

**Linking Conservation with Sustainable Mountain Livelihoods: A
Case Study of Northern Pakistan**

By

Shah Raees Khan

A Thesis Submitted to the Faculty of Graduate Studies of
The University of Manitoba
In Partial Fulfillment of the Requirements of the Degree of

Doctor of Philosophy

Clayton H. Riddell Faculty of Environment, Earth, and Resources
Natural Resources Institute
University of Manitoba
August 2012

Copyright © by Shah Raees Khan

**THE UNIVERSITY OF MANITOBA
FACULTY OF GRADUATE STUDIES**

COPYRIGHT PERMISSION

**Linking Conservation with Sustainable Mountain Livelihoods:
A Case Study of Northern Pakistan**

**By
Shah Raees Khan**

A Thesis/Practicum submitted to the Faculty of Graduate Studies
of the University of Manitoba in partial fulfillment of the
requirements of the degree of Doctor of Philosophy

© 2012 by Shah Raees Khan

Permission has been granted to the Library of the University of Manitoba to lend or sell
copies of this thesis/practicum to the National Library of Canada to microfilm this
thesis and to lend or sell copies of the film, and to University Microfilms Inc.
to publish an abstract of this thesis/practicum.

This reproduction or copy of this thesis has been made available by authority of the
copyright owner solely for the purpose of private study and research, and may
only be reproduced and copied as permitted by copyright laws or with
express written authorization from the copyright owner.

Dedicated to my parents

Abstract

This study investigated the livelihood strategies of mountain communities and their relationships with natural resources in northern Pakistan. Interventions by the State to conserve biodiversity have led to the “decommonisation” of the commons and with strict sanctions on the local communities restricting their access to the resources. This has resulted in severe conflicts between the State and the local communities. In light of the adverse effects of “decommonisation,” prevailing institutions, international conservation organizations, have initiated the “re-coupling” of the local communities with resource management. However, this process of “new-commonisation” appears to be failing because it has not provided “a sense of ownership” among the local communities. To investigate the pertinent issues, this research encompassed five areas for analysis: 1) the dynamics of mountain livelihoods; 2) the vulnerability and coping strategies of mountain communities; 3) the “decommonisation” of mountain commons; 4) international NGO-led “new commonisation” of natural resource endowments, with efforts to involve local communities; and 5) the formulation of a framework towards sustainable mountain livelihoods.

The study collected evidence from two communities in northern Pakistan, namely, Shimshal and Naltar Valley, during July 2006-September 2008. A four-tier field method was used that included introductory workshops, household surveys, focus group discussions, and data validation. This investigation identified the following findings: 1) there has been a significant reduction in the livelihood options of local communities due to State-induced “Protected Areas,” 2) traditional pasture management systems have been facing serious threats from State institutional measures; 3) some communities have proactively attempted to diversify their economy by expanding household portfolios into

non-agricultural sectors; 4) external drivers of local socio-economic conditions have augmented local vulnerability; 5) in the face of external threats, some traditional institutions have transformed themselves into formalized institutions with the capability to establish cross-scale linkages. There is a potential to manage the commons through revitalized local institutions that would promote “self-governance” in managing the commons. It stresses the need to understand the local livelihoods from the perspective of the local people, so as to advance effectively the conservation of natural resources in the context of mountain areas.

Acknowledgement

There is always an inspiration behind any success that keeps the person going to achieve his goal. In my early age, my mother used to tell me a story of a young shepherd, *Janjo-kucz-Ghulam*, who would take a book with him while taking care of the livestock. He would try to learn the words and would go to people to understand the new words from the book, but some people would tease him saying, “A shepherd is carrying books with him. What! He wants to be...a literate shepherd!” Eventually, the young shepherd got his high school degree and then went on to the university. He got an opportunity to go abroad, where he found a higher level position with the government. The person’s achievement was admired by the local people, even the Mir, “the ruler” of Hunza, and he became an inspiration for the poor.

Whatever we achieve in life is because of all those who have made it possible. My mother always kept me in her prayers for success, and I would never be able to repay her for her admiration, love and, above all, her sacrifices to send me away for education at an early age. My late father, Muhammad Khan, was keen to see my progress and achievements. His eyes used to become full of tears from happiness on our small achievements. It’s unfortunate that he is not here to see this achievement. It would be unfair if I didn’t mention my elder brother Ayub Khan’s contributions. His efforts to provide us the opportunities were priceless for our family. His support and encouragement took me to this level, and without his support it would have not been possible to pursue my education. I will forever remain deeply indebted to my wife, Samina, for her support in all times. She was by my side each step of the way, from the start to this stage. She sacrificed the most in order for me to do my research, and she fully shares the accomplishment of my achievement. I am indebted

to my loving daughter, Sarah, and my son, Ali, who waited for me and missed their playtime with me while I was away from them doing my field work. Eventually Ali started calling me “*invisible Daddy*.” I am especially grateful to my sister, Shehzadi, who supported my college education and to my sisters, Bilqis and Najma, whose prayers were always for my success.

I am thankful to Uncle Ahsan and Aunty Shahida for their continuous prayers for my success. My friends, Qaiser Ahsan, Asif Ahsan and Faisal, were keen to see my degree. Oh yes, my family friends in Winnipeg, Moez Haji and Nasim Haji, always opened their doors to me, whenever I travelled to Winnipeg, and yes, Moez’s demand is to have a dinner with me in a “very expensive restaurant” in Ottawa once I complete the degree.

I am grateful to Dr. Emdad Haque for all his support as my advisor and for his encouragement at all times. His guidance gave me confidence and inspired me to accomplish my work. I am thankful to all my committee members, who guided me to pursue the research. I am beholden to Dr. Fikret Berkes, who gave me his guidance and encouraged me to focus on my research area. Once he wrote me an email saying, “*I am penciling in the time, but I will put it in ink once I receive the thesis.*” I am grateful to Dr. James Gardner, a person whose wealth of ideas and field experience made me think of my subject beyond the borders of my domain. I am thankful to Dr. Kelly MacKay, who was always instrumental in helping me construct my research methodology for the field work.

My special thanks to Shimshal and Naltar communities, who shared their knowledge and experiences with me. I received cordial welcomes in Shimshal and Naltar Valley, and many people invited me to attend the local ceremonies and family dinners. I am grateful for their hospitality, which made my work comfortable. Last but not least, I would like to

express my gratitude to all the field team members, especially the teachers who participated in collecting data in Shimshal and Naltar Valley. I believe that it would have not been possible without the team of teachers who contributed voluntarily to the research by collecting data as well as by hosting the workshops in Shimshal and Naltar.

I am grateful for the support I received from the World Wide Fund for Nature-Pakistan (WWF-P) Gilgit, International Union for Conservation of Nature (IUCN-P) Gilgit, government department, and Karakoram Area Development Organization (KADO); they freely shared their data and reports. It would have not been possible for me to conduct the research work if there had not been financial support. The Aga Khan Foundation (AKF-Geneva) graciously provided me a scholarship for my PhD. Studies. The Natural Resources Institute provided me partial financial support for the field work, and CIFOR through the PEN Initiative provided partial funding for field data collection. I thank you all for all your support which allowed me to complete this research work. My acknowledgement will not be complete without two important people, wish to thank them here: Cameron Zywina, for editorial support on this document, and Shantonu Khan for going through all the references and glossary terms. Finally, I take the responsibility for any misinterpretations and shortcomings.

Contents

<u>ABSTRACT.....</u>	<u>III</u>
<u>ACKNOWLEDGEMENT</u>	<u>V</u>
<u>CONTENTS.....</u>	<u>VIII</u>
<u>LIST OF TABLES.....</u>	<u>XII</u>
<u>LIST OF FIGURES</u>	<u>XIV</u>
<u>LIST OF PHOTOGRAPHS.....</u>	<u>XV</u>
<u>ACRONYMS.....</u>	<u>XVI</u>
<u>GLOSSARY OF TERMS.....</u>	<u>XIX</u>
<u>CHAPTER ONE: INTRODUCTION.....</u>	<u>1</u>
1.1 CONTEXT AND THE DEBATE ABOUT CONSERVATION AND LIVELIHOODS	6
1.2 THE ISSUE OF KHUNJERAB NATIONAL PARK.....	10
1.3 KEY RESEARCH ISSUES	14
1.4 RESEARCH OBJECTIVES.....	15
1.5 RESEARCH APPROACH	16
1.6 RESEARCH METHODS	17
1.7 RESEARCH SCOPE AND LIMITATIONS.....	18
1.8 ORGANIZATION OF THE THESIS.....	19
<u>CHAPTER TWO: THEORETICAL CONSIDERATIONS.....</u>	<u>22</u>
2.1 THE CONCEPT OF SUSTAINABLE DEVELOPMENT.....	23
2.2 SUSTAINABLE RURAL LIVELIHOODS: CONCEPTS AND THEORY	24
2.2.1 SUSTAINABLE RURAL LIVELIHOOD: A <i>FRAMEWORK</i> FOR ANALYSIS.....	29
2.2.2 LIVELIHOOD SUSTAINABILITY IN THEORY AND PRACTICE.....	32
2.2.3 VULNERABILITY AND LIVELIHOOD ADAPTATION.	35
2.3 LINKING CONSERVATION APPROACHES AND SUSTAINABLE LIVELIHOODS.	37
2.3.1 CONVENTION ON BIOLOGICAL DIVERSITY (CBD): IMPLICATION FOR LIVELIHOOD AND CONSERVATION.	39
2.3.2 CREATION OF IUCN’S NEW CATEGORIES OF PROTECTED AREAS: ADAPTING TO NEW REALITIES.....	45
2.3.3 CONTESTING CONSERVATION.	52
2.3.4 CONSERVATION DILEMMA: “DECOMMONISATION” OF COMMONS.	54
2.3.5 CO-MANAGEMENT IN STRICT PROTECTED AREAS: IS IT A FEASIBLE ALTERNATIVE MODEL?. 55	

2.3.6 GOVERNANCE IN PROTECTED AREAS: COULD COMMUNITY-OWNED NATIONAL PARKS BE A WAY FORWARD FOR RECONCILIATION?	59
2.4 PROPERTY RIGHTS CONSIDERATION.....	60
2.4.1 COMMONS, PROPERTY RIGHTS AND STATE PROPERTY.	60
2.4.2 NATURE OF PROPERTY RIGHTS REGIME UNDER A CO-MANAGEMENT ARRANGEMENT.	62
2.4.3 THE COMMUNITY-BASED CONSERVATION (CBC) APPROACH.....	64
2.4.4 NEED FOR RETHINKING PROPERTY REGIME IN RESOURCE MANAGEMENT AND SUSTAINABLE COMMUNITY LIVELIHOOD.	68
<u>CHAPTER THREE: RESEARCH AREAS AND METHODS</u>	71
3.1 PHILOSOPHICAL ORIENTATION OF THE RESEARCH.....	72
3.1.1 MIXED METHODS APPROACH.....	74
3.1.2 SOURCES OF DATA.....	77
3.1.3 ETHICAL CONSIDERATIONS.	77
3.1.4 IDENTITY, CONFIDENTIALITY.	77
3.1.5 INFORMED CONSENT.	78
3.2 STUDY AREA AND BACKGROUND	79
3.2.1 THE COUNTRY CONTEXT.	79
3.2.2 REGIONAL CONTEXT.	82
3.3 STUDY SITE SELECTION AND TARGET GROUPS	84
3.3.1 CROSS-CASE COMPARISON.....	85
3.3.2 THE STUDY SITES.....	86
3.4 FIELD STUDY DESIGN AND METHODS	90
3.4.1 THE FOUR-TIER STUDY DESIGN.	92
3.4.2 FOCUS GROUP DISCUSSIONS.....	99
3.4.3 THE FINAL DEBRIEFING AND VALIDATION WORKSHOPS.	99
3.5 FIELD EXPERIENCES: INTERACTION AND ADAPTATION.....	100
3.6 VALIDATION OF THE INFORMATION.....	102
3.7 SURVEY: ATTRITION AND PROBLEMS ENCOUNTERED.....	102
3.7.1 RESPONDENTS FAILING TO DISCLOSE INFORMATION.....	103
3.7.2 LOCAL CONFLICTS AND ILLEGAL ACTIVITIES.	104

<u>CHAPTER FOUR:</u>	105
<u>THE DYNAMICS OF MOUNTAIN LIVELIHOODS</u>	105
4.1 INTRODUCTION: WHAT IS A MOUNTAIN LIVELIHOOD AND HOW DO PEOPLE VIEW LIVELIHOODS?	106
4.1.1 THE DEBATE AND DISCOURSE OF THE LIVELIHOOD CAPITAL APPROACH VS. RESOURCE APPROACH.	110
4.1.2 LIVELIHOOD RESOURCES IN THE STUDY AREA.	111
4.2 VULNERABILITY AND CRISES.....	141
4.2.1 NATURE-TRIGGERED EXTREME EVENTS: LANDSLIDES, DROUGHTS AND FLOODS.	143
4.2.2 HUMAN-INDUCED CRISES AND DECLINE IN TOURISM.....	145
4.3 STATE AND TRANSITION OF LIVELIHOOD CHANGE	148
4.3.1 LIVELIHOOD IN SHIMSHAL VALLEY.....	151
4.3.2 LIVELIHOOD IN NALTAR VALLEY	169
4.4 COPING STRATEGIES – DIVERSIFICATION AND MIGRATION.....	185
4.4.1 LIVELIHOOD DIVERSIFICATION.....	188
4.4.2 MIGRATION.	189
SUMMARY	190
<u>CHAPTER FIVE: “DECOMMONISATION” AND “NEW-COMMONISATION” OF MOUNTAIN COMMONS, AND THEIR IMPACT UPON LIVELIHOOD SECURITY</u>	193
5.1 COMMONS AND PROPERTY RIGHTS	194
5.2 PERSPECTIVE ON COMMONS AS A PROCESS.....	196
5.3 CASE STUDY I: MANAGEMENT OF THE PASTURE COMMONS IN SHIMSHAL BY LOCAL COMMUNITIES.	198
5.3.1 TRADITIONAL YAK HERDING SYSTEM IN SHIMSHAL.....	199
5.3.2 SUMMER PASTURING SYSTEM.	202
5.3.3 WINTER PASTURING SYSTEM.	206
5.4 “DECOMMONISATION” OF THE PASTORAL RESOURCES: KEY FACTORS IN THE LOSS OF COLLECTIVE RIGHTS AND THEIR EFFECTS ON LIVELIHOODS.	209
5.5 “DECOMMONISED” FORESTS – CASE II: EFFECTS ON COMMUNITY RIGHTS AND LIVELIHOODS.	211
5.6 WAS “DECOMMONISATION” A FAILURE TO CONSERVE RESOURCES?.....	221
5.7 EFFORTS TOWARD “NEW-COMMONISATION” TO CONSERVE BY INTEGRATING LOCAL COMMUNITIES.	222

5.7.1 EXPERIMENT OF THE MOUNTAIN AREA CONSERVANCY PROJECT (MACP) AND LESSONS LEARNED.	224
5.7.2 THE MAIN PURPOSE OF THE MACP.	225
5.7.3 THE APPROACH OF MACP.	226
5.7.4 PERFORMANCE ASSESSMENT OF MACP EXPERIMENT.	228
5.8 AN EXPERIMENT ON LOCAL INSTITUTIONS AND NEW PARTNERSHIPS IN COMMONS MANAGEMENT: A WAY FORWARD.	232
SUMMARY.	241
<u>CHAPTER SIX: DISCUSSION OF SUSTAINABLE MOUNTAIN LIVELIHOODS AND THE FUTURE OF COMMONS</u>	243
6.1 SUSTAINABLE MOUNTAIN LIVELIHOOD FRAMEWORK	244
6.1.1 SOCIETAL DIMENSIONS IN LIVELIHOODS.	245
6.1.2 MOUNTAINS’ UNIQUE ATTRIBUTES.	250
6.1.3 IPCC FRAMEWORK ON VULNERABILITY.	252
6.2 LIVELIHOOD DIVERSIFICATION	254
6.3 HOW CAN MOUNTAIN LIVELIHOODS BE SECURED?	258
6.4 STRENGTHENING LOCAL INSTITUTIONS AND BUILDING NEW PARTNERSHIPS FOR COMMUNITY EMPOWERMENT	259
6.5 NATURE OF COMMUNITY-OWNED, STATE-REGULATED COMMON PROPERTY (NEW MANAGEMENT ARRANGEMENT).....	265
<u>CHAPTER SEVEN: CONCLUSIONS</u>	269
7.1 KEY FINDINGS OF THE RESEARCH	272
7.2 CONTRIBUTION TO NEW KNOWLEDGE.....	281
7.3 RESEARCH AND POLICY IMPLICATIONS: CLOSING REMARKS.....	289
<u>REFERENCES</u>	293
<u>ANNEX I</u>	330
<u>ANNEX II (A)</u>	331
<u>ANNEX II (B)</u>	332
<u>ANNEX III</u>	333
<u>ANNEX IV</u>	334
<u>ANNEX V</u>	335

List of Tables

Table 2.1. Guide to IUCN Prioritization of Protected Areas Objectives	50
Table 3.1. Specific Tools Employed to Attain the Research Objectives	91
Table 3.2. Methods of Data Collection, Duration and Numbers	93
Table 3.3. The Survey Questionnaires: Contents and Timing	99
Table 4.1. Characteristics of Livelihood Resources in the Study Area	112
Table 4.2. Livestock and Sources of Fodder Naltar Valley	120
Table 4.3. Sources of Fodder in Shimshal (Percentage Distribution)	123
Table 4.4. Volume and Monetary Value of Fuel Wood in Naltar	125
Table 4.5. Volume and Monetary Value of Fuel Wood in Shimshal	128
Table 4.6. Households' Level of Education	131
Table 4.7. List of Schools in the Study Area	132
Table 4.8. Top Tourist Visitors by Country of Origin During 2008-2009	148
Table 4.9. Livelihood Analysis at Household Level (Shimshal and Naltar Valley)	151
Table 4.10a. Livestock Population by Village	152
Table 4.10b. Livestock Population and Sales in Shimshal	156
Table 4.10c. Sources of Household Income Shimshal	157
Table 4.11. Household Level Livelihood Analysis	159
Table 4.12. List of Household Members Negheban Shah	160
Table 4.13. List of Household Members Farmanullah	163
Table 4.14. List of Household Members Ghulam Murtaza	165
Table 4.15. List of Household Members Bibi Nabat	167
Table 4.16. Sources of Household Income Naltar Valley	173
Table 4.17. Livestock and Source of Fodder in Naltar Nalley	175
Table 4.18. Household Level Livelihood Analysis Naltar	176
Table 5.1. Key Mechanisms of Pasture Resources Management in Shimshal	201

Table 5.2. Protected Forest in the Northern Areas	220
Table 5.3. Key Factors of the Decommissioning Process in the Study Area	221
Table 5.4. MACP Conservancies	225
Table 5.5. Key Factors of the New-Commonisation Process in Northern Pakistan	240
Table 6.1. Community-Owned, State-Regulated Property	267

List of Figures

Figure 1.1. Location Map of the Northern Areas of Pakistan	5
Figure 1.2. Khunjerab National Park Map	11
Figure 2.1. The Sustainable Livelihoods Framework: A Framework for Analysis	30
Figure 3.1. Location Map of Shimshal and Naltar – Study Sites	87
Figure 4.1. Land Categories Shimshal	115
Figure 4.2. Land Categories Naltar Bala	115
Figure 4.3. Land Categories Naltar Payees	116
Figure 4.4. Sources of Fodder in Naltar Bala	121
Figure 4.5. Sources of Fodder in Naltar Payeen	122
Figure 4.6. Sources of Fodder in Shimshal	123
Figure 4.7. Volume and Monetary Value of Fuelwood collected in Naltar	126
Figure 4.8. Volume and Monetary Value of Fuelwood collected in Shimshal	128
Figure 4.9. Households' Level of Education	132
Figure 4.10. Number of Foreign Tourist visit to Gigit-Baltistan	147
Figure 4.11. Seasonal Calendar Shimshal	155
Figure 4.12. Seasonal Calendar Naltar	171
Figure 4.13. Income Sources in Naltar Bala	172
Figure 4.14. Income Sources in Naltar Payeen	172
Figure 5.1. Summer and Winter Herding Routes	203
Figure 5.2. Governance Model and Linkages at Cross-scale	237
Figure 5.3. Formal and Informal Institutions in Shimshal	238
Figure 6.1. Livelihood Strategies: Assets Decisions and Activity Portfolios	248
Figure 6.2. The Sustainable Mountain Livelihood Framework	253
Figure 6.3. Community-Owned, State-Regulated Property	265

List of Photographs

Photo 4.1. Community Collective Work	136
Photo 4.2. Community Rituals and Celebration	136
Photo 5.1. Livestock in Summer Pastures	204
Photo 5.2. Women Milking Livestock in Summer Pastures	204
Photo 5.3. Herdsmen Moving Yak Herds During Winter	208
Photo 5.4. Livestock in the Protected Forest in Naltar	214
Photo 5.5. Fuel Wood Collection by Gujars in Naltar	214
Photo 5.6. Encroachment in Naltar Forest	218
Photo 5.7. Military Resort in the Naltar Bala	218

Acronyms

AKES - Aga Khan Education Service

AKRSP - Aga Khan Rural Support Program

CBC - Community-Based Conservation

CBD - Convention on Biological Diversity

CDCM - Community-driven Collaborative Management

CIFOR - Centre for International Forestry Research

DCC - District Conservation Committees

DfID - Department for International Development

FAO - Food and Agricultural Organization

FGD - Focus Group Discussions

FWS - Forest Working Schemes

GDP - Gross Domestic Product

GEF - Global Environmental Facility

ICIMOD - International Centre for Integrated Mountain Development

IUCN - International Union for Conservation of Nature

KKH - Karakorum Highway

KNP - Khunjerab National Park

KVO - Khunjerab Village Organizations

MACP - Mountain Areas Conservancy Project

MEA - Multilateral Environment Agreements

NA - Northern Areas

NAFD - Northern Areas Forest Department

NALC - Northern Areas Legislative Council

NASSD - Northern Areas Strategy for Sustainable Development

NEWDO - Naunihal Education Welfare and Development Organization

NGO – Non-Governmental Organization

NWFP - North West Frontier Province

PA - Protected Areas

PEN - Poverty Environment Network

PRA - Participatory Rural Appraisal

PRIF - Pre-Investment Feasibility IUCN

RCP - Resource Conservation Plan

SD - Sustainable Development

SEI - Stockholm Environmental Institute

SL - Sustainable Livelihood

SLA - Sustainable Livelihood Analysis

SNT - Shimshal Nature Trust

ToP - Terms of Partnership

UN - United Nations

UNDP - United Nations Development Program

UNEP - United Nations Environment Program

USDA - United States Department of Agriculture

VO - Village Organizations

WAPDA -Water and Power Development Authority

WCED - World Commission on Environment and Development (also known as Brundtland Commission)

WCMC - World Conservation Monitoring Centre

WO - Women's Organization

WWF - World Wide Fund for Nature

WWF-P - World Wide Fund for Nature-Pakistan

Glossary of Terms

Chaash - Shrubby land locally called

Chirpindok - Thin Chapatti bread layers with *qurut* (liquid form) and butter on the top

Dass - Fallow land owned by individuals or the community).

Gal - The incense leaves of juniper and Pistacia Khinjuk stocks

Garbel - Garbel is the unit of land used as equivalent to kanal (1/8 acre or 0.0505857 hectare) and kanal is a traditional unit of land area in Pakistan equal to 20 marlas)

Gishee - Shrubby land locally called in the *Sheena* dialect

Gujars - The nomad community of Naltar Valley

Gulgul - The incense leaves of juniper and Pistacia Khinjuk stocks

Ibex - A type of Trophy hunting of game animals

Jirga - Traditional informal institution

Juniper - Alpine habitat vegetation

Kanal - A *kanal* is a traditional unit of land area in Pakistan equal to 20 marlas

Kutch - Shimshal community celebrates a number of rituals, but the most conspicuous one is the return from the pastures

Markhor - Is a large species of wild goat(Mountain goats)that is found in northeastern Afghanistan, Pakistan (Gilgit-Baltistan, Hunza-Nagar Valley, northern and central Pakistan) (*Capra falconeri*)

Mirgichig - A purification ritual perform by the female in the pastures.

Mirik - Dairy product

Pistacia Khinjuk - A type of incense leaves

Qurut - Liquid form

Rajaki - Collective work

Shain - Agricultural land and grassland

Sheena - Dialect

Shina - Speakers Sheen and Yashkoon

Waqf - Given away

Woolio - The yearly yak race, symbolizes "eternal happiness"

Chapter One: Introduction

Even though we live in a remote village, our belief is firm, and we strive for a better life for our coming generations, who would be proud of our efforts in building this village and maintaining the resources. It is our hope that our new generation will take forward the legacy of maintaining the resources that our ancestors have left for us. (Interview with Dawlat Amin, 2007)

My passion to conduct this research comes from my earlier affiliation with the World Wide Fund for Nature (WWF) in Pakistan. While working with WWF at the Gilgit office, northern Pakistan, I confronted the issue of snow leopard predation on livestock. The issue of conservation of the snow leopard was interesting and challenging, as the debate was between protecting an endangered species, on the one side, and providing livelihood security to the poor mountain community, on the other side.

From the perspective of a conservation organization, one would try to convince the villagers to protect the snow leopard as it was a rare animal, yet one also risked lacking a deep understanding of the villagers' linkage with nature for their livelihood sustainability. In one reported snow leopard predation incident, a shepherd from Chalt village, close to Naltar Valley, lost his 60 livestock, sheep and goats due to snow leopard predation. As representatives of a conservation organization, we asked the villagers living there to protect the snow leopard without being compensated for losses from incidents like this. The incident was reported by the government wildlife department and kept in a file but the shepherd never received any assistance. Then, the shepherd went to

government offices asking for compensation and also approached the WWF Office in Gilgit for similar help since it was the WWF that was trying to protect the snow leopard.

From the WWF's point of view, we had no answer to give him except the hope that the whole community would benefit in the long run from protecting this animal through the visits of tourists to the village to see the wildlife. The other explanation we gave the villagers was that the snow leopard sometimes came down to the village to look for food because it could not find prey species (e.g., ibex, mountain goat) in the mountains, since the community must have killed the ibex.

At the time, while I was working for the conservation organization, I began thinking of what could be done about such an issue of conflict between conservation and livelihood security, and I came up with an idea about a livestock insurance provision. I put forward a proposal to promote the idea of an insurance provision for livestock. Ironically, I thought of insurance for livestock in a place where there was no provision of insurance against the loss of human life! I realized that such an idea of insurance was illogical and a utopia. I wondered why the communities would protect the wild animal if it "did not belong" to them and they might not gain any direct benefits from doing so in a context where control of the natural resources was being taken over by the State. The "Protected Areas" (PA) established by the government promoted the "strict protection" of resources, yet they were not benefitting the local communities which had relied on these resources for their livelihood for centuries. I began to look into such issues from "the users' perspectives."

In this context, my research addresses the conflict between "conservation," promoted through "Protected Areas" established by the State, and the interests of local

communities. The root of such conflict is embedded in the linkage of community livelihoods with nature (i.e., pastures, meadows, forests, mountains, streams, rivers, wildlife, etc.) and the imposed “decoupling” (Hoole, 2008) of them by the provision of strict sanctions in Protected Areas through rules that exclude the local communities from their own resources (e.g., pastures and forest).

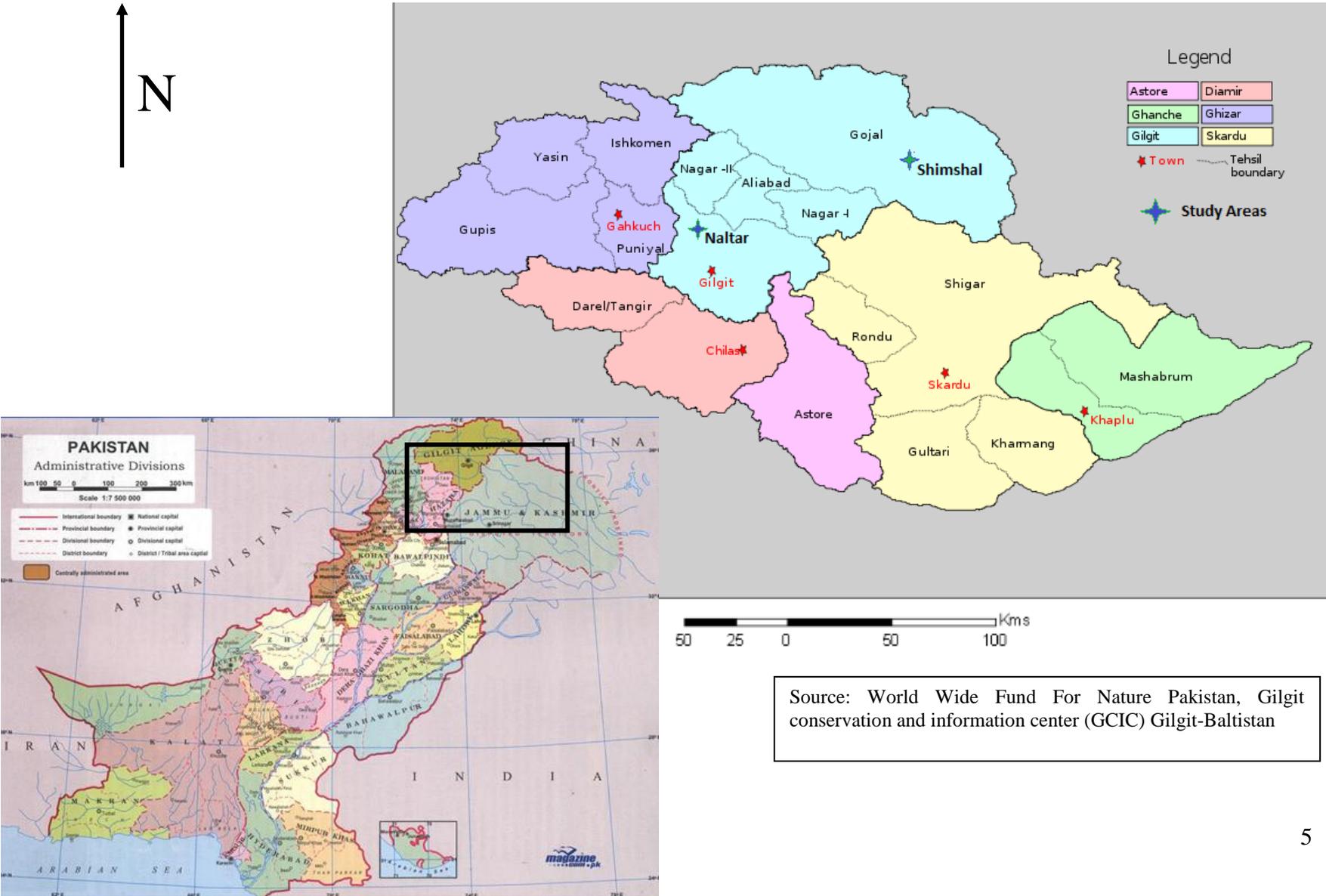
Historically, in the Northern Areas of Pakistan (now known as Gilgit-Baltistan) (Figure 1.1), natural resources were managed through traditional systems, that is, by adopting customary laws that considered natural resources as central to the survival of local communities. For the mountain communities, the use of resources was symbolic to “conservation,” meaning “use it but don’t destroy it” (Quran, 28, p. 77) – this principle maintained natural resources for centuries. The centuries-old principles and traditional practices regarding the commons have recently been challenged by the predominance of the State as the new commons-governing institution.

The State extended its authority and ownership over, the commons through the enactment of the Gilgit Private Forests Regulation 1970 in Northern Pakistan. It has employed a top-down, “command-and-control,” expert-driven management approach, under the guidelines of the Pakistan Forest Act 1927. This has eliminated the traditional management system of the resources, and restricted local peoples from their rights of extraction (e.g., fuel wood collection for livelihood; timber for construction of houses and infrastructure) and placed priority on revenue collection for the State. The new statutory laws (Gilgit Private Forests Regulation 1970) allowed non-locals, who were restricted under the traditional system, to gain access to forest resources (timber extraction). These laws also made provisions for the State to establish “Protected Areas” (PAs) on the

commons, which restricted local communities from their traditional use rights (i.e., grazing livestock, extracting fuel wood), and local communities were considered as a threat to natural resources – as destroyers rather than protectors. Naltar Forest is an example of a resource conversion of commons to Protected Area “protected forest”, status under the Forest Act 1927. With the abolition of the principality states (previously controlled by “Mir” rulers in northern Pakistan) by former Prime Minister Zulfikar Ali Bhutto in the early 1970`s, the Northern Areas Forest Department (NAFD) took over control of the forests in Naltar, Chaprote, Astore and other parts of northern Pakistan. This meant that local people lost both their control of the forests and their authority to remove outsiders from them (NASSD, 2003).

In this study, I examine the case of Naltar Forest management, particularly the impact of conversion to Protected Forest (State property) on the livelihoods of the local communities. I also study how it has contributed to the exploitation of the forest in Naltar. The study explores the possibility of an alternative management option for Naltar Forest that may benefit both the protection of the forest and livelihoods. In the context of mountain areas where local communities rely heavily on natural resources for their livelihood, the imposition by the State of strict regulatory measures against local people accessing local natural resources ironically “threatens” the sustainability of local communities by making their livelihood more “insecure” than ever before.

Figure 1.1. Location Map of the Northern Areas of Pakistan



Source: World Wide Fund For Nature Pakistan, Gilgit conservation and information center (GCIC) Gilgit-Baltistan

My study aims at setting the case of Shimshal community – which had been living within the national park with the traditional practice of yak herding and through maintaining and controlling their hereditary pasturelands – into the broader context of conservation and sustainability. The study in particular analyzes how the establishment of Khunjerab National Park and its associated rules and regulations by the State of Pakistan has affected traditional herding practice. In this study, I also investigate the possibility of an alternative management option for the Protected Areas that may benefit both conservation and livelihoods. A relevant concern is whether the local communities are willing to partner with government authorities in managing local natural resources under the existing natural resource governance models (PA's), or whether there is a need to find an alternative model in which the communities could exercise their traditional rights as the custodians of the resources without eliminating the legitimate role of the State and other relevant governing institutions. Addressing these issues and concerns constitutes the core of my thesis.

1.1 Context and the Debate about Conservation and Livelihoods

The classical approach to conservation started with an emphasis on “flagship” species conservation (Sharma et al., 2010). The assumption was that if the flagship species, which usually occupy the tip of the pyramid in the food web in an ecosystem, flourished then the ecosystem was considered healthy. This postulation was advocated through the world conferences on national parks in 1962 and 1982, and even later with the Convention of Biological Diversity 1992 (Sharma et al., 2010). In addition, the expansion of Protected Areas (PAs) on commons took place with the notion that free

access to commons leads to degradation and therefore the allocation of full authority to regulate the commons to an external agency, the State, is the appropriate measure to reduce overexploitation of the commons, which Hardin (1968) termed the “tragedy of the commons.” In this context, PAs represent a clear example of conversion from a common property regime to State property and, as a result, they have separated communities from natural resource use (Hough, 1988, 1994; Hoole, 2008). This change in approach has given rise to numerous conflicts between local communities and the State over resource use rights, access and control of the resources in various parts of the world.

The emerging conflicts over resources and the marginalization of local communities in resource management generally have led to a failure of the State-centered, top-down approaches. The realization by some policymakers that local communities are key stakeholders has led to shifts to give the emphasis to include local people or the resource users in resource conservation. The search for new thinking on this issue has led to a call for adoption of a people-centered approach, “based on the premises that local populations have a greater interest in the sustainable use of resources than the state; and that they are able to effectively manage those resources through local or ‘traditional’ forms of access” (Brosius et al., 1998, p. 158).

This shift in resource management approach is primarily characterized by an increasing focus on people-centered policies, bottom-up planning processes, and decentralized governance (Chambers, 1994a; Agrawal & Ostrom, 2001). The approach considers local communities’ involvement as an integral part in the decision-making for conservation and resource management (Hansen & DeFries, 2007; DeFries et al., 2007). It also advocates that multi-use Protected Areas can help accomplish these goals, and

calls for “compatibility between environmental goals (carbon storage and biodiversity conservation) and support for local livelihoods” (Nelson & Chomitz, 2011, p. 9). Thus, in the search for effective management, new governance models have been presented, including co-management, community-based conservation, and other systems of governance that involve local people in decision-making. Such newer models have received wide acceptance in Protected Area management strategies (Berkes, 1989; Colfer et al., 1999; Granek & Brown, 2005).

