Through these approach and paradigm, I interpreted the lived experiences relying on the participants' understandings.



Interpretivism subsumes the views of writers who have been critical to the application of the scientific study of the social world and have been influenced by different intellectual traditions. To find out the in-depth perceptions of the people, it is necessary to consider the varieties of values, beliefs and attitudes of the people with their underlying assumptions. For this purpose, I found interpretive inquiry as the best way as it believes in multiple realities. It is determined subjectively and can be constructed socially according to the time, context and situation (Von Wright, 1971). A self-philosophy opening questions ask the respondents about how they consistently feel or think about practices of Environment Education (EE). The cultural framework principle consists of asking questions about how the respondent believes other people in his/her situation would feel about natural resources management in Nepal.

### **Methodology**

I collected both biophysical and socio-economic data as primary and secondary data in this study. I have selected the ethnography as a strategy of inquiry within qualitative approach. I have to exhume the values given by the stakeholders in my study; what cultural setting is growing as the intervention of it in the society. According to Cohen et al. (2000), "Inquiry is influenced by the values that inhere in the context. As per Creswell (2003), "These strategies focus on data collection, analysis and writing, but they originate out of disciplines and flow throughout the research."

I faced the great dilemma, while selecting and entering the study area. Thinking repeatedly about the selection of field, I could not select my study area easily in the beginning. I strongly believed and thought that I should select my native land i.e. Chhapahile, Gulmi. After my proposal presentation, I had tried to get the data visiting the spot three times, but I was not satisfied. I had to return Dolpa, since I was

NOMA scholarship student for EESD course at KU from Dolpa among public school teachers. I returned to my teaching profession in my school, Dolpa. I tried to connect and sufficient collect data from the study area Gulmi in the very beginning, but I could not do so, due to the uneasy access to Gulmi from Dolpa. Therefore, upon prior approval from the concerned authority at university, I amended my study area from Gulmi to Dolpa on same topic applying ethnography as a strategy of inquiry following qualitative method. Thenceforth I consulted DFO and my staff members, and chose Juphal as my study area due to easy access out of better forests among CFUGs. I mostly selected my off days to enter my field study. Then, I started my research journey towards Juphal community enthusiastically.

Dolpa is one of the Himalayan districts of Nepal, which is the largest in area, fully rich in biodiversity and diverse in culture. Despite the snow-peaked beautiful mountains and spellbound natural beauty, it is prevailed with elevated and fragile terrain, socio-economic backwardness and physically remoteness.

My study area is Juphal, a small community of Dolpa for this social research. Juphal is the mixed part of mountain and highland area. It has rugged topography, complex and fragile nature of the geological structure, soft and shallow soil covers, highly intensity rainfall in the monsoon season.

According to recent National Population Census 2068, the total population of Juphal is 2279. Out of them, 1,108 are males and 1,171 are females having 568 households in my study area of Juphal VDC, whereas the total population of Dolpa, despite being the largest district of Nepal, is only 36,700, where there are 18,238 males and 18,462 females as counted up and stated in the latest census report. On the one hand, I have been observing the Dolpa NTFPs' economy and its multiple effects since past ten years on the other hand. On the other, as a student of

environment education and sustainable development from Kathmandu University (KU), I wanted to explore more about environmental issues linking with educational aspect of Dolpa community from my own more interested field where normally researchers cannot go and choose as the study area due to remoteness, budget and time factors.

I wanted to make smooth my data collection procedure through the strategy of ethnographic inquiry. Therefore, observations, in-depth- interviews and small group sharing (SGS) have been used as the data collection techniques followed by respective tools, i.e. observation checklist, interviews as supportive instruments. For interview, I used semi-structured and open questionnaires. I maintained observation guidelines for observation besides diary maintaining and memo-notes. Through in-depth interview, I have probed the stakeholder's beliefs, experiences and feelings linking all relevant issues.

Nepal is one of the few countries, which is enviably rich in genetic resources, but financially constrained. Various types of herbal plants are found in Nepal since our very long history.

Another reason for choosing this topic is to define the CBNRM practices with the lenses of educational and environmental perspectives. There is a debate among the different circles, levels, CFUGs, and even between the conservationists and consumerists, environmentalists and economists, positivist and postmodernists regarding the meaning and the approaches of existing practices. Hence, I was interested in knowing which school of thought has influenced the collectors' understanding of NTFPs like Yarchagumba economy. Finally, the outcome of this study may help the policy makers to understand the community peoples' perception on environmental and school ethical practices and their reflections to the society,

which can contribute to formulate new local-based controlling and managerial policies or to modify the existing ones.

### **Ethnography**

Ethnography is the study of human social phenomena and communities, through means such as fieldwork. It is considered as a branch of cultural anthropology, which focuses on the study of human societies. Some people use “ethnography” and “cultural anthropology” interchangeably, although cultural anthropology includes more research techniques than just ethnography.

Ethnography is a strategy of inquiry in which the researcher studies an intact cultural group in a natural setting over a prolonged period of time by collecting, primarily, observational and interview data (Creswell, 2007). The research process is flexible and typically evolves contextually in response to the lived realities encountered in the field setting. Denzin and Lincoln (2005) state “Ethnographic research is representation or the problem of showing the realities of people.” So this theory governed my research. It sought to describe and understand the behavior of a particular social or cultural group.

This research studied the members of the community in their natural setting. I tried to see the things from the perspective of members of the community and required extended exposure in the field. The practice of ethnography usually involves fieldwork in which the ethnographer lives among the population being studied. While trying to retain objectivity, the ethnographer lives an ordinary life among the people, working with informants who are particularly knowledgeable or well-placed to collect information.

People in modern days are applying different level of methods and tools to collect the data and information but in this study, I have applied personal interview,

small group interactions and individual interactions, bird-eye view and observations are the key elements to apply in the research area. The choice of which method to employ is dependent upon the nature of the research problem. Noor (2008) cites Morgan and Smircich and states that the actual suitability of a research method derives from the nature of the social phenomena to be explored.

I have chosen this strategy for this research, as Cohen (2000) states, “humans actively construct their own meanings of situations”; about the elements of naturalistic enquiry. Creswell (2003) recommends ethnographies, “in which the researchers study an intact cultural group a natural setting over a prolonged period of time by collecting, primarily, observation data (Creswell, 1998).

In ethnography, the researcher spends with the cultural group in a natural setting over a prolonged period by collecting, primarily, observational data (Creswell, 1998). The researcher process is flexible and typically evolves contextually in response to the lived realities encountered in the field setting. In an ethnography study, the investigator collects descriptions of behaviors through observations, interviewing, documents, and artifacts (Creswell, 2009, p.131).

Ethnographic investigation describes the culture of a particular group of people to clarify how the members of the group view their own culture (Ghimire, 2011, p. 11).

From all these data, it can be said that ethnographic study takes place in particular place and culture where researcher spends long time along with their life style to explore the required information through participation observation, in-depth interview and other means of data collection strategies.

### **Primary Data Collection Strategies**

Major CFUG members, stakeholders, DFO at the district level in Dolpa were identified for obtaining information on availability and opportunities for the identified CBNRM. Research tools and techniques such as questionnaires, key informant interview, formal and informal interviews and interactions, participatory observation and resource mapping were mainly undertaken to obtain primary information. Major stakeholders such as District Forest Office officials, members of the CFUGs and CFUG executive committee, FECOFUN members, local resource persons, members of the District Chamber of Commerce and VDC, teachers, students, NTFP collectors and traders were consulted during the fieldwork for relevant information collection. Information was cross checked and data triangulation was performed as far as possible to ensure the validity of the collected information.

#### **Small Group Sharing (SGS)**

Discussions through small group sharing were carried out among the various stakeholders by covering poor to disadvantaged groups, community people to leaders, students to teachers, social actors to government officials. For this, ethnography is the main model of information collection. I had to collect the data related to present situation and practices, stakeholder's aspirations. I have spent ten years in Dolpa. So having close attachment and engagement with the local people, I met with many people and consulted as much as I could.

In this study process, I talked with so many small groups formally and informally. When I met a group of people, I used to start my query after rapport building in the natural setting. I was benefitted more on getting information in this process. I got various views and opinions by consulting stakeholders. Such small

group sharing contributed a lot enriching the ideas and developing the themes of research questions.

### **In-depth Interview**

It is an intensive study of a small village as a single unit or case. Therefore, the in-depth interview was carried out within the key stakeholders. During this process, information regarding all research questions and debatable issues has been drawn in such a way that it establishes reliability and validity of information and findings.

I always tried to build rapport before taking interview, which is an essential part of the research interview. However, I am not from the same ethnic group as community people, better relationship seems to prevail when they know my social status as a teacher and familiar person. Research respondents were asked many open-ended questions and few close-ended questions as well.

Theoretically, in interviews, the researcher conducts face-to-face interviews with participants, interview participants by telephone, or engages in focus group interviews with six to eight interviewees in each group. These interviews involve unstructured and generally open-ended questions that are few in number and intended to elicit views and opinions from the participants.

Oral history of the condition of the CFUG and the other resources in the study were obtained by interviewing elderly people who shared their knowledge about the protection and management activities of their community (Chhetri & Pandey, 1992, p. 15).

As Best and Kahn (2003) claimed in the book 'Research in Education' regarding the benefit of young interviewer, I did not agree upon that views. They further said that younger interviewers seem to be more successful than older, particularly when middle-aged respondents are involved. Again, they said, "Women

seem to have a slight advantage over men in getting candid responses, although, depending on the topic, e.g. male impotence, male interviewers might be more successful. Of course, experience tends to improve interviewing skills". Accordingly, I have also screened only seven research participants as the key respondents. While taking interviews, sometimes, I recorded videos and took audio interviews along with capturing their important photos upon prior consent and approval.

### **Observation**

In order to get the detailed description and holistic picture related to access to education both participants and non –participants' observations had been done. I tried to find their behavior, daily activities that can be identified through informal interactions with the community people along with the frequent and prolonged observation.

In observations the researcher takes field-notes on the behavior and activities of individuals at the research site. In these field-notes, the researcher records, in an unstructured and semi-structured way, activities at the research site. The qualitative observer may also engage in roles varying from a non-participant to a complete participant (Creswell, 2003).

I have tried to take detailed notation of behaviors, events and the texts surrounding the study area as claimed by Best and Kahn (2011). For that I have interacted time and again with the community people in many ways exploring their inner ideas, thoughts and practices.

### **Research Participants' Profile**

To conduct my research, I had screened 21 respondents in the very beginning and I thoroughly filled up the closed questionnaires in the first round. During the period, those who could answer well and logically related to my research problem and



questions; I selected seven (i.e. one-third) participants out of 21 as my key research informants purposively by representing different categories and making more inclusive.

Here, I have talked about my research participants based on collected basic information and their background. I would like to present a short profile of the seven purposively selected key research participants.

R1 is a social and political leader. He is 65 years old. He has served for six terms as the Pradhan Pancha<sup>12</sup> in the Panchayat era and Chairperson of VDC as well. He is so popular for his social service and is leading an elite role in the community and the district too. He is very much curious about social, political and natural issues. He used to write legal documents in his young period like *Tamasuk*, *Rajinama* etc. He knows many more species of medicinal plants. He can make local medicines by using different herbal products. Therefore, he is also known as Baidhya Babu Saheb. He is fond of bird hunting. He is also the chairperson of the School Management Committee. He is a very frank, active and practical man. He has prolonged experiences in many spheres of the life. He hardly speaks without any sayings or proverbs. He is a bold, arrogant and straightforward social leader in the community.

R2 is a mature local farmer having a long experience of practical life. He was a businessperson in his adulthood, now enjoying the geriatric life with his wife. He is also aligned with the district level political stream. He seems very simple; listens more speaks less, answers straight with logic, and has unique local tone, can speak and understand Nepali language very well. He is popularly known as Dhami in the community. He is an experienced farmer cum religious devotee. He is also skilled in knitting sweater, Radi Pakhi, Doko, Namlo, Choya Chitro, etc. He is so alert and

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<sup>12</sup> Chairperson of the VDC in Panchayat era

curious on nature, environment and forest issues. He is just a literate person; however, the community respects him as a community elite personality.

R3 is a woman research participant from the Shahi-Thakuri family. She is a middle-aged woman of about 40 years. However, she is a daughter-in-law, is very active in the community. She used to raise current issues in the community and wages strong voice against injustice. She can frankly share her views in the meetings.

R4 is a matured male participant, social leader and local politician.

While speaking, he smiled and spoke with satirical jargons using body language. He put himself busy in participating in social activities. He is very much close with the local tradition and community practices. He is popular as Baidhya<sup>13</sup> for his expertise in the non-timber forest products (NTFPs). In the past, he used to collect and sell those medicinal and aromatic plants (MAPs). Now, he is more engaging in social and community activities, especially district level programs. He is so active and energetic. He used to crack jokes and satires with the familiar people and shows keen interest in speaking with the stranger.

R5 is the Headmaster of government school. He is popular among the community for his dynamic leadership in the school. Currently, he is studying Master's degree in Educational Planning and Management (EPM) in Tribhuvan University (TU) and was cooperative with the researcher taking keen interest in research. He has ample experiences of educational leadership and the community issues as well.

R6 is a female participant. She is a student in class ten. She is a sharp-minded girl. She has a habit of providing prompt response. She looks simple and keeps on smiling while answering the queries. She gives shortcut answers with logic. She can

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<sup>13</sup> traditional healer in the local community

speak well among many students. She has a good understanding of formal education and demonstrates better performance at school with practical knowledge.

R7 is a young woman from so-called dalit family. She has bitter experiences due to unsociable culture. She feels disgusted about the prevailing community practices over there. She is not satisfied with the present culture which is discriminating people in the name of caste and culture.