However, as these people-centered models have their strengths and weaknesses, I intend to explore them for their applicability to the context of resource management in northern Pakistan. Co-management has been seen as a viable approach to resolve the conflicts over resource management between the State and communities. Co-management has been defined as “the sharing of power and responsibility between the government and local resource users” (Berkes et al., 1991, p. 12). It has evolved from the sharing of power and responsibilities to knowledge partnerships and a process of social learning for adaptive management (Berkes, 2009).

I argue that the co-management option may not work where the communities’ trust in government has vanished, and where there have been decades of conflict between the communities and the State over rights and ownership. In practice, co-management could be another framework to control the communities’ resources, with decisions dictated by bureaucratic authorities. Local communities could remain very reluctant and feel fearful of authoritative actions that would give them very limited choices (Ruitenbeek & Cartier, 2001). To explain these further, Carlsson and Berkes (2005) offer a powerful clarification. They rightly advocate for understanding co-management

arrangements as complex systems, consisting of different interests by gender, ethnicity and socioeconomic group. They also see co-management as a dynamic and iterative system. Further, collaborative arrangements are highly dependent on the extent to which parties recognize the legitimacy of one another. The behaviour of ecosystems and how they respond to resource exploitation may also be highly unpredictable (Carlsson & Berkes, 2005).

Ostrom's (1990) argument, that "[s]elf-governance is possible" in common-pool resources, has provided us a new understanding of commons management. Confirming with Ostrom's idea, I would like to raise the question why it would not be possible for communities to manage Protected Areas. In the literature, the discourse of self-governance has provided two separate ideas: 1) Yang et al. (2010, p. 262) use the term as synonymous for co-management, and 2) others (Kooiman & Bavinck, 2005; Townsend & Shotton, 2008) speak of self-governance as a form of private decision-making process. Some advocate that self-governance should not be viewed as a stand-alone alternative management regime, as co-management is, but rather as an element that strengthens the governance institution that it is constituted within (Gay, 2002).

In order to examine northern Pakistani local communities' sustainable resource management system, self-governance should be explored as an alternative management regime, where communities traditionally controlled and governed their resources in an effective manner at the local level. Thus, self-governance should be regarded as an independent management regime with a set of rules and regulations, adopted by informal traditional institutions, and agreed on by the members (users of the resource). All users

would exercise equal rights or fair access to resource use but they would also be liable for shared responsibilities.

Commons management through local institutions should be seen as a viable system for managing resources at the local level; even though they are informal they are stronger than formal institutions. I define self-governance as a system of governance that reflects the traditional system of management by employing a collective decision-making process for resource use at the local level. This is performed through an adaptive management system that achieves efficiency by making all individuals responsible for sustainable resource use. The self-governance model is a useful framework for maintaining resources in a complex and fragile environment. To effect such a shift from strict Protected Areas (State-controlled) to community-driven collaborative management (CDCM), there needs to be a change towards community-based conservation using self-governance. This would mean an adjustment in the philosophy of how to manage resources and would require significant policy adjustments toward conservation and natural resource management.

1.2 The Issue of Khunjerab National Park

Khunjerab National Park (Figure 1.2) represents a classic case of conflict between conservation and livelihood. The traditional yak herding practice of Shimshal community relies on centuries of experience of the pasture resources; they are highly devoted to maintaining their hereditary pastoral resource (Butz, 1996). Livestock plays a central role in the Shimshal economy, contributing a total of 38% of the total economy, and it plays a vital role in the region's food security (Ali & Butz, 2003). The enactment of the

Khunjerab National Park rules and regulations restricted Shimshal community from continuing their grazing practices to certain pastures. This has adversely impacted the traditional grazing system of Shimshal community and traditional resource management. Shimshal herding practice is used as a tool to manage pastures by harvesting forage through using livestock to maintain plant composition (NASSD, 2003). It is hypothesized that eliminating the local communities' right of use and stewardship in resource management would cause negative consequences on conservation.

Figure 1.2. Khunjerab National Park Map



Source: Gilgit Conservation and Information Centre –WWF Pakistan

Khunjerab National Park (KNP) is also a case of State control over common resources, where the local community has followed traditional pasture management practices through livestock herding for centuries (Butz, 1996; Knudsen, 1999). Khunjerab National Park in northern Pakistan was established in 1975 as an IUCN Category II Park through a national ordinance, on the recommendation of George Schaller, wildlife biologist. The park was established mainly to protect Marco Polo sheep (an endangered ungulate species) and thereby showcase modern nature conservation.

Ali (2008) argued that the establishment of Khunjerab National Park was not an “expression of ecological nationalism.” Rather, it was a process of “ecological state-formation” as it helped Zulfikar Ali Bhutto (former Prime Minister) to expand Pakistan State’s territorial control in the Northern Areas (Ali, 2008). The creation of this park on the Pakistan-China border was “at least partly a move to territorialize” the disputed area by declaring it as a “Protected Area.” China had already claimed a part of the Northern Areas called the Transkarakoram Tract (Ali, 2008).

As per IUCN Category II Park classification, it does not permit human use within park boundaries, including livestock grazing, the extraction of flora and fauna, and hunting. This has been a major impediment of the KNP, as two-thirds of the area is comprised of Shimshal territory, common pastures for livestock herding (Knudsen, 1999; Ali, 2008). In the 1970s, little consultation on park restrictions and local use took place, and Shimshal was the only community that did not agree to abide by park regulations and monetary compensation (Abidi-Habib & Lawrence, 2007). The Shimshal community argued that this was a substantial portion of their territory, and they noted the high

economic and symbolic cultural dependence of Shimshal community on these territories (SNT, 2005).

By the 1990s, this had become the centre of a national controversy between the government and local communities (Knudsen, 1999; Abidi-Habib & Lawrence, 2007). However, the Shimshal community continued to pursue their trans-human lifestyle and yak herding practice in their traditional commons while the controversy continued over the contextually inappropriate regulations (Knudsen, 1999). Several negotiations took place through WWF-Pakistan to consider local rights and possible modifications to park zones (Abidi-Habib & Lawrence, 2007), but they seemed merely to fulfill the paper work of government officials. In this context, the community struggled to protect the hereditary land from non-locals (the government) and to maintain their long-standing stewardship of nature. As a result, the Shimshal Nature Trust was established in 1997, signifying a transformation of community response to external threats (Ali & Butz, 2003; Abidi-Habib & Lawrence, 2007). My investigation was framed in this context, where communities' reliance on natural resources is vital for their survival and the denial of their rights and access and other restrictions are imposed by the park to benefit the "Park" itself. My research explored how the communities view the "Protected Area (State property)" and whether State control of these isolated areas through a top-down approach could attain "conservation" without considering the relationships within the structure of mountain socio-ecological systems.

1.3 Key Research Issues

The research focused on the following four broad research questions. The questions pertain to the approaches to conservation and their disconnections with local livelihoods and needs.

a. How diverse are the mountain livelihoods and to what degree do the livelihoods depend upon natural resources?

How diverse is the mountain communities' livelihood? What are the main livelihood options available to the communities? How dependent are the communities on forest resources? What are the restrictions on accessing these resources? How sustainable are the livelihoods? What are the main factors of their vulnerability and how do the communities cope with these vulnerabilities? How do their coping mechanisms differ from other communities that have been studied? Are these livelihood options affecting or enhancing biodiversity?

b. What are the conflicts between resource use and conservation in the selected communities in northern Pakistan?

What are the major conflicts between the mountain communities' livelihood and conservation? Have the conflicts arisen because of the communities' livelihoods dependency? What are the property rights available under current resource management? What property rights are held by the community under the State property arrangement? What are the desirable property rights for effectively managing resources, more specifically, in forests and pasturelands? How are the rules of excludability and subtractability determined under the transition phase of the commons to State property? Who decides "who is in" and "who is out" in the

commons management under the conservation initiatives led by international organizations? Who decides the rules for restricting access? Who decides the limits of subtraction? How have these issues been addressed by the government and by non-governmental organizations?

c. How have activities related to the Protected Areas threatened local livelihood security?

What are the impacts of conventional conservation activities on the communities' livelihoods? Are such conventional approaches and activities necessary in these mountain communities? Are PAs in northern Pakistan, more specifically, Khunjerab National Park and Naltar Forest Reserve, effective in protecting the wildlife and forest resources in a sustainable way?

d. Are there viable approaches that reinforce and enhance livelihood strategies for the sustainability of the mountain communities while meeting conservation goals?

What formal (government), non-governmental (NGOs, CBOs) and informal institutions exist in the rural communities and how have they been interlinked? How can these institutions play a critical role in designing and implementing viable grassroots-level initiatives to enhance livelihood strategies in the mountain communities? How can biodiversity conservation be linked with livelihood strategies in these communities?

1.4 Research Objectives

The broad goal of this research was to examine how to integrate conservation and livelihood security within the setting of a developing country and with specific reference

to mountain communities. Conceptually, the study was intended to advance our understanding of society-nature relationships in the context of an environmentally fragile mountainous area. Further, it intended to explore viable alternative approaches that might be effective in reconciling conservation and livelihoods in the context of mountain areas of the developing world. My research also attempted to determine the role of revitalized local, traditional institutions in implementing community-driven conservation projects through establishing cross-scale linkages that would simultaneously strengthen livelihood strategies and enhance the conservation of natural environment and biodiversity.

The **specific research objectives** were:

- i)* To analyze the characteristics of mountain livelihood resources and livelihood strategies, as well as the vulnerabilities and coping strategies of local communities in northern Pakistan.**
- ii)* To analyze the shifts in institutional arrangement for conservation and for mountain commons management and their impact on livelihood security.**
- iii)* To assess experimental projects on community-based conservation and determine the lessons learned for sustainable mountain livelihood.**
- iv)* To formulate, as an alternative to the Sustainable Livelihood Framework, the structure and elements of a Sustainable Mountain Livelihood Framework within which Community-Driven Collaborative Management (CDCM) would be embedded .**

1.5 Research Approach

The research questions were explored through the application of qualitative and quantitative methods based on primary data about livelihoods, socio-economic

conditions, and issues related to the access and rights of the communities to resources. First, a village-based case study was conducted in Shimshal and Naltar Valley, which provided data on how these communities are interlinked with forest and pastures. It was complemented with two annual village-level surveys and quarterly surveys at the household level. Second, questions related to Research Objectives ii and iii were explored through focus group discussions and individual interviews. The communities were engaged in the process by using a selection of Participatory Rural Appraisal (PRA) tools (Chambers, 1983). In the participatory methods, the following specific tools and techniques were applied: semi-structured interviews, focus group discussions, resource mapping exercises, a seasonal calendar, participant observations, and trend analysis (Pido et al., 1996). Seasonality was captured through the quarterly field exercises and focus group discussions.

1.6 Research Methods

Participatory Rural Appraisal (PRA) tools were used to gather qualitative data, i.e., community responses in relation to rights and access to resources, conservation initiatives, the community's perceptions of, and recommendations concerning, forest protection, and how these are related to their livelihood security. A series of workshops, focus group discussions and individual interviews were conducted to inquire about issues.

At the village level, two surveys one at the beginning of the year and one at the end to see the changes over the periods (V1 and V2), and at the household two annual surveys (A1 and A2) and four quarterly surveys (Q1, Q2, Q3, and Q4) were conducted over a 12-month period. In addition, in-depth family studies were conducted to gain

insights into the complexity of the livelihood systems. The purpose was to understand the internal dynamics at the family level. Over a period of twelve months, six families in Naltar Valley and five families in Shimshal were closely observed for this purpose. The monitoring of specific families in the quarterly surveys gave tangible data on the household economy.

The questionnaire of the household surveys was a constituent part of a larger project on livelihood analysis at the global level, sponsored by Centre for International Forestry Research (CIFOR). The questionnaire was designed under the Poverty Environment Network (PEN) and the guidelines were provided by the Centre for International Forestry Research (CIFOR) to collect information on socio-economic, demographic, and livelihood-related data. A random sampling method was employed to cover a sample size of $\geq 50\%$ of the total households in each study site.

1.7 Research Scope and Limitations

The study covered two major geographical areas of interest, Shimshal, in upper Hunza, and Naltar Valley, in Gilgit-Baltistan (formerly known as the Northern Areas), Pakistan. Within these areas, my study dealt with three diverse faith-based groups, namely, Sunni, Shia and Ismaili, which are distinct within the complex social-geographical region. Because of the cultural, religious and political sensitivities, I encountered some limitations. In Naltar Payeen and Naltar Bala, interviews could not be conducted with women groups and their opinions in relation to conservation were not recorded. Due to religious sensitivities, a number of questions could not be explored (e.g., the dominance of religion on women's work outside the home), and the conflicts that

arose from their religious beliefs were not explored. Such issues would have been interesting to explore if there had been opportunities to view them from many different perspectives. Second, being from the study area, I was aware of the risk of being biased and using experiences from my region to describe the impacts of conservation approaches on livelihoods in the study areas. However, my training in conservation and my involvement with a conservation organization for the protection of wildlife and natural resources have equipped me to balance my views from such a risk of bias. In addition, my past degree in sustainable development and my learning in academic programs with an interdisciplinary approach have equipped me with the necessary tools and skills such as triangulation, systematic scientific analysis to deal with such issues and helped eliminate any bias.

As far as the research sites are concerned, both sites are unique in culture and language. However, both sites are situated in a politically sensitive region of Pakistan, where geopolitical and religious-led tensions often occur. Fortunately, during the research period, no such incidents occurred. In terms of familiarity with the region, I was familiar with the culture, language and sensitivities and, above all, I had experience working with the Gojal community, which was a great strength for my field research.

1.8 Organization of the Thesis

The thesis has been organized into seven chapters. The first chapter provides the contextual issues, research objectives, research questions and methods used in the field. The second chapter explores the theoretical concepts and framework related to the research areas, more specifically to livelihoods, conservation, and the commons. Chapter

3 provides the approach used to collect data and methods used in the field. Chapter 4 focuses on livelihood complexities of two mountain communities, the resources available for their living, and the strategies to cope with adverse conditions including external drivers and threats to their livelihood. This chapter explores the cultural affiliation with herding practices. Chapter 5 provides an insight into the commons issues and factors affecting the commons. It deals with the issue of the conversion of the commons to study the “decommonisation” as a process (Nayak & Berkes, 2011), and it uses the concept of “new-commonisation,” which I propose for understanding the emerging trend of involving local communities and the government in a joint venture in commons management. I assess the Mountain Areas Conservancy Project (MACP), its impacts, and the lessons learned from it, and I introduce the case of Shimshal Nature Trust (SNT), which exemplifies the transformation of a traditional institute to a formalized institution. Chapter 6 provides a discussion on sustainable livelihoods in a complex mountain system. It provides an insight into mountain livelihood vulnerabilities, and explores how the distinct characteristics of mountains affect the livelihood strategies. It provides a Sustainable Mountain Livelihood Framework that can be applied in a similar context to understand not only a livelihood but a “way of life” adapted within the complex mountain system and the cultural aspect in livelihood strategies. The chapter explores whether strengthening the traditional management system (use and maintenance) and the rights of local communities to their natural resource is effective for managing the commons. By elaborating on the Community-Driven Collaborative Management (CDCM) approach, I attempt to provoke new thinking on the role of local-level institutions in bridging local communities with national-level NGOs and government agencies, and in fostering

community-based management of the natural resources to link conservation and livelihoods together. Chapter 7 provides the conclusions, presents some key findings, indicates the contributions to new knowledge, and finally outlines the policy implications of the outcomes.

Chapter Two: Theoretical Considerations

The theoretical considerations pertinent to my thesis research are illustrated in this chapter. The focus of my discussion is on mountain communities, specifically, on aspects of livelihoods and the Protected Areas (PA) that the State has created to protect and preserve wildlife in general and endangered species in particular. This chapter hence attempts to provide a critical review of the literature on livelihoods, conservation approaches, and common property rights in the context of Pakistan. The discussion examines the theories, concepts and explanations provided by the existing literature of the pertinent topics. In turn, it encompasses the concept, practice and processes concerning conservation approaches, the implementation of PAs, and Community-Based Conservation (CBC) at the grassroots level. An understanding of broader issues of development and conservation, the factors and drivers in conservation, and how these have affected mountain livelihoods are highlighted. The essence of the discussion centers on the concept of sustainable development¹ and how it relates to the research area. It is elaborated with the examination of the concepts of conservation and PAs within the specific context of mountain areas, and with an explanation of the factors, using relevant examples from northern Pakistan.

¹ “The concept itself, however, was first used by the Swiss-based World Conservation Union (IUCN) in their 1980 report on World Conservation Strategy: Living Resource Conservation for Sustainable Development. The interdependence argument advanced by the IUCN was much the same as that expressed by the Brundtland Commission but the report itself failed to receive the extraordinary attention that surrounded the Commission’s report” (Estes, 1993).

2.1 The Concept of Sustainable Development

The concept of “Sustainable Development” (SD) promotes a balance between finite resource bases and unlimited development and economic growth potential, as well as with the emerging environmental and social problems. There are several interpretations of this development concept, but the common agreement recognizes that there is a certain ecological carrying capacity of the planet that requires appropriate growth within its capacities. The popular Brundtland Commission (WCED, 1987, p. 43) defines SD as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” It presented two key propositions that are inherent within this definition: 1) the concept of the “basic needs” of the world’s poor to which overriding priority should be given; and 2) the idea of “limited nature’s carrying capacity” to meet the ever-increasing present and future needs. The concept urges that growth must be revived in the developing countries because that is where “the links between economic growth, the alleviation of poverty and environmental conditions operate most directly” (WCED, 1987, pp. 43-51). UNDP’s (United Nations Development Program) view of development builds on the notions of the “basic needs” school (Stewart, 1989) and Sen’s well-known explanation of development in terms of “capability expansion” (Sen, 1984, 1999).

In explaining sustainable development, Naess (1989) focuses on ecological sustainability; and Pearce et al. (1988) focus on achieving social goals. Barbier (1987), McCormick (1991) and others view it as a concept that is more concerned with securing livelihoods, reducing the dire poverty of the world’s poor, and aiming to halt resource depletion, environmental degradation, cultural disruption and social instability. Munn

(1989, p. 50) argues that “development, to be sustainable, requires profound changes in political, social, economic, institutional and technological order, including re-definition of relations between developing and developed countries and a succession of technological break-through.” Holling (2000, p. 7) defines development as a process of creating, testing, and maintaining opportunity, and sustainability as “the capacity to create, test, and maintain adaptive capability.”

Sustainable development therefore refers to the goal of fostering adaptive capabilities and creating opportunities. Thus, treating sustainable development as a process creates the need for an indefinite program of monitoring and adjustment. In short, sustainable development is a moving target and requires a continuous process of adaptation due to two factors: the inherent unpredictability of complex adaptive systems, and the changes brought about by human innovation (Dale et al., 2010).

2.2 Sustainable Rural Livelihoods: Concepts and Theory

Concerns about livelihoods are rooted in the development practices that began in the developing world in the 1960s. However, the issues of livelihoods, including their sustainability, security and strategies, received wider attention in the 1990s. Chambers and Conway (1992) provided a strong foundation for the interpretation and conceptualization of the livelihoods idea. They stated:

Livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chambers & Conway, 1992, p. 5).

Ellis (2000) supports this concept and further explains that livelihood is comprised of the assets (natural, physical, human, financial and social capital), the activities, and access to these (mediated by institutions and social relations) that together determine the well-being of individuals or households.

The first part of the definition, offered by Ellis, describes the components of livelihood systems and their linkages. It identifies five main categories of “capital” as contributing to assets. These are natural capital, physical capital, human capital, financial capital, and social capital (Ellis, 2000). There are various definition and explanations of natural capital. According to Berkes and Folke (1993), natural capital has three components: 1) non-renewable resources that are extracted from ecosystems; 2) renewable resources which are produced and maintained by ecosystem processes; and 3) environmental services, such as climate, soil formation, nutrients cycling, and waste assimilation, which are the products of ecosystem functioning. For Hart (2000, cited by Cocklin & Dibden, 2005), they can be divided into three parts: i) natural resources, ii) ecosystem services, and iii) the aesthetic beauty of nature.

Natural resources here are those resources such as water, plants, animals, minerals, and fossil fuel, which we take from the natural environment and use either in their unmodified form or transformed form through production processes. Environmental services are natural processes from which humans (and other species) benefit in some way. Ecosystem services are, as defined by Cocklin & Dibden (2005, p. 4), “those public goods and services, which generally come from natural areas, but can also result of sustainable management of land and water. Included are the provision of clean air and water, biodiversity services and sequestration of carbon.”

I would like to argue that in the usage of the term “capital,” it refers to resources which are stable, fixed categories of assets, and thus it limits the relationship between resource use and user (White & Ellison, 2007). The existing categorization of the assets may not recognize the other functions and uses of resources and the relationships. It is important to understand the interlocking functions between assets (resources) and the aspects that mountain communities rely on for their livelihood well-being. In this context, the term “resource” gives a more comprehensive meaning (than “capital”), which includes the function, use and service of all natural elements, especially terrestrial and aquatic resources that are intricately related to the livelihood portfolios of poor people. Natural resources are materials and components within the natural environment that are essential for sustaining life forms; they also function as a base for the well-being of human kind.

In my thesis research, I focused on natural resources, which refer to the resource base in nature (land, water and trees) that yields “products” utilized by the human population for their survival (Ellis, 2000). It provides, as well, a symbolic relationship between humans and the natural environment. Several scholars have identified human-environment relationships (Kates et al., 2001; MEA, 2005) as the key determinant of successful governance (Biermann et al., 2009; Nayak, 2011). The abundance of natural resources and the access to and ownership of natural resources are directly related to livelihood functions and the sustainable use of the natural resource base.

The second part of the livelihoods definition links them to the aspects of sustainability. According to Scoones (1998), the term “sustainable livelihoods” relates to a wide set of issues which encompass much of the debate about the relationships between

poverty and the environment. Scoones (1998) explained that the first part of the livelihoods definition focuses on livelihoods, linking concerns over work and employment with poverty reduction and with broader issues of adequacy, security, well-being, and capability. The second part of the definition concentrates on the sustainability dimension, the resilience of livelihoods, and the natural resource base on which the communities depend.

Bryant and Bailey (1997, p. 159) in this context argued that the concept of livelihood is valuable in investigating environmental degradation because “the environment in the third world is largely a livelihood issue,” and changes in environmental quality impact directly on human welfare. Conforming to this notion, Kirkby (2000) asserted that poor communities are mainly dependent on the physical environment, especially on common property resources, because they cannot afford access to any other resources. The poorest suffer the most from the effects of environmental degradation, and usually these people live in the least desirable and most degraded environments. Hazlewood et al. (2002) expressed their concerns over the effects of environmental degradation and restrictions on the access of poor people to natural resources, by stating,

Poor people tend to be most dependent upon the environment and the direct use of natural resources for their livelihood opportunities, and therefore are the most severely affected when the environment is degraded or their access to natural resources is limited. (Hazlewood et al., 2002, p. 5)

However, Carswell (1997, p. 10) observed that the definition of sustainable livelihoods is “often unclear, inconsistent and relatively narrow. Without clarification, there is a risk of simply adding to a conceptual muddle.” Ellis (2000) placed more emphasis on access to assets and activities as influenced by social relations (gender, class, kin, belief systems) and institutions. Chambers and Conway’s (1992) concept focuses on the idea that people construct livelihoods by drawing on a range of assets (resources) and entitlements that prevail in a given social-ecological system. Relative to floodplains, coastal plains and other landscapes, mountain livelihood systems are more dynamic and susceptible to external influences. The notion of good or bad livelihood typically results from how livelihood systems are impacted by many of these external influences, and local people use the resulting experiences to construct their meaning of livelihood. Therefore analyzing livelihood systems can draw far more meaning if local concepts and approaches to livelihood are carefully examined.

The definitions of a sustainable livelihood are important but also limited, and the absence of any clear ideas on how livelihoods can cope with and recover from stresses and shocks (Marschke & Berkes, 2006) within the given definitions makes it challenging to define mountain livelihoods. However, the livelihood definitions are certainly deficient in providing “i) the nature and extent of complexity involved in achieving sustainable livelihoods and, ii) the possibility that livelihood strategies, influenced by changes in context, resources and institutions, may rarely result in sustainable livelihoods” (Nayak, 2011, p. 167).

The discourse of livelihoods issues, their conceptualization, pertinent components and indicators has led the debate regarding how to analyze livelihoods and their

sustainability issues. Various frameworks have been developed to analyze the factors in a Sustainable Livelihood (SL). I use a Sustainable Livelihood Framework (Scoones, 1998) to analyze the dynamic livelihood system of two mountain communities of northern Pakistan.

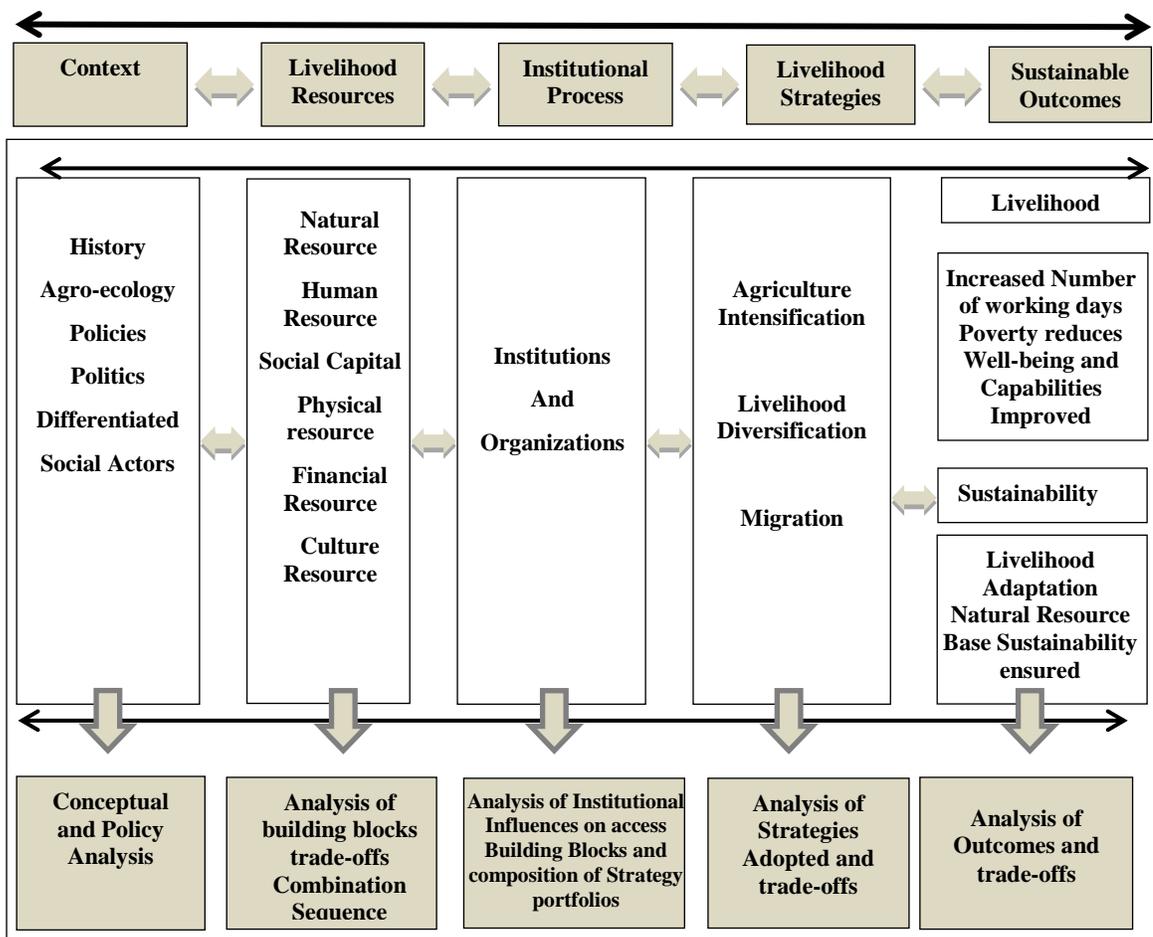
2.2.1 Sustainable rural livelihood: A *framework* for analysis.

A key question in the literature has dealt with how to analyze and measure sustainable livelihoods (Chambers & Conway, 1992; Shankland, 2000; Scoones, 1998; Ellis, 2000), especially in rural and remote areas. In this respect, Shankland (2000) defined Sustainable Livelihood Analysis (SLA) as the process of identifying the resources and strategies of the poor, the context within which they operate as well as the institutions and organizations with which they interact. By defining the livelihood framework as illustrative tools that attempt to capture the interaction between livelihood assets, vulnerability, and transforming structures, Toner (2003) added the susceptibility dimension. With a more comprehensive approach, Ellis (2000) explained that the livelihood approach is based on the premise that the asset status of the poor is fundamental to understanding the options open to them, the strategies they adopt to attain livelihoods, the outcomes they aspire to, and the vulnerability context under which they operate.

Emphasizing specificity in SLA, Scoones (1998) identified five key elements: i) the number of working days (on or off-farm, part of the labour system or subsistence production system); ii) poverty reduction measures that help to reduce poverty; iii) well-being and capabilities; iv) livelihood adaptation, vulnerabilities and *resilience* – defined

as the ability to adjust to temporary or long-term stresses; and v) natural resource sustainability. Such specificity helped analysts to apply these tools in the empirical contexts. Scoones's (1998) framework (Figure 2.1) provides a relatively comprehensive structure for understanding the various components and can be modified to incorporate additional elements. It has all the elements of contexts, history, agro-ecology, socio-ecological system, power and politics. It focuses on institutions as the central force. It provides a scope for problem analysis and extends the understanding of how to build on effective strategies to cope with livelihood crises. The framework is oriented towards a way forward to sustainability and adaptation.

Figure 2.1. The Sustainable Livelihoods Framework: A Framework for Analysis



Source: Modified from Scoones (1998)

Among the critics of the application of sustainable livelihood analysis, Cahn (2002) has been the most prominent. He expressed his concerns over the ways the frameworks portray the relationships between the elements. He has also warned against the danger (in this type of approach) of simplifying the reality and complexity of a livelihood system. Thus, the relative importance of some factors and the relationships between the factors are lost. There are no frameworks that have focused on aspects of culture, and on ideology and spiritual aspects (i.e., belief system or religion) as part of the factors to take into consideration in livelihoods. Rarely do studies address how culture and religious belief play a role in the livelihoods of local people. In the northern Pakistan context, where religion plays an important role in decision-making, it is very important to analyze the complexity and implications of ideology and the belief system for livelihood and resource management. While such an analysis is complex, these aspects should not be neglected in SLA. One example of a cultural element that may affect individual or household livelihood is land inheritance and entitlement or intergenerational land transfer, which plays a significant role in defining livelihood systems in traditional societies. Another key factor is the religious belief system (constructed belief system), which restricts livelihood diversification. Recognizing that there is very limited literature in this area, I will attempt to analyze the manifestations of ideology and spiritual aspects for resource management and livelihood in mountain regions in Chapter 4.

In light of the above discussion, I would like to argue that a successful SLA is the one which provides a comprehensive structure to help build an understanding of the various components and elements driving the livelihood system. The approach should be

able to accommodate or provide room to include factors and processes in various contexts and be flexible for any modification.

2.2.2. Livelihood sustainability in theory and practice.

The natural resource base is a major element for sustaining rural livelihoods. As stated earlier, Ellis (2000, p. 8) referred to “natural capital” as the natural resource base - land, water and trees - that yields products utilized by people for their survival. Some scholars broadened the scope of natural “capital” (resource) by identifying its three components: non-renewable resources that are extracted from ecosystems, renewable resources that are produced and maintained by ecosystem processes, and environmental services, such as the climate, soil formation, nutrients cycling, waste assimilation, which are the products of ecosystem functioning. The three components can act together to make livelihood sustainable, and their realization depends on maintaining a balance between people and the existing resource system (Berkes et al., 2003).

Adopting a system approach, Holling (2001) added that the sustainability of the natural resource base implies the ability of a system to maintain productivity when subject to disturbing forces, whether it is a “stress” - a small, regular and predictable disturbance with an effect - or a “shock” - a large, infrequent and unpredictable disturbance with an immediate impact. It thus refers to avoiding the depletion of natural resources to a level which would result in the permanent reduction of services to rural livelihoods (Marschke & Berkes, 2006). The sustainability of the natural resource base represents the sustainability of all its components, including renewable and non-renewable resources, and its functioning in the socio-ecological system.

In the context of northern Pakistan, local communities rely overwhelmingly on natural resources, such as forest and pasturelands, rather than on agricultural land since the steep terrain prevents large-scale, extensive agriculture production. In addition, other livelihood options are scarce as these communities live in remote areas. The livelihoods of people in these mountain areas are at greater risk because of extreme climate conditions and the unequal distribution of resources (Jodha, 2001). One of the most significant processes affecting all families in mountain communities in Pakistan is the fragmentation of agriculture land, which is 15-25 *kanal* (0.78 -1.04 hectares) per household and gets divided further with increase in family size. In the study area, by tradition, only the male inherits land, whereas the rights of daughters to land are usually limited to movable assets that are transferred to the groom's household. However, this is contradicting the Islamic law, under the Islamic law one 1/3 of the land goes of the female, but in practice the females does not take any portion of land. The principle of inheritance of land among sons is a cultural practice and prevails in most areas of northern Pakistan.

The system of land management maximizes the utilization of land resources in a complex way. Use of the land resource for different crops on various seasons, on different elevations give the community to secure their livelihood. It provides a similar context of in highland of the Andes Mountains, where the local communities perform agriculture on different elevations for variety of crops to complement their livelihood (Stadel, 2009). For example, the process of decision-making involved in selecting sites and crops reveals how these communities use their traditional knowledge for optimum land use. Generally, family members live together with little resources in small land holdings of 10-15 *kanal*

(0.52- 0.79 hectares). This allows them to develop strategies or diversify their earnings from multiple sources, i.e., earnings from wage labour, and from tourism sector, and to secure enough resources for the whole family to meet their basic needs. It also builds strong family ties among the household members and becomes a supportive system for recovery in times of crises, both morally and economically. Compared with larger landowners, the livelihood strategies of families with small landholdings are more confined to limited sectors and are more vulnerable because they would have fewer options to invest in education and technical skills. However, I found that households with large landholdings over 35 *kanal* (1.8 hectares), and with a large number of livestock, do not prefer to send their children to school; this finding is consistent with study results elsewhere, which have suggested that the proportion of active household members may determine school dropouts (Mike et al., 2008).

However, this principle of land inheritance by only males may not be sustainable in the long term since improved access to medical services, improved nutrition and the extended life expectancy of parents have increased the number of sons that survive to adulthood (Wood & Malik, 2003). The fragmentation of landholdings and the reduction in land size per household has several immediate effects. First, it reduces the capacity of households to survive on land and livestock alone. Second, the pressure to increase the productivity of the remaining landholdings may lead to soil exhaustion and of course alter production. Third, it increases pressure on the commons grazing area, partly due to reduced pastureland around the village and partly due to the lack of other income options for communities (Thapa & Niroula, 2005).

2.2.3 Vulnerability and livelihood adaptation.

The sustainability of livelihoods refers to the ability of households to cope with and recover from stresses and shocks and to maintain or enhance their capabilities and assets both in the present and in the future without depreciating the natural resource base (Chambers & Conway, 1992; Marschke & Berkes, 2006). Those who are unable to cope with temporary changes or adapt to longer term shifts in livelihood strategies are inevitably more vulnerable and unlikely to achieve sustainable livelihoods (Scoones, 1998).

The clarification of “vulnerability” given by the Stockholm Environmental Institute (SEI) adds the dimension of security to the concept of vulnerability. It suggests that vulnerability is “the capacity to be wounded by a perturbation or stress in the natural or social environment and...vulnerability can be described as a lack of security from environmental threats” (SEI 2005). Vulnerability results from a combination of processes that shape the degrees of exposure to a hazard, sensitivity to its stress, and impacts. SEI (2005) also states that socio-economic stresses increase vulnerability and can be found more predominantly among poorer people than others. Poor people are often forced to live in precarious areas where the lack of cushion against the adverse effects of vulnerability may lead to unsustainable livelihoods (DfID, 1999).

Vulnerability “is the state of susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt” (Adger, 2006, p. 268). The vulnerability of mountain livelihood systems can be assessed through understanding the level of susceptibility of the various dimensions associated with pastoral systems, agro-ecosystems, and institutions (Fraser, 2007).

Adaptation is the ability of a society to act collectively by forming social capital (Adger, 2003). It is a planned approach that deals with adjustment to socio-economic and ecological systems and its consequences (Gallopín, 2006). Adaptation depends on the capacity of people and the scale of the impacts. Adaptive capacity is context-specific, it varies among countries, communities, social groups and individuals, and it changes with development over time (Smit & Wandel, 2006). Historically, communities have experienced collective adaptation practices (Agrawal, 2001; Adger, 2003; Alexander et al., 2010). However, adaptation strategies by mountain communities are targeted to respond to short-term shock and events rather than employ planned initiatives (Nuorteva et al., 2010) or strategies to adapt over time that lead to adaptation. As Jodha (2001) explained, the factors that cause vulnerabilities, such as environmental and socio-economic variables, are intertwined with characteristic features of fragility, marginality, and inaccessibility. In the context of mountain areas, environmental and socio-economic vulnerabilities limit livelihood options. Jodha (2001) concluded that the intensification and over-extraction of resources have caused serious degradation and depletion of mountain resources and led to environmental and social vulnerabilities. In addition, with change in climate patterns, and glacier recession providing a new identity to the mountain regions, these changes have potentially serious consequences for mountain ecosystems and people (Shrestha et al., 2000; World Bank, 2009b; Macchi, 2011).

Adaptation to vulnerability to adverse livelihood situations can take place through the implementation of various strategies. How do communities adapt livelihood strategies (agricultural intensification or intensification, diversification and migration) and what outcomes do they desire? What are the institutional processes (formal and informal

institutions and organizations) which facilitate the ability to carry out such strategies and achieve such outcomes? These livelihood strategies can be categorized under coping strategies, i.e. intensification, extension, diversification and migration. The divergent outcomes from the field data, contrary to the positive outcomes of the sustainable livelihood framework, indicate that local communities have experienced quite a significant level of disconnection from the resources. This disconnection is due to several factors that are primarily associated with the context of external interests and geopolitical situations.

As part of the coping mechanism to stress and shocks, communities tend to out-migrate from mountain regions to other areas. For many, out-migration is an obvious livelihood strategy, and for others, migration may reflect a coping strategy. In a rural context, more specifically in northern Pakistan, rural unemployment rates are very high compared to urban areas, population growth is higher, and there are less job opportunities. In addition, considerations for social status make people reluctant to take a lower level job in rural areas; they prefer to work on similar level jobs in other valleys. However, migration as a livelihood strategy is not only confined to the examples above. Seasonal or permanent migration to lower areas occurs because of opportunities for a better education, and it is generally initiated by young males who pursue education and work opportunities (Gazdar, 2003).

2.3 Linking Conservation Approaches and Sustainable Livelihoods

The concept of sustainable livelihoods is influenced by our understanding of the community dynamics, institutions, conservation practices, governance structures and

related factors in socio-ecological systems. Various approaches can potentially lead both resource management and livelihood processes towards sustainability. Conversely, certain other approaches tend to negatively impact livelihood sustainability while primarily focusing on resource conservation. One such dominant approach in the past century has been the implementation of Protected Areas (PAs), which have tended to take an exclusionary approach with regard to people and their livelihood dependence on the resource.

Under the Protected Area approach, the focus of conservation is on the protection of natural ecosystems, such as national parks and reserves, and on keeping humans out of those areas. The origin of Protected Areas dates to 1872, when the Yellowstone National Park was established to protect the pristine beauty of what was perceived as a wilderness in the United States. This concept was well endorsed at the first world conference on national parks in 1962, when it was stated,

National parks and reserves are an integral aspect of intelligent use of natural resources. It is the course of wisdom to set aside an ample portion of our natural resources as national parks and reserves, thus ensuring that future generations may know the majesty of the earth as we know it today. (First World Conference on National Parks, 1962)

This concept has flourished around the world and has been widely implemented, however, without much criticism. The concept of PAs has been activated through legal bindings, such as acts and regulations, to protect wilderness and natural areas. The Brundtland Commission in 1987, followed by the Earth Summit (Rio Conference, 1992),

also endorsed legal bindings to protect biodiversity. One of the important legal bindings is the Convention on Biological Diversity (CBD). Bennett and Lopoukhline (1998) stated that the concept of Protected Areas has been acknowledged as the basic method for biodiversity conservation since it makes use of regulatory frameworks for preventing disturbance activities. However, Borrini-Feyerabend (1996, cited by McKay, 2001) complained that the model has resulted in forced resettlements of local communities.

Protected Areas, usually established by the State, represent one of the situations that often conflict with local livelihoods, as is the case in the mountain regions of Karakoram, Hindukush and the Himalayas (Sharma et al., 2010). Since the concept of PAs does not support the inclusion of humans, particularly the local communities and user groups, as a part of the natural system, it neglects the role of humans in shaping and maintaining landscapes. The State approaches for conservation and protection of natural resources have not put their priorities on livelihoods of the local communities and thus it is important to look into the implications of establishing PAs. For example, understanding the perceptions about conservation can shed light on the consequences of PAs and how they have affected the livelihood of mountain communities. Hoole (2008) found that Herero communities in Namibia were disconnected from their forest resources after the PAs were established.

2.3.1 Convention on Biological Diversity (CBD): Implication for livelihood and conservation.

At the United Nations Conference on Environment and Development 1992 in Rio de Janeiro, two historic set of agreements were signed. These agreements include: the

Convention on Climate Change, which targets industrial and other emissions of greenhouse gases such as carbon dioxide, and the Convention on Biological Diversity (CBD), the first global agreement on the conservation and sustainable use of biological diversity. The Convention on Biological Diversity was signed by 188 countries and came into force in December 1993, thus making it a real global treaty (Diaz, 2005). The Convention on Biological Diversity has three main goals: i) the conservation of biodiversity, ii) the sustainable use of biodiversity's components, and iii) the sharing of benefits that arise from commercial purposes as well as other uses of genetic resources in a fair and equitable way (CBD, 2005). The Convention recognizes

the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components, also of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere. (CBD, 2005, p. 143)

The articles of the Convention focus on the conservation of biological diversity and its sustainable use, and also recognize the traditional dependence on biological resources of many indigenous and local communities for their traditional lifestyles. Article 8 of the convention focuses on in-situ conservation through the establishment of Protected Areas where specialized measures are taken to conserve biodiversity both within and outside of the boundaries and where sustainable use is considered. It also recognizes that economic and social development and poverty eradication are the first and overriding priorities of developing countries, and it stresses that efforts should be

made to provide for conditions where current use and conservation are maintained (CBD, 1992). Article 8 (i) of CBD (1992) states that parties “endeavor to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components” (CBD, 1992, p. 6).

Having agreed to conserve biodiversity, many countries face the challenge of how to determine what are the necessary steps, as Article 6 of the Convention calls for parties to “develop national strategies, plans or programs, or adopt existing plans, to address the provisions of the Convention; and to integrate biodiversity work into sectoral and cross-sectoral plans, programs and policies” (CBD, 1992, p. 5). It provides guidelines that help national governments to take steps towards conserving biodiversity and addressing the needs of resource-dependent communities.

There are other sections in Article 8 of the Convention which focus on in-situ conservation and guidelines for managing Protected Areas. There are two different interpretations of “conservation.” One focuses on “wilderness” and emphasizes the establishment of strictly Protected Areas (Locke & Dearden, 2005) while the other focuses on benefits to people from resources when they are used in a sustainable way (CBD, 2005). This has led to debates as to whether people or the conservation of wilderness areas should be the main focus of the Convention. Will strict Protected Areas conserve biodiversity? Will establishing Protected Areas that allow the interaction between human and nature help conserve biodiversity, in particular, in mountain areas? These remain unsolved questions.

However, this debate has helped to understand the implications of both concepts – the earlier concept of strict protection and the later concept of wise use. It is critical to

raise the question whether strict PAs have achieved our goals of biodiversity conservation. The proponents of strict PAs prefer to designate a PA first and establish strict regulatory regimes, given that the concern for biodiversity, without any consideration of human dimensions, was the main reason behind the establishment of the Convention. Moreover, the “Protected Area first” choice is logical because the establishment of PAs will influence the economic development process of the surrounding regions that formulate development planning in accordance with the needs of Protected Areas (Richard & Richard, 1995).

But why do the developing countries need to establish strict Protected Areas, and what are the implications of establishing these areas specifically in the context of mountain ecosystems? Others argue that since people should be the ultimate beneficiaries of development planning and natural resource management policies and are the prime concern of the decision-making process, PAs should not receive preferential treatment. This idea leads to the establishment of categories of PAs which favor the integration of conservation and community needs.

The establishment of PAs for conserving single species is a common trend in developing countries. However, issues are emerging with regards to conserving a few selected species (Hector et al., 2001). Arguments have been made that conserving few species would eliminate other important species, so the question is whether PAs conserve biodiversity or conserve only a few “integral” species while discarding the rest. In this sense, PAs serve as potential contributors to the alienation of some species. A misguided conservation effort towards species of importance in the ecosystem has become a threat to the rest of the species. This approach might help eliminate species that might become

highly desirable under the current prediction of climate variations and the future implications for species survival (Hector et al., 2001).

The CBD (2003, p. 2) states that “no single component of biodiversity (i.e., genes, species or ecosystems) is consistently a good indicator of the overall biodiversity as these components can vary independently.” It also confirms:

Biodiversity is determined by the interaction of many factors that differ spatially and temporally. Biodiversity is determined for example, by a) the mean climate and climate variability; b) the availability of resources and overall productivity of a site; c) the disturbance regime and occurrence of perturbations of cosmic (e.g. meteorites), tectonic, climatic, biological origin; d) the original stock of biodiversity and dispersal opportunities or barriers; e) the spatial heterogeneity of habitats; f) the intensity and interdependency of biotic interactions such as competition, predation, mutualism and symbiosis; and g) the intensity and kind of sexual reproduction and genetic recombination. Biodiversity at all levels is not static, as the dynamics of natural evolutionary and ecological processes induces a background rate of change. (CBD, 2003, p. 2)

Since much of the focus on biodiversity conservation in developing countries has focused on a few species that are threatened or endangered, there are concerns that Protected Areas established for such a narrow focus might eliminate many other species. In the context of mountain areas, PAs have been mainly chosen for their spectacular scenery, quality of wilderness and their biodiversity values. However, they have largely neglected the human communities living in or around these areas. This contradicts the

objectives of the CBD and the related text of the relevant provisions of the 11th preamble paragraph of the Convention, which reads as follows:

Recognizing the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components. (CBD, 1992, p. 1)

Article 8) states:

Each Contracting Party shall, as far as possible, subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

Following the Rio Summit (1992), interventions in natural resources conservation by actors such as government and non-governmental organizations increased around the world. According to Hardner and Rice (2002), Conservation International estimates that at least half a billion dollars are spent on conserving biodiversity each year alone in the tropics. Apparently, there has been much attention given to conservation in terms of expenditure on various projects both in the West as well as in the developing world.

Despite the high levels of investment and effort, there has been very little impact on curbing the loss of biodiversity (Kiss, 2005).

Pakistan, as a signatory to the Convention, has been involved in many aspects of biodiversity conservation, including the planning of national parks, the protection and recovery of endangered species, and the propagation and breeding of plants and animals. However, experience with planning and implementing biodiversity-related measures has been limited. Pakistan has not yet approached biodiversity planning and implementation in the comprehensive and integrated manner that is required by the Convention (IUCN, 2006). In addition, the conservation approach adopted in the mountain areas has not complied with the Convention because in most cases the establishment of PAs was undertaken without proper consultation with local communities and it neglected the communities' dependence on mountain resources.

2.3.2 Creation of IUCN's new categories of Protected Areas: Adapting to new realities.

The discourse on categories for Protected Areas (PAs) has evolved over many decades. The emergence of the IUCN's new PA categories (V and VI) indicates recognition of the importance of communities and their needs when developing new PAs. However, Locke and Dearden (2005) assert that the new paradigm shift from restrictive categories of PAs to more people-focused categories may undermine the value of creating more strictly protected reserves. This point of view diminishes the purpose of conservation and undermines the interrelationship between communities and their environment. It also overrides current literature and past experiences of bio-centered

approaches in developing countries, where local people were excluded, which often resulted in the failure to achieve the objectives of conservation. The study report of the World Wide Fund for Nature (WWF) (2004) shows that PAs have not succeeded in meeting their management objectives with specific reference to forest PAs. The reasons include indigenous peoples' rights to resource extraction for livelihoods, which seemed to conflict with "conservation," improper PA design, objective-setting, and negative relationships between forest officials and the local people (WWF, 2004). This reflects a flaw in the concept of PAs as it lacks in providing recognition of, and respect for, the rights and values of local and indigenous peoples. PAs around the world have been established mostly in areas selected to protect rare or unique species and to retain maximum biotic diversity. The idea of in-situ conservation has been considered more secure and financially efficient. However, the idea has restricted access to resources, and in most cases undermined the right of local communities to extraction. The challenge of in-situ methods is to develop new models for conservation where multiple uses are included (William et al., 1995).

More and more it is being recognized that PAs must be supplemented by a range of other categories that include meeting the social and economic development needs of modern society. As Rodas, M. Flores (Assistant Director General of FAO in 1982) stated:

Until and unless the rural people are ensured adequate food and shelter and a dignified standard of life, all efforts to establish and manage national parks and Protected Areas will be nothing else but grandiose projects in futility. I submit to you this congress focus attention on the interests of the rural people in developing

countries who live in the vicinity of national parks and Protected Areas. (World Congress, 1982, p. 17)

The preliminary categories of PAs emerged in 1973 and were published by the International Union for Conservation of Nature (IUCN) in 1978. The purpose of such categorization was mainly to encourage governments to develop systems of PAs where management aims would be tailored to national and local circumstances; to reduce the confusion that had arisen from the adoption of different terms to describe different kinds of PAs; to provide international standards to help global and regional accounting and comparisons between countries; and to provide a framework for the collection, handling and dissemination of data about PAs.

Initially, in 1978, the IUCN developed 10 categories to achieve the purposes stated above. Later, the need to review these categories was recognized to strengthen and update PAs and also to allow for the distinction between these categories. In 1992, the IUCN Commission on World Protected Areas reviewed the categories and made some recommendations to strengthen the existing PAs system. As a result, new categories emerged. The following definition of “Protected Area” was developed by IUCN to create and establish the PA guidelines: “An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means” (IUCN, 1994, p. 8). Based on the definition provided above and advice given by the Commission (1992), the following management objectives and categories were developed:

Management purpose:

- Scientific research
- Wilderness protection
- Preservation of species and genetic diversity
- Maintenance of environmental services
- Protection of specific natural and cultural features
- Tourism and recreation
- Education
- Sustainable use of resources from natural ecosystems
- Maintenance of cultural and traditional attributes

The following seven categories of Protected Areas, defined by IUCN (1994), are indicative of the shifts in conservation approaches to resource conservation. For example, IUCN categories Ia, Ib and II advocate for strict protection and reserved areas, which resonate with the focus of the mainstream conservation approaches discussed above (Dudley, 2008). However, as we move down the list, the strict protection and preservation orientation softens into a more resource-oriented and people-managed approach that can benefit towards achievement of the objectives of both conservation and livelihoods. Therefore, the categorization of PAs by IUCN clarifies that the possibility of combining conservation and livelihood needs is real and doable. It also recognizes the existence of multiple possibilities whereby different combinations of factors can lead to distinct resource management arrangements – some are more oriented towards

conservation, while others support livelihoods and a few even work towards combining both.

- I (a,b) Strict protection (i.e. Strict Nature Reserve / Wilderness Area)
- II Ecosystem conservation and recreation (i.e. National Park)
- III Conservation of natural features (i.e. Natural Monument)
- IV Conservation through active management (i.e. Habitat/Species Management Area)
- V Landscape/seascape conservation and recreation (i.e. Protected Landscape/ Seascape)
- VI Sustainable use of natural ecosystems (i.e. Managed Resource Protected Area)

Table 2.1. Guide to IUCN Prioritization of Protected Areas Objectives

Objectives	Ia	Ib	II	III	IV	V	VI
Scientific Research	1	3	2	2	2	2	3
Wilderness protection	2	1	2	3	3	-	2
Preserve species and genetic diversity	1	2	1	1	1	2	1
Maintain environmental services	2	1	1	-	1	2	1
Protection of natural and culture features	-	-	2	1	3	1	3
Tourism and recreation	-	2	1	1	3	1	3
Education	-	-	2	2	2	1	3
Sustainable use of natural ecosystem	-	3	3	-	2	2	1
Maintain culture and traditional attributes	-	-	-	-	-	1	2

1=Primary Objective, 2=Secondary Objective, 3= Acceptable Objective, - =Not Applicable

Source: IUCN (2000).

The new categories that emerged in response to current livelihood needs are given below:

CATEGORY V Protected Landscape/Seascape: Protected Area managed mainly for landscape/seascape conservation and recreation

Definition: Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

Objectives of Management

- to maintain the harmonious interaction of nature and culture through the protection of landscape and/or seascape and the continuation of traditional land uses, building practices and social and cultural manifestations;
- to support lifestyles and economic activities which are in harmony with nature and the preservation of the social and cultural fabric of the communities concerned;
- to maintain the diversity of landscape and habitat, and of associated species and ecosystems;
- to eliminate where necessary, and thereafter prevent, land uses and activities which are inappropriate in scale and/or character;
- to provide opportunities for public enjoyment through recreation and tourism appropriate in type and scale to the essential qualities of the areas;

- to encourage scientific and educational activities which will contribute to the long-term well-being of resident populations and to the development of public support for the environmental protection of such areas; and
- to bring benefits to, and to contribute to the welfare of, the local community through the provision of natural products (such as forest and fisheries products) and services (such as clean water or income derived from sustainable forms of tourism).

CATEGORY VI Managed Resource Protected Area: Protected Area managed mainly for the sustainable use of natural ecosystems

Definition: Area containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

Objectives of Management

- to protect and maintain the biological diversity and other natural values of the area in the long-term; to promote sound management practices for sustainable production purposes;
- to protect the natural resource base from being alienated for other land-use purposes that would be detrimental to the area's biological diversity; and to contribute to regional and national development.

2.3.3 Contesting conservation.

The Convention on Biological Diversity adopted at the Earth Summit in 1992 recognizes that networks of Protected Areas are central for conserving biodiversity. The Convention focuses on establishing Protected Areas, and notes that their number continues to grow each year (UN/UNEP, 1992, article 8). There are over 102,000 Protected Areas worldwide, not including 5000 heritage, biosphere reserves and Ramsar sites (Borrini-Feyerabend et al., 2004a; Chape et al., 2008). Mountain PAs host a significant assembly of biological, social, and cultural diversity. By 2009, mountain Protected Areas represented about 32.5% of the world's terrestrial PA coverage (UNEP-WCMC, 2009). The important point is not how many Protected Areas exist but what category (IUCN categories of Protected Areas) they are described under, who owns them (State, communities or private), and how well they are managed (Smith et al., 2003). One of the fundamental questions is the status of people living in the strict Protected Areas (national parks).

The conventional approach (top-down governing structure with the strict Protected Areas notion) sees people and nature as separate entities, and requires the exclusion of people; it views the presence of human communities as a concern and incompatible with conservation (Borrini-Feyerabend et al., 2004a). There is a considerable controversy over the strict Protected Areas regarding their effectiveness, which may be challenged only on methodological grounds (Hayes, 2006; Mehnen, 2009; Nelson & Chomitz, 2011). However, from an ecological viewpoint, strict Protected Areas seem effective in protecting biodiversity but at the expense of local inhabitants (IUCN, 1996; Nelson & Chomitz, 2011). The idea that strict PAs are most effective for protecting

biodiversity seems to be losing grounds. There are examples of indigenous communities that have maintained and even improved biodiversity at small scales; they show humans functioning as custodians in a socio-ecological system (Bruner et al., 2001; Hayes, 2006). Scholars with traditional park model ideals favour strict Protected Areas under State control and consider such strict control policies as most effective for conserving biodiversity (Ghimire & Pimbert, 1997; Bruner et al., 2001). Humanist thinkers, however, view communities as part of the system and recognize that their control could produce similar results and be even more effective at the local level (Bruner et al., 2001; Hayes, 2006; Mehnen, 2009).

The question is why these approaches are effective in some areas and not in others. The traditional model thinkers portray Protected Areas as more effective when decision-makers and management adopt a more exclusionary approach towards local communities (Bruner et al., 2001). Others, however, consider local communities' involvement in the decision-making as integral to conservation and resource management (Hansen & DeFries, 2007; DeFries et al., 2007). A recent global study comparing the effectiveness of the strict Protected Areas with multi-use Protected Areas reveals that “mixed-use protected areas where some degree of productive use is allowed are generally as effective or more effective than strict protected areas, especially in less remote areas with greater pressure for agricultural conversion and timber extraction” (Nelson & Chomitz, 2011, p. 9). This suggests that “indigenous areas and multi-use protected areas can help accomplish these goals, also suggesting some compatibility between environmental goals (carbon storage and biodiversity conservation) and support for local livelihoods” (Nelson & Chomitz, 2011, p. 9). Thus, serious doubts have been raised

against the claims of the effectiveness of strict Protected Areas (top-down approach), by postulating the question whether the strict Protected Areas will be effective in the long run, especially in areas with a higher dependency of communities on natural resources for their survival.

2.3.4 Conservation dilemma: “Decommonisation” of commons.

The conversion of the commons to Protected Areas has been observed by many in different parts of the world (Hoole, 2008; Khan et al., 2011). Nayak and Berkes (2011) have developed frameworks for “decommonisation” to analyze the processes and key factors contributing to the loss of commons rights, which I will discuss in Chapter 5. The conversion of the commons to PAs has brought about issues of conflict over rights and also changed the dynamics of community power. Conservation through Protected Areas (PA) that seeks to preserve landscapes in their “natural state” for the protection of wildlife has had some implications in mountain areas. First, it has alienated the local communities from their right to access for fuel wood collection and grazing their livestock. Second, it has removed the control and traditional management of the resources that the community had. Third, the approach has advocated for disconnecting local community members from their affiliation with the environment (Butz, 1996; Hoole, 2008). Most of the PAs established in mountain areas are based on the models of high-income, developed nations and, therefore, have ignored the traditional laws established by the local communities and their capacity to retain control over and effectively manage the resources. For instance, in the case of Chitral Gol National Park, the community of Bumboor Valley (Kalash) utilizes the park for summer grazing. Kalash goat rearing has

an important ritual whose significance in Kalash culture has been segregated by the park rules and regulations (IUCN, 1999; Khan, 2003).

The main consequence of PAs is that local communities have lost their control over the natural resources available in their surroundings. Most of the PAs in northern Pakistan have been established on communal lands where the local people usually had control over the resources and utilized and managed them through their customary laws (IUCN, 1999). Establishing such PAs and imposing restrictions on access and utilization of resources without considering local needs and associated economies have undermined the livelihood dependencies of the local communities (IUCN, 1999; Khan, 2003). The example of Khunjerab National Park is an illustration of a “conservation dilemma” that has led to the denial of the rights of locals to resources. The imposition of strict rules by the State has undermined local livelihoods. In turn, the establishment of PAs has instigated conflict that has resulted in the unwillingness of local communities to participate in efforts towards collaboration with the government.

2.3.5 Co-management in strict Protected Areas: Is it a feasible alternative model?

An effort to bring together the local communities and the government in the area of resource management has been under the concept of “co-management.” Co-management has been defined as “the sharing of power and responsibility between the government and local resource users” (Berkes et al., 1991, p. 12). It is “a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources” (Borrini-Feyerabend et al., 2000, p. 1). Borrini-

Feyerabend et al. (2000) further explained co-management “as a pluralist approach to managing natural resources, incorporating a variety of partners in a variety of roles, generally to the end goals of environmental conservation, sustainable use of natural resources and the equitable sharing of resource-related benefits and responsibilities” (Borrini-Feyerabend et al., 2000, p. 1).

Carlsson and Berkes (2005) offered complexities in their understanding of co-management as:

complex systems, consisting of different interests by gender, ethnicity and socioeconomic group, co-management as a dynamic and iterative system, collaborative arrangements are highly dependent on to what extent parties recognize the legitimacy of one another and the behavior of ecosystems and how they respond to resource exploitation may also be highly unpredictable. (Carlsson & Berkes, 2005, pp. 68-69)

Berkes (2009) explored different phases of co-management: the “sharing of power; institutional building; trust and social capital; governance; problem solving,” as well as knowledge generation and social learning, which are evolving over time. The most important feature is the linkages between organizations at various scales, both horizontal and vertical, for learning and knowledge production for bringing balance.

But for many local communities co-management is another model for controlling their resources and where the decisions are dictated by the bureaucratic authorities. Those communities’ ground realities need to be recognized and considered to ensure the co-management arrangement is beneficial both to people and conservation. In the context of

northern Pakistan, such co-management options are limited in PAs management, especially in the context of Khunjerab National Park (KNP), where communities are not willing to accept the government as a partner. In co-management arrangements, trusting the government is vital, but in the case of KNP, there have been decades of conflict between the government and the community over the resources, rights, access, and ownership of them. Shimshal community has enjoyed their traditional rights of grazing and maintaining the pastures over centuries but the community has been in conflict with the government for the past thirty years, since the establishment of the KNP. The community is still struggling to regain their rights to the pasture, and court cases have not resolved these issues yet (Butz, 1996).

In such cases of impasse, a concerted effort will be needed to restore the relationship between the communities and the government. One argument for the co-management option is that it may limit the ability of local institutions to manage the resources under the traditional system (self-governance). For example, the emergence of Shimshal Nature Trust (SNT) to respond to the adversities of current externalities can be cited as a local innovation. Abidi-Habib & Lawrence (2007) refer to SNT as an institutional innovation to adapt to outside challenges without destroying their traditional management system; it is an innovation of the local communities towards a better solution of resource management. The community's response at the time of adversity by formalizing the traditional institution is an example of adaptation for governing the natural resources. This portrays an important element of self-governance, where the community is using adaptive management in the system to address the issue (Holling, 1978).

In other cases, many local communities could not have access to natural resources; specifically, in the case of Naltar, the Gujar community could not establish their rights to Naltar forest, which was under the control of principalities and later under the State (i.e., the Government of Pakistan). Since the Gujar community is not a native community, it could not have the rights to access forest resources even under the traditional system. In such a case, with the help of the State, the local community can create a space to negotiate their role in a co-management arrangement. In this way, the non-native local community may be able to take some responsibilities to protect the forest. However, in the case of Naltar Payeen, the native community enjoyed the traditional rights but they are in conflict with government over their rights to forest resources which are being controlled by the State. Here, the native local community is not willing to accept the government as a partner in a co-management arrangement because of their mistrust of the State. I will elaborate on different communities' responses through the evolution of traditional institutions in Chapter 5.

The argument is that co-management is not a model to address the community ownership issue but rather another model for controlling the resource through the communities, where the State deliberately imposes a co-management arrangement to engage the communities. Here, the attempt has been to make communities responsible for resource conservation and management. Ruitenbeek and Cartier (2001) in this regard asserted that co-management regimes which are imposed, rather than self-organized, are less likely to be adaptive and more likely to fail. In such cases, the State is ineffective and management of the resource is needed to protect the depleting resources.

The example of Chapoto community in Zimbabwe provides a typical example of community concern over co-management, where communities with traditional rights to graze their animals were uncertain of their rights under the co-management arrangement (Hoole, 2008). As a community member described “We don’t really know how long government will allow us to keep these animals and the revenues they generate. We don’t know how long government will allow us to lease sites on the Zambezi and keep the proceeds” (Borrini-Feyerabend et al., 2004b, p. 29). Also, in a co-management arrangement, there could be multiple stakeholders with competing interests that may also have negative impacts on resources; how the stakeholders negotiate their objective has not yet been explored.

2.3.6 Governance in Protected Areas: Could community-owned national parks be a way forward for reconciliation?

Adding to Ostrom’s (1990) concept “Self-governance is possible on commons” the possibility of extending self-governance to strict Protected Areas can be further explored by introducing “[c]ommunity-[o]wned national parks,” a flip of State-controlled Protected Areas. Self-governance has two aspects (Yang et al., 2010, p. 261): it is seen as synonymous with co-management and 2) it can also be interpreted as a private decision-making process (Kooiman & Bavinck, 2005; Townsend & Shotton, 2008). Some advocate that self-governance should not be viewed as a “stand-alone alternative management regime” as co-management is, but rather must be seen as an element that strengthens governance institutions (Munro et al., 1998). I argue that self-governance is a separate alternative management regime with a set of rules and regulations agreed upon

by the members (users of the resource). All users have equal rights to a resource and are liable for shared responsibilities. Even though local institutions managing the commons are generally informal in nature they can function as formal institutions with regard to resource management. Because of its context specificities, community-based management systems in Shimshal can be more reliable and offer long-term practical solutions to the challenges of commons governance. By looking at Shimshal self-governance system I can say that it is a system that reflects traditional values, norms and practices within a format of collective decision-making across local and regional levels. It uses an adaptive management approach for the sustainable management of resources in a complex and fragile environment. What needs to be explored is its applicability to different contexts. Does the community have the capacity and resources to manage a national park? Does the community have an established institution and represent the local population? How effective are their rules and regulations? Can the community sustain both their livelihoods and the park? These questions will be explored and presented in Chapter 6.

2.4 Property Rights Consideration

2.4.1 Commons, property rights and State property.

In the literature, a distinction has been made between four different categories of property regimes: open access, private property, State property, and common property (Berkes & Farvar, 1989; Feeny et al., 1990). Several scholars (e.g., Berkes, 1989; Feeny et al., 1990; McCay & Acheson, 1987; Bromley, 1992; Ostrom, 1990) have defined the nature of these regimes, which are as follows:

Open Access is the absence of well-defined property rights where access to the resource is open to everyone.

Private Property refers to individual rights to exclude others and regulate the use of the resource.

State Property rights are vested in the government to decide access to and levels of exploitation of the resource.

Common Property is held by an identifiable community of interdependent users who exclude outsiders while regulating use by members of the local community.

How property can be held as distinct resources is thus clearly spelled out in the literature within these four categories. However, there is a gap in terms of possible combinations of categories of property, which leads one to understand that property rights can only be held as exclusive rights to make sense. This kind of understanding of property is especially critical for analyzing property rights in the context of a co-management arrangement because such an arrangement cannot be clearly defined either as State or common property within the given definitions. Co-management is understood as a process for sharing management rights and responsibilities between parties (Ruitenbeek & Cartier, 2001). This view of co-management suggests that it would include characteristics of both State and common property regimes. Therefore, in this research, an attempt has been made to understand and clarify the nature of a co-management arrangement involving Protected Areas and some of the basic property rights-related characteristics. Since co-management does not explicitly fall within the existing property rights regimes, my investigation has attempted to define a property

rights regime for co-management within the specific context of mountain regions. In this regard, I will particularly examine co-management as community-owned State property.

2.4.2. Nature of property rights regime under a co-management arrangement.

The current literature on common property resources advocates an appropriate system for avoiding the “tragedy of the commons,” such as the decentralized collective management of common property resources and local-level systems of resource management, which are based on the knowledge and experience of the resource users themselves (Berkes, 1989). The management of the commons through a centralized system or by the community alone may not resolve the problem of sustainable resource management or ensure livelihood security. Co-management has been seen as a viable approach to resolve the conflicts in resource management between the State and communities. Co-management has been defined as “the sharing of power and responsibility between the government and local resource users” (Berkes et al., 1991, p. 12). Co-management has evolved from the sharing of power and responsibilities to knowledge partnerships and a process of social learning for adaptive co-management (Armitage et al., 2007, 2009; Berkes, 2009). Berkes (2009) defines the co-management as key in knowledge production and learning, and indicates co-management can be seen as a vehicle for a process of resolving conflict, building trust and social capital, building institutions, developing innovation, generating knowledge, and social learning and governance.

Common-property resources share two important characteristics. First, the exclusion of resource users is difficult. Second, the use of resources by one user subtracts from the welfare of other users. Natural products like trees, water, and wildlife are subtractable and in most cases, exclusion will be problematic and costly. If one individual uses more, less remains for others. Moreover, the physical nature of the resource often includes conflicting claims on boundaries and resource benefit-sharing, which make controlling the access of potential users costly (Feeny et al., 1990). This also involves the question of who could be a member in the institutional arrangement. Confusion over who should be included and who should not leads to uncertainties on the eligibility to subtract from the resource. Among members, the competing tendency for resource exploitation makes each user capable of subtracting from the benefits of other users.

The threats that exploitation by one user could reduce resource availability for others intensify the competition amongst all users (Ostrom et al., 1999). The diversity of resource needs by different social and economic groups within the community could also influence the notion of subtractability in the context of livelihoods. Therefore, problems associated with excludability and subtractability make common property management complex.

However, the success of resource management under a common property regime would depend on how effectively issues relating to both subtractability and excludability are negotiated and resolved. This important consideration equally applies to the management of resources under a co-management regime involving Protected Areas. If excludability and subtractability are two of the most important aspects in the establishment of common property regimes, then it is logical to understand that a co-

management arrangement must include positive aspects of these two characteristics along with important aspects of the State property regime. This in itself constitutes a scholarly challenge for this research as it would be interesting to explore how State and common property can be linked in some form of co-management arrangement in which important characteristics of the commons - excludability and subtractability - could be retained in favour of the community.

2.4.3 The Community-based Conservation (CBC) approach.

The shift in the conservation movement from strict protection to sustainable use and community-based conservation began in the 1960s. According to this idea, “the term community-based conservation” was introduced to distinguish between the conservation practices that merely “involved” local people from those in which communities are the main actors and decision-makers (Erni, 2002). At its heart is the idea of protecting nature’s resources and biological diversity with the interests of local communities in mind.

For many scholars, the community-based conservation concept is still in the developing stages (e.g., Hecox, 1998). It seeks to make natural resources beneficial to rural communities, so that conservation practices can improve their economic condition. Although there is no clear consensus on the true meaning of “conservation” or “community,” community-based conservation seeks to provide for the well-being of local people while protecting the earth’s environment and biological diversity. Hecox (1998) explains that the concept of community-based conservation is simple to understand, but difficult to apply. Berkes (2004) clarifies that CBC is based on the idea that if

conservation and development could be simultaneously achieved, then the interests of both could be served. He further states that it has been controversial because community development objectives are not necessarily consistent with conservation objectives in a given case. Apparently, the CBC concept has been implemented in different ways. Ideally, initiation for such a program should come from the grassroots level, but in practice, we see that many CBC programs throughout the world have emerged through external actors like national or international level institutions (Hecox, 1998).

The CBC approach tries to seek people's participation in conservation (Wells et al., 1998). While it is difficult to generalize, the approach asks communities to implement a predefined agenda of conservation agencies, to establish buffers between parks and people, to declare conservation areas which are under community use, and to allow for limited use of resources in buffer zones and conservation areas. Wells et al. (1998) also found that CBC is a concept that has gone from theory to being regarded as "best practice," without having demonstrated success. CBC is generally not working because it is being pursued primarily through projects, and the project model is the wrong mechanism for achieving biodiversity conservation.

Songorwa et al. (2000) argue that the failure of CBC occurs not because of the weakness or impracticality of the concept, but because of improper implementation with regards to the delegation of powers and responsibilities. However, internationally there has been an attempt to integrate development with conservation and wildlife management towards community-based approaches that put people at the forefront. This effort has achieved some success through the integrated conservation and development projects of the 1980s, community-based conservation of the 1990s, and emerging trends in resource

management, wildlife use, and extraction. Yet, some critics have pointed out that even these people-oriented approaches to conservation have largely failed to achieve their main goal, the protection of biological diversity.

Some analysts argue that the mixed results of CBC approaches are due to misconceptions about community, participation, empowerment, and sustainability (e.g., Brown, 2002). Brown (2002) also recognizes that the conservation of biodiversity and biological resources depends upon the mobilization and support of the local people. One of the recent conclusions by Berkes (2004, p. 628) on community-based conservation is that

perhaps the larger issue is not whether or not communities conserve. The larger issue is rethinking conservation at a time when there is historical shifts in ecology and applied ecology towards a system view of the environment, a perspective that sees humans as part of the ecosystem, an emerging practice of participatory management.

In addition, conservation should be achieved in a manner that allows communities to secure income from resources (Knudsen, 1999). Williams (1998) argues that projects promoting the Western “ideology of protection” are being designed and communities are requested to accept them without giving their input. Local people are offered some incentives merely to attract them to implement the pre-defined projects. However, this approach benefits communities with training in wildlife surveys and teaching techniques. It also tries to encourage people to accept the projects, especially in areas where the government neglects communities and the non-governmental, international

environmental organizations play an intermediary role in controlling the funds. In addition, governments are increasingly being forced to compete with civil society organizations, and in the distribution of aid, Western NGOs have been allocated a greater role (Williams, 1998). In doing so, international organizations require a formal body to communicate with and to undertake implementation of the projects.