### **Data Analysis in Ethnographic Research**

Based on the data generated via ethnographic research approach, I analyzed the data, moreover, trying to dig out the knowledge based on the existing situation, causes, local efforts and the way outs to address the solution in thick description. I had chosen an area of Dolpa, suitable, comfortable and accessible for my study, where I spent about nine years in a nearby village by maintaining sound relation with all the community people where there were less chances of being biased because I could get the factual data and real voice of the respondents. If I had selected the new study area, either people would have been manipulated data or hesitated to share their own concepts, perceptions, ideas and challenges. Thus the relevant data could not be explored the ground realities within expected time from the targeted location and community where findings may be applicable throughout the mountain area of Nepal, where there is similar natural settings and similar situations.

Data analysis is a process of extending and expanding valid data information, beyond a purely descriptive account with an analysis. It is also a step of making sense out of available data. Here, it is trying to identify key factors and meaningful relationships in the data. It is also a challenging job to produce rational meaning to the data as it gives an outlet to reach for understanding. The qualitative research is fundamentally interpretive. This means that the researcher makes an interpretation of

the data. This includes developing a description of an individual or setting, analyzing data for themes or categories, and finally making an interpretation or drawing conclusions about its meaning personally and theoretically, stating the lessons learned, and offering further questions to be asked (Wolcott, 1994, as cited in Creswell, 2003, p.182).The qualitative researcher uses complex reasoning that multifaceted, iterative, and simultaneous. Although the reasoning is largely inductive, both inductive and deductive processes are at work.

I, as a qualitative researcher, adopted and used one or more strategies of inquiry as a guide for the procedures in the qualitative study. The process of data analysis involves making sense out of text and image data. It involves preparing the data for analysis, conducting different analyses, moving deeper and deeper into understanding the data, representing the data, and making an interpretation of the larger meaning of the data (Creswell, 2003). Sense making from context is really challenging and interesting.

### **Quality Standards**

The criterion involves establishing the results of qualitative research are credible or believable from the perspective of the participants in the research. Since from this perspective, the purpose of the qualitative research is to describe or understand the phenomena of interest from the participants' eyes. The participants are the only ones who can legitimately judge the credibility of the results.

Transferability refers to the degree to which the results of qualitative research can be generalized or transferred to other contexts or settings. From a qualitative perspective transferability is primarily the responsibility of the one doing the generalizing. The qualitative research can enhance transferability of doing a thorough job of describing the research context and the assumptions that were central to the

research. The person who wishes to “transfer” the results to a different context is then responsible for making the judgment of how sensible the transfer is.

Qualitative research tools assume that each researcher brings a unique perspective to the study. Conformability refers to the degree to which the results could be confirmed or corroborated by others. I chose some of the case(s) are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Stake, 1995).

Reliability and validity of the outcome, using standard strategies invented and practiced so far. Qualitative validity means that the researcher checks for the accuracy of the findings by employing certain procedures, while qualitative reliability indicates that the researcher approach is consistent across different researchers and different projects (Gibbs, 2007).

Research methodology is a way to solve the research problem systematically (Kothari, 2000). Methodology is a systematic and scientific study of the methods applied in the knowledge building process. Data collection techniques and tools, questions of validity and reliability, ethical considerations, research design and planning, selection of the study area and respondents and their justification etc are systematized in methodology regarding the definition of methodological concern. I have found series of different levels of definition in this regard, but in general how people are processing the steps to collect the information while researching. The term *methodology* refers us the tools applied in the assessment process while being collecting data and required information.

I had explored the knowledge remained within the people who were facing the real situation. I also applied the ethnographic strategy to collect the data from the grass root level watching the community for a whole year purposively. Ethnographic

research involves a detailed description of the setting or individuals, followed by an analysis of the data for themes or issues (Creswell, 2009). A final step in data analysis involves making an interpretation or meaning the data. “What were the lessons learned” captures the essence of this idea. These lessons could be the researcher’s personal interpretation, couched in the individual understanding that the inquirer that brings to the study from her or his own culture, history, and experiences (Creswell, 2003).

I have triangulated different data sources of information by examining the evidences from the different sources and used thick description erasing the bias including peers debriefing to build a coherent justification and accuracy of the account clarifying the biasness of the researcher (Creswell, 2003).

### **The Rashomon Effect**

The Rashomon effect is the “effect of the subjectivity of perception on recollection, by which observers of an event are able to produce substantially different but equally plausible accounts of it.” “That’s not what I heard” is the common refrain.

Consequences can include wasted time, poor work product, and - more seriously - distrust and suspicion as team members begin to question one another’s integrity and start to speculate on ulterior motives (Aryal, 2010).

I have tried to maintain a healthy skepticism towards everything that I hear, see, remember, record and write while analyzing the data before concluding the findings, conclusion and drawing implications. It is believed that the local community and the stakeholders will read this dissertation in future.

Therefore, their views were respected honestly. Conflicting issues were set carefully and the priority was given to the people of the study area. Therefore, they

simply would not raise any irritating questions and disputes and wage disinterest with any of the researchers in the days to come.

### **Praxis**

Praxis refers to truth and values of my research work. It aims at achieving the knowledge of participants through different data collection tools and checks whether this knowledge works or not. But the data I collected from the participants were genuine and not the photocopies of others. The interpreted views of my respondents had social cultural values. Denzin and Lincon (2002) say, “Praxis is the nexus between the representation and legitimacy of the research. To some extent praxis may deal with the notion of the theory-practice dualism and critical traditional”. Praxis concerns the worth and values through the findings of representation and legitimacy crisis.

Praxis works as a method in research that provides theories to the researcher to construct findings. As a researcher, I needed to find the learners’ values where they got their learning. So praxis gives the concept to me to find the real practices from participants who expressed their real views through the data collection tools. Praxis concerns not only the value of learner, teachers, but also the value of researchers how they were prepared data collection tools, and how they expressed themselves in the field of research. Fact findings of the research also depend upon the researchers prepared tools and his or her behavior.

### **Ethical Considerations**

Pinnell and Eagan (n. d.) believe that ethics refers to standards of conduct that indicate how people ought to behave based on specific values and principles that define what is right. Ethics deals with the ability to distinguish right from wrong, and the commitment to do what is right.

Creswell (2003) states:

Ethics is the study of what constitutes good and bad conduct, including related action and values. The term ethics is sometimes used synonymously with morals. It would be more accurate, though, to use the terms morals and moral to refer to the conduct itself, and terms ethics and ethical to refer to the study of moral conduct or to the code one follows. (p. 5)

Whether it is ethics or moral, the term is related to the broad question of bad conducts that are not expected in the particular situation or culture. Therefore, ethics involves broader values as well as methodological issues. Simply saying, ethics and values are intertwined. I have maintained value commitments by maintain informed consent, privacy and confidentially. Protection of research participants' rights and their right to privacy were the important issues enacted during my research.

In course of describing ethical behaviors, Pinnel and Eagen (n. d.) say, values are core beliefs or desires that guide and motivate attitudes and actions. Everyone has thousands of values, ethical and non-ethical. Ethical values are concerned with beliefs about what is right. They include caring, fairness, and responsibility. Non-ethical values relate to things we like, desire, or deem personally important. These ethically neutral values may include wealth, fame, or pleasure. Values are motivators to action. The research seeks the knowledge; however, it does not mean that such knowledge and experiences should be achieved in any costs. Therefore, during my research works, I respected their privacy, think harm, and always took informed consent and considered exploitation and consequences as my portions of ethical concerns.

Ethics are concerned with moral duties which indicate how people should behave. It assures that there is a distinction between good and evil and right and wrong and that



individuals have a moral obligation to do their best to discover and do the right thing (Patricia & Shirley, 2009).

The ethics consists of code and conformity. The formal documents of ethics specify employee behavior in detail and are often written by lawyers. Such codes govern conflict of interest, accepting gifts, entertaining concerns and so on. In addition, employees are often asked to sign a document each year indicating that they have read and understood the code. Thus, if the code is broken, it becomes easier to identify and penalize offenders. There is growing concern in the organization to work or act according to the statute.

In order to be ethical, leaders must first be able to analyze their actions. After the leaders make a judgment, they then analyze the moral motivation which inspires them do the right thing. Finally, leaders implement this action through the moral action component.

Data, evidence and rational considerations shape knowledge. In practice, the researcher collects information on instruments based on measures completed by the participants or by observations recorded by the researcher (Creswell, 2003).

I followed diary maintaining to record my required information. I used to maintain field notes and write main points for my comfortable. I used to visit weekly especially in the days of government leave so that I could meet more and more people and too interviews. During the process, I interacted with too many people as more as I could. I used to keep camera and mobile phones to record key matters.

Data analysis is a combination of description, analysis and interpretation (Wolcott, 1994, as cited in Creswell, 2003). Description of the field provided a context and background for the analysis and interpretation, even though there is no clear sequence

or order of these tasks. Analysis was done upon the artful description as well as various data were obtained from the stakeholders of the community.

In closing point, it is important to consider that this study was done with the hope that it could give a way out for further research, prevent on lived impractical practices and provide possible counseling interventions.

### **Chapter Summary**

This third chapter highlights the research procedure. Choosing qualitative method I followed both theoretical and methodological approaches applying interpretative paradigm through ethnographic study.

Three essential philosophical Considerations mainly ontology, epistemology and axiology of the research have been introduced briefly in my own research concept and context. Small group sharing, in-depth interview and observation are the primary data collection strategies. In doing so, I have introduced and tried to establish the new method i.e. small group sharing as the data collection strategy especially for the justice of those respondents especially in ethnography where many people, formally and informally small groups have been contributing in different ways in sense making by sharing their knowledge, skills and experiences.

I have presented research participants' profile in this chapter. I have also maintained quality standards, considered praxis, aware from rashomon effects and followed ethical considerations.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

#### **Chapter Overview**

This chapter describes and analyses the data related to the research information which was acquired through in-depth interviews, frequent observations and small group sharing. People's voices, feelings and views regarding the various issues have been concisely evaluated in relation to my four research questions as proposed in the previous chapters. Apart from these, the field data were about traditional knowledge, experiences, local understandings and practices in relation to their rural life, livelihood and natural resources. Considering this, the results for each of the four research questions have been judged in the eye of the research participants. Similarly, themes are drawn applying with relevant theories and critical analysis with literature reviews.

Schatzman and Strauss (1973) claim that qualitative data analysis primarily entails classifying things, persons and events and the properties, which characterize them. Typically, throughout the data analysis process ethnographers index or code their data using as many categories as possible.

#### **Existing Practices of Community Based Natural Resource Management**

There are many more natural resources in my study area. Water, soil and forest are the key resources out of them. Lakes, mountains, hills, hot springs, beautiful pasturelands and NTFPs (Yarchagumbha, Bhutle, Chireto, Satuwa, Hattijara, Atis root, Katuki, Amala, Common walnut, Morel, Tinospora, and Nepali Piper etc. are the main

natural resources in the context of Dolpa. Soil, forests (Timber and NTFPs), water (river, rivulets, hot spring) are also the major resources in my study community.

The existing practices which are related to the community and their collective attempts and initiations towards natural resource conservation are supposed to be community based natural resources management. Respondents gave different responses regarding the management of such natural resources.

R1 said, "*We have many more resources, here are lots of Jadibuti<sup>14</sup>, banjungle<sup>15</sup> and water, soil, river, hills*".

R2 replied that, "*All these things which are around us, which can be seen and used in our daily life could be natural resources. Forest and water are the key ones*".

R3 answered, "*From water to all these medicinal products including hills and mountains are natural resources and we are rich in it*".

R5 synthesized that. "*The things which are gift of nature and high value in our lives are the natural resources. Although people have no clear cut idea about it, they are using it*".

R6 told, "*Natural resources the things which are given by nature and managed and used by people for the betterment of human beings. We have learnt many things in our HPE course, we study it on environment*".

R7 gave her short-cut answer as like she is unknown but curious, "*presents of God and nature which are using in our daily life could be natural resources*".

From these answers we can say that they have a sort of knowledge regarding natural resources but they are grasping it differently. According to the voices of R6 and R7, the things which were common for the community are the natural resources, but now, they do not seem common due to their power relation. From their collective

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<sup>14</sup> medicinal plants

<sup>15</sup> forests

responses, the available natural resources are water, lakes, mountains, hills, hot springs, beautiful pasturelands and forests (timber and NTFPs) in the context of Dolpa.

R4 told, *"The chalan<sup>16</sup> of this village is quite unique than others districts"*.

R1 shared, *"We have had a appointment system of Herala and Nwarala for the whole controlling and watching our cropping and other resources as well"*.

Rest of the respondents also agreed upon the matters and repeated that same answers. While asking resources, everyone started from either water or from forests. Therefore, these two burning things are in people's minds in priority.

### **Forests Resources**

Forest is one of the important natural resources. Different types of forests are found in different regions of Nepal. Forest is the source of all wood-based industries.

Industries like paper, furniture and timber are based on the forest. The major categories of Nepalese Forests are conservation area, buffer zones, collaborative forest, leasehold forest, religious forest. There are two types of forests according to Indian forest Act 1927: Public forests and Private forests. Public forests may be subdivided into three categories, namely: Reserved Forests, Village Forests and Protected Forests (Padma & Rao, 2011).

Forests are rich in herbs. The herbs have medicinal values. Many medicines are made from these herbs. Timber and herbs are valuable natural resources. The value of timber and herbs are very high in the world market. Therefore, they safely collect those medicinal and aromatic plants safely and carefully so that they could expo, sell and earn more and more money which is also base of their better income from the very beginning.

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<sup>16</sup> trends/customs/practices

The key benefits of intact forest are stated that it provides clean water, provides home to unique plants and animals, source of economic growth, provides clean air provides recreational opportunities and ecological benefits (Padma & Rao, 2011).

From the discussions and interactions, it was obtained that forests have both tangible and non-tangible benefits. It also gives multiplier effects.

Following shrubs and grasses are found in my study area.

- A. Major grasses: Biralcho, Koya, Tikadi, Fern, Moss, Kharsu, Rayas, Nigalo, Timtari, Chumli, Kosheghas, Nilkhuri, Chadauri, Gango, Dhyar, Sallo, Soti, Mereti, Lotti, Khapango, Khayo, Bhanauro, Dalechuk, Buki, Jwato, Kanda, Gobre, Dhigo, Bhojpatra, Saralo, Devdar etc.
- B. Major medicinal plants: Cordyceps sinensis, Katuki, Attis, Chiraito, Bhulte, Hattijaro, Satuwa, Bojho, Bhattauri, olive, Mushroom, Kachur, Keshar, Ghodamorcha, Bhattauri, Padamchalno, Toto, Bojho, Paanch Aunle, Bhojpatra etc.
- C. Major ornamental plants: Dhupi. Dhupi-sallo, Kalki, Baish, Peepal Apple, Peach, Keshari, Hazari, Sayapatri, Makhamali etc.
- D. Major birds: Chakhura, Danphe, Kalij, Phangras, Sparrow, Pigeon, Crow, Swallow, Chiyar, Kalchuri, Chil etc.
- E. Major domestic animals: Sheep, goats, cow, oxen, buffalo, dog, cat, hen,
- F. Major wild animals: Ghoral, Jharal, Thar, Naur, Kasturi, Bear, Wild Bear, Black- Sheep, Duck, Jackal, Wild Cat, Fox, Wild Dog, Monkey etc.

### **Management of Community Forestry: Practices and Provisions**

Forestry is the most important natural resource for the livelihood of the local people in Dolpa. People depend more in natural things, goods and products. Local people use fodder from forest, benefitted from forest by cuttings shrubs and feed the animals by cutting soti, khar, grass, make homes, construct buildings and make furniture by cutting trees for the timber items.

There is a natural forest, increasing day by day, but the today's people are cutting brushes and trees were randomly than in the past. Community Forestry and its management Practices: Community forestry in Nepal has a well-documented history of over 25 years. It is now widely perceived as having real capacity for making an effective contribution towards addressing the environmental, socio-economic, and political problems raised by Nepal's rapid progression from a feudal and isolated state to modern and globalized world (Forest Action, 2007, p. 8).

R1 has said, *"The people have been cutting the forest randomly. They don't consider that it will greatly effect in the days to come. No one is listening to our voice. Youths don't listen to our suggestions."*

R2 said, *"Rules and regulations are not followed nowadays, everyone is being made like a king, and he satirically expressed his depressed feelings regarding the present practice of Community forestry"*.

R3, Active social leader and female activist of Juphal, agreed with the random deforestation, but she said, *"It is being changed in all aspects than in the past. People know more what to do and what not, in the recent days. Some people are serious on environment protection, forestry management and conservation of flora and fauna but few people do what they want due to their negligence. Many people are ignorant about the value of nature and nurture so they use natural resources without care"*.

The Secretary of CFUG, Hasta Bahadur Budha has claimed, *"It is normally running well, though we cannot do as expected by the people and as provisioned by the CFOP, but we have tried to follow the existing rules and regulations. We conduct meeting time to time; we take legal way out by writing minute by unanimously or majority before taking important decision."*

The Chairperson of the CFUG has also claimed that they have been trying better than in the previous committees. He continued, *"We need public support since it is collective responsibilities, people generally don't care about the forest and water resources. It has interlinked each other. If we save jungle, we can get more water sources."*

R4 boldly claimed that, *"We have abundant of natural resources in our locality. We are proud of having lots of Jadibuties, jungle, jamin<sup>17</sup>, Jal<sup>18</sup> and janashakti<sup>19</sup> etc. on the lap of Himalayan Mountain. Those who can wisely collect and sell it, they would be rich, those people who have courage, activeness and resources mobilization capacity and idea, they could be wealthy and healthy as well"*.

When I put this question with many respondents regarding community forestry, I got different views and news from many more responses based on gender, social, sustainability and development perspectives.

Despite the various legal provisions and authorities, the communities are not managing the forest sustainably and the use of the forest resources is found to be more exploitable rather the managerial. The respondents' views and the direct observations show that people are more interested on using forest resources haphazardly rather than in planned way.

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<sup>17</sup> Land

<sup>18</sup> Water

<sup>19</sup> Human resources



### **Practice and Provision on Timber Products**

Juphal community is mostly depended on forests resources from the very beginning. This community has sufficient level of Jungle so far. If they could not manage properly they would face great challenges in the days to come.

R1 said, "*We had a big Jungle in the past, we were trying to save them time and again, but due to the unique practice of using ekdare kath while makings homes and sheds, young tress are not getting chance to grow up on the one hand, one the other, the old big trees which are lying little far are fallen down without use*".

R2 opined, "*We have the houses made of mud roofs, therefore, we have to use more and more woods to maintain soil which was put on the roof-top. That's why the forest is decreasing year by year*".

R3 agreed with R2 and further added that, "*We heard that those households, which hold many more old fire-woods, are supposed to be wealthy family*".

R5 opined his voice in line to R3 in established saying, "*Purana daura<sup>20</sup> gharana ghar<sup>21</sup>*" (*Better old firewoods, cultured and established home*).

R6 responded, "*Hariyo ban Nepal ko Dhan, bhanchhan ( It is said, Green forest, Property of Nepal)but we cannot see so in this community, Rather, Hamro Ban Sakne ko dhan (the forest owns who have manpower, time and access)*.

R7 Said, "*Jas ka ghar, Jas ka laxmi usai kya Ban Bhaya, Khoi hamra kya bhaya!*" (*Those who have house, livestock, they owned forest, if we don't have so, so what we have?*"

From these discussions and responses, the best way of preserving forests resources was based on indigenous traditional knowledge and experiences.

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<sup>20</sup> Old Fire-woods

<sup>21</sup> Royal/Well established family

Apart from that one established culture like Dharala, Gothala, Heral, Nwarala<sup>22</sup> in the *past*, has been still practiced and shall be continued in the days to come sine it is relevant and productive.

They are gradually changing their traditional idea regarding CF management but they are not easily ready to change the indigenous methods of preserving forests. Therefore, concerned authorities have to consider for preserving TKE.

### **Practice and Provision on NTFPs**

Yarchagumba, Jatamasi, Attis, Katuki, Chiraito, Bhulte, Hattijaro, Satuwa, Bojho, Bhattauri, Paanch Aunle are the main Non-timber forest products (NTFPs) of this study area.

Following table highlights the key NTFPs which are found in Dolpa around my study area in terms of business and medicinal use.

Table 3

#### *Major Non Timber Forest Products (NTFPs) Species*

S.No.	Scientific Name	Locally Known as	Parts
1	Cordyceps sinensis	Yarchagumba	Plants
2	Dactylorhiza batazira	Panchaule	Tuber
3	Aconitum heterophyllum	Attis	Root
4	Acorus calamus	Bojho	Rhizome
5	Asphalt organk	Silajit	Exude
6	Juglans regia	Okhar	Fruits
7	Nardostachys grandiflora	Jantamasi	Root
8	Paris polyphylla	Satuwa	Plants
9	Swertia chirata	Chiraito	Herbs

<sup>22</sup> A responsibility given by the community with power and remuneration

### **Yarshgumba Collection and Management**

Usually the collectors begin their collection of Yarchagumba (YG) in the second week of Jestha (May 4th week) every year. It is appropriate to collect when its 'Struma' sperm is well-developed. If not collected within three weeks of Struma development, it will ferment away. There is a variation in its abundance year to year due to snowfalls, the varied temperature, rainfalls etc. The moist germination and caterpillar's population are highly affected by the weather and nature of habitat as well. Upon the suitable environment, the population of caterpillar as well as the germination of moist increase resulting in the adequate collection of YG. Its harnessing styles, destruction of other plants, wildfire, etc. also determine the sustainability. It is a fungus made with the help of *Hepialus obliquifurcus* in the Trans-Himalayan regions (SPNP, 2009, p. 5).

These are the major Non-timber Forest Products (NTFPs) species that are found in Dolpa around my study area in terms of medicinal use. People in Dolpa are using many plants and their derivatives for different purposes. Different medicinal plants are used according to traditional concepts. Some of the Non-timber forest plants are found there. While major NTFPs are found in the highland area.

Regarding the availability of such medicinal plants, R4 said, *"They vary every year based on season and climate. It grows more when it reduces, it is changing repeatedly, very few people know about this trend"*.

R2 and R3 have also same type of response. They talked more about its threats and opportunities.

R1 opined his inner voice, *"Getting such valuable plants is our luck, People who have manpower and better access to national and international markets are benefiting every year by selling such medicinal plants"*. He further added that , *"We so-*

*called Babu Saheb Thakuris” are not doing so, even our children feel shame to sell apples by bringing up to airport bazaar, then how we could do better income, how this new generation can run their lives?”*

R4 said, *“There are definitely threats as the population has been increasing day by day since the past”.*

R5 put forth his logic, *“The earning of People is depended based on abundance of medicinal plants; people have been shifting towards Yarcha Gumba collection and selling practices more than in the past. People organize big Mela (Fair) for collecting Yarchagumba, but others are left as hardliner business profession. They need to command over species, expertise on collective knowledge and processing and selling in Nepalgunj Bazaar, all these are very clumsy process and have to face many barriers and official process. Therefore, people follow direct and short-cut process like YG collection, where people collect in the day and can sell in the evening since local traders are ready to buy their YG from the very first day of their collection period”.*

R6 replied, *“YG economy is the key feature of Dolpa, however, people have been collecting, using and selling various NTFPs for their better livelihoods”.*

R7 concluded, *“Jas ka Bal Usai ka Bhais, who have strong manpower and better idea, they are only benefiting in the recent days. We poor are so poor and being poorer due to adverse chain effects.”*

Regarding the YG, Thinley, The Hiro of Caravan opined in our meeting at Dunai headquarters, *“People have better income due to YG economy, nature is God and favors us to Dolpali people. How lucky these people are today.”*

From these discussions, it is seen that people are more concentrative on YG collection due to its high value and short period of investment.

### **NTFPs Collection Practices: Key Income Source of Dolpo People**

NTFPs are the gift of nature; bless of the holy God, boon of the mountains and fate of the Himali people. Karnali is the most potential origin place of Yarcha Gumba in the Himalayan region.

In the recent days, Yarcha is the main source of income and issue for the frog style upliftment for some Dolpali people that affects the whole society more or less both positively and negatively. However, some families have better livelihood and advanced life, many families have multiple source of incomes, such as agriculture, livestock, business, etc., But, they have limited ways and resources for their livelihoods. Though their main occupation is agriculture and livestock, they cannot depend on it for the year round. Some other few people have conducted business; some people collect and sell herbal products like Bhulte, Silajit, Paanchaunle, Hattijara, Chiraito etc. When Yarcha took both market and popularity, then, everybody shifted into Yarcha economy, especially since for a decade, hence, they can earn minimum handful thousands and can maximize up to ten-fifteen lakhs by a strong family from Yarcha harvesting which is ten to twenty times better in terms of income in comparison to their traditional income. Normally, money is supposed to be the great matter for this materialistic world rather than the environment which is suffering for pitiable livelihoods.

Nepal is a country with adequate natural resources. It is also popular of being its herbal products, Out of numerously popular and invaluable. Yarcha Gumba is one of the important herbal products gifted by nature in the highland arid environment.

R5 has said, "*These people are getting opportunities on NTFPs, directly or indirectly government and NGOs are also helping in the name of different issues and programs. But there should be great change. Yet, community is still lagging behind in poverty.*"

### **Practices and Interventions on NRM**

Traditional practices are running from the people's side on the one hand, on the other, N/GOs initiatives are undergoing in the community. Modern ways and methods are being adopted. Peoples' participation has been increasing in the social and community issues were construing than in the past.

Attitude is a relative concept that is context based; it is shaped by the culture and tradition. How the society is governed and community functioning, it guides the practices leaving the impressions and such impressions develop the attitude in the minds of the common people. Still, people think that development is the whole task of government so they can only support the government process and procedures. It means that they have dependency culture.

### **Provision of Yearly Accepted Cutting on CFOP**

Yearly accepted cutting is recommended up to 1947 cubic feet, where CFUG may release 665 Cubic feet timber and 726 Bhari<sup>23</sup> fire woods.

Methods of releasing forest products based on yearly-accepted cutting model.

It should not exceed the recommended square feet as mentioned in the part 3 or related parts. If some species should be cut or collected more or less due to the cause of balance, then, the concerned CFUG shall submit application to the District Forest Office for permit. The DFO may release permission if it is felt relevant after field supervision.

Priority of cutting would be as follows so as to collect forest products. Cutting the dried and fallen down trees, If it not covered by such products, then thinning

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<sup>23</sup> quantity equals to single person capacity to be carried out/brought, usually put and brought on back side of the body either the use of nylon ropes or bamboo baskets

Lathra/ Khanba<sup>24</sup>. So as to do, cutting of dead, about to dead, twisted and dense lathra, to follow  $D= d+I$  formula while thinning the trees.

Priority of cutting would be as follows so as to collect forest products.

Cutting the dried and fallen down trees, If it not covered by such products, then thinning Lathra and Khanba. So as to do, cutting of dead, about to dead, twisted and dense lathra, to follow  $D= d+I$  formula while thinning the trees.

If it is not sufficient by such process, then drying trees and twisted tress should be cut. By doing so, if the accepted quantity is not fulfilled, then cut the old trees without making long gap and field open (CFOP, 2008).

### **Long-Term Objectives of Forestry Management**

To do sustainable development of forest, to maintain environmental balance, to develop justice system in distributing forest products and to protect wildlife and biodiversities (CFOP, 2008).

### **Short-term Objectives of Forestry Management**

Plantation and re-plantation of multipurpose species focus of natural reproduction of multipurpose timber species, preservation of forest in the community forestry area, making distribution system simple required products to consumers, protection of Conservation of Potential and existing non-timber resources (CFOP, 2008, p.12).

However, Community is neither serious for these short term objectives nor concern for long-term achievement.