These events have resulted in the emergence of new forms of community-based conservation that are NGO-driven, using a top-down approach that has initiated the process of establishing community-based organizations rather than a bottom-up approach where communities feel the need to organize themselves to resolve the issues. These organizations may be called “Fake CBCs” because they are founded merely to fulfill the requirements of international organizations. The question is how these CBC organizations can remain sustainable, whether they can be long lived, and whether they are able to make positive changes. Will they survive after the project is over or will they die is another critical question. In northern Pakistan, CBCs based on external interest have not survived because these programs were merely fulfilling international or external agendas. Grass-roots level organizations that emerged to address a genuine cause have remained successful and sustained over the long run as they are efficient in delivering the services to the community. A few such examples are Khunjerab Village Organizations (KVO), and the Shimshal Nature Trust, which have succeeded in reaching their goals.

There are other informal bodies, traditional institutions, i.e. “*Jirga*,” and informal community-based institutions which have emerged in response to the issues felt at the village level. These non-formal institutions evolved into formalized institutions and have integrated the conservation agenda in their mandate (Abidi-Habib & Lawrence, 2007).

Such institutions would remain there permanently, and possibly adapt to situations over time. Such institutions are merely explored in developmental work. The word “*Jirga*” (committee) can mean different forms of organization in different areas of Pakistan, but in northern Pakistan, it is an informal body that works at the local level to manage and control local issues related to resources, i.e. water distribution, pasture management and other collective work at the village level. This set-up is run on a voluntary basis, but the responsibility of each member belongs to the community, as a collective entity, with the obligation to obey the rules of *Jirga*.

2.4.4 Need for rethinking property regime in resource management and sustainable community livelihood.

The shift in approaches involved in the conversion of the commons to State property has directly and adversely impacted the livelihoods of resource-dependent communities of northern Pakistan. My investigation focuses on the impacts of conservation and Protected Area policies upon the livelihoods of the local communities under the current property regime (i.e., State regime). It explores the management arrangement that can retain the characteristics of both common and State property regimes or that can integrate the property regimes and contribute positively towards building sustainable mountain communities. As stated earlier, co-management has been defined as “the sharing of power and responsibility between the government and local resource users” (Berkes et al., 1991, p. 12). It is a process of engaging “a situation in which two or more social actors negotiate, define and guarantee amongst themselves a

fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources” (Borrini-Feyerabend et al., 2000, p. 1).

From the property point of view, co-management is a combination of two properties, and in the context of northern Pakistan, how this change can affect the status of excludability and subtractability under both State and common property must be understood in its historical and current contexts. Co-management is understood as a process for sharing management rights and responsibilities between parties (Ruitenbeek & Cartier, 2001). This suggests that it would include characteristics of both State and common property regimes. The combination of the rights may vary depending on the negotiations between the parties. However, the inheritance of State property rights in a co-management arrangement may not be acceptable for the communities and if the community retains the excludability rights, the State property control will be eliminated; thus, this arrangement could create a new partnership in property rights, which will be described in Chapter 6.

It is postulated here that the conversion of one property regime to another - more specifically the “decommonisation” by the State - has resulted in an adverse impact on the livelihoods of the communities. One of the theoretical underpinnings of my research therefore is to analyze how the joint management of Protected Areas can contribute positively towards building sustainable livelihoods at the local level. The challenge is to empower local communities to participate actively and effectively in the management of resources and decision-making as equal partners in a joint management or co-management arrangement. Realistically, equal power sharing for managing resources does not exist on the ground, more specifically in areas where illiteracy is high and the

deprivation of proper rights is common. The prevailing perception has been that the State would take the ownership of local land, and consequently, the locals would not be able to exercise their traditional rights of excludability and subtractability. While local communities have enjoyed their customary rights under a traditional system and managed local resources collectively, their rights and decision-making capacity would be diminished or eliminated under State control. In the next chapter, I will focus on the methodological approach and specific field methods that I applied to attain the goals and objectives of my study.

Chapter Three: Research Areas and Methods

In my study, I explored the complex dimensions of mountain livelihoods, the associated socio-ecological systems and cultural attributes, and the applied mixed methods used for conducting the inquiry. For this purpose, I used a four-tier research design, which included: 1) initial workshops to become familiar with the community and to gain insight into the issues at the village level by using PRA tools; 2) surveys, including two annual ones at the village level and four quarterly ones at the household level, and in-depth family interviews (case studies) to gather primary data for understanding and interpreting livelihoods and for analyzing agro-pastoral activities; 3) Focus Group Discussions (FGDs) to gain insight into the issues related to conservation, livelihood practices and commons management; and 4) finally, debriefing and verification workshops, to validate and make the necessary revisions of the data.

In this chapter, I describe the study area and explain the research approaches and field research methods I followed to attain the research objectives. I focus on clarifying the process of information gathering by describing the methodological approach that I undertook to collect data on the livelihood systems of the communities. In the first section, I explain the philosophical orientation, the research approach and the way the research was conducted using specific research tools, and then I clarify the issues and challenges. In the second section, I incorporate background information about the study area, the process of site selection, and the details of my field research procedures. I also provide the details of specific methods used to address the objectives and the data analysis techniques applied. Finally, in this chapter, I explain the process of checking the

validity and reliability of the results and the processes concerning the dissemination of the findings of my study.

3.1 Philosophical Orientation of the Research

From a broader perspective, my research is based on three interrelated approaches that provide an overall philosophical and methodological base. These include both quantitative and qualitative approaches (Creswell, 2007), which, when used together, is commonly known as the “mixed method” (Tashakkori & Teddlie, 2003; Creswell, 2009). In my research, I applied both qualitative and quantitative methods. I drew upon the strengths of both approaches and tried to minimize the weaknesses (Onwuegbuzie, 2003; Creswell, 2003, 2009). According to the “post-positivist” school of thought, researchers should eliminate their bias, remain emotionally detached and uninvolved with the objects of study, and test or empirically justify their stated hypotheses. In this philosophy, the quantitative approach maintains that research inquiry should be “objective.” That is, time- and context-free generalizations are desirable and possible, and real causes of social scientific outcomes can be determined reliably and can be transformed into generalizations (Nagel, 1986). Quantitative methods are used because they have the advantage of generalization for testing and validating already constructed theories. In this way, observable phenomena can be explained through building knowledge of universal laws and principles. However, such an approach has some serious limitations; it is more confined to the amount or number of things being investigated. Also, in the process of making generalizations, the unique as well as detailed characteristics of the phenomenon under study are eliminated. It also follows an ahistorical approach.

The “social constructivist” school of thought uses qualitative tools and in general upholds that multiple constructed realities abound, and that time- and context-free generalizations are neither desirable nor possible. They concede that research is value-bound, that it is impossible to differentiate fully between causes and effects, that logic flows from specific to general (e.g., explanations are generated inductively from the data), and that the knower and the known cannot be separated because the subjective knower is the only source of reality (Guba, 1990).

A qualitative research approach has a number of advantages over the quantitative approach: 1) It is more useful for describing complex phenomena as they are situated and embedded in the local context, thus enabling the study of dynamic processes in a complex system; and 2) it is more responsive to local situations and adaptive to the conditions, the stakeholders’ needs, and the changes that occur throughout the research. The qualitative approach allows shifts in the original focus of the study to incorporate emerging conditions or realities in the field (Johnson & Onwuegbuzie, 2004). I found that the application of the qualitative approach in the field enabled me to interact easily with the respondents as the interviews were relatively non-structured or semi-structured followed with structural quantitative data gathering.

However, application of the qualitative approach in the field runs the risk of being a time-consuming method. Also, there are possibilities that the results are more easily influenced by the researcher’s personal biases or orientations. Creswell (1994) emphasized that there are several possibilities available to the researcher in qualitative research approaches, which makes it one of the preferred methodological approaches. In his view, the qualitative approach is a “process” rather than a “product” or “outcome,”

and it is concerned with meaning (how people make sense of their lives and experiences). Further, it is inductive in nature so the researcher builds on concepts, hypotheses and theories, and in the fieldwork, the researcher must observe behaviours and conditions in a natural setting.

In reference to Creswell's (2009) classification, my thesis research falls into the "pragmatic worldview," in which, rather than concentrate on "methods per se," researchers focus on the "research problem" and apply all approaches available to comprehend the problem (Creswell, 2009). The most conspicuous advantage of the pragmatic worldview is the freedom of choice the researcher has in choosing the methods, techniques and procedures of investigation (Morgan, 1998). Here, as a field researcher, I did not view the world or reality as an absolute unity. The emphasis was placed upon the social, historical, political, cultural and other pertinent contexts of the research problem concerning the livelihood security issues of mountain people and the sustainability of the natural resource endowment in northern Pakistan; this in turn, directed the discussion and analysis towards the role of the State and community-based institutions in conservation.

3.1.1 Mixed methods approach.

The mixed method approach is a blend of two approaches, qualitative and quantitative; in other words, it is a method in the middle ground between these two approaches. It incorporates the elements of both qualitative and quantitative approaches (Tashakkori & Teddlie, 2003; Creswell, 2009). The mixed method is not simply a collection of qualitative or quantitative data; rather, it complements both approaches in a

way so that the outcome is greater than what would be possible using each approach (Creswell, 2009). Hantrais (2009) points out that there has been greater importance given to “methodological pluralism” (mixed methods) for comparative studies in social science; there are advantages, but there is a risk that results will be irreconcilable.

I used the mixed method approach to understand and capture complex mountain livelihoods. The use of the mixed method approach provided both the qualitative and quantitative data to make sense of mountain livelihoods. This blended method facilitated the use of both qualitative and quantitative methods simultaneously, where required, for procuring information. Among the constraints of this method were that the data collection procedure was extensive, and its application demanded a considerable amount of time.

To attain the stated research objectives, I employed the “case study” approach, as well as PRA technique (Yin, 1984; Chambers, 1983). “Case study” research is defined as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, using multiple sources of evidence (Berg, 2007; Yin, 1984, 2012). Such an understanding was important in considering how local people and their social considerations were impacted by the Protected Areas.

For this purpose, I used PRA research tools in the field. Participatory research is cost-effective and recreational, and employs visible methods compared to household surveys. Other major advantages of the PRA approach are that it allows “reversal learning” from local people, it involves face-to-face interaction directly on the site, and such learning is rapid and progressive, with scope for conscious exploration and the flexible use of methods and cross-checking (Chambers, 1994b). It can easily be adapted to various contexts and a variety of issues. It provides a platform for all members of the

community to contribute to the process. In addition, PRA tools are very easy for communities with low or poor literacy to understand. They also enabled me to collate, present, and analyze the information (Chambers, 1994b).

The implementation of the participatory approach in the field required a number of activities. The selection of specific study communities was done in collaboration with local agro-pastoral communities as well as with the local institutions. An introductory workshop was convened to discuss the study design and its implementation process. Use of participatory methods offered the opportunity to implement a number of practical and experimental research tools, such as social and resource mapping, institutional analysis, trend analysis, historical transect, and matrix ranking. The diversity of these tools helped situate the research in the past, present and future contexts. As part of these participatory approaches, community workshops and Focus Group Discussions (FGD) were organized to collect information from specific socioeconomic groups which had diverse experiences and perceptions with regard to forests and pastures.

Considering the above multitude of merits, I adopted PRA tools in my thesis research in the appropriate thematic areas. This was supplemented by quantitative data gathered through structured questionnaires designed for annual and quarterly surveys and in-depth family surveys. This approach was effective for organizing, collecting and analyzing information since it advances knowledge and facilitates community capacity to generate information (Berardi, 2002).

3.1.2 Sources of data.

The sources of my research were manifold. They included both primary and secondary data sources. Most of my primary data were generated through field surveys, which included annual village and quarterly household surveys, interviews, focus group discussions, and personal observations from my participation in community activities, rituals and ceremonies. The secondary data were procured from the Shimshal Nature Trust (SNT), official documents of the Government of Pakistan, reports from non-governmental organizations, particularly from the International Union for Conservation of Nature (IUCN), and World Wildlife Fund (WWF) – Pakistan, as well as from international organizations such as the Food and Agricultural Organization (FAO).

3.1.3. Ethical considerations.

In my thesis research, I followed the University of Manitoba Joint Faculty Ethical Research Board guideline for collecting data from respondents in northern Pakistan. In this regard, approval was procured from the Board on 18 July 2006, prior to the commencement of my field work (see annex D).

3.1.4 Identity, confidentiality.

In Naltar Valley, participants identified themselves by their first name as well as their father's name; the reason, as explained to me, was that the first names were very common, and four or five people could bear the same name. However, in Shimshal participants were identified by their first name as well as the hamlet's (village) name. But self-identification by the participants was primarily seen as part of the local culture,

where it is customary to introduce oneself to outsiders by name. The use of military rankings or titles was popular for identifying some of the participants. For example, Hawaldar (military title) as a prefix along with the first name was used. However, no participant was in any way asked to disclose his/her name if he/she chose to stay undisclosed.

In the case of Naltar Payeen, some households were reluctant to give female members' names, and therefore, their names were not revealed. A few households revealed the names of the female members and requested they not be documented. To abide by the University of Manitoba ethics guideline as well as a matter of principle, the original names of the participants were protected with a view to protect the respondents' privacy and for analysis purpose, Household ID numbers were used. The names of the participants were only used in order to clarify or verify data during the field research. In this thesis, I have revealed the name, age and village associated with a quote wherever I have received the person's consent. All the respondents who agreed to be identified were comfortable with linking their names with their age and village. All data and the names of the research participants are currently under my care and stored in a secure location. All the personal information on paper will be shredded and digital records will be deleted upon the completion of the research.

3.1.5 Informed consent.

Permission to undertake the research work was obtained from the study communities through verbal consent during the first workshop. The consent letter was read to the participants during the workshop for the intended research work in the

villages. All the households were asked to verbally confirm that they understood the purpose of the surveys and then I acquired their verbal consent to participate. Signatures were not taken from any of the households as it was not appropriate in their cultural context. None of the households denied participation; however, those households that migrated during the second or third round of interviews were dropped from the surveys. In the two workshops arranged at the end of the surveys, the procured data were shared with the communities and regular feedback was received during the quarterly surveys. The research dealt with human subjects only and there was no risk, direct or indirect, beyond those associated with normal activities. No financial compensation was paid to the participants in the research activities. However, during the workshop, refreshments were provided as per local tradition.

3.2 Study Area and Background

3.2.1 The country context.

Geographically, Pakistan is located in a complex and important part of Asia. It has two distinct physiographic entities: 1) the Western Highlands, produced by the mountain erection movement stretching from the Makran Coast in the south to the Pamir Plateau in the north; and 2) the Indus Plains, which were formed by the deposition of sediments from the river Indus and its tributaries (UNEP, 1998). The Western Highlands cover most of Balochistan, North West Frontier Province (NWFP), and parts of the Punjab. The Northern Areas (Gilgit-Baltistan), where the study sites are located, cover the northern parts of Pakistan (UNEP 1998) and are the centre of three great mountain ranges: the Himalayas, the Karakoram and the Hindu Kush.

Pakistan has a population of approximately 173 million people and nearly 67% of the country's population lives in rural areas, where they rely, directly or indirectly, on the agricultural sector for their livelihoods (USDA, 2009). The population growth rate is among the world's highest, officially estimated at 1.99% per year, but unofficially thought to be closer to 2.3% per year. Pakistan's GDP growth, which had been averaging above 7% per year since fiscal year 2000-2001, declined to 5.8% in fiscal year 2007-2008 and further declined to 2.5% in fiscal year 2008-2009 (Martin & Kronstadt, 2009). Apart from the global recession, current civil unrest in Pakistan has contributed negatively to the economy and this has created a profound impact on poor people due to the increased inflation rate in a short period of time. The World Bank estimates that about 14% of the population in urban Sindh Province lives below the poverty line², while 41% of people living in the rural North West Frontier Province bordering Afghanistan live in abject poverty.

Agriculture is the backbone of Pakistan's economy and it contributes 22% to the GDP of the country. Pakistan's rural economy is based on agriculture and accounts for about 70% of rural household incomes (USDA, 2009). Major crops produced are wheat, rice, cotton, maize (corn) and sugar cane, which together constitute 63% of the cropped area (Rehman, 1993). Land ownership still remains highly concentrated. About 2% of the households control more than 45% of the land area (World Bank, 2009).

There is no consensus on the total area of Pakistan's forest cover as the official statistics on this phenomenon vary considerably. A relatively reliable authority is the

² World Bank, 2012. Extreme poverty is defined as an average daily consumption of \$1.25 or less and means living on the edge of subsistence.

Food and Agriculture Organization (FAO), which suggests that forests in Pakistan cover a total of 3.587 million ha (i.e., 4.1% of the total land area; cited in FAO, 1997). The farmland trees and linear planting along roadsides, canal sides and railway sides cover an estimated area of 466,000 ha and 16,000 ha respectively, yet these do not constitute forests within the context of the legal definition of forests. Pakistan's forest cover consists of nine different types of forests: mangrove forest (littoral and swamp forests), tropical dry deciduous forests, tropical thorn forests, sub-tropical broad-leaved evergreen forests, sub-tropical pine forests, Himalayan moist temperate forests, Himalayan dry temperate forests, sub-Alpine forests and Alpine scrub (FAO, 1997). All these forests spread over Pakistan's territory from the coastal areas to the highest areas of the Himalayas.

The country is facing enormous development challenges on multiple fronts. The main challenge arises from a combination of poverty and population growth, leading to the over-exploitation of natural resources. With a high population growth rate, demand for timber and fuel wood is increasing astronomically; consequently, these forests are facing immense pressure. The public policies on forest management have undergone major shifts, and in some cases, sanctions on the appropriation of timber and other forest products have been enacted and implemented. Communities living in and around these forests areas have therefore been facing newer arrangements in terms of access, rights, and ownership. These features have heightened conflicts between local communities and the government. Among the emerging forest-related issues are the improper management of forest resources, illegal logging by outsiders (backed by national and/or regional entrepreneurs), scarcity of fuel wood and fodder, and shortage of food supply in terms of

non-timber forest products. The centralized policies in the forest sector have been framed by the alliance between government officials and political entities, which have left out consideration of the concerns of the local population. Most of the forest policy initiatives, particularly until 1975, were aimed at forest conservation *per se* and ignored the livelihood provisions for local communities. The current forest policies in Pakistan are founded upon the policy of 1975, which recognizes the people living in and around forest areas as stakeholders for the first time. This exhibits a shift from a bureaucratically top-down, science and technology orientated forest policy to a people-focused resource use and management orientation. Shahbaz et al. (2006) argue that the 1975 policy is more political in nature rather than public service-oriented.

3.2.2 Regional context.

The Northern Areas of Pakistan (recently renamed Gilgit-Baltistan when it was given the status of a province) cover an area of 72,496 sq. km. This is a unique and important geographical location between China, India and Afghanistan. It is situated in the centre of the Karakoram, Himalayan and Hindukush mountain ranges. These mountain ranges are important for many scientific reasons. They are among the world's most geologically active areas at the boundary between two colliding continents. The Karakoram mountain range has the largest concentration of glaciers, about 500 km in length, and it is the most heavily glaciated part of the world outside of the Polar Regions (Hewitt, 1998).

The Northern Areas have a unique status in the political constitution of Pakistan. Considered part of the undivided state of Jammu and Kashmir, which was taken over by

Pakistan in 1947 during the war with India, the areas have not been given a legal identity. Even by name, “Northern Areas” seemingly does not represent a specific region. This region was previously divided into small princely states, controlled by Mirs and Rajas. In the early 1970s, Prime Minister Zulfikar Ali Bhutto abolished these princely states (IUCN, 2003). After the abolition of the prevailing status of these states, this region came under the direct administrative control of the federal government. Under the new system, various principalities were brought within one federally administered territory, called the Northern Areas (Raman, 2005).

The people of the Northern Areas do not have the legislative right to elect their representatives to the National Assembly. However, in the mid-1990s, the Northern Areas Legislative Council (NALC) was formed. The Council used to have an elected body of 24 directly elected representatives from all five districts. The Speaker of the Council was given the status of a Provincial Minister (Raman, 2005). However, the powers still remained with the federal government for budget allocation and decision-making. In 2009, this region was given the status of a province *per se* and given a new name, “Gilgit-Baltistan.” Administratively, it was divided into five districts: namely, Gilgit, Diamer, Ghizer, Skardu, and Ganche. There have been changes in the names of these districts, and additional districts have been created, such as Hunza-Nagar and Astor.

The livelihood of the people of the Gilgit-Baltistan is based on subsistence level agro-pastoral activities, with low agricultural productivity caused by climatic constraints. The area is generally poor and resource deficient, physical infrastructure is inadequate, and off-farm employment opportunities are very limited as the wage labour sectors are underdeveloped. Some opportunities for off-farm employment are provided by the

tourism industry (Wood & Malik, 2003). However, in the last 30 years, the Aga Khan Development Network has attempted to improve the health and education status of the people in parts of the areas. Most of the people in Diamer, Darel, Tangir, Naltar, and Shimshal are still struggling to obtain the infrastructure and to undertake development work.

3.3 Study Site Selection and Target Groups

It is worth reiterating the purposes of my research. They were: to study the characteristics of the livelihoods of the mountain community groups who primarily rely upon natural resources, to determine how the community groups and the environment are interwoven together, to identify the characteristics of their vulnerabilities, to examine how they are coping with their vulnerabilities, and to determine how these communities are being affected by the new public policies on forests and conservation which have led to the creation of Protected Areas (PAs).

In light of the purposes and objectives, the most important criterion used to determine the study areas was based on the communities's dependence on natural resources and are living in or in the vicinity of the PAs. For the purpose of my study, I identified two specific sites: 1) Shimshal, in upper Hunza (Gojal), and 2) Naltar Valley, in northern Pakistan (Figure 3.1). Shimshal is located in a designated Protected Area, Khunjerab National Park, and also in a designated conservancy area under the Mountain Area Conservancy Project (MACP), which was implemented jointly by IUCN-World Conservation Union, World Wildlife Fund (WWF)-Pakistan, and the Government of Pakistan. Naltar Valley has a protected forest and a game sanctuary. Each research

project site is unique in terms of forest type, wildlife, location, and resource use and thus provides an opportunity for significant comparative study. The other purpose of selecting two different sites was for conducting a cross-case comparison.

3.3.1 Cross-case comparison.

I selected two sites for cross-case comparison, to get a deeper understanding of the issues in different contexts within the study region, Gilgit-Baltistan. The approach is inherently challenging with diverse communities (Shimshal, Naltar Payeen and Naltar Bala) located in context-specific study sites. In the past, a number of site-specific comparisons, organized through both theoretical and empirical analysis (Angelsen & Kaimowitz, 1999; Rudel, 2005), were done but cross-case comparisons faced different challenges that included, independent variables that might not necessarily match in comparing cases. I used cross-case comparison in defining communities' views regarding conservation in two sites, as well as for examining issues associated with pasture and forest resources. In the cross-case comparison, it was evident that at the community level, Shimshal and Naltar communities share the issue of disconnect because of the policies imposed on them by the State. The observations in Shimshal and Naltar will help formulate the generalized view of the communities in the context of northern Pakistan. Although both communities share similar socio-ecological systems, their livelihood strategies and dependencies vary by community. I will discuss this matter in Chapter 4 of this thesis. Another aspect is the physical disconnection of the community. Relative to Naltar Valley, Shimshal was disconnected for centuries from the rest of the world by the

lack of a physical link (Cooks & Butz, 2011). It is worth examining how community views differ due to the existence or absence of physical links with the outside world.

3.3.2 The study sites.

The selection of the Shimshal and Naltar communities was appropriate for this study as both the communities live in or around the Protected Areas. These communities were also important for the enhancement of my understanding of how different communities respond to or cope with livelihood vulnerabilities. The selection of two study sites enabled me to compare between them as well as with other communities in Hunza that have attempted to diversify their livelihoods through their involvement in tourism sectors based in mountain area settings in northern Pakistan.

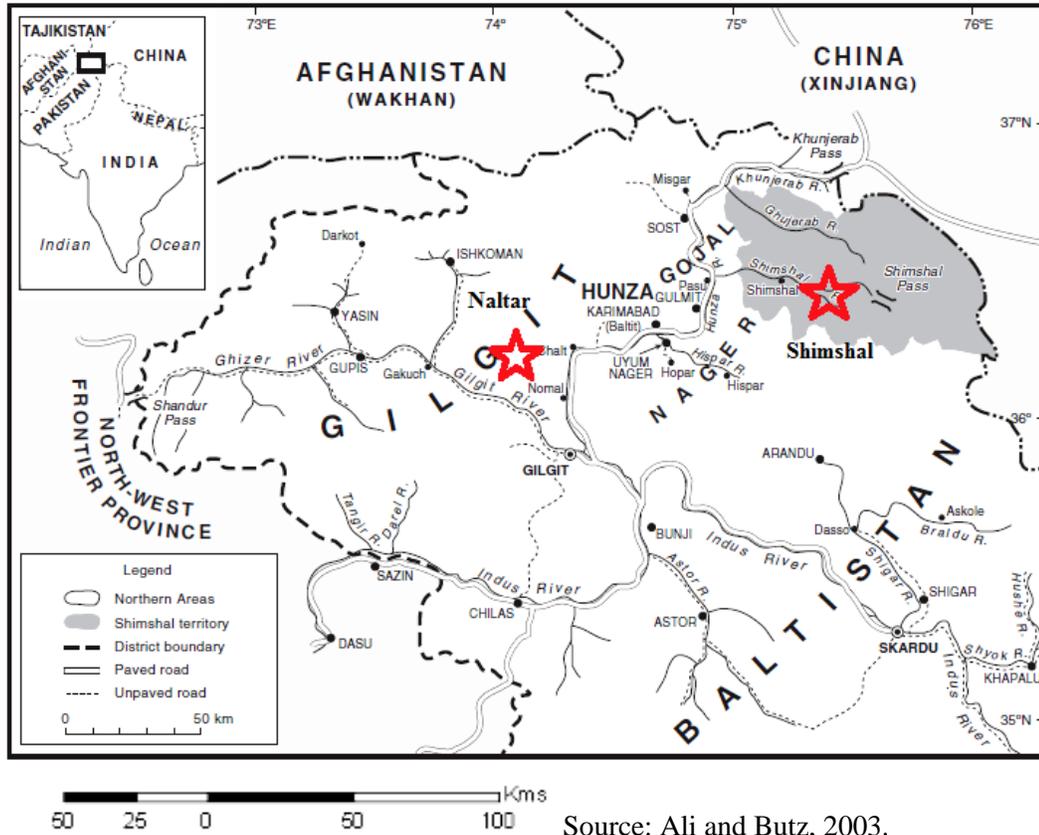
3.3.2.1 Study site I: Shimshal, Gojal Hunza.

Shimshal valley is located in upper Hunza (Gojal), in the district of Hunza Nagar, approximately 62 km from Pasu, located in the Central Karakorum Mountains in northern Pakistan, at an elevation of approximately 3352 metres above sea level. This site is characterized by an alpine habitat comprised of juniper, shrubby vegetation, community plantations on the lower lands, and permanent snowfields in the higher altitudes. Shimshal is comprised of 179 households, with a total population of approximately 1,500 individuals living in four adjoining small villages (hamlets): Shimshal Centre, Khizirabad, Aminabad and Farmanabad. The seasonal settlements of the Shimshal community are located in the vast alpine pastures of Pamir, Ghujerab and Lupgar.

The community at large owns 15-20 *kanal* (1/8 of an acre) on average per household of agricultural land where they grow mainly wheat, barley, and more recently

potatoes. Small quantities of garden vegetables and beans are also grown. In addition, each household owns medium to small-size (25-30 *kanal*) plots of grassland and other vegetation, which are mainly used for fuel wood and fodder.

Figure 3.1. Location Map of Shimshal and Naltar – Study Sites



The community complements their agriculture with extensive herding of sheep, goats, cattle and yaks. For Shimshal community, livestock plays a major role in their livelihood, and their herding system represents a symbiotic relationship with high altitude pastures (Ali & Butz, 2003; Butz, 2006). Cook and Butz (2011) describe the transformation of indigenous culture as they emerged from isolation through the link road. In 2003, after 20 years of continuous struggle, the Shimshal community completed a 62 km single-lane road on a self-help basis, with meagre support from government and

NGOs. The completion of the road has brought the community economic prosperity as well as new fears. Cook and Butz (2011) provide a powerful analysis of the socio-cultural transformation and trace the shifts in Shimshal community. The fear that the local community elders have relates to their concerns about the potential effects of modernity, particularly on their culture, festivities, ceremonies, and more importantly on their belief systems. This also relates to the facilitation of logging industry and the State-imposed separation of local communities from their traditional use of forest products and their pastoral practice of yak herding. The establishment of strict Protected Areas has resulted in the disconnection of the Shimshal community from their culture, tradition and relationship with nature. Socially, the Shimshal community is well organized and it is well-known for the people's hardiness. This is the only community in northern Pakistan that remained in isolation for centuries without access to roads.

3.3.2.2 Study site II: Naltar Valley.

Naltar Valley is situated within the Himalayan Highlands, northwest of Karakorum Mountain range, which is approximately 40 km from Gilgit town. The altitude ranges between 2286-3500 m above sea level. The valley starts with narrow *nullah* and a waterway and stretches considerably with the elevation. The valley falls under a Montane Dry Temperate Coniferous Zone of Pakistan Forest Classification. The forest type contains blue pine (*Pinus wallichiana*), edible pine (*Pinus gerardiana*), cedar (*Cedrus deodara*) in pure and mixed stands, and juniper species at higher elevations (IUCN, 2003; Sheikh, 2001). The forest in Naltar Valley is a protected forest, and under

the present management regime, the local communities have little stake in the management of the forest as they receive no incentive to protect it.

Naltar Valley consists of two main villages, Naltar Payeen and Naltar Bala, which are inhabited by approximately 4,000 residents in 352 households. Naltar Payeen is comprised of 195 households, and Naltar Bala (upper Naltar) has 157 households. These include small settlements, i.e., on north and south-facing slopes of Naltar Bala, Singo, Gupo, Lower Shani and Upper Shani (hamlets), with about 8-10 households each. The community in Naltar Payeen village mainly belongs to the Sheen and Yashkon tribes, the early settlers of Naltar Valley. However, both the tribes remain in Naltar Payeen village and stretch out towards the eastern side of the valley.

People in Naltar Bala belong mainly to the Gujar³ community. Some have settled permanently while others migrate during the winter season to underdeveloped areas in Sakwar and Gujar Dass, near Danyoor, adjacent to Gilgit town. Within the Gujar community there are several tribes, mainly Dandu (Bijad), Kolocko, Paswad, Siyali, Chukuri, Abijad and Aduth, which reside in Naltar. A meagre population in Naltar Bala is the Brusho (Hunzukutz) community, who are permanent settlers of Nomal but migrated from Hunza Valley. The Brusho ethnic group visits Naltar Bala during the time of agricultural activities, mainly for the sowing and harvesting of crops from their agriculture fields.

The communities' livelihoods depend mainly on utilizing forest resources and nomadic and semi-nomadic grazing (IUCN, 2003). These communities rely on rangeland

³ Scholars have referred to the Gujar people and their language by various names and spellings, (e.g., Gujar, Gujuri, Gujjari, Gujri, Gojri, Gojari). I have chosen to refer to the people as Gujars, reflecting the pronunciation encountered most commonly in field research.

and pastures for their livestock and forest resources, such as blue pine (*Pinus wallichiana*), edible pine (*Pinus gerardiana*), cedar (*Cedrus deodara*), *Salix* sp., and birch (*Betula utilis*), they collect juniper species for fuel wood and timber, and they use medicinal plants to cure diseases (NASSD, 2003; Sheikh, 2001).

Most of the people of the Naltar Bala are illiterate; but overall, the literacy rate is 38% in Naltar Valley (Harris, 2001). They rely on their traditional skills as animal herders, shepherds, agriculturists, masons, and carpenters. Others are teachers or provide government services such as the military. The community in Naltar Bala has an average 10-15 *kanal* (1/8 of an acre) of agriculture land per household, and they rely on agriculture, livestock and forest products for their livelihoods.

3.4 Field Study Design and Methods

The design of the fieldwork was conditioned by the selection of fieldwork sites and the sequence of the fieldwork periods. The lack of secondary sources of data regarding the livelihoods was an important factor in the fieldwork design. A number of studies provided insights about the process by which local populations adapt to, and manage within, the local resource base in Shimshal (Abidi-Habib & Lawrence, 2007; Ali & Butz, 2003; Butz, 1999, 2006, 2010; Knudsen, 1999), however, very little data were available on Naltar.

The data collection was designed based on a larger study entitled Poverty Environment Network (PEN) of the Centre for International Forestry Research (CIFOR), based in Jakarta, Indonesia. For livelihood data collection, additional questions were incorporated in the PEN questionnaire designed by CIFOR. The following selected

methods and tools were used based on the key questions corresponding to each objective of my research (Table 3.1). These are synthesized and presented in a schematic manner. To achieve the objectives, I selected key questions to ask and I considered how the information could be gathered in accordance with ethical considerations as well as by respecting local traditions. I then attempted to determine what would be the appropriate target groups for these questions. Finally, I selected the field method for data procurement.

Table 3.1. Specific Tools Employed to Attain the Research Objectives

Description of Objectives	Key Research Questions	Specific Methods	Participants	Methods of Analysis
<i>To analyze the characteristics of mountain livelihood resources and livelihood strategies, as well as the vulnerabilities and coping strategies of local communities in northern Pakistan.</i>	<ul style="list-style-type: none"> •What are the major conflicts between the mountain communities' livelihood and biodiversity conservation? •What are the main factors? •Have the conflicts arisen because of the communities' livelihood dependency? •How dependent (%) are the communities on natural resources, more specifically, on forests and rangelands? •What are the restrictions on access to these resources? •How vulnerable are the livelihoods? •How do communities cope with their livelihood vulnerabilities? How have these issues been addressed by the government? 	Local Level Workshops <ul style="list-style-type: none"> • Focus group discussions • Participatory Resource Mapping • Seasonal calendar In-depth Family Study <ul style="list-style-type: none"> • Semi-structural Interviews <ul style="list-style-type: none"> • Informal discussions Survey <ul style="list-style-type: none"> • Structured village and annual surveys A1 and V1 (PEN) • Household surveys (Q1, Q2, Q3, Q4) • Meetings with the communities • Individual interviews with govt. officials 	Community members Selected Families Household head Govt. Official/ Representative	Response Ranking Comparative Analysis Wealth Ranking Resource Mapping
<i>To analyze the shifts in institutional arrangement for conservation and for mountain commons management and their impact on livelihood security.</i>	<ul style="list-style-type: none"> •What formal government, non-governmental (NGOs, CBOs) and informal institutions exist? •How are they interlinked? •How can these institutions play a critical role in designing and implementing grassroots level initiatives in the mountain communities? •How can biodiversity conservation be linked with livelihood strategies? 	Regional Level Workshops <ul style="list-style-type: none"> • Venn diagrams Survey Methods <ul style="list-style-type: none"> • Semi-structured interviews • Formal and informal meetings with government and non-governmental organizations • Personal observation 	Community members NGO representative Govt. Official/ Representative	Response Ranking Comparative Analysis
<i>To assess experimental projects on community-based conservation and determine the lessons learned for sustainable mountain livelihood.</i>	<ul style="list-style-type: none"> • Who are the beneficiaries or stakeholders? • Was the approach successful? • Did communities received any benefits? • What were the constraints? • Analysis of the reports. 	Regional Level Workshops <ul style="list-style-type: none"> • Focus group discussions • Formal meetings with and non-organizations • Meeting with officials 	Project officers NGO representative	Comparative Analysis Cross checking
<i>To formulate, as an alternative to the Sustainable Livelihood</i>	<ul style="list-style-type: none"> •How can biodiversity conservation be linked with livelihood strategies in these 	Regional Level Workshops <ul style="list-style-type: none"> • Focus group discussions • Formal meetings with 	Govt. Official/ Representative	Comparative Analysis

Description of Objectives	Key Research Questions	Specific Methods	Participants	Methods of Analysis
<i>Framework, the structure and elements of a Sustainable Mountain Livelihood Framework within which Community-Driven Collaborative Management (CDCM) would be embedded .</i>	communities? •Are there any policies that favour integration?	government and non-governmental organizations	e NGO representative Community members	Response Ranking

3.4.1 The four-tier study design.

In consideration of the goals and objectives of my study, I formulated a four-tier study design (Table 3.2). The components of my study design included the following: 1) initial workshops to become familiar with the community and to gain insight into the issues at the village level by using the PRA tools; 2) surveys, which included two annual village surveys and four quarterly household surveys, along with in-depth family interviews (case studies) to gather primary data for understanding and interpreting livelihoods and for analyzing agro-pastoral activities, 3) Focus Group Discussions (FGDs) to gain insight into the issues related to conservation, livelihood practices and commons management; and 4) final debriefing and verification workshops.

3.4.1.1 The initial workshops.

After several initial meetings with community leaders at local schools, I organized three separate workshops with the local communities, one in Shimshal, one in Naltar Payeen and one in Naltar Bala. The initial workshop with Naltar Bala was conducted in the middle of July 2006 and a week later in Naltar Payeen. The workshop in Shimshal was conducted in the first week of August 2006. These workshops set the ground for my interaction with the communities, and demonstrated the response of the communities in

terms of their acceptance of my research work. These workshops were used as a tool to understand the village issues, to obtain insights of community power relations -- who dominates in the community – to allow the community to express its voice, and to hear

Table 3.2. Methods of Data Collection, Duration and Numbers

Field methods / techniques		Duration	Total numbers	
			Shimshal	Naltar
Tier I	Initial meeting and introductory workshop and Reconnaissance Survey	July/August 2006	30 village members and 5 women villagers, representing 5 villages 4 themes involving specific topics with community leaders and representatives	45 village members representing 5 villages (hamlets) in Naltar Payeen, 32 village members representing 5 villages (hamlets) in Naltar Bala 4 themes involving specific topics with community leaders and representatives
Tier II	Village survey 1	July – August 2006	65 households surveyed from five village hamlets	93 households in Naltar Bala 82 households in Naltar Payeen
	Village survey 2	June 2007	65 households surveyed from five village hamlets	93 households in Naltar Bala, 82 households in Payeen, Total 175 households in Naltar Valley
	Household survey (Quarterly)	July – August 2006 to June 2007	65 households surveyed from five village hamlets	45 households in Naltar Bala 65 in Naltar Payeen
	In-depth family surveys	July/August 2006 to June/July 2007	5 household heads in Shimshal	6 household heads in Naltar
	Interviews	July 2006 - October 2008	68 individuals, 2 institutions, and 2 government officials	175 individuals, 1 institution, and 2 government officials
Tier III	Focus Groups	June 2006 - July 2007	4 group discussions involving elders and groups of women, representatives SNT, Naubahar public school, AKES school and govt. school.	4 group discussions involving villagers, representatives of the English medium school, govt. school.
Tier IV	Final Workshop	June 2006 - July 2007	For community leaders and representatives of SNT and members	For community members and representatives from local schools
	Validation of data	July 2008- August 2009	Community members, SNT	Community member

the voices of the disadvantaged who might be neglected. In Shimshal, after the initial meetings with the communities and with teachers, I organized a workshop at Sifat Guest House, attended by 30 male villagers and 5 women villagers, representing five villages. After an informal introduction, I explained the details of the purpose, the objective and

the survey plan of the research to the community leaders and attending members. I responded to all questions and concerns related to the research. The major issue that arose was the timing of the surveys, which conflicted with their agricultural activities. In response, I decided to postpone the survey work until the end of August (see annex II A).

In Naltar, I organized two similar workshops, one at the Government Boys' Middle School, in Naltar Payeen, and the other one at the Centre Mosque, Naltar Bala. A total of 45 community members attended the workshop in Naltar Payeen and 25 village members attended the workshop in Naltar Bala (see annex II B). Notably, no female member participated in the workshop in either village. The emerging issues related to the surveys sought information from females (name and age) by using a survey instrument in Naltar Payeen, and also sought information about the migration of households during winter time in Naltar Bala.

In these workshops, information about the villages were discussed such as the number of houses, population size, state and characteristics of pasture resources, and the rights of community members. The workshops helped in exploring the issues and conflicts at the village level, in preparing the village profiles, and in making the maps concerning the resources available to the communities.

3.4.1.2 The surveys.

As elaborated above, I applied both qualitative and quantitative methods to collect data and information. I employed Participatory Rural Appraisal (PRA) tools to gather qualitative information, such as community responses in relation to rights and access to resources, conservation initiatives, the community's perceptions of and recommendations

concerning forest and rangeland protection, and how they relate to their livelihood security. Individual face-to-face interviews were conducted with the government personnel associated with resource management. Focus Group Discussions (FGD) were conducted in the communities with community leaders and resource user groups (see annex II A & B).

I further carried out family-level in-depth case studies to gain insights into livelihood vulnerabilities, coping strategies and opportunities. These in-depth studies helped me to understand internal dynamics concerning livelihood assets, resources, and activities in selected families. Families were selected based on the survey data, considering whether they fit the categories mentioned in the selection criteria established for in-depth family surveys (see annex III).

In addition, I conducted a series of surveys, including two village-level surveys (V1, V2), two annual surveys (A1, A2) and four quarterly household level surveys (Q1, Q2, Q3, Q4) over a 12-month period during the 2006-7 (see annex IV). The data validation surveys were conducted during 2008 and 2009. The surveys provided quantitative data on socio-economic, demographic, and livelihood aspects, encompassing the linkages between the households and the forests and forest resources.

3.4.1.2.1 Selection of villages and households.

Both the project sites and study communities were selected based on three criteria: i) a very high dependency ($\geq 75\%$) of the households on forest and pasture land, ii) the vicinity of the community to a designated Protected Area (PA), and iii) a typical, representative size of the community (that is, in the range between 100-300 families).

The Shimshal, Gujal and Naltar Valley communities (i.e, Naltar Payeen and Naltar Bala) met all these selection criteria.

3.4.1.2.2 Sampling and sources of data collection.

In phase 2 of the study design, the research adopted the random sampling method to select the households at the village level. A random sampling method was used with a sample size of $\geq 30\%$ in each project site. Based on the data, a total of 110 households that include, 45 households in Naltar Bala and 65 in Naltar Payeen were surveyed out of 353 households total households in Naltar Valley. The reason for the higher number was that the Naltar Bala community migrates during winter and there was a higher chance of drop-out from the surveys. In Shimshal, 65 households were surveyed out of 179, which is more than 35% of the households. The reason for the higher number was that Shimshal community spends time in Pamir during the summer, and there was a higher chance of drop-outs from the survey. The community-level information (i.e., the composition of the community, its location, organization and infrastructure) was collected from the Aga Khan Rural Support Program (AKRSP) and the Shimshal Nature Trust (SNT).

3.4.1.2.3 Survey implementation.

During the visits to the communities, I visited local primary and secondary schools in each village. I expressed the intention of my field research to the principals of the schools and requested their teachers to be involved in the research surveys. The particular interest in selecting teachers for the survey was based on: i) their close familiarity with the village, ii) their availability and easy access for all the surveys so that repeated training could be avoided, and iii) their academic qualifications, which allowed

me to communicate research issues effectively and to explain the purpose of the surveys. I was successful in forming a team of six teachers in Shimshal and eight in Naltar Valley. All the teachers attended a two-day training session for conducting the surveys in subsequent months.

3.4.1.2.4 Field surveys.

Field surveys were based on the Poverty Environment Network (PEN) questionnaire designed for village level surveys (V1, V2) and household level surveys annual surveys, (A1, A2), and household quarterly surveys (Q1, Q2, Q3 and Q4) designed by Centre for International Forestry Research and were followed after the initial workshop and meetings with the communities during the summer and fall months of 2006. As planned, village-level (V1) and quarterly household (Q1) surveys were conducted in mid-July simultaneously in Naltar Bala and Naltar Payeen (see annex IV). However, in Shimshal, surveys were postponed until late August 2006 due to a community request since most of the community members were fully occupied with their work in the field, especially the wheat and potato harvests. In addition the breakdown of a bridge near Shimshal made it difficult to access Shimshal in July. During the summer season, with the peak flow of water, these *nullahs*, waterways, cannot be crossed without bridges.

During October and November 2006, the second quarterly surveys (Q2) were conducted in Naltar and Shimshal. In addition, household level in-depth interviews were initiated with five families in Shimshal and six families in Naltar Valley.

During the month of November 2006, I arranged meetings with two government officials, Conservator Ghulam Tahir with regards to conservation issues in Khunjerab National Park and Sabir Khan, Range Forest Officer for forest issues in Naltar Valley. These meetings brought up some issues that reflected the misconception of the community practices in the eyes of the government officials.

During January and February 2007, I conducted the quarterly surveys (Q3) in Naltar and Shimshal, and followed them with the quarterly survey Q4 in April/May and annual surveys (A2) in May 2007. All the field surveys were completed by June 2007. In the following, a list of surveys conducted in the field is presented (Table 3.3), depicting duration and frequencies.

Table 3.3. The Survey Questionnaires: Contents and Timing

Tools and Research Steps	Contents	Timing
Workshop 1	Introduction of study, community views, selection of survey team.	July/August 2006
Village Survey 1	Geographic and climate variables, demographics, infrastructure, forest land cover/use, forest resource base, forest institutions, forest user groups	July/August 2006
Village Survey 2	Risks, wages and prices, forest services	June 2007
Annual Household Survey 1	Household composition, land, forest resource base, forest user groups	July/August 2006
Quarterly Household Survey 1	Income, wages and inputs (forest, livestock, agriculture)	July/August 2006
Quarterly Household Survey 2	Income, wages and inputs (forest, livestock, agriculture)	Oct/Nov2006
Quarterly Household Survey 3	Income, wages and inputs (forest, livestock, agriculture)	Jan/Feb2007
Quarterly Household Survey 4	Income, wages and inputs (forest, livestock, agriculture)	April/May 2007
Annual Household Survey 2	Crises and unexpected expenditures, forest services, forest clearing, welfare perceptions, social capital, and enumerator assessment of the household, assets and savings, land ownership pattern	May 2007
Workshop 2	Survey findings, community response.	June/July 2007
Data Verification	Additional data gathered and previously collected data verified	July 2008-Aug 2009

3.4.2 Focus group discussions.

The purpose of the focus group discussions (FGD) was to capture the views of the community regarding conservation, the establishment of PAs, and pastures management. The idea behind the application of the FGD method was that group processes could help people to explore and clarify their views in ways that would be less easily accessible in a one-to-one interview (Kitzinger, 1995; Ellis, 2000). Focus group discussions are useful either as a self-contained means of collecting data or as a supplement to both quantitative and qualitative methods (Morgan, 1988; 1998). On each site, I conducted two focus group discussions (see annex II A and B). The following topics were discussed in the group meetings:

- i. What were the issues in mountain livelihood?
- ii. What were the impacts of (PAs) and how do you view conservation?
- iii. What were the major impacts of the decline in tourism industry?
- iv. What were the major changes in yak herding and pasture management in recent years and what factors have driven them?

Focus group discussions helped provide clarity about the conflicts in the village, the responses of community members to emerging issues, and the resource use patterns at the village level.

3.4.3 The final debriefing and validation workshops.

I organized the final debriefing workshops in Shimshal, Naltar Payeen and Naltar Bala, with the participation of the community members and leaders, representatives from

the government, and NGO representatives. I presented the findings of my research to them. I used these workshops as a tool to verify the information, incorporating responses related to community information, and to obtain information on changes over a period of one year. In Shimshal, 40 village members attended the debriefing workshop that was convened at Sifat Guest House. The participants included the representatives from Shimshal Nature Trust, Aga Khan Education Service and the women's organization. In Naltar, I organized two debriefing workshops: one at the Government Boys' Middle School, in Naltar Payeen, and the other at the Government Primary School, in Naltar Bala. In both debriefing workshops, the findings of the surveys were presented. These workshops were used as a tool to verify the information, incorporating responses related to community information, and to collect information on changes over a period of one year. Community members were pleased to know about the findings and requested the anonymity of female names in publications. Thus, no female names were included in this thesis.

3.5 Field Experiences: Interaction and Adaptation

One of the advantages for me to conduct empirical research in the area was my close familiarity with the region. I grew up in Hunza and I do understand the local socioeconomic systems and the culture because of my deeply entrenched relationship with the social-ecological settings of the area. During my employment with the World Wide Fund (WWF) for Nature-Pakistan, I travelled across these areas on numerous occasions and thus became familiar with the people and places of the region. As a native from northern Pakistan, it was quite easy for me to understand the vocabulary, local

traditions and culture, and thus to mingle within the communities.

My initial meetings with local leaders (*lumberdar*) provided me impetus and encouragement to start off the field research process in the Shimshal and Naltar areas. The support from local school teachers was spontaneous. However, with the community in Shimshal, trust building was a major challenge as the locals were generally suspicious about “outsiders” who usually represent government agencies. The community was under vigilance by the government department because of the ongoing conflict between government policy on Khunjerab National Park (KNP) and the local interests. It was therefore difficult for me to gain the trust of the locals to conduct my field work immediately after my arrival at the Shimshal community.

In the past, some outsiders visited the village to conspire against the community members who had protested against government policies for the national park. However, I gained the trust of the villagers after several meetings with the elders and after participating in the cultural events at the local level. My affiliation with a Canadian university helped me to earn the confidence and trust from the villagers as the community members became aware of the neutrality of academic institutions, particularly foreign universities, about their issues. This awareness stemmed from the previous experience that the community members gained from David Butz, a professor of geography at Brock University (Canada) who supported the Shimshal community through promoting and publicizing about this community worldwide.

3.6 Validation of the Information

Triangulation is the way of combining and validating the findings from several research methods. I used Guba's (1981) criteria of validity for this research. I spent over a year and half with the community, gained their trust, and established friendly relationships with community members. In the mixed method approach, tools might overlap each other somewhat, and be complementary at times and even contrary at others. Triangulation assisted me in minimizing bias (sampling, procedural, preconceptions), in mapping out, and in explaining in a more holistic way the richness and complexity of humans in their own socio-cultural construct. For validation, I combined different techniques that created synergy and balance: quantitative vs. qualitative, individual vs. group, and short engagements with respondents vs. long engagements. At the end of the research, I presented the findings before the community. In some cases, I had dubious findings generated through multiple tools; I practiced triangulation and reflected constantly to confirm the data to eliminate any biases or any wrong interpretations.

3.7 Survey: Attrition and Problems Encountered

As expected, some households dropped off from the sample in Naltar Bala, a few others in Naltar Payeen and none in Shimshal. It was anticipated that the Gujar community would move to Gilgit and surrounding areas during the winter time. At the time of initial data collection for Gujar households, I gathered their contact addresses for the winter time. During November and December, 19 households from the sample moved

to Gilgit Gujar Dass, where most of the Gujars migrate. However, seven households could not be traced because they moved to some other areas. This situation was anticipated, and to address that issue, I kept the sample size larger than the minimum required for statistical tests. Because of attrition in this way, the sample was reduced from 52 to 45 households for Naltar Bala. In Naltar Payeen, 3 dropped out from the sample. One household moved to the city, another moved to Gilgit town in winter, and a third one refused to participate, as they could not make the commitment to stay in the village for the whole period of one year. As a result, the sample size was reduced from 68 to 65 in Naltar Payeen.

3.7.1 Respondents failing to disclose information.

A sensitive issue in both the research sites was how to deal with the data regarding the use of a gun that a household possessed. In Shimshal, though there is no sectarian clash, Shimshal community belongs to the Ismaili sect of Islam and many households still may keep guns as a souvenir from their ancestors; retired military persons also like to have a gun. Since Shimshal Nature Trust (SNT) has put a ban on hunting, no illegal hunting has been practiced. The government officials still view the possession of guns by the community members in and around the Protected Areas as a threat to wildlife protection. After the first exploratory meeting with the local communities, pertinent questions regarding the possession of guns were not asked. However, some respondents disclosed information on their possession of guns willingly on their own. In Naltar Valley, communities belong to two religious sects of Islam, the Shias and the Sunni. Naltar Payeen belongs to the Shia sect of Islam and Naltar Bala

belongs to the Sunni sect of Islam. However, very few households belong to the Ismaili sect that temporally resides there during summer months.

3.7.2 Local conflicts and illegal activities.

Conflicts over resource use rights have affected the lives of the Naltar Valley residents in various manners. Both the communities in Naltar Valley have conflicts over natural resource use and such conflicting issues are not discussed in public. The issues of resource conflicts were explored in private with the key members and community leaders as there were obstacles to exploring the questions in community meetings. One of the major issues for Naltar Payeen community was that the Gujars immigrated to this region as nomads and occupied the land illegally, yet they are now demanding their rights on the pastures. In the recent past, Gujars' livestock resources were killed in the pastures in retaliation. This has heightened conflicts, not only on matters relating to resource use, but they have also instigated sectarian clash in Naltar. The illegal extraction of forest and non-forest products from the Protected Areas has been one of the major issues in Naltar Valley. Locally, the involvement of a group of "timber mafia" as well as local government officials was observed. One respondent said, "They blame us for the decline of the forest; in fact the government personnel are selling the forest illegally" (personal communication with a respondent who wants to be unnamed). These issues could not be explored further due to the sensitivity relating to the sectarian nature of the issue. Application of above-stated field methods and research approaches has provided me outcomes on livelihoods, commons (i.e. pastures and forests) and Protected Areas. I will present these findings in the next two chapters (i.e. Chapters 4 and 5). An analytical discussion on these findings will be presented in Chapter 6.

Chapter Four:

The Dynamics of Mountain Livelihoods

This chapter explores the livelihood system of mountain communities; how such communities view livelihoods and their association with nature; and the challenges these communities face in making a living. Drawing upon a contemporary Sustainable Livelihood Framework, I focus on analyzing the household characteristics, the resources that a household requires for living, and how various households build strategies to gain a living and respond to livelihood vulnerabilities. As part of the exploration of mountain livelihoods, this chapter examines communities' reliance on natural resources and the complexities of living in the fragile environment of mountains. The chapter offers an analysis of livelihood changes caused by the global events as well as their profound local impacts. I address the question whether these events exert limitations upon livelihood options and disrupt communities' livelihoods. I also examine how these communities cope with shocks and stresses. The chapter highlights the strategies that the communities of Shimshal and Naltar of northern Pakistan have adopted to cope with the rapid global changes and stresses. Special attention is paid to analyze the community responses and the stakeholders' responses to pertinent questions in these two communities.

The chapter is organized in four sections. The first section deals with the definitional aspects of livelihood, the role of symbolism in mountain social systems, the intertwined systems of socio-cultural attributes and nature, and the discourse of the capital vs. resource approach in livelihood system studies. It expands on the livelihood

resources and highlights the importance of cultural resources in a mountain livelihood system. The second section clarifies livelihood opportunities and vulnerabilities, extreme environmental and geopolitical events, and their effects on livelihood security. The third section analyzes the complexities associated with livelihood change and provides case studies of selected households. The fourth section identifies the strategies that the local communities have innovated and adapted for survival.

4.1 Introduction: What is a Mountain Livelihood and How Do People View

Livelihoods?

My life centres around livestock and pastures. Most of the time in my life, I spent for herding livestock. I don't have much land from which I can earn. My time passed to try something else, but this is the only area of work that I rely to feed my family. (Ghulam Akbar, 53, shepherd, Natar Bala)

We are in a remote village and there was no way out to go for education; I had no money to afford education in cities; my father passed away when I was young and there was no one to take care of the family. In the village there is no paid work; I started going with tourist as a porter and earned enough money to feed the family. Now a few tourists are coming; I am surviving on my land and livestock. (Meherban Shah, 47, Shimshal)

There seems to be no future in keeping livestock; I took this trade in the past because I had no skills or education, and there was plenty of forest, pasture land.

Now forest is declining and the government is imposing fees and restriction to grazing livestock. Now keeping livestock is costlier; we cannot afford feeding them as fodder is decreased and our individual landholding is reduced. We will give education to our children so that they get good jobs. (Khadim Hussain, 57, Naltar Payeen)

We have high hopes of our new generations to take forward the legacy. Our village has limited opportunities, but we can still progress in the village. The challenge for the new generation is to struggle to meet the needs of their families; our expectation with our youth is that they will sustain our traditions and social responsibilities as the future leaders of the village and custodians of our resources. (Dawlat Amin, 62, Shimshal)

It is common to ask in the Wakhi dialect (spoken in Shimshal) “ChizyarkSar” and in Sheena dialect (spoken in Naltar Valley), “Jake komkar thaiga,” which mean, “What do you do?” The answer we get from the elderly village people is “Zameendori Saram” (in Wakhi) and “Zameendari” (in Shina), both meaning “work on the land.” The word “Zameendori” represents all the aspects of work that a person performs in the village. As one of the herders said, “My land and my livestock feed my family. I sell my livestock when I need money; I produce wheat, barley, and now potatoes give us more money. I have orchards from there; I get fruits” (Laili Shah, 58, herder, Shimshal).

Livelihoods in mountain areas are largely dependent on the natural resources (forest, pastures, land and water). Mountain communities employ a “multi-income”

livelihood system, combining agricultural and non-agricultural systems, including rearing livestock. Non-farm income from wage-earning employment and remittances from abroad contribute to household income in varying degrees (Kreutzmann, 1993; Cavassa, 2009; Mariscal et al., 2011; Schutte & Kreutzmann, 2011). The livelihood of local communities is primarily shaped by their access to the natural resources, which include forest and pasture resources, land, and water, and they appropriate them by applying indigenous knowledge and their experience of interacting with the natural environment (Jodha, 1998; Butt & Price, 1999). These communities employ mixed, complex activities that are associated with indigenous cultures, norms, and values to support their living. Thus, mountain livelihoods can be defined as communities' efforts in using their traditional knowledge and experiences to gain a living in the fragile environment of a mountain, in coping with stresses associated with poverty and environmental extremes, and in adapting to changes in social and climatic spheres.

The Shimshal community is a good example for understanding the relationship and interactions between people and resources (MEA, 2005; Kates et al., 2001), as well as the complexities of the mountain livelihood. Butz (1996) describes the Shimshali life as “trans-human pastoralists” symbolically intertwined with all of the landscape ecology. The community's affiliation with yak herding is embedded in their self-identity as “Shimshali,” and it is “a way of life” for the community that is highly devoted to maintaining their culture and hereditary resources, which their ancestors have passed on to them (Butz, 1996; PANOS, 2004; Khan et al., 2011; Cook & Butz, 2011). The yak is considered a source of pride associated with a sense of belonging to their hereditary

pasture land, and the traditions and celebrations which are linked with their herding practices are expressed in various forms of symbolism.

The community spends over five months with their livestock, during the long summer period, in the pastures of Pamir, where the women are the primary herders in a struggle to maintain their hereditary pasture resources and to meet their basic needs (PANOS, 2004). The practice of yak herding throughout the year in the rugged mountains provides the confidence of survival within the rugged mountain landscape (Khan et al., 2011). Their socio-religious festivals associated with renewing collective memory, passing down traditional knowledge, and celebrating new achievements provide hope for a future that is within the “pace of modernity in a rural landscape,” where their “lives will continue to adapt without the destruction of their unique identity” (Abidi-Habib & Lawrence, 2007, p. 3). The celebration of “Woolio,” the yearly yak race, symbolizes “eternal happiness” in Pamir pasture, and the “Kutch” celebration of returning from pastures with yaks, the wealth derived from the pastures in the form of livestock products, butter, other dairy products (Mirik, Qurut), and yak hair, symbolizes their successes through blessings from the almighty creator or God. The incense (leaves of juniper and Pistacia Khinjuk stocks), locally called “gal” and “gulgul,” is used to purify their bodies in their rituals with a view to symbolizing their affiliation with nature.

As Laili Shah (herder) describes:

Our herding in Pamir is essential because it is part of our tradition and history. It is a prestige and honour to keep our traditions and our rituals that connect us with the nature, and we feel rejuvenated and uplifted from the celebrations and rituals.
(Laili Shah, 58, herder, Shimshal)

As Musk (experienced female herder) describes:

Our several rituals are associated with herding in Pamir, on arrival to Pamir, in pastures we (women) perform a number of rituals - Mirgichig (purification) before starting any activities, and then the first product of the new season is sent to our families in the village, which is consumed in a special festival with thanksgiving and prayers. (Musk, female, 57, herder, Shimshal)

The narratives of the Shimshal community represent many other mountain communities and their intimate relationship with nature and natural resources.

4.1.1 The debate and discourse of the livelihood capital approach vs. resource approach.

There is extensive literature on livelihoods but very limited efforts have been taken to provide a concise definition of mountain livelihoods. Formulating a generalized definition of mountain livelihoods requires attention to the aspects of assets. Often the term “capital” draws upon an economic metaphor (DfID, 2000) and has ignored non-monetary assets, such as human health and well-being, social networks, culture, clean air and water, and biological diversity (DfID, 2000). The explanation of assets in the Sustainable Livelihood Framework includes: human capital (the education, skills and health of household members); physical capital (e.g., farm equipment or a sewing machine); social capital (the social networks and associations to which people belong);

financial capital and its substitutes (e.g., savings, credit, cattle, etc.); and natural capital (the natural resource base) (Carney, 1998; Scoones, 1998).

These assets are best expressed in terms of “capital” from an economic point of view. In consideration of the non-economic or non-monetary aspects of this so-called “capital,” and to avoid the functionalist approach, along with White and Ellison (2007), I would like to argue that the term “resource” is more appropriate for the analysis of livelihood characteristics. The use of the term “capital” portrays resources as stable, fixed categories of assets, and limits the relationship between resource use and user (White & Ellison, 2007). The existing categorization of the assets may not recognize the other functions, the use of resources and the relationships. It is important to understand the interlocking functions between assets (resources) and the aspects that mountain communities rely on for their livelihood well-being. For example, if we consider yaks only as a financial asset, because of their economic or market value, we would be ignoring the significant non-monetary values of the yaks that are embedded in cultural resources. Thus, the concept of livelihood resources is arguably a more appropriate tool than assets, especially in the context of traditional pastoral and agricultural societies.

4.1.2 Livelihood resources in the study area.

The categorization of livelihoods can be performed by various criteria; however, the utility and role of various types of resources that support livelihoods can provide more comprehensive taxonomical insights about livelihood assets. However, the complexity of interdependency and overlaps makes it difficult to develop a comprehensive classification of resources in terms of their uses. Based on my field work,

I attempted to describe the characteristics of resources that support the livelihood of the people in the study area in terms of their economic, social, and cultural utility (Table 4.1).

Table 4.1. Characteristics of Livelihood Resources in the Study Area

Resources (Assets)	Components
Physical Resource	It includes access roads, irrigation channels, agriculture land (cropland), grass land, fallow and shrub land.
Natural Resource	It consists of common land, water, glaciers, and biological resources such as herbs, pasture, and wildlife. The function of the resources may degrade or improve with the management practices in a suitable pasture land. It is a critical productive asset for mountain community.
Human Resource	It is directly related to the demographic size of the family, and plays a major role in the household economy. The availability of the number and quality of work force in the households determines the income. This can be determined by household size, number of working males (considering the study area – Naltar and Shimshal), the level of education, technical skills, and the state of health of household members.
“Social Capital”	It refers to local networks and community bondages based on kinship, clan and tribes; they are important assets in the mountain community. Social Capital refers to features of social organization, such as trust norms and networks that can improve the efficiency of society by facilitating coordinated actions (Putnam, 1993, p. 167). These include the sense of belonging within community and ability to trust and depend on neighbours and friends for help in times of need. It signifies the relationships that communities have built over the centuries both vertically and horizontally.
Cultural Resource	It is an important element of community that provides a sense of identity, sense of belonging, and tradition; the rituals symbolize “eternal happiness” and their affiliation with nature.
Financial Resource	It comprises savings in liquid form, financial assets, such as easily disposable assets, livestock, and trees, which in other senses may be considered as natural resources.

Source: Modified from DfID, 2003a.

4.1.2.1 Physical resource.

DfID defines Physical Capital as “the basic infrastructure and physical goods that support livelihoods” (DfID, 2003a, p. 42). They include infrastructure consisting of modifications made to the physical environment that help people to meet their basic needs and to be more productive. The communities in the study area own land that includes agricultural land and grassland (locally called *Shain*). The latter is a land type,

owned by individual households, and developed for fodder for livestock and fuel wood. Communities have developed these lands by constructing water channels stretching over several kilometers to irrigate them. Shrubby land (locally called *Chaash*, and *Gishee* in the Sheena dialect) is a common land for the community where community members take their livestock during winter. Another form of land is fallow land (Dass, unused land owned by individuals or the community).

In both study sites, there is a variation of land type. In Shimshal people have pasture land and grass land, but in Naltar Bala people do not have this land type. In terms of livelihood resource base, land (cropland) remains the main resource base. Having productive land (agricultural land) is considered a source of power for households in the village. The households who have large parcels of land are considered self-sufficient in terms of food supply. Since there is no other means of getting wheat or staples, agricultural land is the only option to grow food. Similarly, based on the amount of landownership, a household can decide on rearing livestock. With the trend of a rapid population growth, land is becoming fragmented due to divisions among the heirs. The overwhelming reliance of the local communities on land and livestock until the recent past is reflected in one of the respondent's comments:

As Aman describes,

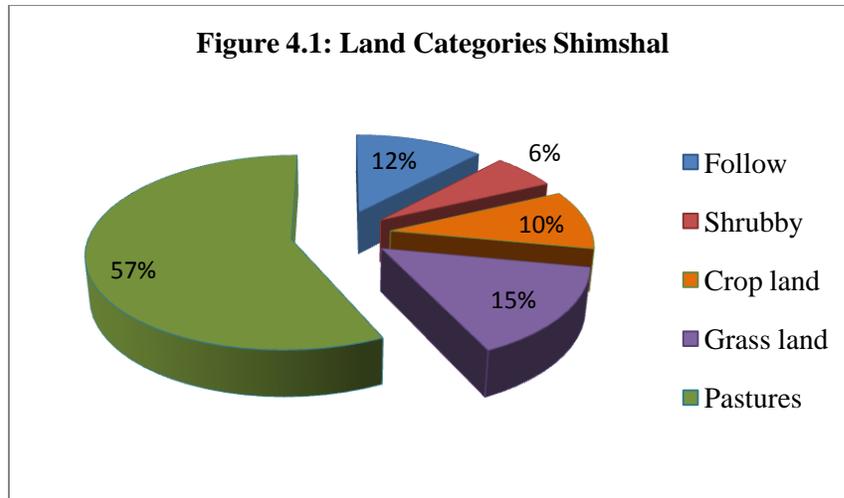
Our whole survival has always been on land and livestock; there were no means of getting food from outside. We used to work together to do the cultivation and harvesting. Now the trend is changing with the construction of road and the encroachment of machinery. (Aman Ali Shah, 53, Shimshal)

One of the trends in Shimshal and Naltar Payeen is that land can only be inherited by the male decedents and if there is no male decedent, the household member gets married again to have a male child. If there is no male child in the family, then the land goes to the brothers or cousins. In Shimshal, most of the marriages are arranged based on how much land the family owns. As one of the community member said,

Females don't get the land because they get married off to another family, but the land belongs to this family and she shares the land from the other family. There used to be a trend that people give hand of daughter to a family who has more land but that is changing now, people prefer educated persons with good jobs in private sector or government. (Karim, 28, teacher, Shimshal)

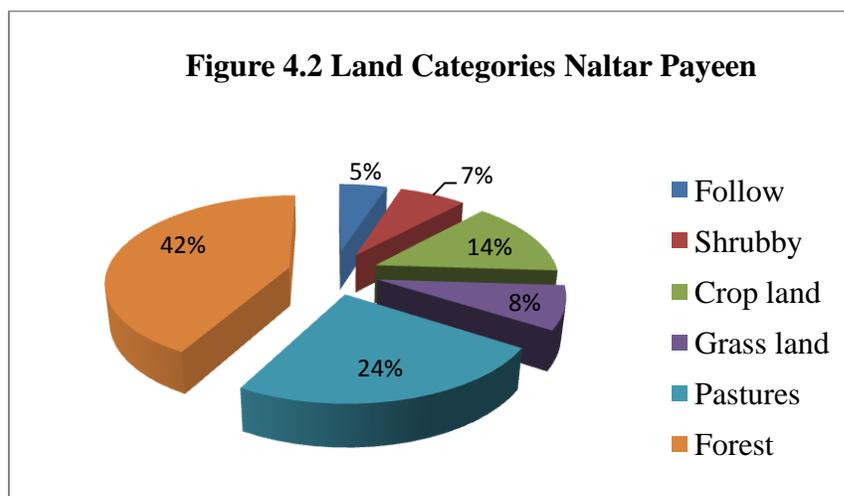
All households interviewed in the two main villages, Shimshal and Naltar, own some parcels of land. The average household in Shimshal owns 15-20 *kanal*⁴ (locally called Garbel) of cropland and 25-30 *kanal* of grassland. The distribution of land in Shimshal reveals that croplands and grasslands comprise 10% and 15% respectively, which they use for the agricultural production and supply of fodder for livestock (Figure 4.1). Pasture land (57% of land area) provides the main resource for livestock rearing.

⁴ A *kanal* is a traditional unit of land area in Pakistan equal to 20 *marlas*. In Shimshal, the term Garbel is used as equivalent to *kanal* (1/8 acre or 0.0505857 hectare) for measuring the land. Community using a thumb rule for calculating Kanal it is amount of seed you sow. It is very close accuracy of Kanal. Similarly for grassland, it based on the production of grass in a Kanal. Kanal equals exactly 605 square yards; this is equivalent to about 505.857 square meters, and in Naltar local people use *kanal* for land measurements.



Source: Field Surveys (V1, 2007), N=65

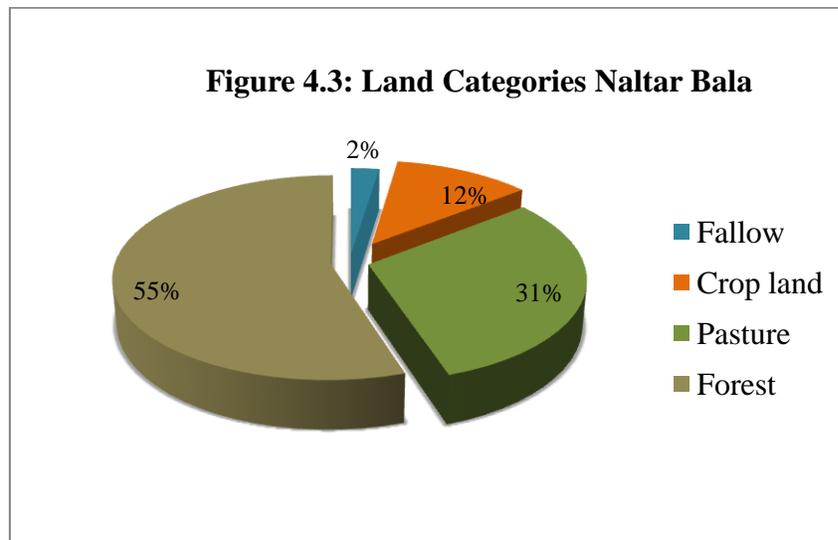
The distributional patterns of land in Naltar Payeen show that cropland (14%) and grassland (8%) can be attributed to a high dependence of the community on agriculture and fodder for livestock (Figure 4.2). The share of pastureland is 24% of the total land in Naltar. Communities here rely on pastures for rearing the livestock in the summer. In Shimshal, the percentage share of the fallow land is 12%, whereas in Naltar Payeen it is only 5%, and may be developed for agriculture.



Source: Field Surveys (V1, 2007), N=82.

In contrast to Shimshal, Naltar has a forest area that is under the control of the national Government of Pakistan. The percentage share of forest land is 42% of the total land. Notably, the level of participation of the local communities in the management of the forest is nominal, and they do not have direct access to the forest resources; these aspects are elaborated in Chapter 5.

The households in Naltar Bala own an average 10-15 *kanal* (0.52- 0.79 hectares) of cropland, without owning any grassland. In this area, 2% of the land is considered fallow. The distribution of land in Naltar Bala shows that the access of households to crop land (12%) and pasture land (30%) formed the bases of their dependence on agriculture and livestock (Figure 4.3). In Naltar Bala, 55% of the land is under forest cover, and administered by the national government authority.



Source: Field Surveys (V1, 2007), N=93

4.1.2.2 Natural resource.

The term natural resource gives a comprehensive meaning that includes the function, use and service of all natural elements, especially terrestrial and aquatic resources that are intricately related to the livelihood portfolios of the poor people. Natural resources are materials and components within the natural environment that are essential for sustaining life forms and also function as a base for the well-being of humankind. Based on their function in the environment, Ekins (2003) classifies natural “capital” into four distinct classes: 1) Source functions (food for humans and animals, fuel wood), 2) Sink functions (absorption of carbon and other waste, shade during hot months) 3) Life Support functions (maintaining ecosystems), and 4) Human Health and Welfare functions. Considering the functional element, one may value only a few attributes and give a monetary value to natural resources. But these elements may change with time and thus may become degraded. Recent research reveals that the rural poor live in areas of high ecological vulnerability and relatively low levels of resource productivity, and in these areas people rely more on natural resource endowments (Baumann, 2002, p. 4).