R4 of Juphal-1 said, "*We provided Amaldapani<sup>25</sup> CF to Dangibanda and kept on helping Motipur with us. Amaldapani forestry is naturally managed. Are you regretting for Loosing Amaldapani forestry? No, we don't have regret. There is lim or Lottery system regarding irrigation management. The Shahi Thakuri's families are*

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<sup>24</sup> the cover of woods and long pieces of cut-down trees

<sup>25</sup> A small place with farm lands

*more in Juphal and who have kingship/Raja heredity, feel shy to do even their work and do not carry loads and baggage. In the recent days, Nepal Food Corporation (NFC) also made Dolpali People lazy by providing rice. Therefore, people are not serious on agro- production. Some people engaged at teaching, Nepal police, Nepal Army and the few in Civil Service. Visiting outside the district is less except some pilgrimage (Tirtha-Brata ). There was early marriage system prevailed in the beginning but nowadays, people want to get married after maturity and career based. Polygamy is decreasing than in the past. JARI<sup>26</sup> marriage is still running partially by paying from 10 thousand up to 2/3 lakhs. Penalties also calculated based on Dhanmal<sup>27</sup>, current and fixed assets". Chhoichhoto ruled over the long period. Covering head in front of Jetaju's arrival/presence is still functioning more or less. The value and Price of YG was 15000/Kg or 3500 per Dharni around 2050".*

Wildlife conservation in the expense of human needs is good. People's participation for wildlife conservation is essential. Hasta Bahadur Budha has said,

*"Juphal is more loyal than Dangibandaa. Juphal has made its chest wide forever than Dangibanda for red soil, stones etc. CFUG has been collecting higher revenue through forest royalties/tax/penalties/fees than Amaldapani CFUG. Protection is decreasing in Juphal whereas increasing in Amaldapani CFUG. All of the species of flora and fauna are available in both CFUG. Planting trees are poor in both sides".*

### **Community Forestry Protection Practices**

Then local people have been protecting CF in many ways for example; R1 said, *"There is control system, people should have permission to cut trees. They can only collect fodder and dried fire woods. If the Fresh woods are cut, they will be punished*

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<sup>26</sup> Second marriage

<sup>27</sup> Properties-both movable and immovable



*by the community. First time by warning; and if repeated, then penalties are charged as per CFUG rules".*

The local teacher Hom Bahadur Dangi said, *"People have different practices, forest conservation is going on the one hand, on the other it is cutting day by day".*

### **Application of Silviculture Operations**

People used to follow thinning where there were densely populated trees and shrubs. Sampati Budha, a local technician assistant at District Agriculture Development Office (DADO) said, "We should follow pruning, singling, cleaning and weeding under the thinning process".

District Forest Officer also expressed, *"Thinning is a better process for the shrubland management."* Further, he stated, *"Fire Management Practice is also another solution. Fire-line construction is one effective solution."*

The CFOP has also guided, *"Five things regarding protection of forest from fire on page 13. It mentioned construction of fire line, control of fire source, publicity and fire controlling and finally legal provision".*

When I asked to Rathi Bhandari the previous Herala, he smilingly answered; *"When the forest is cut with fire, Gun is fired in the village immediately and informed the people to go that spot and control the fire as soon as possible gathering more people as they can."*

From the discussions, it is found that fire can be controlled by making roads, keeping open space and specifying fire line as provisioned in CFOP.

### **Forest Development Practices**

The forests can play a vital role for better livelihood of people. Agreeing with this statement, R4 said, "We have to save the Jungle, we should plant trees time and again.

Fire woods should be collected as we need. If we don't cut the fresh trees, it can sustain more otherwise it is threatening.

People have been protecting forest by selecting certain area. Most of the people think it is our own forest; we have to save it and use it. From the discussions and studied documents, we can protect the forests by the process of trees plantation, nursery establishment, adopting thinning protection of forests from fire via fire line construction and control of source of fire and using media properly. Rangelands management, over use of forest and land control, soil conservation, control from random use, preventing from poaching could be the other key steps of forest development and protection.

Perception towards CFUG process was not strong due its weak work culture. Most of the respondents did not accept the role of CFUG. Some of them even blamed that it was nominal and just to display. Compensation cannot be received if something happened in the community.

#### **Attitude towards Nature Conservation/ NRM/CBNRM**

People think if there is dense forest, they can use fire woods, fodder, leaf litter, etc. Forest resources are used for both business motives like olive, YG and many more medicinal plants and for sustainability. There is no clear-cut perception towards wildlife conservation. A few people think that they are just wild animals, other think it is related with our nature and has chain effect.

I met many people and talked during my research period. I observed the community activities repeatedly. I saw different types of cultural and socio-economic practices. I have been observing, what they think, do and how they face the ground realities as a teacher of that locality for the last 9 years. However, the research participants could not say the various matters in logical order what I had expected. I

got simply an overview of a situation of the community as positivism seeks to present partial explanation on CBNRM. Whom and whomever I asked, they provided tit-bit information from their own perspectives.

When I asked R1, he used to describe more and cover as much as he knew. R2 answered exactly in the very first, and used to add his points slowly with comparing among the people. Aaite Kami has also added what he felt in his heart.

### **Financial Revenue Collection and Accounting System**

When I asked this question with the general respondents, they did not give straight answers. Laxmi Sharki said,

*There is not enough revenue in this village. Simply, people only take permission letter if they have to build homes or for furniture. In others task they don't take permission. Fire woods, fodder, leaf litters are normally free. There is no big dealing. Therefore, accounting system is not complex. Our CFUG income should be around 2 lakhs. Committee members should be honest and development oriented. Our society has been trying to do well, but there is also another group who does not support the activities and change."*

33 years old Hari Chandra of Juphal-5 also agreed that income of Juphal is increasing day by day but not sufficiently. 51 years old Khamba Bahadur Shahi of Juphal-3 also expressed his mixed views and emotions to CBNRM issues. He said, forest and revenue collection both are simply going up more than in the past. People face many challenges due to over use and misuse of resources.

R6 was unknown about revenue collection system but her friend Prachanda Bikram Shahi (22 years old) shared:

*"There is not a great change due to national leader Prachanda, but when I will be grown up, I'll try to do more for the environment and forestry. Nature is like a mother*

*and we have to save it collectively. At school, our teachers raise many more issues in many subjects, especially in HPE teacher taught us repeatedly about it. Though, the curriculum does not apply all practically, we get more and more knowledge. If there are urgent notices and warning regarding health, environment, forestry and new incidents are declared even in the period of prayer at 10:00 in the morning."*

Krishan Chandra Shahi, 43, of Juphal 4 and Silam Shahi, 33, of Juphal-3 also agreed on the value of environment and forestry, but no one said, how to manage and conserve it wisely and sustainably.

R5 started his story without stopping his household task on the roof-top. He opined that society is very complex; every type of practices can be seen here. Forest should be saved and conserved. We should be responsible for that process.

R2 opined his views, *"We have a unique type of cultural practices. Life is changing day by day. We did many struggle in our life, Today's people are both so lucky and lazy too. There are two separate forests within Juphal VDC, our Juphal and Dngibanda's Forest of Amaldapani. It is better to separate rather than fighting together. Since Motipur is not set simply with Dangis, we put and took them together.*

### **Role of Women in Community Forest Users Group**

*"Women are left back, in terms of access and education. Women and girls are being more active than in the past. Since forestry is a key sector of livelihood, wholly and solely, women are so aware in the community. Lila Shahi, a female teacher of Shree Adarsha Higher Secondary School (AHSS) Juphal has said,*

*"In our era, few girls were sent to school but today there is great change.*

*Today even, we have female leaders in the community."* Min Kumari Shahi

said, who is also one of the female politicians in the local level and she raises

her voice against unclear matters of meetings and decision process with bold voice and strong logic.

The proximate causes can be commonly grouped into five categories-expansions of agricultural land policies for the food production, commercial and household wood extractions for firewood including logging, road construction and infrastructure development policies, wild fire, grazing and fragile geological condition and natural calamities (Indigenous Peoples Forest & REDD Plus, 2010, p.147).

### **Water Resource Management**

Discharge management of rivulets, streams, rivers, wells and springs are essential for planning. Water resource uses for energy, irrigation and drinking and other different purposes at both meso and micro levels. Above all, Water harvesting is very important for the better use of water resources. Various measures like infiltration wells, Ferro-cement tanks and polythene-lined tanks, Powerless pumps, sprinkler and drip irrigation need to be adopted for economizing on the use of water resources.

Water is also taken as the most important source of natural resource in this community. They have had own practices for the water management. Water is an essential element and precious source that makes life on earth possible. Water that is found in streams, rivers, lakes, wetlands and artificial reservoirs is called surface waters. Water that percolates into the ground water and fills the pores in soil and rock is called ground water (Padma & Rao, 2011). Most of the research participants shared that water is the commonly used natural resources in the research area. However, the fact, 71% of the earth surface is covered by water. Only 3% is used in the drinking water. Water is regarded as the most essential element for the creatures. We cannot sustain without it.

In this line, regarding source of drinking water R1 said,

*"We people use stoned tap water and well as well".*

R2 also said, *"We used Tap and well water from the very beginning, even people drank from rivulets, recently we have Ferro cement, plastic tanks and plastics pipes".*

There was no contradiction with the sayings of the research participants as R3 has said, *"There was shortage of water in Juphal. People used to drink from river and canal, later we used pipes at home and put tap in the centre point of the village and even inside the house in the kitchen".*

Besides using water for drinking purpose, it has been used for other activities in the family and community. At present water resource is decreasing as R4 said,

*"People had problem for water due to the poor management in the past, Now they have managed, but people used to cut pipes from place to place, there is no better culture to use resources economically, very few people are serious, youths even don't care the matter, Consequently, the society has to face the water crisis although some people have managed it very well and economically by using different equipments and system".*

Some so-called Dalit people at Sarkibanda said, *"We have an easy access at the stone sprout from the ancient period, but Shahi Thakuris and Chhetries hurt hurt volleys of abuse and impose untouchability. But water is sufficient if we manage and used it wisely and cooperatively."*

Other participants admitted, *"People even use open stream, canal, rivulets, Kulo and river to drink water, they knew clean water is pure and good for health to some extent, but they drink with dirty hands, even by using dirty pots."*

Regarding the question of quality of drinking water, most of the research participants selected the good options out of four. A few respondents stood on behalf

of poor quality. Some did not speak about the quality. Many respondents accepted rivulets and stone spouts as the major sources of water. A few people even agreed upon river. Rest of the participants provided mixed type of answer. Ferro cement, plastic pipes and wells are considered as the main use of water source.

People drink water from different water sources. Most of the people of Juphal use drinking water by tape, canal, stone-spouts, well, rivulets, Ferro cement, river, plastic tanks and pipes, ghaito, open streams etc. People even used to collect and drink snow by melting it, believing its medicinal effects. People have a better life standard than in past. They think, people should have sufficient water and must drink pure one. Therefore, they use filters, and different other equipments. They even drink hot water in the cold season. The government and its local agencies have been trying to enhance the betterment of water facilities in different ways. Non-governmental institutions like DESERT, KIRDARC, DEPROSC, and SEDA NEPAL are also active in this regards.

People irrigate their field (Khet and Bari) traditionally from the very beginning. When I put this question regarding irrigation custom of Juphal, R1 smilingly started the story of irrigation system of Juphal,

*“We have 22 Kula systems in this village as heritage. He further argued, since then, water of a river is divided into three separate small villages in Juphal, Dangibanda and Motipur<sup>28</sup> respectively since the period of ancestors. This irrigation practice is fixed by limb system i.e. lottery/ Gola pratha so that they get turn by turn based on random lottery. Accordingly, 22 days are separated for Juphal, 8 days are left for Motipur and Palang together and 7 days are given to Dangibanda gaun.”*

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<sup>28</sup> A small community residing nearby bheri river almost Kathayat chhetris

R2 replied, "*We have a unique and different practice for the irrigation system.*"

When I asked the same question to R3, R5 and R7 and other respondents, I received the similar responses. They said that for better irrigation and farmland system, the 22 KULA systems had been conducted from the very beginning.

R4 added, "*We used to plant Tite Mithe Phapar, Jau, Makai, Dhan, Simi, chino, Khursani<sup>29</sup> etc. We didn't think more about irrigation at that time, even today, we plant all these crops and add more cash crops but we concern more on irrigation system for the professional agro-practices.*"

R5 expressed, "Today's people are more concerned with professional agriculture system, and they use such products themselves.

R7 shared, "*People believe that there is better cropping, apple and YG in the year of snowing*

From the whole discussion and observations, I found that the people had been irrigating their lands, farms and nurseries by managing canals, using rainfalls water, utilization of snowfalls, arranging rivulets. A prolonged period of dry weather started to decrease water sources and reduced level of water at well or in springs.

Therefore, we can say that, "22 Kula system, canal system, tap water, drops irrigation, sprinkle system, use of wells, Hajari sprinkle, precipitation, dew points, snow fall, rainfalls are the commonly depended irrigation systems in this local community and in the most parts of Dolpa as well."

People of Juphal think that water is the most essential natural resource. Drinking water is not sufficient according to their voice, but they agreed that their life is running anyway. People get high amount of water in rainy season but gradually

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<sup>29</sup> Chillies



decreasing in spring and have to face problem in the summer. Despite the fact, there is a better facility of water than in the past, women argued that they had to go to the well and stone spout to fetch water. Nowadays, people have plastic pipes, Ferro cement and tank, even tap in the kitchen. Irrigation water is not enough; so they have to depend on different sources like 22 Kula systems, rivulets. People wait for the precipitation pattern and they take very seriously about the snowfalls. Purna Bahadur Dangi, the Headmaster of Adarsha higher Secondary School, Juphal said, "*When there is better snowfall, crops and Yarchagumba would be better for that year, otherwise, it would affect the season and geographical region.*"

Kamal Budha, a media person cum government school teacher informed and requested me to visit Hot Spring of Juphal which is located at one hour's walking distance from Rupgarh. Accordingly, we visited together on the exact day of Chaitra 20 of 2068 B.S. We watched there and took baths with the people who came at that place from the different VDCs.

Most of the research participants agreed that water sources are decreasing year by year due the climate variation and seems difficulties in snowfalls and rainfalls. Rainfall is the important factor to maintain diversity. No two places of the world have equal rainfall. Heavy rainfall creates thick forests. Low or scarcity of rainfall creates deserts. Sufficient rainfall creates ordinary forests. Again forests are the sources for rainfall (Padma & Rao (2010).