Natural resources such as forests and pastures play a crucial role in maintaining the livelihood system in most parts of the mountain areas. They provide multiple products, i.e. firewood, construction material, medicinal plants, and grazing fields (Hamilton, 2004; Heinen & Acharya, 2011). The abundance of natural resources and access to natural resources are directly related to livelihood functions and the sustainable use of the natural resource base.

In the following, I examine the cases of Naltar and Shimshal communities and their interconnectedness with the pastures in the surrounding regions to demonstrate that human dependency on natural resources for survival in mountain areas is inseparable since natural resources provide the basic means of survival in mountain livelihoods. In relatively geographically isolated areas like Naltar and Shimshal, the functions of natural resources are not limited to the socioeconomic backbone for the livelihoods of the dependent communities, but they are also linked with the spiritual aspects of these communities. In both study sites, the communities are heavily dependent on pasture resources for grazing activities performed for their livelihood.

4.1.2.2.1 Utilization of pasture resources through livestock rearing.

All households in the study area maintain livestock to meet their own requirements of meat and dairy products. Livestock includes cow, goat, sheep and yak herds, which provide support to various facets of livelihood. In Shimshal, they are employed for the transportation of goods as well as for riding, and are regarded as part of their culture to maintain the pasture resources. Livestock rearing is performed in a way so that the pasture resources are utilized fully and their sustainability is ensured.

In Naltar Payeen, the livestock is driven during the early summer months to alpine pastures at altitudes of 3,500 - 5,000 m and they return back to their place of origin after September. The rest of the year, when snow makes the alpine pastures unusable, the animals are grazed in valleys and lower sections of the mountain slopes. They are also stall-fed the tree leaves, hay and grass accumulated from pastures, grasslands, and agriculture fields. In this region, only male herders go to alpine pastures to graze their

livestock. Usually a group of 3-5 male community members (shepherds) take the livestock to alpine pastures. In Naltar Bala, the Gujar community performs the summer herding on an individual basis or in small groups. This practice is quite different in the Naltar communities than in the Shimshal communities.

In Shimshal, summer herding is led by the females, and children also join them in the herding practices. It is a unique practice; almost half of the village community goes to pastures by rotation for the grazing of their animals. In turn, they perform the herding activities. All the activities related to milking sheep and goats, and to making dairy products are performed by female groups; however, if needed, males share the responsibilities. The entire chain of dairy products, i.e. butter, qurut, cheese, is collected; an inventory of the products is maintained and ultimately distributed to the households based on the number of milking animals. The whole process is led by female groups. Males perform certain activities that include the tracking of animals, arranging of food and water for animals through clearing water channels, and transporting of goods to the village. The winter herding in Shimshal, however, is performed by the male members. I will further explain the aspects of pasture management as a commons through the traditional practice of livestock herding in Chapter 5.

In order to understand the aspects of pasture land as a natural resource, and its carrying capacity to support livestock herding, it is worth examining the details on the number of animals per village and the sources of fodder for the livestock. The Naltar Bala community accrues 67% of the fodder requirement from the forest and pasture (see Table 4.2); only 12% of the Naltar Bala households depend on agriculture land for fodder. The Gujar community, lacking in grassland, is more dependent than other communities on

forest and pasture resources for fulfilling the fodder requirements for their livestock. Therefore, the Gujar community keeps a higher stock of smaller animals (sheep and goat) compared to large animals (cows). The natural and institutional constraints together impose sanctions on increasing the number of livestock to many of the local community members in Naltar Bala. As expressed by one Gujar herder:

I don't have much land to keep more livestock to feed them in winter. In summer, I can take them to pastures but in winter I have to feed them and there are restrictions by government to get grass from the forest, so I cannot keep the livestock. (Akbar Wali, 43, Naltar Bala)

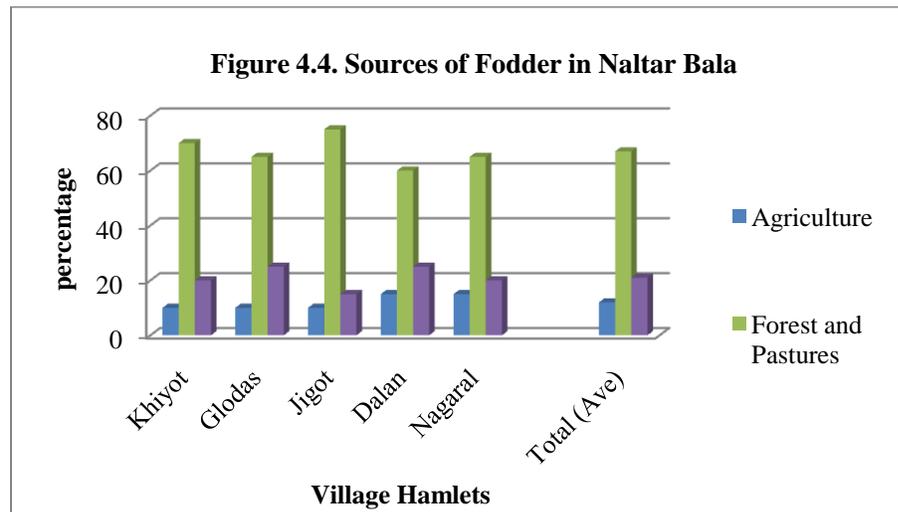
Table 4.2. Livestock and Sources of Fodder Naltar Valley

Naltar Valley	Number of Respondents	Livestock in the villages					Source of Fodder in Percentage			
		Sheep	Goat	Cow	Yak	Others	Agriculture	Forest Pastures	Grass land	Others
Naltar Bala										
Khiyot	18	190	78	15	-	11	10%	70%	-	20%
Glodas	24	335	130	20	-	8	10%	65%	-	25%
Jigot	22	226	175	32	-	9	10%	75%	-	15%
Dalan	18	289	163	22	-	4	15%	60%	-	25%
Nagaral	11	215	63	7	-	7	15%	65%	-	20%
Subtotal	93	1255	609	96		39	12%	67%		21%
Naltar Payeen										
Jafarabad	23	263	280	41	7	2	35%	45%	15%	5%
Mehdiabad	12	157	178	18	5	4	25%	55%	20%	5%
Mominabad	19	220	274	39	2	1	30%	50%	15%	5%
Roshanabad	13	166	148	19	1	2	45%	40%	10%	5%
Nasirabad	15	149	177	27	6	1	40%	35%	15%	10%
Subtotal	82	955	1057	144	21	10	35%	45%	15%	6%
Grand total	175	2210	1666	240	21	49				

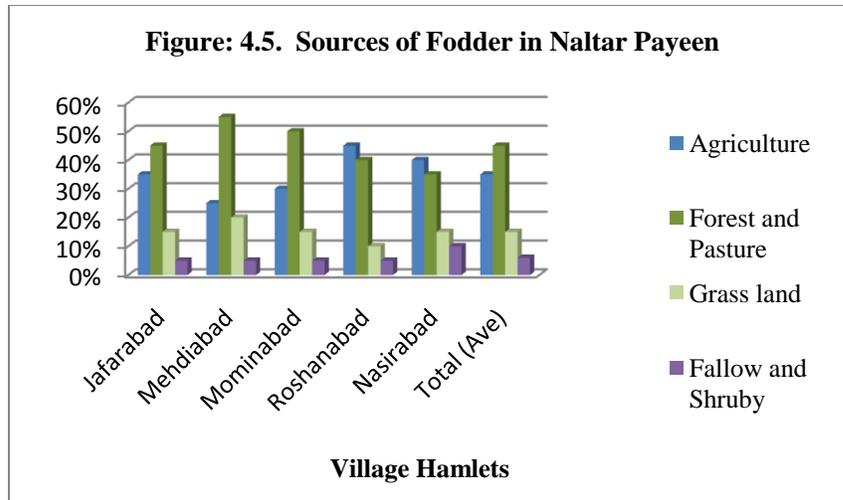
Source: Field Quarterly Surveys (Q1-Q4), 2007-2008.

Data contained in Table 4.2 reveal that the Naltar Payeen community extracts 45% of the fodder requirements from the forest and pasture compared to 67% in the Naltar Bala community (see Figures 4.4 and 4.5). This indicates significant variation between these two Naltar communities in their households' dependency for fodder on forests and pastures. Grassland areas contribute 15% of the total fodder requirement of the Naltar Payeen community.

My field data reflect that the Gujar community is more dependent on forest and pastures than the Naltar Payeen community. The Naltar Payeen community has a diverse livelihood portfolio for the land resource, compared to Naltar Bala. This may be attributed to the opportunities and constraints offered by the local social-ecological systems.



Source: Field Quartelry Surveys (Q1-Q4), 2007-2008, N=93.



Source: Field Quarterly Surveys (Q1-Q4), 2007-2008, N=82.

In Shimshal, the contribution of fodder from pasture alone is 66%. This includes both the summer pasturing as well as winter pasturing. Evidently, the pastoral resources contribute more to Shimshal community's fodder needs than to those of Naltar Payeen. Data presented in Table 4.3 reveal that Shimshal community procures 66% of their fodder requirements from the pasture resource compared to 45% in Naltar Payeen and 67% in Naltar Bala, respectively (see Figures 4.4 and 4.5). Grassland contributes 14% of fodder requirements; other sources include fallow lands (unproductive land locally called Dass) and shrubby areas that together contribute 12% to fulfilling fodder requirements.

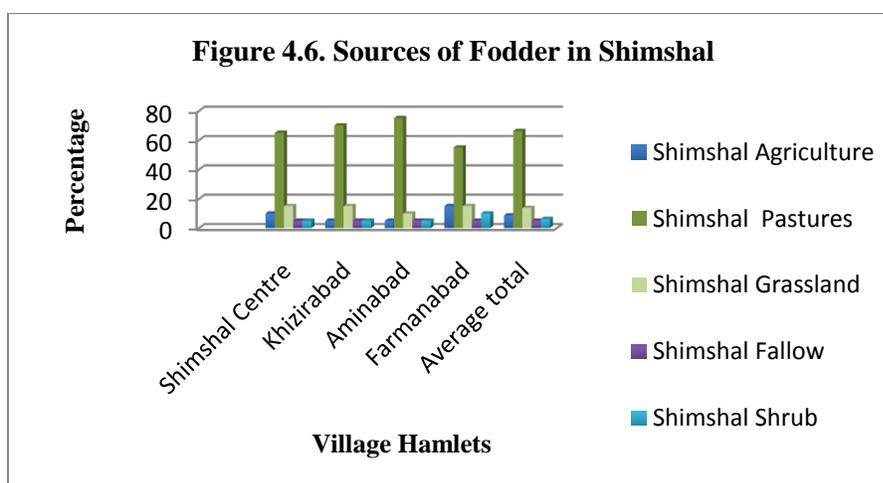
Concerns about the support from the pasture commons have been expressed in various forums by community members in Shimshal community. The restriction on grazing in Shimshal placed by the national government authorities of Pakistan has reduced their grazing area. This implies that such sanctions eventually will reduce the number of livestock and yak population, impacting the livelihood security adversely, unless the local economy becomes diversified and value adding sectors are expanded. One Shimshal community member expressed it in the following manner:

As we have small land holdings in the village to keep our livestock, our dependency is on pastures to fulfill the needs; the restrictions on pastures by the government will reduce the grazing area for our livestock, and our option in livelihood maintenance in these mountains will reduce and eventually our survival will be at stake. (Dawlat Amin, 62, village Shimshal)

Table 4.3. Sources of Fodder in Shimshal (Percentage Distribution)

Shimshal	Source of Fodder (average)				
	Agriculture	Pastures	Grassland	Fallow	Shrub
Shimshal Centre	10	65	15	5	5
Khizirabad	5	70	15	5	5
Aminabad	5	75	10	5	5
Farmanabad	15	55	15	5	10
Average total	8.75	66.25	13.75	5	6.25

Source: Field Quarterly Surveys (Q1-Q4), 2007-2008, N=65.



Source: Field Quarterly Surveys (Q1-Q4), 2007-2008 N=65.

4.1.2.2.2 Fuel wood collection.

Fuel wood is one of the main products that communities extract from the forest and pastures. The main sources of the fuel wood are: blue pine (*Pinus wallichiana*), edible pine (*Pinus gerardiana*), cedar (*Cedrus deodara*), *Salix* sp., birch (*Betula utilis*), and juniper species. However, some species of *Artemisia*, *Rosa* are used as fuel wood in Shimshal.

We have no electricity in our village; we need fuel wood for winter period. The rest of the year we can manage it from our own fields, but there is not much of fuel wood in our pastures, we get “mon” (*artemisia*) and chash (*rosa* specie.).
(Barkat Ali, 32, Shimshal)

The collection of these forest products takes place in mainly two quarters: April-June and July-September. October through March is the time when fuel wood collection does not take place in either of the project sites. During these colder months of the year, community members use the fuel wood collected earlier, i.e., during the other two quarters of the year.

4.1.2.2.2.1 Fuel wood collection in Naltar.

As can be seen in the detailed data presented in Table 4.4 on fuel wood collected quarterly and the category of the harvesters, it is primarily the adult males who are responsible for fuel wood collection in Naltar Payeen. Only a few females participate in fuel wood collection with their male household heads (Figure 4.7). The total fuel wood collected in one year by both the villages, Naltar Bala and Naltar Payeen, from the forest

and pastures was 1092.85 Mund⁵ (43, 714 kg), worth 131,280 Pakistani rupees (US \$1458). This signifies that fuel wood collected from the forests and pasture commons meets a considerable portion of the energy needs of the local communities in northern Pakistan.

Table 4.4. Volume and Monetary Value (in Pakistani Rupees) of Fuel Wood in Naltar

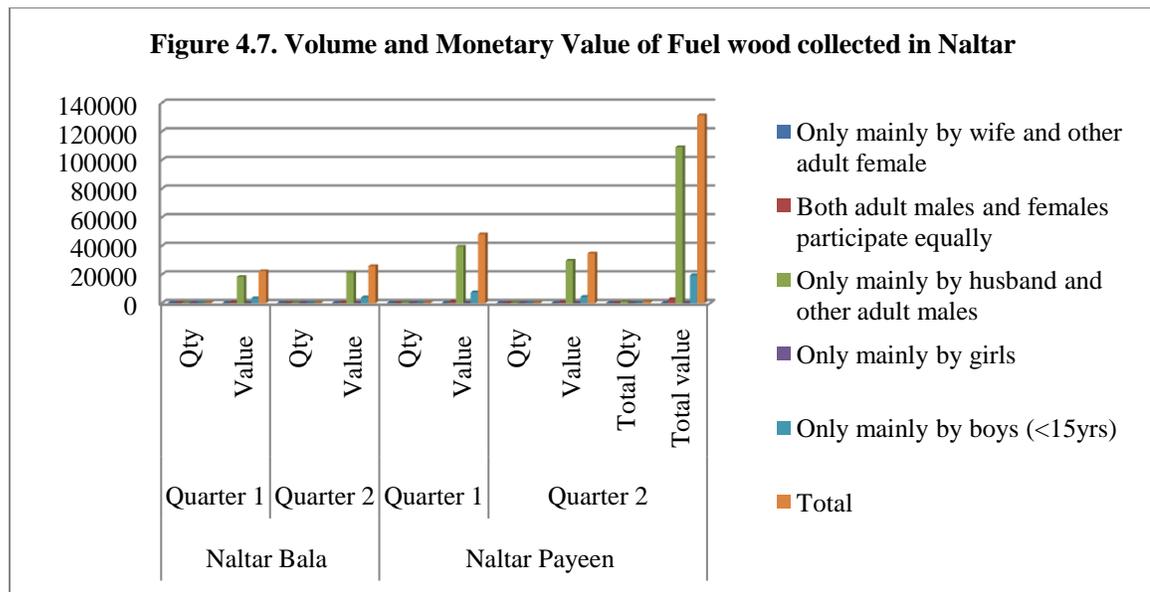
Collector	Naltar Bala				Naltar Payeen				Total Qty	Total value
	Quarter 1		Quarter 2		Quarter 1		Quarter 2			
	Qty	Value	Qty	Value	Qty	Value	Qty	Value		
Mainly by wife and other adult female	0	0	0	0	0	0	0	0	0	0
Both adult males and females participate equally	5	600	4	480	10	1080	5	600	24	2760
Mainly by husband and other adult males	153	18360	178	21370	329	39530	248	29760	908.00	108960
Mainly by girls	0	0	0	0	0	0	0	0	0	0
Mainly by boys (<15yrs)	29	3480	34	4080	63	7560	37	4440	163	19560
Total	187	22440	216	25930	402	48170	290	34800	1095	131280

Source: Field Quarterly Surveys (Q1-Q4), 2007-2008, N=110 (45 Bala and 65 Payeen).

The collection of fuel wood in Naltar Payeen is the responsibility of male members of households but occasionally female members participate in the fuel wood

⁵ *Mund* is the unit for fuel wood used in both the study sites and is equivalent to 40 kg. The unit price per *Mund* was 120 Pak rupees in Naltar Payeen and Naltar Bala, but in Shimshal the price was 250 per *Mund*.

collection with the adult male of the family or with their husbands; females are culturally prohibited from collecting fuel wood alone in Naltar Payeen. However, in Naltar Bala, girls under 10 years of age perform fuel wood collection with a male member from the same family. However, it was found that, occasionally, female household members collect fuel wood alone from the forest and pasture commons. The seclusion of adult women from men outside the family varies between communities. During my field visit in Naltar Bala, I could interact with female household members to ask if I could meet the male member in the house. But in Naltar Payeen, outsiders are not allowed to interact with female members of households or with women’s groups. These types of sanctions against women have a direct bearing upon fuel wood collection from the commons.



Source: Field Quarterly Surveys (Q1-Q4), 2007-2008, N=110 (45 Bala and 65 Payeen).

4.1.2.2.2.2 Fuel wood collection in Shimshal

Since there is no forest area in and around Shimshal, a great variation in the type of fuel wood was recorded during the field study. Shimshal community members collect

Salix sp., birch (*Betula utilis*), juniper species, Artemisia Sp., and Seabuck thorn. In this region, most of the fuel wood collection takes place mainly in two periods: i) April-June, and ii) July-September. In these cold months communities use their stored fuel wood, which they collected during the summer months. Shimshal community collects fuel wood from their own grassland by trimming their trees. During the colder months of the year, usually the community uses the stored fuel wood collected during the other two quarters of the year.

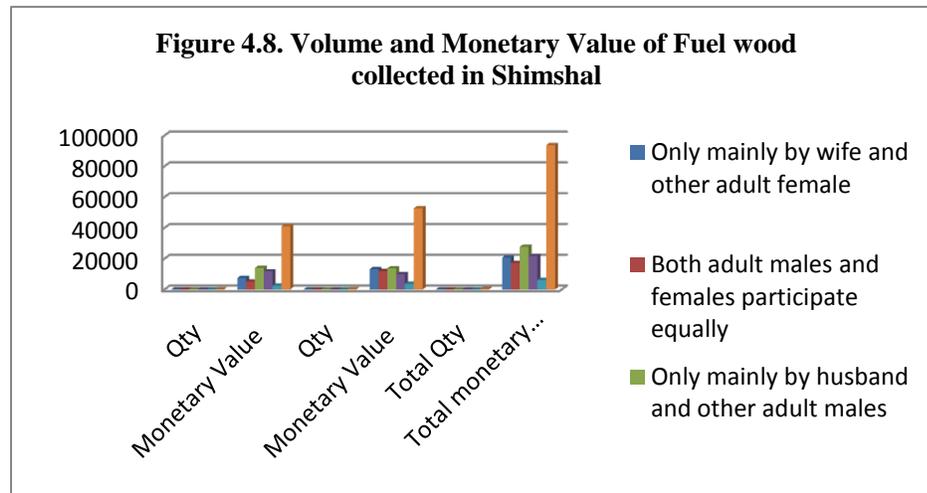
In Shimshal, both males and females are allowed to collect fuel wood from the commons. In most cases, female members collect fuel wood in this region, which is quite different from Naltar Valley, where only males collect the fuel wood, with few exceptions. There is no restriction on female participation in any outside household activity in Shimshal community. During my visits to the households in the Shimshal area, I could freely interact with female members of households, and in some cases the whole interview was conducted with a female member of the household.

The unit price per *Mund* was 250 rupees in Shimshal. The price of the fuel wood was more than 100% higher than the price in Naltar because of the absence of forest woods. As can be seen in the data presented in Table 4.5 on the volume and value of the collected fuel wood as well as the category of collectors in Figure 4.9, the total fuel wood collected from the forest and pastures was 15,000 kg, an average of 230 kg per household collected from the pastures, and worth 93,750 Pakistani rupees during a one-year period.

Table 4.5. Volume and Monetary Value (in Pakistani rupees) of Fuel wood in Shimshal

	Shimshal				Total Qty	Total monetary value
	Quarter 1		Quarter 2			
	Qty	Monetary Value	Qty	Monetary Value		
Mainly by wife and other adult female	30	7,500	53	13,250	83	20,750
Both adult males and females participate equally	21	5,250	48	12,000	69	17,250
Mainly by husband and other adult males	56	14,000	55	13,750	111	27,750
Mainly by girls	47	11,750	40	10,000	87	21,750
Mainly by boys (<15yrs)	10	2,500	15	3,750	25	6,250
Total	164	41,000	211	52,750	375	93,750

Source: Field Quarterly Surveys (Q1-Q4), 2007-2008, N=65.



Source: Field Quarterly Surveys (Q1-Q4), 2007-2008, N=65.

4.1.2.3 Human resource.

The human resource refers to the total capability embodied in individuals and reflects the stock of individually possessed knowledge, experience, competencies, education and skills that help them to increase their personal, economic and social well-being (Helliwell, 2001). It entails the capabilities of individuals to shape families, groups

and nations by their inventions, knowledge and concepts, thereby making the world a better place for all beings (Bebbington, 1999; Malhotra, 2000). The factors used to categorize the human resource are the education, skills, knowledge (gained through personal experience or traditional knowledge transmitted from generation to generation) and competencies combined with the social standing of individuals.

To understand mountain livelihood issues, it is important to have a grasp of the “human dimensions of mountain development” (Parvez and Stephen, 2002). Education is one of the main indicators for measuring the human capital; this includes the percentage of students having or working towards advanced degrees, and the equal opportunity for citizens to wisely utilize their inherent human resource to generate greater human capital (Malhotra, 2000). The significance of education, both formal and informal education, lies in improving the capabilities of individuals established by current thinking, thereby reducing illiteracy and addressing the lack of skills; these have a correlation with poverty reduction. Reflecting upon the changing trends in the human resource and local conditions, one of the community members said:

There seems to be no future in keeping livestock. I took this trade in the past because I had no skills or education, and there was plenty of forest, pasture land. Now forest is declining and the government is imposing fees and restriction to grazing livestock. Now keeping livestock is much more costly. We cannot afford feeding them as fodder supply has decreased and our individual landholding is reduced. We will give education to our children so that they get good jobs. (Khadim Hussain, 57, Naltar Payeen)

This quote validates that the importance of education and skills is recognized even in remote areas with a low level of education. An analysis of the human resource is vital for mountain livelihoods because the nature of agricultural and pastoral activities inevitably comprises a broad mix of knowledge covering traditions, skills, and knowledge of seasonal variations, pastoral resources and pastoral activities, and an understanding of the associated risks. It plays a vital role in the household economy, and the availability and quality of the human resource determine the household income. This can be determined by the household size, number of working males (considering the study areas, Shimshal and Naltar), level of education, technical skills, and health of household members. In the case of Shimshal community, the community tends to invest more in the education sector than the Naltar communities. By linking the yak economy with education, one of the respondents in Shimshal has expressed this in the following words:

Our investment in education is as vital as the investment in yak. The revenue from yak is diverted to education. By selling one yak I can educate my one child in down country. Otherwise, our limited resource will not allow us to take the burden of education expense. (Mohammad Gonic, 69, Shimshal)

In the case of Naltar Payeen community, the community members tend to invest more in education to secure non-agricultural jobs. The literacy rate of Naltar Payeen is 38%. In the primary school enrolment, 62% students are boys while 38% are girls. The community members have recognized an increasing trend in the attendance of girls in Naltar Payeen village. However, the ratio of female education in secondary and higher

secondary is negligible among the surveyed households in Naltar Bala (Table 4.6). The total percent of females receiving education is 12 in Naltar Bala. It is evident from the data that the significance of education and non-agricultural skills are recognized as important for livelihood security and household economic development across the remote mountain communities. However, many community members in Naltar Payeen still face some restrictions that stem from the prevailing social values and ideological or religious belief systems. In Shimshal, girls' education is considered important, and all the school age girls were enrolled in schools. Among the households studied, the percentage of students in them was 48 for females and 52 for males, implying a considerable female participation in Shimshal.

Table 4.6. Households' Level of Education

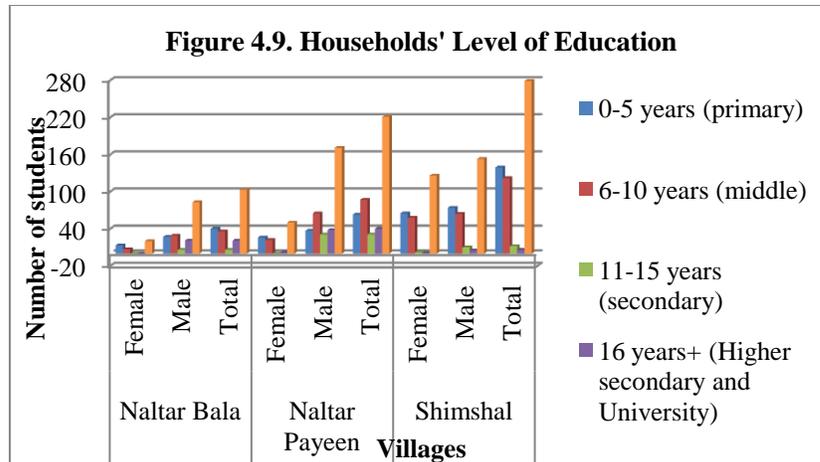
Number of Years in School	Naltar Bala			Naltar Payeen			Shimshal		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
0-5 years (primary)	13	27	40	26	37	63	65	74	139
6-8 years (middle)	7	29	36	22	65	87	58	64	122
9-10 years (secondary)	0	6	6	0	31	31	2	10	12
10 years+ (Higher and University)	0	21 ⁶	21	2 ⁷	38	40	11 ⁸	15	26
Total	20	83	103	50	171	221	126	153	279

Source: Household Surveys (A1) 2007, N=65.

⁶ In Naltar Bala all of the male students completed their 10 grade but had no opportunity for higher education.

⁷ In Naltar Payees, two ladies were married to members in Naltar Payeen and they had 12th grade of education.

⁸ In Shimshal, some female students were studying in Hunza Aga Khan Academy, but males were between 12th grade and master's degrees.



Source: Household Surveys (A1) 2007.

At the time of my field study, there were a total of nine schools in Naltar Valley and six in Shimshal (see Table 4.7). All the schools are owned and operated by the government except the Al-Hayat and Nawabahar private schools, which were established recently by the communities. This is indicative of an increasing demand for high quality education that can offer better education and training of skills than the government-run schools.

Table 4.7. List of schools in the study area

Village	S.No	Name of School and Location
Naltar Bala	1	Al Hayat Public School
	2	Govt. Primary School for Girls
	3	Govt. Middle School for Boys
Naltar Payees	1	Govt. School for Boys, Mominabad
	2	Govt. Primary School for Girls, Mominabad
	3	Govt. School for Boys and Girls, Jafarabad
	4	Public School for Boys and Girls, Mominabad
	5	Primary School for boys and Girls Roshanabad
	6	Govt. Primary School for Boys and Girls, Mehdiabad
Shimshal	1	Government middle school for boys
	2	D.J Middle school for girls, Shimshal Centre
	3	Rotary Club School, Khizerabad
	4	Social Action Primary School Aminabad
	5	Social Action primary School Farmanabad
	6	Nawabahar Secondary School, Shimshal Centre

Source: Village Level Surveys (V1) 2007.

4.1.2.4 Social capital.

I would not spend my six months in the pasture grazing the livestock of the community if I did not have the trust in my community in case of emergency, and my neighbour is the first person to help my family. Even in my absence, I feel like I am there in case of any mishap. (Rehmat Ali, personal interview, Shimshal, 2007)

Social capital in the mountain areas is perceived as an essential and invaluable resource that reflects their trust, belongingness, respect, responsibilities, and social harmony in a community (Pennar, 1997; Pretty & Ward, 2000). Social capital refers to features of social organization, such as trust norms and networks that can improve the efficiency of society by facilitating coordinated actions (Putnam, 1993, p. 167). It is vital to the communities where institutional support systems are underdeveloped or not developed at all, and their reliance on the safety net for coping is imminent. It is also very contextual and differentially owned by the members of a society, thus producing dissimilar outcomes for different individuals in different places (Olsson et al., 2004; Ostrom, 2005; Pretty, 2003; Pretty & Smith 2004; Bodin & Crona, 2008).

Social capital is more beneficial in communities with well-established traditions, norms, and values. It manifests itself, for example, in the survival and coping strategies that the communities undertake in the face of extreme vulnerability (Rasmussen & Parvez, 2002). The initiative to build the physical infrastructure (water channels, roads, self-help school buildings, management of natural resources) collectively and maintain the infrastructures clearly demonstrates the social capabilities and the inner strength of a community.

Shimshal community sets an example in dealing with extreme geophysical vulnerabilities through building strong social bonds and acting collectively in the interest of the village. Shimshal community belongs to the Ismaili Sect of Islam, and community service is one of pillars that community adheres to. The Shimshal community has teams of volunteers, both male and female, and Boy Scouts and Girl Guides dedicated to helping the community in case of any misfortune.

An important aspect of the mountain livelihood is the joint family system that unites families together. Generally, families are dependent on each other, and the sharing of resources, including cash and other assets, is common in the joint family system. The main purpose to living in the joint family system is an intention to share the stresses and cope together with the externalities, e.g., to reduce the burden of the higher cost of living through sharing; avoid the additional costs of building a separate house; avoid the fragmentation of land and labour; and share the household-level water distribution tax and other financial resources. Generally, these isolated communities have developed a system of “collective work,” known as “rajaki” in local terms, which is appropriate for isolated areas where external support is almost non-existent. The purpose of the collective work imposed by the community is to maintain the existing water channels, roads or pathways that all the community members enjoy, or to undertake any new construction that will benefit the community as a whole (Photo 4.1). That could be an educational building, a religious centre, or a health centre where the community shares the cost and benefits equally.

Developing a viable social capital demands a set of rules to govern. Therefore, in both Shimshal and Naltar, the community has formulated some rules to be strictly followed by all households:

- 1) Presence and active participation in collective work, “rajaki,” whenever called on; this does not apply to widows or households with a female head.
- 2) In case of the absence of any household participation in “rajaki,” they are liable to pay in cash or kind so that compensatory workers can be arranged (e.g., food to the workers).
- 3) In case of not meeting rules 1 and 2, the household may be restricted from using the resource or gaining benefits from them.



Photo 4.1. Community collective work

Source: Photo Pamir Times



Photo 4.2. Community rituals and celebration

Source: Photo by Pamir Times

4.1.2.5 Cultural resource.

An important element and part of life of people in mountain communities is the culture that provides a sense of belongingness, the traditions and the rituals that symbolize “eternal happiness” in mountain communities. The traditional culture reflects values, beliefs, ideas and knowledge systems that the societies use to experience their world in a mutually meaningful manner (Nanda & Warms, 2007).

In recent literature, cultural resources have been given greater significance as an integral factor of development processes and strategies (Harrison & Huntington, 2000; Daskon & Binns, 2009), and therefore, one can logically argue that understanding cultural values may bring reconciliation of disconnection between societies. A key characteristic of the culture is the “generational-transformation of knowledge, beliefs, values, customs and norms” practiced in these communities (Daskon & Binns, 2009, p. 497). For most communities, belief systems reflect their way of admiring life and spiritual connection with nature and/or “God,” which helps them to heal spiritually in times of sorrow and crisis.

Community members seek inner peace by removing themselves from worldly issues and pain through the practice of rituals. The rituals manifest their conformity to spiritual connections and celebrations that rejuvenate their inner soul. All the activities associated with them represent their connection and association with nature, and they become part of the traditions of the community (Photo 4.2).

These activities have a strong link with their daily life and livelihood in general. An example was given to me by Musk (female herder) during my field work, in which she described:

Our several rituals are associated with herding in Pamir. On arrival to Pamir pastures, we (women) perform a number of rituals: Mirgichig (purification) before starting any activities and then the first product of the new season is sent to our families in the village which is consumed in a special festival with thanksgiving and prayers. (Musk, female, 57, herder, Shimshal)

Shimshal yak herding practice is a reflection of the community's cultural values, and their affiliation with yak herding is symbolic. The self-identity as "Shimshali" captures the belongingness and pride of the community, and the herding practice is blended with their socioeconomic, spiritual and cultural needs, and is fundamentally reflective of "a way of life" for the Shimshali and Naltar communities (Butz, 1996).

There are two main elements of the Shimshal yak herding practice:

- 1) The intertwined cultural value and practices through rituals and their association with livelihood through the gathering of yak products in the form of butter, qurut and yak hair; and
- 2) The aspects of common property rights of pastures and the sustained maintenance of these pastures, where the yak is used as a symbol for controlling their hereditary resources. As appropriate, I will analyze these aspects in Chapter 5.

The mountain communities consider the yak as a source of pride associated with their hereditary pasture land. Celebrations that are linked with their herding practices reflect their traditional values, beliefs and culture; these types of cultural affiliation

cannot be disconnected from their life (Butz, 1996; PANOS, 2004; Cook & Butz, 2011). Shimshal community celebrates a number of rituals, but the most conspicuous one is the return from the pastures, locally known as “Kutch.” The important aspect of the ritual here is thanking “God” for the gifts from the hereditary pastures in the form of wealth, the newborn yaks, sheep and goats, and dairy products such as butter, qurut, and cheese. Underlying these rituals is the community value embedded in their culture to affirm their affiliation with nature. In this context, the economic values get overridden by non-monetary considerations. The events in which communities slaughter yak for cultural celebrations represent their cultural value. If they considered only the monetary value of yak, they might not consider sacrificing the yak.

4.1.2.6 Financial resource.

The DfID Livelihood Program defines financial capital as “the financial resources that are available to people and which provide them with different livelihood options” (DfID, 1999, p. 27). These include savings, credit, insurance and pensions, remittances, welfare payments, grants and subsidies. In the absence of institutions and services, i.e. credit unions, pensions or insurance, communities do reinvest in other forms of exchangeable material assets (Nayak, 2011). In Shimshal, I found the co-existence of both formal and traditional financial institutions, and a trend of weakening the traditional way of sharing capital in mountain communities by the formal financial institutions (credit unions, banks or insurance schemes) was apparent. Where formal institutions are absent, communities have developed mechanisms of granting loans based on their trust of each other. However, such arrangements are not based on gaining profit or interest;

rather, it is rooted in the intention to share capital with each other. In such arrangements, it is likely that the person who borrowed the money may not be able to return the money in time, and still may not be penalized, due to a compassionate understating of his/her condition. In the case of formal institutions, for example, a bank, the loan would have been secured by the money from the collateral, so the failure to pay back in due time leads to forfeit of the house, land or another asset.

As stated above, based on my direct field observation, I would like to argue that the expansion of contemporary financial institutions is threatening the traditional notion of sharing financial resources within communities, which they have built and sustained over centuries. With the addition of these new financial institutions, attracting poor communities towards a credit system may bring detrimental effects to their economic system. It would be easy for them to borrow money, but to return the principal with interest to the bank would be very challenging. Communities with low education and with meagre financial resources maintain a very low material standard, and a bank loan may assist him/her to improve the house condition but the associated stress of the loan may have adverse health effects (Mahmud, 2008; Sandberg 2012).

In small mountain communities, the perception of an individual suffering from debt burden among the community members could bring about new stress, and could be detrimental to personal health. In such small villages, financial information is very transparent, where everyone knows each other and their financial conditions. In such circumstances, living with a debt burden is not easy. As explained by one of the respondents of my survey:

It is acceptable with my community if I don't have a big house, or if I am living in a one-room house; people talk behind if I built a big house and I am in debt for a bank for the construction of a house that I would not be able to pay. Thus, this does not remain a personal financial issue; rather, it becomes a social issue. (Karim, 35, Shimshal)

I would like to argue that the application of the concept of financial resources in discrete forms in the mountain social context has limited scope, and it is often difficult to separate financial resources from cultural resources. In the case of Shimshal, if one considers yaks as a financial asset because of their economic value, it would be too narrow and erroneous. This is because a yak offers numerous non-monetary values: for example, it is socially prestigious to have a yak herd, and it provides a means to have control over ancestral pastures. Although the mountain communities are blessed with social as well as cultural richness, they face unique types of crisis that are sometimes unavoidable.

4.2 Vulnerability and Crises

Mountain livelihoods are diverse, and continually need to adapt to change. Hence, livelihood strategies are dynamic but fragile (Ellis, 2000; Tao, 2009). Such livelihood strategies are shaped by several factors, which include access to and control of natural resources, and cultural and social capital (Bebbington, 1999; Haan, 2000). External threats to mountain livelihoods are climatic extremes, market failure or turbulence, geophysical disasters, and international events. Mountain dwellers' internal coping

capability is determined by the assets they possess, amount and quality of food stored, and the support they receive from family or the community (ICIMOD, 2011). Vulnerability is a constant reality in mountain communities because of the terrain (critical slopes, danger of landslides, susceptibility to floods), seasonality (short period for growing their crops), high cost of basic goods caused by remoteness (uneven prices compared to cities or towns), and lack of alternative sources of income, which singly or collectively impact the family's well-being and livelihood (Hassan et al., 2005).

Vulnerability is the degree of exposure to risk, shocks, and stress, and proneness to food insecurity (Ellis, 2000), environmental extremity, and social inequality and injustice (Ribot & Norton 2010). There are various forms of inherent vulnerability that are rooted in natural systems and geographically destined and others that are created by socio-culture standings (Cutter et al., 2003). Whereas “physical exposure” refers to the susceptibility of tangible resources to extreme geophysical events (Smith, 2004), “social vulnerability” is defined as “a product of social inequalities those social factors that influence or shape the susceptibility of various groups to harm and that also govern their ability to respond” (Cutter et al., 2003, p. 9). Both types of vulnerability deserve attention in analyzing the dynamics in the mountain regions. In the following, I will examine both the physical exposure-related vulnerability of the study areas as well as the social vulnerability of these communities to international events and their socioeconomic impacts.

4.2.1 Nature-triggered extreme events: Landslides, droughts and floods.

Gilgit-Baltistan (formally known as Northern Areas), including its capital, Gilgit, lies in a seismic zone, and the occurrence of earthquake tremors is common in the region. The earthquakes of 1972, 2002 and 2005 caused colossal damages to life and property in the areas of Muzafarabad, Kashmir (Khan & Khan, 2008). In the past, Shimshal community faced three sets of hazards and each had its important cultural dimensions. Shimshal is a flood plain, surrounded by several streams and glaciers, so the blockage of streams due to the advancement of glaciers poses a significant threat to the permanent agricultural settlements along the flood plain, and transportation infrastructure (road) gets swiped out for weeks and disappears (e.g., bridges). As per the community discussions, in the early 1960s the glacial dam burst, and the homes in the Center Shimshal were swiped away, much agricultural land was destroyed, and several people died. In the rebuilding of the settlement, scattered houses were rebuilt, partly due to the land on which the original houses had stood was washed away, and partly to de-intensify the risk of subsequent glacier dam bursts. Also, due to their fear of new events, the community keeps at least a year of “wheat stock” in their houses.

Aside from the young geology and fragile soil type of the mountain ranges, accelerated deforestation, driven by the public policy of generating revenues and corruption among the public officials, is a major cause behind the increased incident of landslides. This trend will continue to adversely impact the surrounding landscape since the forest cover is shrinking by 3% annually (Khan & Khan, 2008). Moreover, extensive explosive blasting along the KKH (Karakorum Highway) during and after its construction, and frequent earthquakes have caused cracks in the mountains. The NAs

(Northern Areas), host to the largest glacier concentration outside the polar zones and regular seasonal snowfall, are prone to avalanches. A study conducted by the WAPDA (Water and Power Development Authority) in the year 1988-89, under the snow and ice hydrology project, identified the potential avalanche pathways. Delayed winters and a sudden rise in rains have resulted in excessive water flows in Gilgit, Ghezar, and Astore. From December 2004 to August 2009, floods affected as many as 91 families, including 304 persons in the NAs (Planning Department, 2010).

The Naltar and Shimshal valleys are considerably fragile and vulnerable to geophysical and hydro-meteorological hazards and risks. Both the villages are prone to climate change-induced hydro-meteorological hazards such as floods, avalanches, cold spells, droughts, landslides, and falling rocks. Such hazards have been striking the valleys quite frequently and indirectly affecting the lives and livelihoods of the dependent communities, and the fragile bio-physical environment. Heavy snowfall in winter increases the risk of avalanches, and during summer, the risk of flash floods considerably increases due to the erratic melting of ice upstream (WWF, 2009). These natural phenomena exert stress on communities irrespective of class, ethnicity, age and gender. Other stresses include potential threats to livestock from predators, the stress of crop failure due to seasonality, and climatic variation, i.e. more rains at the time of harvesting wheat or early cold waves that lead to serious damage to plants. The cumulative impacts of cross-scale stresses imply that households are pushed to a threshold point of livelihood insecurity. Key questions are how different households respond to these vulnerabilities and crises and what are the mechanisms they have developed to cope with these stresses. In the next sections, I will examine the coping mechanisms in the study communities.

4.2.2 Human-induced crises and decline in tourism.

The event of 11 September 2001 has changed the pattern of global tourism throughout the world (Goodrich, 2002). In response to the event, tourism has drastically decreased to “so-called” 28 terror destinations, as identified by the USA State Department, including Pakistan (Gregory, 2004). The situation in Pakistan further deteriorated following the US declaration of the global “war on terror” and the ensuing invasions on Afghanistan and Iraq. With Pakistan as a partner, most of the tribal areas mentioned above came under military operations, with bomb blasts and suicide attacks, particularly in the capital city of Peshawar. Such insecure geopolitical turbulence deterred the inflow of foreign tourists (Rehman et al., 2009). As a result, within Pakistan, other regions were avoided and perceived as destinations of high risks; these included areas like Chitral and Gilgit-Baltistan, formally known as the Northern Areas of Pakistan. Rehman et al. (2009) refer to this phenomenon as “imaginative geographies” that have been portrayed by the media as regions (for example northern Pakistan) of violence and conflicts.

Ironically, the Northern Areas of Pakistan have been considered in a similar manner as areas such as Dir, Kohistan, Swat and other tribal areas, even after being entitled as a separate entity as Gilgit-Baltistan, the fifth province of Pakistan. The Northern Area of Pakistan was a separate entity that included Gilgit, Baltistan, Ghizer, Diamer and Ganche. However, this region has been amalgamated with areas such as Dir, Kohistan, Swat and other tribal areas, where the conflict existed. The region of Gilgit-Baltistan has further suffered the decline in the tourism industry because of the misleading information portrayed in the media. US media and secret agency officials

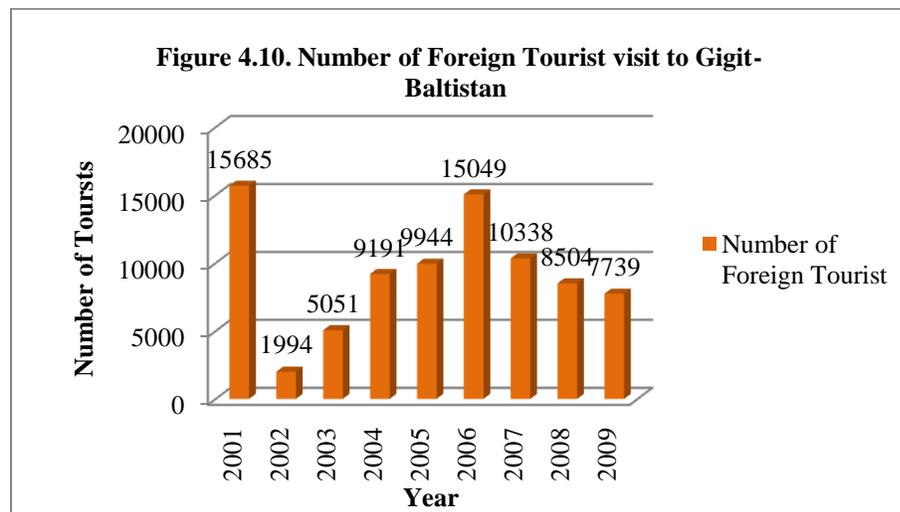
were tracing the whereabouts of Osama Bin Laden in the Hindu Kush in the Karakorum (Faizi, 2009; The News, 2008; Yusufzai, 2008a, b). Such news items are printed or telecast at the beginning of the tourist season in this region. According to Rehman et al. (2009, p. 9):

The residents of Skardu and its adjoining areas, whose livelihood depends mainly on tourism activity, have been taken aback by media reports about Osama Bin Laden's likely presence in the area. The report, which these people term "ridiculous," has been carried by UAE-based TV channel Al Arabia and picked by many other media outlets at a time when mountaineering and trekking season is about to set in.

The creation of this image of a risky region has resulted in the cancellation of numerous visits by tourist groups and individuals. According to the respondents of my field surveys, the tourism sector in these areas has suffered severely. The analyses of the time series data from 2000 to 2007 on the tourist inflow to Gilgit-Baltistan reveal interesting patterns. Variation can easily be correlated with national and international political events occurring outside the area.

In 2001, a maximum number of 15,685 of tourists visited the region. The 11 September 2001 terrorist attack in New York, USA significantly changed global tourism. The ripple effect of the event was felt in all parts of Pakistan, yet more severely in the northwestern and northern parts of Pakistan. Gilgit-Baltistan was affected badly by the steady decline in tourist numbers. The number of tourists declined by 87.28% in 2002. In the following years, there was a gradual improvement until 2006.

In the face of a declining trend in tourism, the Government of Pakistan has to take some initiative to rejuvenate the tourism industry. The year 2007 was declared as “Destination Pakistan Year” by the government as part of a campaign to attract an increasing number of tourists. However, such an initiative had little impact in the northern areas as the data for Gilgit-Baltistan reveal a continuous decrease in the number of foreign tourists following 2006 (Figure 4.10).



Source: Tourism Department Gilgit 2011.

In 2008 and 2009, the majority of tourists came from China and Japan. It is apparent that the number of Western tourists declined drastically; however, there were a few tourists from other countries. “We used to have more Western tourist (US, British, and France) before but now very few of them are coming,” Karim (tourist guide, Hunza), a local resident stated during my field study.

Table 4.8. Top Visitors by Country of Origin during 2008-2009

Top Visitors by Country During 2008			Top Visitors by Country During 2009	
S.N	Name of Country	Total	Name of Country	Total
01	China	1839	China	1597
02	Japan	888	Japan	406
03	Kenya	600	USA	135
04	British	526	Korea	93

Source: Tourism Department Gilgit 2011.

4.3 State and Transition of Livelihood Change

In the study areas, I found two important factors, the religious belief system or ideology and cultural practices, which define the nature and composition of economic activities in mountain communities. For example, in Naltar communities, “conservative” Islamic ideology is predominant, embedded in local cultural practices, and restricts a large segment of the community from involvement in education and other social activities. Such an ideology negatively affects female populations from gaining education, getting involved in local economic activities, generating value adding productivity and income, and more importantly in diversifying livelihood portfolios.

In Naltar Valley, such a socio-religious belief system and cultural factors pose limitations on women`s groups to engage in activities that would assist in their livelihoods. In contrast, in Shimshal, the higher education rate among females has helped them to engage in wage-earning service sectors. Their reluctance to adhere to the traditional livelihood activities for females, i.e. milking the cows and taking care of the livestock, was apparent, and led to some forms of social conflict. However, these educated female groups have taken the jobs as teachers in the schools and as social

workers working for non-government organizations, and have become the breadwinners for some families.

One of the female respondents expressed in her words (she wants to be anonymous):

We didn't have the exposure before and now I have education and skills but not to work with the livestock, I received the education to change my lifestyle and I think I can contribute to my village this way as well.

Another important factor that has penetrated "as a virus" in some communities is the religious conflict within the region. My field data have revealed that religious conflicts between Shia and Sunni sects have negatively affected the livelihood strategies of many communities. Inter-village economic activities were paralyzed due to the occurrence of such events. The community in Naltar Payeen belongs to the Shia sect, and Naltar Bala community (Gujar) belongs to the Sunni sect. During the religious conflict of 1988, most of the Gujar ethnic group's yaks were killed in the pastures by the Naltar Payeen community. Since that event, Gujar community has avoided keeping yaks in the pastures and transformed their livelihood strategies. A member of Gujar community in Naltar Bala stated:

We don't have that many options here. We used to keep large herds of livestock (sheep and goats) and started to keep yaks in the pastures, but after the sectarian clash and conflict with the Naltar Payeen community, we don't keep the yaks now.

In the following section, I examine how the households perform livelihood activities, develop livelihood strategies and respond to crises. For this reason, I closely examined eleven households for an in-depth livelihood case study; five households from Shimshal; and six from the Naltar community. A list of the number of selected community members and their main occupation or livelihood source is presented in Table 4.9. The selected household members were engaged in three primary occupations: agriculture on small parcels of land, livestock rearing, and service in the tourism industry.

As mentioned earlier, factors that pose risks to livelihoods are: seasonality, interruption to accessing the marketplaces due to weather-induced infrastructure failure, floods, and landslides. In addition to posing physical constraints to the movement of people and commodities, such infrastructure failures cause major drops in the market price of the perishable crops and other agricultural products. For example, the peak season for selling the agriculture produce and earning cash is between July and August. Ironically, during this time, heavy rains and the peak flow of rivers often block the access road to markets. As a result, a steep decline in the price of the products takes place, causes considerable loss of agricultural investments, and creates economic crises for the community (AKRSP, 2005).

In Shimshal, where the community grows a single crop in a season, a heavy snowfall or a heavy rainfall could shift their overall agricultural production or could disrupt their pastoral activities. In 2005, heavy snowfall in Shimshal killed over 300 livestock, which was a major economic loss for the community (focus group discussion, 2007).

Table 4.9. Livelihood Analysis at Household Level (Shimshal and Naltar Valley)

S/N	Household	Principal Occupation and livelihood Source	Shimshal	Naltar-Bala	Naltar Payeen
1	Mohammad Goonic Abdullah Khan (Naltar Payeen) Akbar Hussain (Naltar Bala)	1. Large livestock 2. Large land holding 3. Skilled Work	1	1	1
2	Farmanullah (Shimshal)	1. Services (govt. and others) 2. Business (Guest house)	1	x	x
3	BibiNabat (Shimshal) Ghulam Mustafa S/O Saif Ali Naltar Payeen Kabeel (Naltar Bala)	Wage labour (casual worker) 1. Small land 2. Small livestock	1	1	1
4	Ghulam Murtaza (Shimshal) Muhammad Shafa (Naltar Payeen), Badshah (Naltar Bala)	3. Small land holding 4. Small livestock	1	1	1
5	Negheban Shah	1. Tourism	1	x	x
		Total	5	3	3

4.3.1 Livelihood in Shimshal Valley.

Shimshal community in general is involved in livestock rearing, agriculture, the service sector, and the tourism sector, which includes performing activities as tourist guides and porters. All the households surveyed in Shimshal maintain livestock to meet their own requirements of milk, meat and dairy products. Livestock includes cows, goats, sheep and yaks, and is the basic livelihood source in Shimshal. The community performs herding practices that are interdependent with their agriculture. An average household keeps 10-15 sheep and goats, 2 cows, and 3-4 yaks (household survey data, Table 4.10a). An average household requires 1.5 litres of milk every day to make tea several times in a day. Milk, tea and *Chirpindok* (thin Chapatti bread) with qurut (liquid form) and butter on the top is one of the most favorite snacks for the households. During the interviews, every household offered our research team tea with Chirpindok. All the households slaughter at

least two animals in a six-month period and sell 2-4 sheep, goats and yaks to earn cash to buy the necessary goods and commodities.

The average income from livestock (include milk, milk products, and meat but not including the sale value of yak) is approximately 46,000 Pakistani rupees, considering the current market value of milk at 70 Pakistani rupees per litre. The community is engaged all year round with activities related to livestock. From April-October, they graze the livestock on high alpine pasture areas, and from October-March, they graze their livestock within the peripheries of the village.

Table 4.10a. Livestock Population by Village

Livestock type	Begin Stock				End Stock				Av. per unit price	Avg. market value
	Naltar Bala	Naltar Payeen	Shimshal	Total	Naltar Bala	Naltar Payeen	Shimshal	Total		
Goats	609	1057	3321	4987	579	1120	3510	5209	4500	23440500
Sheep	1255	955	2290	4500	1233	980	2377	4590	3000	13770000
Donkeys	39	8	24	71	39	8	26	73	8000	584000
Chicken	120	68	43	231	103	74	32	209	150	31350
Cattle (cow)	96	144	520	760	107	155	532	794	12000	9528000
Yak	0	132	840	972	0	120	937	1057	35000	36995000
Horse	0	2	0	2	0	2	0	2	12000	24000
Total	2119	2366	7038	11523	2061	2459	7414	11934		84372850

Source: Household Quarterly Surveys (Q1-Q4) (2007-2008).

Livestock herding is one of main activities for livelihood maintenance in Shimshal. There are three types of herding in Shimshal: 1) small livestock, which include sheep and goats, taken to the alpine pastures for a period of over five months; 2) the rest of the year, when snow makes the alpine pastures unusable, the animals are grazed in valleys and lower sections of the mountain slopes, and also stall-fed the tree leaves, hay and grass accumulated from either pastures, or grown in their grasslands or agriculture fields; and 3) yaks are grazed throughout the year in the higher and lower pastures.

Females play the main role in making livestock products and rearing livestock. Summer herding is led by the females, and children also join them in the herding practices and remain in the pastures for over five months. Almost half of the village community goes to pastures by rotation to graze their animals, and performs the herding activities. All activities associated with milking sheep and goats and with making dairy products are performed by female groups. However, if and when needed, males share such responsibilities. The entire chain of dairy products, i.e. butter, qurut and cheese, are collected and an inventory of the products is created. Eventually, these products are distributed among the households that rely on milking animals. The whole process is led by female groups. Males perform certain activities such as the tracking of animals, arrangement of food and water for animals through clearing water channels, and transportation of goods to and from the village.

Yaks remain in the pastures during the winter period, and the practice of yak herding is carried out throughout the year in the pastures. However, with the restriction imposed by the state, communities are now confined to a limited area of pastures that hinders their rotational grazing system.

Agriculture is another sector that the community relies on for their livelihood. During April through September, the community gets engaged collectively in agricultural activities, i.e. sowing of seeds, watering, harvesting, and non-agriculture activities such as the gathering of fuel wood. Figure 4.11 (seasonal calendar) describes the community's involvement in both agriculture and livestock activities, as well as the defined gender roles. In Shimshal both women and men are engaged in livelihood activities. However, women's workload in the field is greater than men's in Shimshal Valley. Women are

engaged in pastoral activities in addition to the household activities. The engagement of women in housework as well as in pastures defines their workload. As per group discussions, during the summer women perform certain agriculture activities that men normally perform, while the males are absent from their households to engage in tourism activities. Males, as the main breadwinners, are engaged in outdoor activities, but have less burden of work compared to the women in Shimshal.

Agricultural sales used to be very limited in Shimshal since there was no option of marketing the produce due to poor infrastructure. In 2003, after 20 years of continuous struggle, the Shimshal community was able to build a road on a self-help basis with support from the Aga Khan Rural Support Program and the Government of Pakistan. This road now connects the Shimshal community to the outer world (focus group discussion, 2007). This infrastructure development has changed the condition of the community.

Wheat has remained the main crop for a long time, and the community was self-sufficient in wheat production until recent years. Potato production has captured some of the market share due to its comparative advantage in profitability (Ali & Butz, 2003), but wheat is still the dominant crop in the area. Because of the historical flood events in the 1960s, Shimshal remained disconnected from foot treks for over two years, and the village nearly starved from the shortage of food. Since then, the community maintains a practice of storing 2 or 3 years of wheat supply even though the community is aware the return from wheat production per unit area is 50% less than that from potatoes. It reflects that food security issues are at the forefront of community livelihood strategies.

Figure 4.11. Seasonal Calendar Shimshal

Figure 4.11. Seasonal Calendar Shimshal													
	October	November	December	January	February	March	April	May	June	July	August	September	
Crop Production	Land Preparation												
	Watering												
	Manure/Fertilizers												
	Seeding												
	Plowing												
	Weeding												
	Wheat Harvest												
	Potato Harvesting												
	Barley Harvest												
	Maize Harvest												
	Green harvest												
	Potato sale												
Other activities	Tourism												
	Agr/Causal/ Labor												
	Cooking Foo												
	Fuel wood Gathering												
	Grass Cutting												
	Gathering Dry Leaves												
	Livestock rearing in village												
	Livestock Feeding												
	Livestock rearing												
	Yak Herding summer												
	Picking Fruits												
	Livestock/Yak sale												
	Yak Herding winter												
	Lean Period						Male Activity				Female Activity		

Source: Focus group discussions, In-depth Family Studies (2007-2008).

Table 4.10b. Livestock Population and Sales in Shimshal 2007-2008

				Livestock Sales			
YAK	Male	female	Total	# of animals Sold	Rate(per) animal[1]	Revenue in Pak Rupees ⁹ .	Percent
Calf (New-born)	32	44	76				
two-three year old	61	73	134	19	15000	285000	
Adult (3-5)	79	86	165	41	30000	1230000	
Adult	254	318	572	37	35000	1295000	
Total revenues	416	521	937	97		2,810,000	79.64
COWS							
Calf (newborn)	38	43	81				
One-year old	40	32	72				
Two-year old	35	27	62				
Adult	129	188	317				
Total Cows	242	290	532	12	7000	84000	2.38
GOAT							
New born	77	63	140				
One-year old	129	107	236				
Two-year old	143	127	270				
Adult	1319	1545	2864				
Total Goats	2305	2477	3510	115	4000	460000	13.03
SHEEP							
Lamb (new-born)	229	237	466				
One-year old	154	151	305				
Two-year old	109	115	224				
Adult	650	732	1382				
Total sheep	1142	1235	2377	87	2000	174000	4.93
DONKEY							
Foal (newborn)	0	0	0				
One-year old	0	2	2				
Two-year old	0	0	0				
Adult	6	18	24				
Total	6	20	26				
Total revenues from livestock sales			8654	408		35, 28,000	

Source: Field Quarterly Surveys data (2007-2008).

⁹ The conversion of the US\$ to Pakistan Rupee is 1 US\$= 93.74 (as of 5 June 2012).

Table 4.10c. Sources of Household Income Shimshal

Villages	No. of Respondents	Income Sources (%)					
		Livestock	Agriculture	Tourism	Employment	Forest Products	Others
Shimshal Centre	24	9(37.50)	6(25.00)	4(16.66)	3(12.50)	0 (0.00)	2(8.33)
Khizirabad	18	7(38.88)	6(33.33)	3(16.66)	1(5.55)	0 (0.00)	1(5.55)
Aminabad	13	4(30.76)	2(15.38)	3(16.66)	1(7.67)	0 (0.00)	1(7.67)
Farmanabad	10	5(50.00)	2(20.00)	2(20.00)	1(10.00)	0 (0.00)	0 (0.00)
Total	65	25(38.46)	16(24.61)	14(21.53)	6(9.23)	0	4(6.15)

Source: Field Quarterly Surveys (2007-2008)

4.3.1.1 Role of tourism in Shimshal livelihood.

Shimshal community is deeply involved in tourism activities, as tour guides and porters. More recently, many locals have begun to work as tour operating agents and also offer other forms of tourist services. Over the past three decades, Shimshal community members have begun to diversify their economy and gotten involved with tourism. Despite the lack of financial and human resources, more than twenty well-known mountaineers have originated from the Shimshal Valley. Mr. Rajab Shah, a Shimshali, has the distinction of scaling all five peaks more than eight thousand feet high. He and Mr. Mehrban Shah have received the Presidential Award for Pride of Performance in recognition of their extraordinary achievements in the field of tourism and mountaineering. In 2010, Samina Baig received the first women climber award in Pakistan; she also comes from Shimshal.

They were inspired to undertake their efforts by Western mountain climbers, who visited these valleys, although the toughness of Shimshal community is well-known in Pakistan. The legendary mountaineers, in turn, have become the inspiration for the community, and the involvement of the community in tourism gained momentum between the years 1990-2001. However, the tragic event of 11 September 2001 in the

USA has changed the scenarios in many parts of the world. As explained above, the Shimshal communities were no exceptions, and experienced a drastic decline in the number of tourists, from 130 tourist groups in 2001 to none in 2002 (Ali & Butz, 2003). This has resulted in a decline in the income from tourism for Shimshal community.

Women's groups were involved in making handicrafts and other cottage industry-based products that they used to sell to tourists visiting the village. This diversified their living, but they were left with no other options when tourism declined.

As Hajat (tourist guide) said, "In the last one year, I could hardly get one tracking group; I used to do at least four groups. The time has gone and our inspiration for tracking has gone" (Hajat Shah, 45, Shimshal).

The lesson the community learnt was not to rely on the seasonal work of tourism. Rather, the community now wants to focus more on the physical resource (land), livestock and education. Socioeconomic instability, most of which is related to international affairs and events severely impacted the local and regional economies and communities of northern Pakistan in general. The severity was more intense among the communities of Hunza Valley, including Shimshal. Future opportunities in the tourism sector to build on the experience of the Shimshal community are yet to be explored.

4.3.1.2 Household level analysis of livelihood in Shimshal.

A mixed but complex trend in the composition of economic activities emerged within households in Shimshal. For most of the households, livestock plays a major role in household income, and products gained from livestock (i.e., milk, butter, qurut) are consumed in their daily diet. Tourism appeared to be the primary source of household

income for a few households, such as that of Negheban Shah. The decline in tourism after 9/11 made him rethink about the profession. However, Negheban believes that tourism will come back and he hopes that he may rebuild himself. Farmanullah, a resident of Shimshal, is employed in the service sector and runs a guesthouse business. His primary livelihood at the time of the interview was service-oriented, partially in tourism, but he complemented it through the ownership of land and livestock. He invested to build the guest house, and he is still paying his debt. Gulam Mutaza, with no education and the burden of family expenses, has pursued wage labour-based activities since his childhood; he is trying to give better education to his family so that the members can share the family expenses in the long run (Table 4.11).

Table 4.11. Household Level Livelihood Analysis

S. N	Household Head	Family Status	Main livelihood Activities	Affiliation	Livelihood History	Stresses/ Shocks	Coping
1	Farmanullah (Shimshal)	Married, 64 yrs, 6 family members	Government Service Business Agriculture Livestock	Govt. Health Community worker	Born in Shimshal, used to have livestock, completed 10th grade and joined the health department	-Shortage of medicine, -Seasonal business	Accumulated debt from a bank in Hunza
2	Muhammad Gonic (Shimshal)	Married, 69 years, 6 family members	Agriculture Livestock Tourism	Community Member	Born in Shimshal, experience with livestock and agriculture	-Access to market -Access to resources	
3	Negheban Shah (Shimshal)	Married, 37 years, 7 family members	Tourism Agriculture Livestock	Community Member	Born in Shimshal, experience with livestock, liked trekking, joined tourism	-Seasonal Work - Investment	Waiting for better time

S. N	Household Head	Family Status	Main livelihood Activities	Affiliation	Livelihood History	Stresses/ Shocks	Coping
4	Ghulam Murtaza (Shimshal)	Married, 26 years, 4 family members	Wage labor Agriculture Livestock	Community member	Born in Shimshal, livestock herding agriculture	-Seasonal work -Access to market - Employment -Cost of living	No option of moving Work on the land
5	BibiNabat (female) (Shimshal)	Married, 55 years, 6 family members	Agriculture Livestock		Born in Shimshal, livestock herding, agriculture	-Seasonal work -Access to market - Employment -Cost of living	Sold a piece of land and livestock

Negheban Shah, Age 37

Negheban Shah was born and raised in Shimshal; he studied up to grade eight -- the highest level of education received by anyone in Shimshal. He had no money to pursue more education in Hunza or down country. There was no road that could link them to Hunza for education. He helped his father with work on the land and with livestock. He got married at the age of 22 and after marriage he lived with his parents. Later he moved to a new house built for the family, and everyone in the family helped him build the house. He has five children and all of them attend school now.

Table 4.12. List of household members Negheban Shah

Household members	Relation	Year Born	Sex	Education
NEGHEBAN SHAH	0	1970	0	8
SULTAN PARI	1	1971	1	0
EMA PARI	2	2004	1	-9
ISA PARI	2	2001	1	-9
AMIR AMAN SHAH	2	1990	0	7
AMIRULLAH	2	1998	0	1
WAZA KHAN	2	1995	0	6

Codes: relationship: 1 (spouse), 2 (child), Sex 1(female), 0 (male), and for Education code -9 was not started yet. (In-depth family studies 2007-2008).

His wife helps him take care of the fieldwork on the land and the livestock. He owns 37 *kanal* of agricultural land where he cultivates wheat, potatoes, and vegetables on a small portion of land. He has a total of 150 *kanal* of fallow land and 100 *kanal* of grassland. They own 6 yaks, 1 cow, 12 goats and 6 sheep. The land and livestock keep him busy year round. Most of the housework is performed by his wife.

In Shah's words:

You know how we are. Our women do most of the work but we just eat at home and get busy with outside work. Honestly there is no work in winter except the livestock rearing and even that work is done by our ladies and we don't appreciate them.

His wife performs most of the work at home and she is the one who takes care of the children. He said, "Our total earning from agriculture and livestock is not enough for the whole year. I calculated that the total value of the products is about Rs. 51,000.00 for this year. I used to get better earning from tourism."

He went on saying:

I joined tourism in 1995 as a helper/porter with local trekking company, and after three years trekking with foreigners. I gained experience in handling arrangement tasks for the tourists. Since I didn't have much education, land and livestock; I consider this profession is interesting and seem fit to my circumstances.

Shah knows that the work is seasonal but it helps him to earn a substantial amount of money in a short period of time. Such seasonal work is suitable for Shah as he can work in the summer in the tourist sector and during the rest of the year he can devote himself to his land and livestock. However, in this job there is great risk involved. He mentioned, “Trekking through these dangerous mountain ranges is quite risky and a small negligence can take someone’s life while trekking.”

Shah revealed that, “The important thing in this field is the ability of proper communication. I had faced serious difficulty in communicating in English language. But with time, I learnt the basics of communication in English through practicing with tourists.”

He said that the late 1990s – from 1995 until 2001 -- were very flourishing years in the tourist industry, when foreign tourists started coming to these mountains. He said, “I am hopeful that the tourism will get back to normal; otherwise it’s going to be tough to live on our land and livestock” (personal communication, 2007).

He used to earn an average of 1,000 rupees/day for assistance in trekking, and during the two summer months, he used to earn an average 65,000 rupees. Such income was adequate to support and maintain Shah’s family. But now with the current situation, it is very difficult to sustain in this field, as no foreign tourists are coming into the region any more.

Farmanullah, Age 64

This household has a family of six: the household head, his wife and four school-going girls. Farmanullah is a government service holder, working as a dispenser in

Shimshal, the only person responsible for providing health services. He is also running Sifat Guest House, with three bedrooms in a traditional house. His wife takes care of housework, in addition to taking care of the livestock.

Table 4.13. List of Household Members Farmanullah

Household Member	Relationship	Born	Sex	Education
HAKEEMA FARMAN	1	1962	1	0
ZAREEF BEGUM	2	1988	1	10
FEHMEEDA FARMAN	2	1990	1	8
FAHEEMA FARMAN	2	1993	1	6
FAZEELA FARMAN	2	1997	1	2

Codes: Relationship: 1 (spouse), 2 (child), Sex 1(female), 0 (male)

(In-depth family studies 2007-2008).

Farmanullah gets some medicines from tourists who visit the guest house, and he redistributes those when needed, at no cost to the community. He built the guest house in 2004 after the road was completed. Farmanullah used to receive 150-200 tourists per year. But since 2001, he has hardly received any international tourists. In 2006, he had 40 tourists in his guest house, far better than the situation in 2002 or 2003, the time when he received only 10 visitors from Pakistan.

The family owns 22 *kanal* of agricultural land where they cultivate wheat, potatoes, barley and vegetables. They also own 80 *kanal* of fallow land and 30 *kanal* of grassland. In Farmanullah's words,

My wife does most of the work at home and to run the guest house. My kids help her as well. I take care of the dispensary as well as I am involved with community activities. Even though I have a job, I cannot afford to cover the expenses. I was hoping to earn money from this guest house but with current conditions, I don't

think I can. I get some revenues from livestock as I own seven yaks, two cows and thirteen goats. These help in times of need.

The total value he gained from the animals is 30,525 Pakistani rupees but still he is trying to supplement the expense from his government job, business, and agriculture. “If I did not have the land and livestock, I would not be able to survive alone from the government job income.”

Ghulam Murtaza, Age 26

Gulam Murtaza was born and raised in Shimshal; he studied up to grade four and left school before he passed the fifth grade, following the death of his father. His mother is ill and it is very difficult to take her to Hunza for treatment, because there is no road and access to Hunza is by foot. He is married, and lives in an extended family with his mother and one younger brother and one sister. Murtaza did not have much land, and started looking for day-labour work. He said:

Getting the labour work is tough in the village, and with no education, job opportunities are minimum. My brothers are still studying. I am helping them to get education so that they can have a better life. I hope that Hamidullah, who is in grade 10, will get better job once he finishes his education so that he can help as well.

Table 4.14. List of Household Members Ghulam Murtaza

Household Member	Relationship	Year Born	Sex	Education
GHULAM MURTAZA	0	1980	0	4
HAMEEDULLAH	7	1986	0	10
RASHEEDA BEGUM	7	1982	1	7
NASEEB SULTANAN	1	1980	1	1
MOM	5	1949	1	0

Codes: relationship: 1 (spouse), 7 (brother/sister), 5 (parent); Sex 1(female), 0 (male):

(In-depth family studies 2007-2008).

The family's total agriculture land possession is 18 *kanal*, where they cultivate wheat, potatoes, and vegetables; they also have 80 *kanal* of fallow land and 60 *kanal* of grassland. They do not have enough financial resources to develop the fallow land; "If I had money I will develop the land and grow potatoes so that I could earn more money," Murtaza added.

The total value of the products from the land for the year 2007-2008 was calculated to be 39,300 Pakistani rupees. They own 1 cow, 17 goats and 26 sheep. The total value gained from the animals was about 35,525 rupees. "My average earning per month is 3000-3500 rupees, which is not enough to feed the family. I only get labour work during summer; during in the winter season, there is not much work," he added. Regarding coping he said, "I put more land for potatoes now than before, and also I plan sell at least 4 sheep to get the money to meet the expense in a year."

Bibi Nabat (female), Age 55

Bibi Nabat was born and raised in Shimshal. Her husband was ill and therefore she provided me the necessary information for my research. In explaining her livelihood, Nabat said:

It has been couple of month my husband became ill; he cannot eat much and feels pain in his body. We took him for treatment to Hunza, but the medicine is not working on him. Maybe it is related to his age.

Nabat has four children, three daughters and a son, and all were going to school at the time of the interview. One of her daughter was ill, too. “My youngest daughter fell down from a tree, and since then she could not walk properly. She was hit on her back.”

In the family, Nabat’s son was the only one who was earning and supporting the family. As Nabat described:

I work on the land and also go with the tourists to get money to meet the expense of living. We couldn’t give our son much education because we didn’t have money, and didn’t have much land from which we could send him to down country for education.

She also mentioned, “I take care of the land and livestock and whatever we earn is not enough to feed us.”

Table 4.15. List of Household Members Bibi Nabat

Household member	Relationship	Year Born	Sex	Education
SHENAZ BEGUM	2	1976	0	10
DILSHAD BEGUM	2	1993	0	5
ALTAF HUSSAIN	2	1994	1	4
JAHAN NUMA	2	1997	1	3
HYDER GULAM	1	1945	0	0
BIBI NABAT	0	1950	1	0

Codes: relationship: 1 (spouse), 7 (brother/sister), 5 (parent); Sex 1(female), 0 (male) (In-depth family studies 2007-2008).

The total agricultural land of the family is 12 *kanal*, where they cultivate wheat, potatoes, and some vegetables. They also have an additional 100 *kanal* of fallow land and 80 *kanal* of grassland. Nabat said,

There is little I can do. I am old but I am still working on the land and producing potatoes so that I can earn more money. I have a debt of 2,000 rupees for purchase of food items that I couldn't pay back yet. I hope to pay back the loan in next potato season.