R1 expressed his experiences, "*There is a great role of irrigation and soil except hard labor on agro-farming.* He cited the Nepali proverb, "What would happen to the land without water and husband without wife." Though, he jokingly uttered it, but declared to take this matter seriously. Again, he further interestingly added next Nepali proverb referring the soil,

*"Rato Mato-Raja Mato, Kalo Mato Kaji Mato and Nilo Mato Paji Mato (Red soil-King soil, Black soil-chhetry soil, Blue Soil, Neglected Soil ". Bitterness in recent crops has increased due to Climate change (CC). "We feel change in climate and problems in weather but this year, it is too cold. Until and unless our life exists, our expectations are still in fresh in our minds."*

In the same line, one of the general participants, Jagadip Shahi shared his opinion,

*"We do produce more and more crops throughout the year. Potatoes, barley, buckwheat,, maize and millets are mainly grown here."*

People drink water from different water sources. Well, rivulets, stone spouts and plastic pipes and Ferro-cement are the key practices

### **Changing Patterns of Farming**

R1 shared his personal views with disappointing mood towards new generation regarding upsetting social change,

*"There is a great change in peoples' life. They do less work and want to enjoy more. Youths are not serious about their life. Even educated people have poor work culture. People have been losing their lands and agro priorities as well. Phapar kheti has been left out nowadays. Modern education has changed the minds of people only on fashions and eating junk foods like noodles and biscuits. So- called youngsters and their fellows enjoy by playing cards followed by taking drinks."*

He further warned, *"If the noodles have been taken frequently by pregnant women, their children may die due to its side effect of frequent use of monosodium glutamate. Era can be changed either by Brahmin or by women. Education without kind (Namrata) and Weapons (Hatiyar) without sharpness (Mar) is Meaningless."*

He strongly argued with bold voice using body language moving his starring eyes around the people sat nearby him. 61years old Pancha Shahi of Juphal-3 and 42 year old Jaya Kumari Shahi of Juphal-4 also agreed on that matter and said Yes, Babu Saheb is absolutely correct, but we can't see so these days. What's going on nowadays?" Jaya who seemed felt whacked, questioned herself on the floor in front of the common mass. Pancha Shahi supported her nearby sitting friend Jaya with emotional turmoil.

### **Establishment of TSPC (2200-2700) in Juphal and its Contribution**

Temperate Seed Production Centre (TSPC) was established for high hill seed production and protection. It is like a snowball of Dolpa. It is also famous for germ plasma collection centre, crop-rotation, practice, traditional auto-organic system.

According to the local respondents, people knew the way of getting and eating green vegetables and fruits after establishing horticulture centre in Juphal. It has been promoting seeds, seedlings, and inspiring the community to foster in the modern ways. In the same line R1 said, *"This horticulture centre taught us to plant and eat vegetables and fruits. Therefore, it encouraged us even to cultivate other types of crops and tress."*

R2 praised, *"Horticulture centre has played significant role for this community. It has been teaching us for developing cash crops."*

R5 said, *"Such centre has opened the eyes of people; people have been benefitting in terms of getting genuine seeds. I tried to form groups though it did not fully succeed. People, who followed its system individually, benefitted more. Due to this centre, we have started Junior Technical Assistant Agriculture course, first time in this district which is supposed to be the most important and practical courses for the community people."*

Furthermore, R3 added, *"It was heard that Green Sag and vegetables were not eaten by the people of Juphal up to 2030/2032. People used to eat Chino Bhat<sup>30</sup> with Dal and Potatoes till the time"*.

R4 opined, *"When Agriculture Centre/Horticulture is established in 2032 BS, it started to provide seeds for the community people. Before it, District Agriculture Office (DAO) used to provide seeds for the people."* Karma Pasang Sherpa (an Agro expert) gave and established HC in Juphal instead of Ralli. Horticulture Centre (HC) gave *Muaabja* 3000 per ropani's for the 15/20 landowners.

Magne-Chalan<sup>31</sup> of vegetables and fruits is still prevalent in the community. However, food habit and cropping patterns both have changed in the recent days. 75-80% people are planting and growing their vegetables themselves. Vegetables and fruits are grown for their both consumption and professional purposes. There is a long-term effect of vegetable seeds. There is not the future of fruits nursery after 10 years. 11 lakhs apple seedlings are grown in Jumla."

*"Phul ropne chalan chhaina, chuddai jane chalan chha. We grow radish, simi and Gajar etc. We plant Jaitun to make green plant within 2-4 years."* A thakuri young woman responded me.

### **Socio-economic Aspects**

"A committee is formed by calling meetings, discussion and cooperation," said one of the participants of Juphal-3, I got same types of answer from other respondents, such as 50 years old Jiru Sarki, 25 years old Panta Rupa, 23 years old Rakeesh, 40 years old Bir Bahadur Sarki and 34 years old Kal Bahadur Sarki from the same ward No 2 of Juphal Village Development Committee during my small group sharing.

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<sup>30</sup> Cooked and ready item of rice

<sup>31</sup> begging system

R3 highlighted about post- maternal care systems of now and then, "*Women were compelled to give birth their children into huts (Gothmai) Her friends surprised and uttered with long breathing and added that Kasta jamana was at that period, sutkeri garaunu parne Gothma and Nal Katne Hasiyale.*"

Further she uttered, *People used to say, "Sudheni, Phalanaki joi."* She proudly talked about the present facilities. Again, she told, "*Today, we have better hospital, health posts, highly sophisticated nursing homes, and treatment centre. People can have Sutkeri Samagri, soap, gloves, trainings at present but at that time, they did what they had experienced and practiced traditional knowledge.*"

R1 immediately satirically expressed, "*Jamana is modern so as to life standard, language and style, people seek more comfort than in the past. Daughters were burden in the past. Now we like daughters. We have great difference in making houses, food habit, clothing and bolichali*<sup>32</sup>. *Women without malik*<sup>33</sup> *and Country without king, all these are like leftovers and meaningless*"

A nearby sitting 40 year old Maya Kumari Shahi of Juphal-4, started her voice with moaning and groaning,

*"Dhami Jhankri jharphuk system is still running. So called, Witch crafts, like boxini, Kaptini and Boxsa are considered in people's mind as superstitious beliefs".*

R3 romantically said, "*Jo janne Usai Lai Manne.* She further said the locally popular saying with cracked voice that, "*Bakhri Budhyouli, Hwaini Kuroli.*"

61 years old Pancha Shahi, a farmer of Juphal-3 resident and 42 years old Jaya Kumari Shahi, an energetic middle-aged woman of Juphal-4, laughed and giggled together with moving their heads and said, "*A committee (Samiti) is formed*

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<sup>32</sup> speaking pattern and manner

<sup>33</sup> Husband/owner

*by calling meetings, discussions and mutual cooperation. The jungle is our life, people should protect."*

The community and the CFUG are not serious about solving these issues rather it was the matter of talking during the meetings, seminars and gossips. I received same types of answer from other respondents, Jiru Sarki 50, Panta Rupa 25, Rakeesh 23, Bir Bahadur Sarki 40 and Kal Bahadur Sarki 34 from the same ward while searching the other general respondents from the community.

Another two research participants related to the Dangibanda community and Amaldapani CFUGs members, 55 years old Lal bahadur Dangi of Juphal-7, and 72 years old Satiram Dangi Chhetry of Juphal-6 with grizzled hair and red face, had revealed, *"People had to be Lata and Ganda due to lack of iodine salt. There was also economic crisis in the past but people have better life today. There is no problem for their clothing and eating and can maintain a kind of standard in the community."*

One of them, mockingly further said that, *"Bhanu Bhane Mukha Mailo Nabhanu Bhane ritto thailo (If said feels bitterness if not meaningless)."*

Another participant R7 said, *"Children (Ketaketi) do whatever they like. Today's children are like animals. Moreover, like monkeys. People use more and more drinks and smoking and fight each other. There was nice forest in the past but it is about to finish by selling woods and fire woods"*

Further R1 added that,

*"Tula Ko Bich Dhana, Dhan Bina Ke Mana." We should send our children to school. We heard that the country Nepal had to face the shyness and bear Beijati<sup>34</sup> while Neplese delegates had to put lyapche (finger prints / thumb impressions) on treaty with trembling fingers and others did their signatures."*

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<sup>34</sup> Shameful

Again he opined, "*Crops are increasing day by day, but people used to mock at us, saying they even live and eat by selling sag/fresh vegetables.*"

*"Climate, language and environment all are being changed in comparison to past and so as to between Juphal and Dangibanda CFUGs. Production pattern is also difficulties due to the change of climate"* responded by R2.

It is well known that the issue of natural resources management is very important and critical in the context of federal constitution making process in Nepal. Different types of issues, ideas, and concepts are emerging in the debates and discourses of NRM in federalism (Forest & Action, 2010).

According to CFOP, there is a trend of forming CFUG to manage community forestry. Since this is autonomous institution, it is formed from the community. They chose President and other members themselves. Although, the main task should be borne by the committee, all people are responsible collectively. Almost all power is given to the CFUG, despite the fact, the local community cannot enhance community forestry as more as expected by the Government and such policy makers. Government side has very few roles of monitoring, evaluation and facilitating the community people.

There is not the whole-sole authority to use forest resources. But, regarding water community, they can take own decision. Protecting forest is the common responsibilities of the stakeholders.

### **Generation Gap Minimization**

Generation gap is another problem of this community for CBNRM. Generally, youths are not attached with the old. Most of children are farther from Dolpa who join Boarding schools and colleges in the name of modern education. They are very detached from their language and culture as if they were not Dolpali.

Those youths, who are at home, youths neither stay with parents nor share their views with the senior people. Since the whole family members, do not share and express their feelings and experiences among one another. They do not have love, affection and feelings, co-operation and co-ordination. Ultimately, there could be generation gap where no one knows each other, nor helps each other, and then problems arouse everywhere. Moreover, from their family matters to community development process, we have to face the challenges.

There is neither bridging system nor initiation so far between and among the people. This is the gaping issue. More than this, those who visit outside Dolpa, hear more about modern methods of managing natural resources, especially local senior people who have adopting traditional way of NRM, are also skilled for their ITK, but no any authorities made any endeavor to bridge the gap between these two generations.

### **Common Property Resources (CPR)**

There is a great debate on CPR in the recent days. Community can get more benefits if it is managed well and protected well. Roads, schools, forest, lakes and mountains all are in CPRs. Ornamental plants like olive trees, Kalki, flower, Dhupi, Bar, Pipal, Swami, etc. are the major CPRs in the study area. The Hindus worship Peepal and Tulsi. Therefore, we plant it nearby house or village in front of Yard. Boudhists have also gumbas<sup>35</sup>. Medicinal plants like Attis, Uttis, Tulsi, YG, Satuwa, Bhattauri, Katuki, Chiraito, Padam Chalno, Jatamasi, Bonjho, Jhijalkando, Dalechuk, Bhotelasun, Devdar oil, Nirbis, Dhupjadi etc. are found in the study area.

I am going to focus on NTFPs out of many more CPRs. Subedi (1999), tried to define NTFPs as biologically originated other than timber, fuel wood and fodder

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<sup>35</sup> Homes where boudhists follow Boudhism and take meditation practices



from forest, grasslands or any land under similar use. The example of NTFPs includes medicinal aromatic plants, bamboo, and rattans, nuts, fruits, tubers, berries, grasses and leaves, resins, insect and insect providers, wild animals and birds.

Chandrasekharan (1998) presented a very similar definition, where she cited NTFPs as all goods and services for commercial, industrial, or subsistence use derived forests and allies land uses, other than timber, fuel wood and fodder. She has included the crops grown under the shade of trees, certain agro-forestry crops which depends on wild sources for seed or planting stock quality as NTFPs.

Medicinal and Aromatic Plants (MAPs) and NTFPs Cultivation systems have been increasing day by day. It has great utilization in terms of economy and medicine. Since, utilization pattern is not predictable and it has positive and negative impacts on environment, no one has carried the research so far in this area.

NTFPs have received high importance in Nepal's forest policies and in overall development planning. The Poverty Reduction Strategy Paper (PRSP), Interim Plan, new government policy and programs, annual budget, manifestos of political parties, donor documents, including country strategy paper and programs, documents bilateral projected of INGOs and more recently the documents of community Forestry Users groups (CFUGs) highlighted the importance of NTFPs in conservation, rural livelihood and poverty reduction NTFPs are being given high emphasis in Nepalese publications such as *Journal of Forest and Livelihood*, *Hamro Ban Sampada*, *Sampada*, *Kalpabriksha*, *Banko Janakari*. (DoF, 2008).

A globally applicably standard classification system for NTFPs does not exist However, NTFPS can be classified in many different ways: according to eternal use (medicine, food, drink etc.), by the part used (roots, leaves, barks, etc.) or in accordance with major international classification systems and coding system

developed under the auspices of the custom co-operation council (Shiva and Verma 2002). Plants product of the NTFPs are food, fodder, medicine, perfumes and cosmetics, dying and tanning(leaves & fruits), utensils handicrafts, construction materials (fibres, bamboo), ornamentals, exudates (gums, resins, latex) and Animal and animal products including living animals like birds and mammals, honey beeswax, bushmeat (mammals), medicine, colorants, hides and skins (Ahenkan & Boon, 2011).

Generally, NTFPs activities often involve poor people but may involve the less poor, yet, there is contrary to this concept in my study area. Those families or households, who have man- power and have knowledge visit to collect the NTFPS. The importance of NTFPS in household livelihood strategies is closely linked to their seasonality and how they can be combined with other income-generating activities. The importance of NTFPS income is extremely variable between households. NTFPs quality is adversely affected by poor harvesting methods and limited amount of resources available. Tenth Plan and Millennium Development Goals (MDGs), challenge the system to increase the forests productivity, streamline the forests benefits towards livelihood promotion and strengthen good governance for greater equity (Bhadra, 2006 p.110).

Table 4

Major Parts used in Non-timber Forest Products

S.N.	Major parts of NTFP
1.	Roots and rhizome
2	Leaves
3	Bark
4	Fruits and Flowers

Dolpa had practised more collecting Silajit and Bhulte in the past, while it is mostly shifted to the Yarchgumaba in the recent days. The collection period of the Yarchagumba is known as same as the festival. About 50-60 thousand people visit to collect Yarchgumaba and out of them one third population of the YG collectors go to Patans<sup>36</sup> through my study area Juphal. Before starting YG collection, the community people gather and form the "Royalty Collection management committee" to control and manage the system.

People did not use to manage the NTFPs and its area but collected more and more NTFPs as much as they could. When collected, they used to clean with cloth and grasses grading on shape and size and did storing roughly in bags, baskets, madus<sup>37</sup>, shed, roofs, sacks or ceilings.

It was felt that the quality would not come due to its poor management system. The NTFPs buyers did not pay more saying that their goods are not in better quality. Due to the lacks of better knowledge, real collectors did not get expected income as they should have. There was no local market. They used to carry via long way being Chaurjahari to Nepalgunj. It took more than a week carrying on mules and porters. Few business persons used to use plane in high cost. Today, people are more concerned on NTFPs collection and management practices since its value has been increasing in the international, national and local markets.

They collect, clean, select and store in better way than past. Now they have local market access. Some brokers are there; they even invest money and buy in low cost. Because of the air access through private airlines, people have easy inlet to the regional and national markets.

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<sup>36</sup> Patches of land where people take livestock for grazing and also visit to collect YG

<sup>37</sup> wooden box

Due to the lack of better homes, energy supplies, trainings, and harvesting skills and knowledge, they are not able to follow modern way of NTFPs management practice. Recently, few households use modern means of storing, packing and selling practices by using solar, cold stores and airways.

From these discussions, it is known that people are benefiting more and changed their economic standards year by year, but they are not ready to invest for modern techniques from their own side, they just complain to the government and its concerned agencies and authorities for better support. People are supposed to be richer in human resources as they are rich by selling it. Therefore, they accepted early marriage for the young man-power that they feel in the recent days after the YG economy trend.

Despite the fact, it seemed that local people have been following their traditional way of compounding, monitoring, controlling, penalizing and promoting the natural resources based on community considering season and climate.

Jataamasee<sup>38</sup> (Spikenard) locally known as Bhulte, Balchhar in Hindi, and Kansung in China, under Valerianaceae family, is also important resource, used rhizomes, an erect perennial herb, 40-75 cm tall with rootstock covered with the dark fibers, leaves basal (DoPR, 2007).

### **Transfer of Knowledge, Skills and Experiences to the New Generation**

Indigenous knowledge, skills and experiences of the common people have been exchanging and transferring to the new and new generations time to time knowingly or unknowingly.

R1 further talked about it and shared, "*Some people have vast KSE, and however, we are illiterate. But, today people are neither mature nor cultured. How*

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<sup>38</sup> Nardostachys grandiflora DC

*the community runs like this? We are proud of our generation and era as well but what sorts of period is this? How they cope with this challenging era. We have conserved the flora and fauna. We have great attachment to the forests. Therefore, we used to save that, now people do not do so, what's the matter?"*

*"This new generation is not forwarding and heading right direction, neither they are conserving natural resources wisely nor they have better culture and worry of the future life" R3 opined from the inner heart.*

R1 shared, *"Our experiences are the great knowledge, and educated people have not such ideas as we have on earth."*

R4 added that, *"Though, we study less, today's people study more, we struggled too much in life, we experienced that both education and practical experiences are needed for the perfection in life."*

R2 also agreed the customs, but further said with the gesture,

*"We need politics and better policies. Old systems are not accepted totally. There should be transparent of CFUG and social activities and other development process or Women should be empowered and practice for the equity and equality. The KSE transfer systems are found in the forms of telling stories, singing songs and saying proverb said. "*

The matured person, R2 Said enjoying with the smoking style. R5 also highlighted, *"Traditions, cultures and rituals practices which are linked with our life and knowledge building process as well. Caring and sharing of experiences are the inevitable process to live in the rural, peaceful and helping community."*

R6 described, *"People transfer knowledge through cultural and ritual practices, verbal and non-verbal expressions, by use of sayings and songs in*

*special functions. Similarly, R7 opened her inner voice, " Our traditions have been functioning themselves from the very beginning, but today there are various formal and informal ways. Students are getting KSEs from school."*

Various views had been expressed regarding transfer of KSEs from the senior to new generation. Other local general respondents said, "We have been learning from *Mela-Pata*<sup>39</sup> in our daily life and it is shaped by our culture. Feast and festivals are also cultural means of transferring KSEs. When new issues are raised to use and manage for the natural resource, then the discussions aroused for the cordial environment for the effective transfer of TIK. Some of the complex and traditional skills like collecting Silajit from Bhir, displaying the herbals by separating poisons practically, irrigation via kath khoper Dudha), people share while they are at Ghatta<sup>40</sup>. They can get knowledge and share to one other regarding better uses of resources. Beating rice in Okhal<sup>41</sup> is a unique practice in Karnali and transferred through learning by doing alike to harvesting paral and soti. There is a system of harvesting crops in the roof top of the houses. People worship god ShivaJi to get rainfall in time. Dhami herne herraune and worshipping Masta Deuta are also the means of established traditions.

While there is a conflict on CPRs or private issues, they usually go to the Deuta and the prediction of Masta-Deutas<sup>42</sup> is believed and practiced more powerfully and sanctioned more than the legal decisions. Even decisions of the court or quasi-decision can be prolonged through the utterances of Deutas.

From all these views, I came to know that indigenous traditional knowledge and skills and their transfer have been going on through informal, non-formal and formal way.

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<sup>39</sup> being and doing here and there during the course of agricultural life

<sup>40</sup> Stone grinding mill run in the shed nearby stream or rivulets with the help of water force

<sup>41</sup> A big circular hole on strong thatched stone prepared the crops after harvesting before cooking

<sup>42</sup> the god and goddess of the Karnali people

Especially, through the means of rituals, *Mela-Pata*, feasts and festivals, learning by seeing and doing.

### **You Reap What You Sow**

Most of the research participants were found worried about the negligence of the new generation and in the same line, R2, who was cooking meat, sitting beside his wife around the modern fire-place in the kitchen around seven o' clock evening along with other family members in the kitchen said bitterly in twisted voice,

*"There is not better life without knowledge, skills and experiences. For that, one should do hard labor in the period of young. If one level of knowledge is acquired, anyone can develop the skills fast, using these knowledge and experiences, such type of sons and daughters are meaningless, invested more in college, didn't study well, used to sleep up to late hours in the morning, even nowadays, there is neither energy nor any common sense. How they can sustain their lives, would face the challenges time and again in the days to come. How they marry and manage their family lives."*

He further expressed with his disappointing mentality, *"we have done very great deal of struggle in our life. Yet, we did not get any facilities at that time and today we have to face the difficulties for these silly kids."*

The gesture probably enriched my mind during the fieldwork. My trips to Juphal were almost full of laughter and joy because of the participants' frankness and open minded sharing.

Very few research participants have shared that the formal education they have acquired has made them role models in the family and community to change to some extent. The level of expectation from family and community has also increased

up in the recent days than in the past. Jay Kumari Sarki shared her experience in the meantime.

*“My family is poor, though there are rich in the community, every one cannot afford the education as we expect and must to do. Even the educated people did not leave good impression in the society; role of youths can be seen destructive to some extent. Educated youths do not want to stay in the village on the one hand; on the other they do not freely part neither the task of household nor the collective work of the community.”*

51 years old Bam Bahadur Sarki, 47 years old Kal bahadur Sarki also agreed the changing pattern of the people's thinking and value of knowledge and skills. In the same line, 39 years old Kamal Sarki focused on skills, he further added, *“We need to get skills and common sense to run our life and profession as well. This generation is changing day by day.”*

Strong hands and huge smiles steadied me as I slipped and stumbled on the way to Juphal from Dunai, the headquarters of Dolpa along with the side of ever innocently blowing Bheri<sup>43</sup> river and somewhere smiling olive trees.

I was mostly welcomed by the local villages with the fruits straight from the tress that they grew up with and bid farewell by freshly-picked fruits and vegetables probably being a known face teacher rather than an outside researcher.

Jay Kumari Sarki 29 and Shivakali Sarki 41 from the ward No 2 argued, *“No life without clear eyes, those who have strong knowledge and positive attitude, can do better in their lives. We were not taught, even parents did not send many years, compelled to get married and face the difficult life”.*

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<sup>43</sup> Name of the zone and river as well, out of Saptakarnali



Collecting the NTFPs, refining, storing, preserving, marketing, using, prospecting, accessing, carrying, packing and selling are the key skills regarding NRs and NTFPs.

### **Tokenism in the Name of Participation**

Whether the people's participation has been exercising voluntarily or in other forms of contribution to predetermine policy, projects and programs are the key features of such participation. If this process revolves as organizational form, it emerges and takes structures that results the process of participation. Gaining control over their own life situations, resource knowledge and ideology empower the people.

Social energy is the strength of programs that can bridge the planners and people connecting the themes of idea, ideal and friendship as advocated by Chinese educator Jimmi Yen on behalf of large-scale people's participation. "Go to people, live with them, learn from them, serve them, love them, plan with them, start with what they know and build on what they have." (Mishra & Bajpai, 2001).

### **Contribution of Health, Population and Environment (HPE) Education**

"Education makes a people easy to lead, but difficult to drive; easy to govern, but impossible to enslave."

*-Lord Brougham (1778-1968 AD)*

My research question "how does Environment education contribute to the management of natural resources in the local area" has been explored in this sub section.

### **Existing Curriculum**

The present curriculum of HPE of grade 9 &10 has been encompassing the various things regarding NRs and CBNRM. Grade 9's HPE is divided into 9 units and grade 10 HPE course is sub-divided into 7 units. Among the units of grade ten, the third, the fourth and the fifth units deal with *Environment Status of Nepal*, *Bio-diversity* and

*Population Environment and Development* respectively. Quite specifically, in the third unit entitled Environment Status of Nepal has put its floodlight over ecosystem by geographical regions, various aspects of such ecosystem, management and conservation of environment.

The curriculum intends to make students familiar to get depth knowledge on physical, biological and socio-economic aspect under the ecosystems of mountain, hills and terai regions. The objective of the curriculum is to explore the effects of ecosystem in the mountains, hills and terai<sup>44</sup>. After learning such units in school students may be aware to take initiation on soil conservation, waste management and pollution control.

In grade nine, there are altogether nine units and among them, unit 1, 3, 4, 5 and 6 are fully related to environment, natural resources and their sustainable use. The first title is about Population and concept of environment education, the aim of this chapter is to make balance between the population and natural resources. The third chapter talks about the causes of population change, its impacts and measures of management of the growing and changing population. Next unit 4 explains the different types of natural resources whereas unit 5 dedicates itself to the protection and care of entire earth in terms of its natural resources as well as unit 6 focuses the environmental health.

Here, from these courses of HPE of grade nine and ten, the students are expected to be invigorated to protect and promote the environment and its sustainable use. If we are able to develop the curriculum blending the practicable community-based environment education, then we can produce the aware population of new generation who can utilize as well as preserve the natural resources.

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<sup>44</sup> lower part of Nepal, flatland, east to west extension with warm and hot temperature

R1 opined, “For me KSE transferring through demonstration an apprenticeship.”

Curriculum of HPE of Grade IX and X advocates the knowledge and positive attitude towards environment is the growing demand of present environmental crisis. I believe that implementation of such curriculum helps to aware students regarding the effects of climate change and global warming. These problems are in existing global situation that can be minimized through better understanding of the phenomena that can be generated through environmental education. Knowledge, awareness, skills, values, and attitudes acquired through education help one to lead a desired quality of life

### **Between and Between the Jupal and Dangibanda CFUGs Communities**

Formal environmental education helps students develop more favorable attitudes towards environment. Therefore, it is significant to evaluate the environmental education in this study.

Different castes of people are residing in Jupal. People have own tap mostly for all the houses. A great festive is celebrated in Bhadra Purnima in Jupal. Shahi-Thakuri, Rokaya Chhetri, Budhatoki, Nepali, BK, Damai, Sarki are the major ethnic castes despite some Brahmins. Forest is so close in Jupal as compared to Dangibanda Community. Language and culture patterns are different in Jupal between Shahi-Thakuris and other castes. It is so popular place due the airport facility from the very beginning after the airport operation. Airport is being populated along with the central market point. Those who use flights should come to Jupal airport. This place is peaceful and windy. It is very hard for the general public to get air tickets since there are not regular flights. The airport is not black topped and considered as the most dangerous airport among of Nepalese domestic airports. There are 550 households but CFOP has stated 287 while the designing time. Dangibanda has only one source

of water where all the people come and use that tap together, which is busy throughout the day from early morning to late evening. People can have frequent access to one another due to tap and they share their ideas, live news of the district and can make arrangement for different plans and purposes. Even they enjoy by satiring their voices and exchanging among the people. Purnima<sup>45</sup>, a great festival is celebrated in the month of Kartik in Dangibanda. It is a little far from their forest setting. Same caste, same language, same tune and tone can be found here. Market is far. Both Dunai and Juphal airport are far from Dangibanda. Red fruits, Kasturi, Thar, Jharal, Mriga are found. We can see Bhojpatra and Devdar trees in Juphal. People keep their animals on the ground floor of their houses in order to shield them from wild beasts in both communities. People normally do not go to India or gulf countries for employment.

### **Role of School and Environment Education**

A higher Secondary school is running in Juphal in the name of Adarsha Higher Secondary School (AHSS). There are five schools in Juphal VDC. More than 100 students are studying in Bindithan Primary School in this year. There is freedom of choosing schools; mostly primary school for up to 5 classes because of near distance. Twenty three households are situated at Sarkibanda<sup>46</sup> in Juphal. Only 3 Laxmi, Janak and Chandrkala passed SLC from this community and one came as Daughter-in-law (*Buhari*) Lalumaya. Sarkis get married in other villages like Majhaphal, Tripurakot and Aula.

The role of school is greater to make people aware in the community. People in a community have hope of rays to solve the environmental and social problems. These five schools in Juphal have contributed to solve such problems in the

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<sup>45</sup> The day of full moon

<sup>46</sup> A small community, inhabitant of Sarkis

community level to some extent. However, the expectation of the community people is much more than the schools contributed. "Teachers of the school shared various experiences of the environment degradation and climate change", said one of the research participants. Almost all participants believed that school can contribute for the environmental balance in the community.

However, schooling in the community may differ in Jhupal and Dangibada. Dangibanda Community is common place of the i.e. only Dangi Chhetries are in. A primary school is running in Dangibanda in the name of Gauri Primary School. More conflicts, evils and controversies have to be faced by Dangi people due to shortage of water sources. Despite the fact, this community has better unity due to caste similarity. It is no surprise that many poor people are becoming poorer. It would be better if support is provided as grant demanded by the local people.

The development of the Great Himalayan Trail (GHT), the longest and the highest alpine walking track in the world, can change the face of Dolpa district and this community as well. The GHT extends Kanchenjunga in the east to Humla in the west along with Dolpa, and it takes about 157 days to trek. The GHT is divided into 10 sections across 16 districts. Since the GHT value has been increasing year by year, its leaves good impacts to the local people in terms of their livelihoods and better opportunities in the development stream.

We may see the appalling of illegally-fallen trees surrounding it, we may enjoy towards fresh views of the splendid, shimmering Himalayas emerged almost every curve. Graced with endless scarlet Khasru and rhododendron forests, bordering small, barely perceptible, villages that gleamed on the pristine hills as far as the eyes could see on the horizon of Kanjirowa mountain and rift of Balengra<sup>47</sup> towards

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<sup>47</sup> A rift that crosses Pahada to Kaigaun

Pahada side. Nevertheless, the reality of living there meant a constant struggle for life and livelihood for some people.

Due to tourist movement, hotels and restaurants businesses have been flourishing at the airport site. With increasing income generating activities, locals have started shifting to hospitality business from their traditional occupation. According to Narbhung Shahi, the owner of Mt. Putha Hotel at Juphal airport,

*"The numbers of both domestic and foreign tourists have been increasing. Locals as well as outsiders are competing to open new business, hotels, lodges and restaurants (Inn). Increase in tourism activities has also created employment opportunities."*

The key feature of the land of Dolpa, could be a better place for the eco-tourism. Following attempts can be adopted for the eco-tourism:

Trekking the tourist to the various spots of resources, conducting home stay, providing horses for trekking, using mules and horses for carrying bags and baggage, eating local foods enjoying with real flavor of Dolpali people, participating in local culture and enjoying with virgin hills, mountains and natural beauty.

This community has great opportunities in many ways. Since, this place is associated with the airport; it could be benefitted in many ways. It can probably be a happier community, if we develop Juphal as well as Dolpa.

We can foster eco-tourism business. Eco-tourism is to be looked upon as a sector which is instrumental to open an access to new and virgin natural regions but steered with an objective to conserve natural vegetation and its habitat and also by developing linkages to bring forth welfare and wellbeing of the local residents as Chanda (2003) claimed in his book 'Essays on development of Nepal.

So, opportunities are creating and can be created as per necessity. The major concern is how to think, practice and guide the community. Accordingly system runs ahead. We can develop and change ourselves. People have to invest and train themselves.

### **Traditional Knowledge for Environment Conservation**

"The aim of the education is the knowledge not of facts but of values."

- William Ralph Inge (1860-1954)

ITK has been following from generation to generation through patriarchal practices. People are learning by doing, acknowledging by observing and adopting through experiencing. Besides these, seniors teach and transmit to the juniors by displaying, sharing, caring, and family counseling etc. Established traditions and cultural practices also enriched their knowledge and experiences. Various practical aspects are practiced and followed. Hand in hand with the loss of biological resources often goes local indigenous knowledge and ethno-botanical knowledge is not written down and so is vulnerable when communities are displaced or attracted by the promises of western knowledge and the western way of life (Walker, 2012, p.118).

### **Chapter Summary**

This chapter has represented the research participants' responses in the form of story. As an ethnographer under qualitative, I have a bitter and remarkable experiences of being here and there during the research work covering whole one year. The qualitative inquiry has revealed the existing practices of the CBNRM in the context of Dolpa at Juphal community. From the theories and experiences, it is proved that ethnographic research is the process and way of walking on the others' shoes. I have interpreted the data that were collected and analysed through sense making from the context under qualitative method.

Besides, I have drawn the themes discussing under the main three research questions. Existing practices of CBNRM is the first theme and I put many sub headings for discussions and also explored the transmit system of knowledge, skills and experiences from the senior to the new generation and the contribution of environment education.



## CHAPTER V

### SUMMARY, CONCLUSION AND IMPLICATIONS

#### **Chapter Overview**

This is the last chapter of the study. In this chapter, the researcher discussed the overall scenario of the natural resources, CBNRM, management of CPRs, transfer of KSE and the role of Environment Education.

In this chapter, here, I drew the conclusions of my research thereby analyzing and interpreting the voices of the participants. In so doing, I looked at these conclusions from different theoretical perspectives. I employed some theories related to the natural resource management and non- timber forest products. Following the major four research questions, I presented my findings in a sequential order. In doing this, I mainly focused on major themes from each research question: practices of community based natural resources management, management of CPRs (NTFPs), traditional KSE transfer system, and role of environment education. Finally, the themes threaded through the study were introduced and elaborated drawn the conclusions and also presented key implications.

#### **Practices of Community Based Natural Resources**

The research area has full of different natural resources like water, forest, hills, and hot-spring. However, I have taken only three major natural resources that played significant role in the livelihood of the local people; they are water and forest. All participants realized the value of these two natural resources. Despite the importance of these natural resources, they hardly practice to manage. They managed these natural resources themselves. For water, they constructed taps and cannels for

drinking purpose and irrigation. It was a collective effort of the local people. They realized the importance of the forest and preserved it by planting trees and not cutting them. The main findings regarding CPR (the most debatable issue of environment and development) under plausible assumptions about the actions available to resource users indicate that cooperation becomes more difficult as the size of the group of users increases, or as the users' time horizon decreases due, for example, to migration. These predictions are largely borne out by Ostrom's empirical studies. However, a more interesting question is whether – when these factors are held constant – some groups of users are better able to cooperate than others. That is, there any designed principles that can be elucidated from the case material?

#### **Management of Non-timber forest products (NTFPs)**

Non-timber forest products are the salient features of the trans-Himalayan study site. People know the value of medicinal plants from the very beginning. Few people have been practicing for the traditional medicinal care with the use of various herbal products.

Therefore, the government should revise the ban on unprocessed expertise of the key NTFPs developing a clear process and criteria for fixing and revision of royalty rates. It should include NTFPs as an integral part of the community forest management to support the rural livelihood. NTFPs should be harvested on sustainable basis rather than a mere profit motives. NTFPs should be collected in appropriate season rather than in leisurely period. The government should provide the local value addition for NTFPs by appropriate method awarding users fund rather than from individual income.

### **Transferring Traditional KSEs**

Local people are the think tank for the traditional knowledge and experiences. The matured people of the local community share their experiences in different ways. They used to share stories, poems and sayings regarding practical knowledge and skills. Chandra Bikram said, *"Jagadip Shahi of this community is excellent at knitting Radipakhi. Siddhiman Budha is also an expert of sweater knitting task. But today's youths don't have such expertise. Then, how they run their lives"*.

R2 agreed in this line and further opined, *"We only run our traditional agro-farm and animal husbandry. I can knit Doka, Namla for our self use, one should pay about 400/500 hundred for single Doka. Today's people use Sack (Bora) instead of Doka<sup>48</sup> to carry compost fertilizer, even to use fire-woods. When we die, how do they live and run their system."*

They learnt informally from their parents and grandparents for preserving natural resource management; however, they did not get any chance to learn environment education in school. They have high consciousness on preserving natural resource management especially NTFPs. The establishment of the community based organizations in CBNRM is based on the idea that people whose livelihoods are dependent on and are sustained by the available resources would have committed to conserve the resources and use it in a sustainable way.

One of the causes of losing an access or control over the ownership of resources is to deterioration of traditional indigenous knowledge in the local community. Such original KSEs are replacing due to modern means of technology. As a result, local community is being depended with others and the imported technology cannot save and preserve the resources properly (Dhungna, Ghimire, & Adhikari

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<sup>48</sup> Bamboo-basket

(2009, p. 71). If the original traditional knowledge is lost during the course of resources management and protection of bio-diversity, then the Adivasi, janjatis and local community may lose their rights (ibid, p.73).

Due to illiteracy, lack of nature and natural knowledge, economic status, poverty, techniques in using natural resources and appropriate procedures, remote area, no means of transportation, internet, televisions, radios and other paraphernalia's people of Dolpa are confined in the traditional way for their survival. Nepalese people survive with comparatively very poor economic status in South East Asia in spite of abundance of natural resources. There is overexploitation of only few natural resources leaving others. This justifies that people are surviving in the brink of their life by following traditional way of knowledge so through diversity in nature as well as in society is found. Preservation of natural resources in the natural way for the benefit of the people of Dolpa is a challenging job, at present scenario of the world too.

### **Educating Environmental Knowledge and Skills**

Education itself is a dynamic process and the knowledge, skills and management of any system are also dynamic. Participates opined, "Present environment education of secondary level has more theoretical knowledge about preservation rather than managing and applying in real practice." For example, in the late evening, a student of environment study went to the forest to cut young trees with his parents, however, he got the best marks in the question on forest preservation. Most of the community people know the importance of NRs but they are working, managing and using them roughly. This means formal environment education is not able to change the traditional way of managing NRs and changing ITK in effective way. That's why; it is

all because of no preservation Sanskar<sup>49</sup> and committed culture. To address environmental problems and challenges, people need to think broadly and understand systems, connections maintaining harmony with social and economic goals and accorded equal priority.

### **Discussions**

The study was thus accomplished to identify the existing practice of CBNRM in Dolpa. Peoples are following traditional ways of farming. They depend on community forests for their basic needs like timber and firewood. Their way of farming is different from that of other places. Major crops are potatoes, maize, millet, barley uwa, Fapar<sup>50</sup>, etc. Villagers start cultivating food at the same time and end in the same manner. They follow animal husbandry like another side of a coin, besides agriculture. In a single house, there are about 20-30 sheep, 5-7 cows and oxen. Almost all houses consist of horses which are the means of transport from one place to another as bikes, bus, tractors in urban areas. There is overexploitation of community forest. In case of building houses, they use a lot of timber more than required.

In contrary to this statement, Indian Forest law has mentioned that no tree will be felled in the said area except in case of diseased trees. By destroying nature, environment, man is committing matricide, having in a way killed mother earth. Technological excellence, growth or industries and economical gains have led to depletion of natural resources irreversibly. Indifference to the grave consequences, lacks of concern and foresight have contributed in large measures to the alarming position (Padma & Rao, 2010).

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<sup>49</sup> Culture

<sup>50</sup> Local crop (buckwheat)

People celebrate Bhadra Purnima and Kartik purnima as major festivals in which Bhadra Purnima is more crucial one. In Bhadra Purnima, people worship the god named Masto, when they dance celebrate, worship and emulate he-goat so that the god becomes delighted and conserves natural phenomena like forests lands, water and fulfills the requirement of the people. There is 22-Kula system for irrigation which is a unique practice. There is little practice of hunting and poaching. Various types of existing practices of NRs and CBNRM can be seen in the study area. Availability of natural resources is abundant and therefore this area is very much rich in flora and fauna.

Agro-forest supplies fodder, fuel-wood, timber and fruit for rural household consumption. Home garden, hedgerow intercropping, trees in and around the agricultural fields, grasses with trees in *Bariland* are the common agro-forestry practices in the study area.

This study shows that the diversity of farm tree is higher in *Bari* land which plays major roles in farming system of Nepal. In the mountain farming system *Bari* land is common for all farmers, which acts as fodder bank especially during the lean period.

The number and nature of the tree species on farms depend on local socio-economic and environmental factors. In general, larger land holdings, more livestock, less fragmentation of properties, *Shahi Thakuri-Chhetry* ethnicity and commercial farming system are associated with higher tree diversity. Further research is necessary to assess the role of agro-forestry in soil and water conservation, sustainability of soil fertility through the plantation of different kinds of trees in farmland, wasteland, fallow land, degraded land and gullies, and relationship between trees and agricultural crops in farming systems.

Farmers have protected and managed some naturally grown or planted fodder trees in and around their homesteads and farm fields for fodder, fruits, fuel-wood and timber. Generally, farmers plant those species which have multiple uses. Fodder trees are maintained in various patterns either along the borders of agricultural lands or on terraces. Fodder trees not only provide fodder to the livestock, but also a substantial amount of fuel wood to meet the household needs of rural energy. Contributions of fodder and fuel-wood are significantly more from the agro-forest as compared to the community forest to the mountain watershed of Nepal. For the self-dependency of timber from agro-forest, plantation of suitable timber species is urgently needed. Rural households collect almost all fruits from the agro-forests.

While asking DFO official, he talked point-wise regarding damage of plants, he added, "Plants and planted field could be damaged through various ways. These could be pathogen related damages, insect related, damaged by fire and grazing related damages. Further he continued, weeding, cleaning, pruning and the thinning are the tending operations for the plantation management.

The quantities of forest products collected from agro-forests among different socio-economic characteristics are found to be different. This study shows that the socio-economic characteristics of households have a marked relationship with the quantity of collected forest products from agro-forests. Rich households tend to collect high quantity of forest products from agro-forests than the poor households, as the livestock holdings and land holdings of rich households are higher. Dependency of rich farmers is more on agro-forestry as well as community forestry. Poor households rely heavily on community forests for most of the forest products used for livestock rearing, cooking and household construction. To fulfill the basic demands of forest resources programs for the planting and management of farm trees, better

access to seedling, extension program and training activities should be conducted for the poor farmers. This high level of dependency of large and medium in terms of landholding and livestock on agro-forests have developed due to an inseparable relationship between agro-forest, landholding and livestock husbandry in the study area. Contribution of agro-forests and dependency on community forest of poor farmers raise great questions for their livelihoods in sustainable way.

Agro-forestry practices such as home garden, agri-silviculture, agro-hortisilviculture and silvo-pastoral systems were found most promising for biodiversity, and meeting the diverse needs to uplift the socioeconomic status of farmers while considering the present status and trends of farm tree biodiversity, socio-economic factors and their contribution.

Though the drinking water is not sufficient, people believe that the quality of water is good but from my observation, it has shown that the water made the pots black and can cause stones in the stomach. The availability of water sources is very few. It is getting more challenges due to climate change and deforestation. People depend more on NTFPs but they are not harvesting them by maintaining sustainability for their livelihoods. River, snowfalls and the precipitation patterns are the main sources of irrigating water. There are both black and red types of soil color. Normally these soils are regarded good quality in term of fertility and productivity.

Cropping patterns differ according to the season and Bariland. Therefore, rotation cropping pattern is adopted. Livelihoods are based on agriculture, business, jobs and others. Collecting and selling NTFPS is the major income source of local rural livelihood. Composition of CFUG is seemed normal by simply gathering and conducting meetings and operation process of meetings are traditional by calling need based and decision making is done by debating more and more and concluding at last.



People can put their voice first. Normally unanimous decision is taken. However, the elements of good governance are not strictly followed while during the decision making process.

If there was a great debate and conflict, voice of the local elites are heard and concluded. CFUG has been increasing its income were than in the past. But the status of financial and accounting system is not updated. Auditing and reporting system are up dated just annually.

### **Cold War between Doer and Talker**

Normally, today's people seem aware of transparency, accountability, participation and predictability but good governance is not collectively practiced well rather traditional culture is digested as the established tradition. CPRs are the common pool and key basis of livelihood but its management system is not mechanized so far despite the implementation of various acts, rules and regulations. Some people want to conserve resources, others just use it, few want to change the community, rest do not support. Therefore, there is always cold war between walk-the walk and talk-the-talk.

People have had traditional indigenous Knowledge, Skills and Experiences. They want to transfer their KSEs to the new generation but the youngsters are not following honestly. People from new generation think that old KSEs do not support our future livelihoods. Therefore, they need to follow new things, modern knowledge and skills except few old ones.

Transferring systems of KSEs are individual types and are lacking institutional practices. We need to conserve their KSEs in different perspectives. Senior people also had knowledge of NRs and CBNRM but today's methods could be different. There were stories, myths, sayings and songs based on applied practices from the very

beginning. As there is change in information and communication technology (ICT), the wheel of time has also changed. Eco-friendly technologies used for cooking and lighting have been widely adopted via personal as well as various projects' facilitations and government subsidies. People are following just what is going on and trying to adopt what the government interventions suggested. They are colorful in nature and can change their trend as the time of wheel can do.

The adoption of eco-friendly alternatives have multiple benefits including natural resources conservation, health improvement, reduction of women's drudgery, and supports efficiency of energy use. Community members as well as outer business persons are the main beneficiaries of the CFUG. Women are more advantages than men in terms of time and labor. Community people should bear the common responsibilities for protecting and promoting natural resources. Conflicts and disputes management are the challenging issues for better development and practices.

### **Conclusion**

From the old-age period, the communities have been practicing various types of techniques in order to manage the natural resources. The study concluded that there exist the numerous types of natural resources mainly in NTFPs, mainly, water, and land. The pattern of managing natural resources and common property exists mainly on utilization whereas the level of awareness towards the importance of conserving and managing natural resources is very high. The people are found positive towards the importance of natural resources and common properties.

The adoption of eco-friendly alternatives have multiple benefits including natural resources conservation, health improvement, reduction of women's drudgery and supports efficiency of energy use. Community members as well as outer businesspersons are the main beneficiaries of the CFUG. Women are more advantages

than men in terms of time and labor. Community People should bear the common responsibilities for protecting and promoting natural resources. Conflicts and disputes management are the challenging issues for the better development and practices. The youths, from the study area are found getting knowledge transferred from their senior generation via the uses and practices of various culture and traditions. So, encouragement of youth on participating on various local levels by seniors is appreciative.

The study also revealed that the practices and benefits sharing from natural resources management is neither inclusive nor equity based environment friendly. The proactive activities and the responsible bodies for this process is not a single one. We have to think and proceed from the part of CFUG, development partners, district forest office, and district agriculture development office, office of district development committee, district administration office and line and staff agencies. Inputs of local organizations, stakeholders and governmental authorities are praiseworthy. Through in-depth interview with the respondents, it was revealed that the local people are interested in the new techniques and interventions that are prescribed and developed by the government bodies.

CBNRM may succeed if community is willing to invest in management measures, has ownership of their resources, empowers to make key decisions affecting resource regeneration, uses effective approaches and technologies to ensure resource recovery, has regulation and uses them to manage sustainable off -take effectively, practices more eco-friendly following CFOP and CFAP, incorporates stakeholders' choices and voices in designing such CFOP and CFAP in the days to come.

Despite the facts, in my study area, community people have been using their resources haphazardly without considering future impacts and challenges. Only exploiting natural resources for personal betterment, people are not collectively ready for natural resources preservation and management. CBNRM implementation and method do not capacitate to control, use and manage the resources on their own. Taking account of other factors, such as community dynamics, social security and equity are far cry.

From all these traditional practices, it can be said that, there is established cultural trend, however, it is fast changing, but it does not assure the real justice neither for the common people nor the environment and nature as Amartya Sen (2009) asserts, '*there is nothing so finely perceived and finely felt, as injustice*' through his renown book 'the Idea of Justice'.

Therefore, EE would play creative role and can bridge this gap by involving everyone effectively and making holistic, practical and lifelong. For this purpose, the policies, rules and regulations should be implemented effectively prioritizing better sustainable management through empowering local people and the community, or applying good governance.

Finally, the study concluded that there exists the local and indigenous ways of managing natural resources and the impact of formal and informal education on increasing awareness level of local people towards the community based on nature conservation and management is praiseworthy.

## **Implications**

The implications of the study have been proposed to the policy makers, local people, curriculum designers and future researchers. The following section is the description of the implications.

### **Policy Makers**

The current practice of natural resource management consists of local knowledge. However, the local knowledge is not compatible to the policy makers. Community people want to learn to develop the right way of planning, implementation and evaluation. This learning would help the community people to incorporate their traditional knowledge in the changing context. If the policy makers help the community people to incorporate those traditional knowledge and experiences in the present context of change, they can be compatible to adopt the right policy and with the help of this right policy, implementation can function effectively.

### **Implications to the Community People**

Community people are very interested to develop their capacity building to manage natural resources. However, they sometimes find themselves confuse to adopt right practices of natural resource management. They often find that their knowledge of NRM is not compatible to the knowledge of the policy makers. In such a situation, community people want to develop their capacity from the experts. If their capacity of planning, implementation, monitoring and evaluation is built, they can involve themselves in such activities in a well manner and they feel convenience in their way of management. When community people themselves engage in natural resources management, it helps to develop a feeling of ownership and the ownership further develops to build sustainable development.

**Curriculum Designers**

The current HPE curriculum does not consist of proper balance of theoretical knowledge and practical skills of natural resource management. The training participants are quite aware about the theoretical knowledge of the experts but they feel difficulty to implement the theoretical knowledge in real practices. On the other hand, when practical based learning outcomes are implemented in the modality of training, it helps to transform participants' skills to incorporate theoretical knowledge in the implementation of their activities. This process also helps to contextualize the experiences of community resource management of the other community in the local context of their own locality. In turn, it also helps to promote natural resources management sustainably.

**Future Researchers**

This research identifies that community based natural resource management lacks the contextualization of knowledge and practices of the other community to incorporate in the context of local society. The future researchers may engage to analyse the ways to incorporate the knowledge and practices of the knowledge of other society in the context of local knowledge of the community. Moreover, there can be a study to find right modality of training or other measures in community resource management. Furthermore, similar studies can be done to explore to find the suitable modality for other non timber forest products.

### **Chapter Summary**

This chapter is a very short expression of my whole research work. It is the blend of my own views as well as research participants' developed from the research activities, studies and experiences over the time span. I have also divided this chapter in different subtitles as mentioned above.

The study highlighted the major themes of the study. The researcher also suggested extending such research in the days to come to verify the inconsistencies in the conclusions between this and previous ones to explore new findings to cover and address recently emerging issues and challenges. Mainly, summary and conclusions are drawn based on research questions and themes. At last, some implications are also proposed to the policy makers, local people, curriculum designers and future researchers in this last chapter.

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## APPENDICES

**Appendix A: Research Questionnaire**

Research questionnaire for assessing the Community Based Natural Resources  
management (CBNRM) Practices

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**Name:** ..... **Age:** .....Years **Date:** / /20...

**Address:** Juphal VDC **Ward No.:** **Sex:** Male/Female/Other

**Caste:** **Religion:** H/B/C/M/Other **Education:**

**Profession:** Agriculture/Business /Job (Govt./Pvt./Seasonal/ wages)/others

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**Signature of the Key Informant:-**

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**Leading Research Question No. 1.**

**What are the existing practices of CBNRM in the study area?**

**Probing Questions** related to Research Question No. 1:-

- 1.1: What sorts of natural resources are found in your village?  
(Jal, Jamin, Jungle, Jarapuri, Janasakti, Janawar, Jadibuti etc.)
- 1.2. Could you tell me your name of the forest and CFUG?
- 1.3. What are the existing practices on NRs?
- 1.4. How do you manage CBNRM?
- 1.5. How do you use those NRs?
- 1.6. How people are benefitted from the NRs?
- 1.7. What are the key Problems in CFM/Decision Making?
- 1.8. How many fire-woods, sottar, syaula and grass use people from forest?
- 1.9. What sorts of committees are formed to manage NRs?
- 1.10. Do people manage water, soil, CPRs, forest and crops?
- 1.11. Any difference between Juphal and Dangibanda regarding CBNRM practices.



- 1.12. What do you mean by Natural Resource Management?
- 1.13. Who is responsible for protection and promotion of Natural Resources?
- 1.14. In your opinion, what are the important natural resources?
- 1.15. What sorts of disputes can be seen while managing community forestry
- 1.16. Is there any pollution in your community? (Hint: land, water, air, noise, etc.)
- 1.17. What measures are taken to reduce such pollution(s) so far?

**Leading Research Question No. 2.**

**How the senior people transmit the knowledge, skills and experiences to the next generation?**

**Probing Questions** related to Research Question No. 2:

- 2.1. How you perceive Knowledge, Skills and Experiences (KSE)?
- 2.2. How the Knowledge, Skills and Experiences are exchanged and transferred among the people of your community or from senior to next generation?
- 2.3. How does present senior, old and experience generation transfer their ITK and KSE to the new/next generation?
- 2.4. How far the new generation tries to follow the KSE from old ones?
- 2.5. Does formal/school education contribute to make life meaningful?
- 2.6. Does the KSA learnt from school help to conserve natural resources?
- 2.7. What is the Role of Youths in managing natural resources?
- 2.8. Whether the migration process disturbs or supports to conserve NRs?
- 2.9. Do students actively participate while managing common properties like forests, schools, ponds, spring, lakes, Pati, Pouwa and Chautaro etc.
- 2.10. Does any media group or any club take special considerations to protect NRs?
- 2.11. Is there any group, club or community directly involving on assisting transferring of KSA?

- 2.13. Is there gender equality and equity within this group?
- 2.14. Is there proportional representation among female, DAGs, elite, medium and poor while forming the groups?

### **Leading Research Question No. 3**

#### **How does Environment Education contribute to manage Community Based Natural Resources?**

##### **Probing Questions** Related to Research Question No. 3:

- 3.1. Do existing Practices align to environmental concern?
- 3.2. Does the present HPE curriculum help to protect the natural resources?
- 3.3. Is there close link to the formal education and the need of the community people?
- 3.4. What is your expectation from new generation regarding CBNRM?
- 3.5. Have you been practicing for transferring KSEs to the juniors or accepting KSEs from senior people?
3. 6. Does present curriculum and teaching-learning process help to foster CBNRM?
- 3.7. Does formal education contribute to CBNRM?
- 3.8. Do modern inventions, people's behavior and their practices help on CBNRM?
- 3.9. Do migrated people help to manage CBNRM in this community?
- 3.10. Do school children share their knowledge gained from school?

## **Appendix B: Checklist for Observation**

Existing Practices on NRs and CBNRM

Availability of natural resources

Flora and Fauna

Drinking and irrigation water resources, quality and availability

Soil Quality, color, Fertility

Cropping pattern and livelihood

Composition of CFUG

Operation process of meetings and decision making process

Status of Financial and accounting system, auditing and reporting system

Good Governance: Transparency, Accountability, Participation, Predictability

CPRs and its management system

Knowledge, Skills and Experiences

Transferring system of KSE

Role of EE on NRM and CBNRM

Demographic and Geographical patterns

Cultural and religious matters

Date, time and venue,

Related documents

Stories and sayings, use of maps and diagrams

### Appendix C: Key Research Participants

S. No.	Research Participant's Code No.	KRP	Caste	Address	Age	Profession
1	0001 P	R1	Chhetri	Juphal-2	65 years	Social service/ Agriculture
2	0002 Q	R2	Budhathoki	Juphal-5	67 years	Agriculture
3	0003 R	R3	Thakuri	Juphal-2	35 years	Agriculture
4	0004 S	R4	Brahmin	Juphal-1	53 years	Agri+Business
5	0005 U	R5	Dangi	Juphal-2	45 years	Teaching
6	0006 V	R6	Budha	Juphal-5	14 years	Student
7	0007 W	R7	Sarki	Juphal-2	29 years	Agriculture

## Appendix D: Research Area

Research Area: Upper Part-Juphal Gaun and Lower Part- Dangibanda, Dolpa



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8