The total agricultural production was calculated to be 18,860 rupees for the year 2007-2008. She added, "We sold almost all of the potatoes. That gave us 6,800 rupees; we don't sell wheat; we stock wheat for the upcoming years."

The family owns 4 yaks, 1 cow, 12 goats and 19 sheep. The total value gained from the animals was 17,650 rupees. Nabat's son earned 6,000 rupees from wage labour. In a nutshell, the family survives on its livestock and land, and by selling the animals and potatoes to the market.

Muhammad Gonic, Age 69

Mohammad Gonic was born and raised in Shimshal. His father used to be a wealthy person as he served the Mir. Gonic had large parcels of land and considerable livestock that generated wealth much above the general population. He helped his father in raising animals and gathered experience with livestock herding. At the time of my field study, he owned 17 yaks, 5 cows, 6 goats and 63 sheep. He owned 70 *kanal* of agricultural land where he cultivated wheat, potatoes, barley, and vegetables. Additionally, he owned 80 *kanal* of fallow land and 200 *kanal* of grassland. Gonic has a small family with two sons, one of whom was married. Gonic explained, “My wife and daughter-in-law take care of the livestock and sons help in field work on the land.”

For Gonic, working as a herder and on the field is not easy. Gonic added: Spending winter with yaks is quite a challenging work, but the benefit I see is the sustainable management of our pastures as well as I can take care of my yaks. I don't have to worry about the land here; my wife and children takes care of the land. Much of my household food requirement comes from my livestock.

The total value of Gonic's products was 44,950 rupees, excluding the sales of livestock in 2007-2008. In addition, he received 58,000 rupees from agriculture crops. His son was working as a tourist guide with a company; the job helped him to earn a significant amount of money during the summer. “There was good time when we had more livestock and we used to sell livestock and had never shortage of money or anything at home,” Gonic said.

[That] time is changing, our village is more accessible with the construction of roads, and we can see the change in the village. We used to have houses made of local material -- stone and mud. But now, cemented houses are being constructed and in these houses it gets very cold in winter, and living in these houses is not possible without heating system. With the access of road, different things will be introduced to our village. Now it's our responsibility to see what is good for us. (Personal communication, 2007)

The above narratives reflect that in Shimshal, households are primarily dependent on land, and livestock has greater economic and social value than anything else. Although they had supplementary income from tourism, after the decline of tourism since 2001, the community has turned back to their heavy reliance on agriculture and herding activities, as these traditional sectors seemed more reliable to them to provide their livelihood security.

4.3.2 Livelihood in Naltar Valley

Naltar Valley is mainly occupied by two ethnic groups, the Shina speakers (Sheen and Yashkoon) and the Gujars, the nomad community that settled there during the last 60 years. The other ethnic groups are more settled communities (Sheen and Yahskoon, residing in Nalter Payeen), who have diversified their livelihood in agriculture, livestock and service sectors. However, by and large, the communities still depend largely on agriculture and livestock, and wage labour for their livelihood.

The field data procured from Naltar communities reveal that landholding per household ranges from 15-20 *kanal* in Naltar Payeen and 10-15 *kanal* in Naltar Bala. The

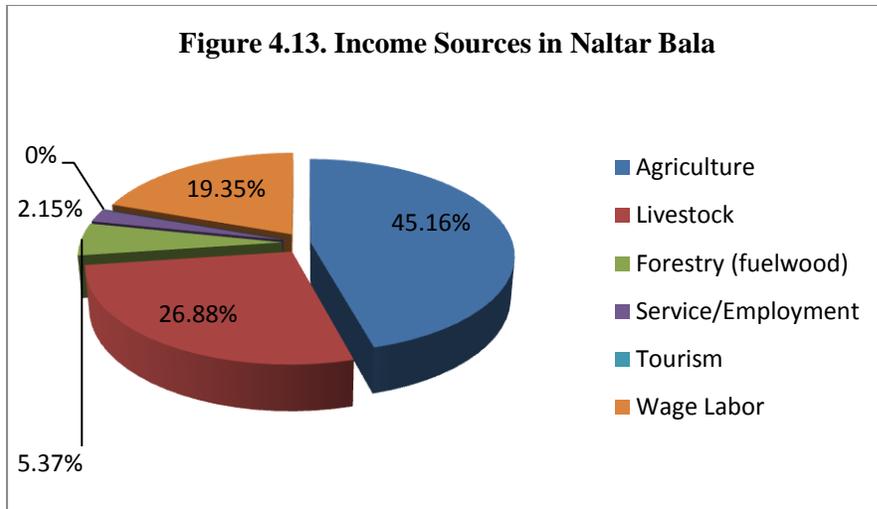
Gujar community's traditional source of livelihood, as nomadic pastoralists, has been livestock (sheep and goat), but after settling in Naltar Valley, they acquired land where they began to perform agricultural activities. Of the total income of the Gujars, 45% was obtained from agriculture, especially from potato production (see Seasonal Calendar 4.12). The data further show that the Gujar communities still maintain their nomadic lifestyle, even after shifting from Naltar to the area near Gilgit town. They migrated to avoid the harsh winter in Naltar, as well as to earn wage employment in urban areas; there were extremely limited opportunities for non-agricultural, service activities in Naltar Bala.

In Naltar Valley, the livelihood characteristics vary between the communities, which are linked with ethnicity. In Naltar Bala, for example, 45% of the income of the overall community members was generated from agriculture and livestock, while it was 25% for the Gujar's household economy. In Naltar Payeen, community members earned 37% of their income from agriculture and 35% from livestock. Although both the communities live in or near the forest, their household economy was nominally linked with income from forest products (table 4.14a).

Figure 4.12. Seasonal Calendar Naltar

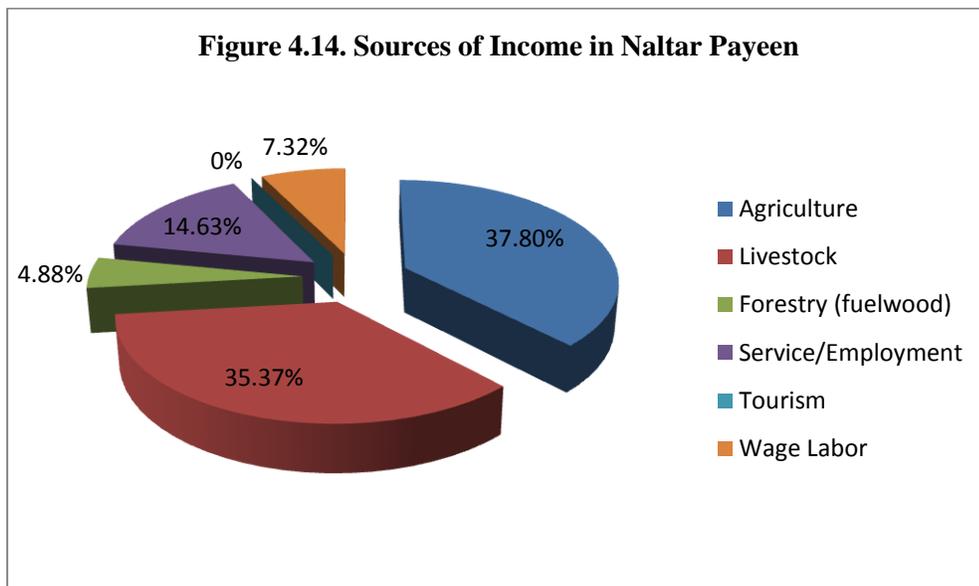
Figure 4.12. Seasonal Calendar Naltar													
		October	November	December	January	February	March	April	May	June	July	August	September
Crop Production	Land Preparation												
	Watering												
	Manure/Fertilizers												
	Seeding												
	Plowing												
	Weeding												
	Wheat Harvest												
	Potato Harvesting												
	Barley Harvest												
	Maize Harvest												
	Green harvest												
	Potato sale												
Other Activities	Causal/ Labor												
	Cooking/Food Preparation												
	Fuel wood Gathering												
	Grass Cutting												
	Gathering Dry Leaves												
	Livestock rearing in village												
	Livestock Feeding												
	Livestock rearing in pasture												
	Picking Fruits												
	Migration of Gujar (to low lying areas)												
	Livestock sale												
Lean Period				Male Activity				Female Activity					

Source: Focus group discussions, In-depth Family Studies (2007-2008).



Source: Field Quarterly Surveys (Q1-Q4), 2007-2008.

None of the study communities in Naltar was involved in extraction activities; some members of the communities only collect fire wood for domestic use; it contributed only 8% to the household economy (see Figure 4.14).



Source: Field Quarterly Surveys (Q1-Q4), 2007-2008.

Opportunities in service sectors (primarily public sector jobs) were limited in both Naltar Bala and Naltar Payeen. Nominal income was accrued from service employment in the Naltar region: 2.15% in Naltar Bala and 14.63 % in Naltar Payeen. In Naltar Bala, 19.35 % of household income stemmed from casual labour, while in Naltar Payeen, it was 7.32% of the respondent households' income (see Table 4.16).

Table 4.16. Sources of Household Income Naltar Valley

Villages	No. of Respondents	Income Sources (%)					
		Agriculture	Livestock	Forestry (fuel wood)	Services/employment	Tourism	Wage Labor
Naltar Bala							
Khiyot	18	11(61.12)	2(11.11)	1(5.55)	0 (0.00)	0 (0.00)	4(22.22)
Glodas	24	12(58.33)	8(33.33)	1(4.17)	0 (0.00)	0 (0.00)	3(12.50)
Jigot	22	7(31.82)	9(40.91)	1 (5.55)	1(5.55)	0 (0.00)	4(18.18)
Dalan	18	8(44.45)	5(27.77)	1(5.55)	1(5.55)	0 (0.00)	3(16.67)
Nagaral	11	4(36.36)	1 (9.09)	1(9.09)	0(0.00)	0 (0.00)	4(36.36)
Sub Total	93	42(45.16)	25 (26.88)	5(5.37)	2 (2.15)	0(0.00)	18(19.35)
Naltar Payeen							
Jaffarabad	23	8(34.78)	5(21.74)	2(8.70)	6(26.09)	0 (0.00)	2(8.69)
Mehdiabad	12	5(41.68)	4(33.33)	1(8.33)	1(8.33)	0 (0.00)	1(8.33)
Mominabad	19	8(42.11)	6(31.58)	0 (0.00)	3(15.79)	0 (0.00)	2(10.53)
Roshanabad	13	4(30.77)	6(46.16)	1(7.69)	1(7.69)	0 (0.00)	1(7.69)
Nasirabad	15	6(40.00)	8(53.33)	0 (0.00)	1(6.67)	0 (0.00)	0 (0.00)
Sub Total	82	31 (37.80)	29 (35.37)	4 (4.88)	12 (14.63)	0 (0.00)	6 (7.32)
Grand Total	175	73 (41.71)	54 (30.85)	8 (4.57)	20 (11.43)	0 (0.00)	23 (13.14)

Source: Field Quarterly Surveys (Q1-Q4), 2007-2008.

The household level studies showed that due to lack of education (only 38% were literate) and skills, communities rely on casual work. My field data revealed that households with small landholdings (4-10 *kanal*) tend to rely on casual labour jobs, and

households with large landholdings (>20 *kanal* of land) rely more on livestock resources as well as supplementary agricultural activities. These patterns imply that the options of households with small landholdings in Naltar communities remained very limited compared to those households with large-size landholdings. Further elaboration on these aspects is provided in the household case studies, presented in the following section.

It was also found that, in response to emerging crises, the Gujar community has diversified their household economy and rely less on livestock (i.e., 27.04% of their income comes from cattle rearing) than other communities in the Naltar region (for example, in Naltar Payeen, 72.04% of household income originated from livestock). The reason for having few cattle in Gujar households was attributed, firstly, to the scarcity of fodder for their livestock; secondly, the nomadic lifestyle of the Gujar community, and thirdly, transporting cattle to Gilgit is difficult for them. During interviews, the respondents noted that keeping cattle required a greater amount of fodder supply, and in the case of Gujar community, with fewer landholdings and with no grassland, was a costly and uneconomic venture.

In contrast, communities in Naltar Payeen with comparatively moderate to large landholdings (average 15-20 *kanal* of agricultural land and 20-25 *kanal* of grassland) tended to keep more cattle, preferably milking cows. In the Gujar community, 59% of the households surveyed owned sheep, and 62% owned goats (see Table 4.17). The reason for such livelihood adaptation was that, in order to cope with emerging resource constraints, the Gujar community had established a norm to migrate to low-lying areas, near Gilgit, during the winter. It is much easier for them to take their small livestock with

them. As well, they did not require a greater amount of fodder to feed sheep and goats (see details in the household case studies in the next sections).

Table 4.17. Livestock and Source of Fodder in Naltar Nalley

Naltar Valley	Number of Respondents	Livestock in the Villages					Source of Fodder in Percentage		
		Sheep	Goat	Cow	Yak/ ¹⁰ Buffalo	Others	Agriculture (average)	Forest and Pastures (average)	Others ¹¹ (average)
Naltar Bala									
Khiyot	18	72	78	10	-	11	10%	70%	20%
Glodas	24	120	50	13	-	8	10%	65%	25%
Jigot	22	132	110	15	-	9	10%	75%	15%
Dalan	18	93	79	9	-	4	15%	60%	25%
Nagaral	11	57	63	5	-	7	15%	65%	20%
Subtotal	93	474	380	52		39	12%	67%	21%
Naltar Payeen									
Jafarabad	23	73	54	41	7	2	50%	45%	5%
Mehdiabad	12	57	67	18	5	4	45%	55%	5%
Mominabad	19	65	25	39	2	1	45%	50%	5%
Roshanabad	13	79	48	19	1	2	50%	40%	10%
Nasirabad	15	49	36	27	6	1	60%	35%	15%
Subtotal	82	323	230	144	21	10	51%	45%	7%
Grand total	175	797	610	186	21	49			

Source: Field Survey (A1) (2007)

¹⁰Gujar community had few yaks, but during sectarian clashes, the community in Naltar Payeen seized and later killed yaks that belonged to Naltar Bala Gujar Community.

¹¹ Fodder requirements are fulfilled from other sources (common dass). Gujar Community from Naltar Bala migrate to nearby towns of Gilgit especially in the winter and they buy fodder in Gilgit.

Table 4.18. Household Level Livelihood Analysis Naltar

S/N	Household Head	Family Status	Main livelihood Activities	Affiliation	Livelihood History	Stresses/shocks	Coping
1	Abdullah Khan (Naltar Payeen)	Married, 63, 8 family members	Mason Livestock Agriculture	Not affiliated	Born in Naltar Payeen Agriculture and Livestock, Labour work and mason	-Seasonal work -Access to market -Cost of living -Debt	-work on land -selling livestock -selling potatoes
2	Saif Ali (Naltar Payeen)	Married, 61, 10 family members	Agriculture Livestock		Born in Naltar Payeen Agriculture and Livestock	-Access to market -Cost of living -Shia - Sunni tension	-work on land -selling livestock -selling potatoes
3	Muhammad Shafa (Naltar Payeen)	Married, 66, 8 family members	Agriculture Livestock and		Born in Naltar Payeen Agriculture and Livestock	-Fluctuation of the potato rate	-casual work -selling livestock -selling potatoes
4	Kabeel (Naltar Bala)	Married, 68, 9 family members	Casual labour Agriculture		Moved 20 years ago from Sakwar, Gilgit area, had a nomadic life and Now has little land and livestock	Decrease in livestock - (yaks got killed during 1988 tension), stress of the same feeling every day -debt	Sold livestock Seasonal work migration
5	Badshah (Naltar Bala)	Married, 33, 8 family members	Casual Labour (only 4 kanal agriculture) 8 kanal grassland)	There used to be a committee but now there is not.	His father moved here 35 years ago from juglot area. He had nomadic life, didn't get education as there was no school here at that time and no money.	-No education -Cost of living -Lack of land. -Scarce casual work -Harsh winter	Sell potatoes Seasonal migration for work
6	Akbar Hussain (Naltar Bala)	Single, 22, 6 family members	Casual work Agriculture Livestock		His father moved here 30 years ago. - nomadic life -livestock	- Cost of living -Scarce casual work -Harsh winter	Sell potatoes Seasonal migration for work

Source: In-depth family studies 2007-2008).

Notably, in Naltar Payeen, relying heavily on livestock and cattle was decreasing. Community members preferred to pursue education to obtain service sector employment rather than maintain a livelihood based on livestock herding. As one of the community members in Naltar Payeen said:

There seems to be no future in keeping livestock. We took this trade in the past because this was considered profitable. To support livestock, there used to be plenty of forest, pasture land and agriculture land. Now forest is declining and the government is imposing fees and restriction on grazing livestock. Our ancestors used to have more land but now our inherited land is getting divided day by day because when two or three brothers split their ancestor's land holding, each gets their part of the land. Consequently, everyone has little landholdings. Now keeping livestock is much more costly. We cannot afford feeding them, as our individual landholding got reduced which in turn reduced the fodder supply. We would give education to our children so that they may get government or other jobs.

A difficult but reasonable composition of economic activities was observed among the households in Naltar Valley. Most of the households owned land between 10-15 *kanal* in size, with the exception of Badsha Khan and a few others, which I will present in the household analysis.

Abdullah Khan, 63 years

Abdullah Khan was born and raised in Naltar Payeen. He never went to school because in their time no school was there; people were poor and their living was based

only on their livestock and agriculture. Khan explained, “Although this area was cold, but we had so much of forest and it was easy to raise livestock and agriculture on the land.”

He used to help his father on the land and with livestock herding. Khan added, “We used to have our livestock and we were happy. We used to produce enough for the family.” At the time of my field work, Khan had less than 10 *kanal* of agricultural land and 25 *kanal* of grassland.

Regarding the fragmentation of land, Khan elaborated:

We had enough land but then the land was divided among three brothers. Now again, whatever I have, will be divided among my two sons. I couldn't survive on this land, so I started working as a labourer and learned how to dress stones and build walls. This skill allowed me make a good earning and with that earning I could feed the family.

It was revealed by Khan that obtaining labour work was difficult in the area: Without any education, I had no option than working as mason and live my life. Sometimes it's hard to work as a mason because people have no money to pay. Even if I worked for a month, I won't get paid until I go ask them several times. The worst part in this business is therefore begging for your own money.

He added, “The other thing is that my work is casual. People who know me, they ask me for work. Other people who may need a mason person, they won't know my work.” The family supplemented their income from 1 cow, 10 goats and 5 sheep.

He also felt:

With education, our dependency on livestock will be reduced and I think by looking at the growth of population, our land will be further divided. Eventually, there will only be space for houses and option for agricultural work will be eliminated.

Ghulam Mustafa, 61 years

Gulam Mustafa was born and raised in Naltar Payeen. He had a family of ten, with a wife, four boys, three grandchildren, and a daughter-in-law. All the children were grown up. The eldest one was employed in military services and two other sons were studying. Mustafa noted that, “I am retired now, too old to work as casual labourer. I worked all my life and now it’s my turn to be off-work.”

His eldest son, who was in the military, took care of the family. He said that his eldest son sent them money every month and with their land and livestock, they met the expenses. If he had a debt, then he paid it back when he received income from potatoes or from selling livestock.

On his agricultural land, Mustafa grew wheat and potatoes. He said, “The production of wheat on the land is so low, and now most of us grow potatoes.”

He complained, “The problem is that we can’t keep producing potatoes every year, and if the crop gets disease so we have to change the location every year.” He said:

The price fluctuates very much. If everyone grows potatoes, the rate we get is so low that we have to wait for good price in the market. The market is very fragile for potatoes. Last year we lost the money, because of the road condition. The contractor asked us to keep the potatoes and he didn’t come in time. As we made a

commitment to him we didn't sell it to other people. He came late when the rate was so low.

Mustafa had two yaks and two cows. He revealed that his wife took care of the cows and he looked after the land. In 2007-8, he produced potatoes on 5 *kanal* of land and it gave him 22 *bori* (1 *bori* equals 100 kg). He sold 20 *bori* and kept 2 for the household. Mustafa informed me that he sold most of them because the price was good. The total earning was 18,000 rupees, which would cover his familial expenses for 4-5 months.

He noted that some development project activities hampered his agricultural activities in recent years. "For the last two years in our village we couldn't do any agriculture on our land because of the hydro project, in Naltar. If we had grown the potatoes on that land we would have earned more," Mustafa commented.

The Government of Pakistan was constructing a water channel and because of the blasting, local farmers could not irrigate the land. The government had announced 5,000 rupees of compensation per month and Mustafa had been receiving this amount of money. "But if we calculate, 5,000 rupees is very nominal. The project work damaged our trees and cropland. We don't know how much we will have to spend to clear the land from boulders," he added with anguish.

Muhammad Shafa, 65 years

Muhammad Shafa was born and raised in Naltar Payeen. He had a medium-size family, with a wife, five children and a mother. All of the children (two boys and three girls) were attending schools. He has some Quranic (religious) education. Shafa noted:

Our time was difficult. We didn't have schools here. I have enough land and livestock I am surviving on. This area is a best place to live; we have clean water and forest. It's our bad luck that our forest is in the hands of government. We could have made a better living if we owned the forest. We could plant more trees and would sell when they would get mature. But this land now belongs to government and they are clearing it off by giving permits to people from the town and down country.

Referring to the recent decline in the local economy, Shafa said:

The only thing that scares us is the religion-based politics, as the religious tensions damage our security. This whole region was very safe for all of us, but now it is scary for us to Gilgit town. I think, definitely, there are some people getting benefit from our miserable conditions.

Part of Shafa's income came from livestock; he had 1 yak, 2 cows, 11 sheep, 7 goats and 2 donkeys. He rented out the donkeys at the rate of 70 rupees per day. On his 10 *kanal* of land, Shafa produced potatoes, which yielded 55 *boris*. He sold 52 at the rate of 900 rupees a *bori*, and kept 3 for the house. Shafa earned 47,000 rupees from them. He also grew fodder on 3 *kanal* of land, which produced 44 *mund* (1 *mund* is equal to 40 kg) of grass. Shafa sold 30 *mund*, which gave him 9,000 rupees.

Kabeel , 68 years

Kabeel moved 20 years ago from Sakwar, a town near Gilgit. He previously had a nomadic life and then settled in Naltar Bala. He used to take livestock to different valleys with his father, and had seen both good and difficult times while he was wandering from place to place in search of fodder for livestock. For him livestock was the only source of living. After the death of his father, Kabeel moved to Naltar. In the first year, he lived in Naltar for six months as a tenant on another's land. He was allowed to graze livestock in and around the land provided by the lender. At that time the price of land was cheap, so he purchased one kanal of land, and he started building a room to live. He explained:

When winter season came, it was so cold. I had to move to Sultanabad, near Gilgit, where other Gujar community members reside. I spent winter there; got some labour work and then I moved back to Naltar. So this way I could spend the summer in Naltar and winter in Sultanabad.

It was reported that there were few other Gujar community members who were seasonally migrating. Kabeel stated:

I could settle in Naltar but it is very cold, with no electricity. It is tough to live there. I saved up some more money, and then, four years ago, I purchased another 4 kanal of land. I work on the land during the summer and I produce potatoes that give me enough money to live for 6-8 months. This year I produced 45 bori, worth 40,500 rupees and I sold 40 bori and received 36,000 rupees.

Kabeel had seven children - five boys and two girls. His wife passed away three years ago. His elder sons worked as casual labourers and supported the family. They also looked after bringing fuel wood to his home. Kabeel did not have any livestock as it was difficult for him to travel with livestock.

Badshah Khan, 34 years

Badsha Khan was born in Naltar Bala, and lived with his family of eight. He had six children (three boys and three girls), with ages between 1 and 10, and his wife was taking care of them. His father moved there 40 years ago, and he built his own house. He added:

I don't have much land, only 4 kanal of land, and it's not productive for agriculture. I live here because it's safe here. My family is here. I go anywhere within village and sometime outside the village for casual labor work. In winter, I go to Gilgit town for work. This year I couldn't take the family because my cost of living is high in Gilgit. In Naltar, at least I get fuel wood to burn, from the land I get grass to feed our two cows that give us milk.

Khan further explained:

If I we are in Gilgit, we have to buy everything, fuel wood, milk and other items. Here I am not paying any rent, but if I go to Gilgit, I have to rent. There are other Gujars who have built small houses there and they can live there but for me it's not feasible. My earning per month excluding the winter months is 3,600 rupees. This is not enough to feed the family. I couldn't send my children to school, the cost of uniform, and books I could not afford. My wife grows vegetables in front

of our house, and it's not enough for even summer months. Now I have a debt of 10,000 rupees that I spent for buying the food items. I pay every month 500 rupees to pay the money back, but again I am accumulating other debts. I hope that when my kids grow, they may be able to earn so our collective income would be enough for the family.

Akbar Hussain, 22 years

Akbar Hussain was born in Naltar and lived with his mother, brothers and sisters. Being the eldest, he was responsible for the family. His father moved to Naltar 30 years ago from Sultanabad, a town near Gilgit. His father used to have a nomadic life in Sultanabad, but began a sedentary life when he moved to Naltar. After the death of his father, Akbar became the breadwinner of his family. He worked on the land, and also performed the casual day-labour work during winter. "When winter season comes, it gets so cold in Naltar. Without heating it's not possible to live here, so we had to move to Sultanabad during the winter months," Hussain noted.

During winter, Akbar tried to find work so that he could meet the expense of living in a town, and sometimes it was very difficult to find casual labour work. He preferred to avoid the cold winter in Naltar, where the temperature decreased close to -20 degree Celsius. Akbar's main livelihood source is agriculture, i.e. potato production. He grew potatoes on his 15 *kanal* of land, and the production rate of potatoes was between 8 and 9 bori per *kanal*. Akbar thus maintained his living from the sale of potatoes.

The family owned 5 cows and 2 goats that served as the chief source for their milk requirement. During 2007-8, he produced 100 *bori*, in total worth 90,000 rupees, and sold

80 *bori*. The total earning was 72,000 rupees, which covered all of their family expenses. Akbar is a bachelor and planning to get married; getting married in a Gujar family is not challenging as, usually, it would cost between 100,000 and 150,000 rupees.

4.4 Coping strategies – diversification and migration

There was no education in our families, our parents had no land and we used to survive only on our livestock. Now, there is no future in keeping livestock. We took this trade in the past because this was considered profitable, and we had no land and there were plenty of forest resources and pasture land. Now forest is declining and the government is imposing fees and restriction to grazing livestock. Things have changed now; we can get a labour job and can feed our family. But, in earlier times, there were no such options for us. (Interview with Barkat Hussain, Naltar, 2007)

Our ancestors used to have more land but now our inherited land is getting divided every day. When two or three brothers split their ancestor's land holdings, they get divided and each brother gets his part of the land, and consequently every family has smaller landholdings. Now keeping livestock is much more costly. We cannot afford feeding them as fodder supply is declining and our individual landholdings are reduced. We would give education to our children so that they may get other types of jobs. (Muhammad Hanif, 58, Naltar Payeen)

There is considerable variation between the livelihood strategies of the people of Naltar Bala and Naltar Payeen. Communities in Naltar Payeen have multiple sources of income, i.e. employment with the government, military, NGOs and from other sources. People who have wage-earning jobs are better off than those who rely on livestock and agricultural products. The families in Naltar Payeen community have attempted to diversify their livelihoods by attaining jobs in services and other non-agricultural activities to earn income to support their families. The strategy they have taken is to rely on educating the younger generation in the modern schooling system, to enable them to move away from pastoral activities.

The surveys and group discussions suggest that the tradition of keeping livestock will diminish in all the communities as a result of easy access to facilities such as roads, education, and the overall economic development in the northern region. However, a sharp decrease is not expected as livestock and agricultural activities are interdependent. Livestock winterfeed relies on agricultural by-products such as hay and grass, and agricultural production relies on inputs of farmyard manure that comes from livestock systems. Shimshal is isolated, and adherence to the culture and tradition is so deep that a decrease in livestock, especially the yak population, is unlikely to happen. However, limited and small landholdings in Shimshal, Naltar Bala, and Naltar Payeen seem to be a main factor for a decline in livestock. In Naltar Bala, the shortage of winter fodder seems to be the principal constraint for livestock rearing.

The coping mechanisms involve the capabilities of individuals and households based on their experience, knowledge and the actions that an individual or a community

collectively need to take under a given set of stresses for their survival. In general, mountain communities reduce their livelihood vulnerabilities in two ways:

- 1) the community collectively resists and responds to the stress, and
- 2) household level responses through actions such as selling livestock, pieces of land or trees, and diversifying income sources, i.e. through acquiring casual work, borrowing money from families or friends, or accumulating debt from shopkeepers.

The birth of Shimshal Nature Trust (SNT) as a result of government pressures is an excellent example of collective response to the external threats, which I will analyze in detail in Chapter 5.

The concept of coping strategies also has connections to livelihood resilience; households with a higher level of livelihood resilience are expected to enjoy livelihood well-being and sustainability (Chambers & Conway, 1992). Households with large landholdings and livestock resources enjoy the wealth not only from these physical, financial and natural resources, but also from their power, authority and social capital. They possess the option to diversify their resources and thus are more resilient to external stresses. Households that lack land, livestock, education, and other skills remain vulnerable to crises that may lead to limited livelihood options, cumulative debt, anxiety and frustration. The traditional joint family structure ameliorates the pressure generated from emerging crises as the household members collectively work to cope with the emerging abnormal situations. Both individual and collective adaptation to changes with long-term strategies are geared towards issues such as climate change, changing trends in

crop production, market fluctuation, infrastructure development and increased accessibility.

4.4.1 Livelihood Diversification.

Communities living in mountain areas with limited options for livelihood tend to explore new areas of economic activity to generate income. However, decision-making regarding livelihood strategy involves consideration of several factors; for example, limited financial and physical capital, access to market and the profitability of the produce. A household would tend not to change to a new crop unless they had gained experiential learning about positive outcomes somewhere else. The reason is that households have limited resources and it is difficult for them to experiment and take the risk. However, if their traditional production norms face a decline for any certain reason, e.g., disease, the household would be willing to address the problem by shifting to a new crop. Such a shift could be a short-term or ad-hoc strategy. In the long-term, the farmer may return to their earlier crop unless the new crop fulfills the farmer's requirements and aspirations.

In northern Pakistan, the introduction of new apple varieties in the early 1980s, through the Aga Khan Rural Support Program, provided a new opportunity, and many of the local communities have adopted them and been successful in diversifying their earning options. Similarly, introducing potatoes as a cash crop also proved financially beneficial. There are other examples of how some communities have adopted new crops and been successful in diversifying their economies. However, the wheat crisis of 1998 in northern Pakistan has forced the local farmers to change from multi-cropping to wheat

production. Farmers had apple trees on their farm lands and used to benefit from multiple crops. With the change in market price for wheat, farmers rationally turned the apple fields into wheat fields again (AKRSP, 1998). In other cases, potato production replaced wheat production, where the market price for the potatoes was high. The field survey results show that in Shimshal, potato production for market is a fairly new concept and emerged as a result of the new access road. In addition, Shimshal community has diversified their local economy by expanding into tourism activities, but with the newer international geopolitical situation with terrorist threats, the decline in tourism has reduced its share in household income.

4.4.2 Migration.

Household survey data revealed that the Gujar community, which used to be a nomadic community, but during the last 30-40 years, the community has semi-settled in Naltar Bala. However, they adopted temporary migration during winter as a coping strategy to cope with the harsh environmental condition. During winter, keeping the livestock in Naltar is risky for the Gujar community. Naltar Bala receives heavy snow (2-3 feet; 0.61-0.91m) in most years. Also due to the unavailability of fodder for the livestock, the Gujar community chooses to migrate to lower areas near Gilgit. In winter, there are no restrictions on grazing in Gilgit town and in the surrounding areas of Gilgit. The Gujar community takes advantage of this opportunity to graze their livestock in the surrounding areas of Gilgit. In addition, living in this harsh weather conditions in Naltar Bala is difficult without appropriate housing and heating systems. After the agriculture harvest, not many activities are required on the land in Naltar Bala. With no other options

to work in Naltar Bala, it becomes logical for them to temporarily migrate to areas where they can get daily-labour work as well as get favourable weather conditions. Temporary migration to relatively underdeveloped areas such as Sakwar and Gujar Dass, near Danyoor and adjacent to Gilgit town, is one of their major coping strategies to the emerging resource and environmental constraints. In these areas, the Gujar community has established temporary shelters, and in some cases, people who have moved out from the livestock herding earlier have established their permanent houses.

Summary

This chapter explored the mountain livelihoods in northern Pakistan, and examined the characteristics of communities' reliance on natural resources as well as the complexities of living in the fragile environment of the mountains. Mountain livelihoods are intrinsically linked with nature and natural resources, and livelihood activities are intertwined with the culture and religious belief system that define nature and the composition of economic activities. The Shimshal and Naltar communities rely heavily on agriculture and livestock, which contribute significantly to household income.

The fragility and vulnerability, on the one hand, and the adaptive capacity of mountain communities, on the other hand, are reflected in a number of facets which have impacted mountain livelihoods significantly in recent years. First, the international political events associated with terrorism had unprecedented local impacts through a steady decline in tourism; such an impact was more profound in Shimshal than in Naltar community. Second, geophysical hazards, along with the lack of infrastructure, in the mountain areas pose serious constraints on the mobility of people and the commodities,

trade, and services that are required to diversify socio-economic activities. My analysis of field data has revealed that the practice of “conservative” religious ideology in certain mountain communities sanctioned women from attaining education and working in non-agricultural, service sectors; Naltar Payeen community was found to be one such case.

Drawing upon a contemporary Sustainable Livelihood Framework, I focused on analyzing the household characteristics and the “resources” (replacing the terms “capital” and “assets”) that a household requires for a living, and on how various households formulate strategies to make a living and respond to livelihood vulnerabilities and crises. These communities have developed a system of “collective work,” appropriate for isolated areas where the infrastructural link with the outside world and external support are almost non-existent. Between communities, there are significant variations in the livelihood strategies that are largely influenced by local social-ecological resources, climate and seasonality, tradition and heritage, spiritual and ideological attributes, globalization and expansion of international tourism, and international geopolitical events. In order to adapt to changing livelihood opportunities and constraints, the families in Naltar Payeen have attempted to diversify their livelihoods by attaining jobs in services and other non-agricultural activities to earn wage income to support their families. Realizing that the current adult cohort had limitations in modern training and skills, this community adopted a strategy of relying on educating the younger generation through the modern schooling system. The expectation was to enable the younger generation to secure livelihoods by moving away from pastoral activities and entering into non-agricultural, manufacturing and service sector jobs.

The coping mechanisms of community members are grounded on their experience, knowledge and the actions that an individual or households collectively take for their survival and prosperity. I observed two ways they respond to livelihood vulnerabilities and crises: 1) the community collectively resists and responds to the stresses; and 2) household-level responses are performed through selling livestock, parcels of land, trees, or other assets as well as by diversifying income sources, i.e., through acquiring casual work, in the case of Gujar community. For short-term coping strategies, households sell their livestock, borrow money on mutually agreed terms from shopkeepers, or obtain credit to purchase food items, especially in Naltar Bala. In terms of long-term strategies, households in the Naltar Payeen have been diversifying their livelihoods options by engaging with non-pastoral, service or manufacturing sectors. In Shimshal, the long-term strategies include educating younger generations and conserving natural resources for livelihood sustainability.

The role of institutions such as the State, in managing natural resources and other resources is critical in addressing the issue of vulnerability in mountain regions. In light of this the changes in the management of commons by the State and other institutions and their effects on local livelihoods will be analyzed in the following chapter.

Chapter Five: “Decommonisation” and “New-Commonisation” of Mountain Commons, and Their Impact upon Livelihood Security

This chapter seeks the answer to the question of “how to retain commons as commons” at a time when they are becoming non-commons (State-controlled Protected Areas - PAs), and facing increasing challenges from external drivers and other factors associated with the conversion of the commons into so-called Protected Areas. The main focus of this chapter is to analyze the characteristics of mountain commons, the local systems of commons management in northern Pakistan, the use of customary rules and regulations by the communities, and how the PA system has affected the local natural resource and environmental management systems.

I have attempted to determine various contributing factors and the dynamics associated with the conversion of commons. I use a framework relating to “decommonisation” (Nayak & Berkes, 2011) to analyze the processes and key factors that have contributed to the loss of the commons rights of mountain communities. I then highlight the emerging trends that have involved local communities and the government in joint ventures in commons management in northern Pakistan, which I term the “New Commonisation.” I assess the Mountain Areas Conservancy Project (MACP), the impacts of the project, and the lessons learnt from the project. Finally, I critically review the case of Shimshal Nature Trust (SNT), a transformation of a traditional institute to a formalized institution; and I examine the best practices on how to sustain the commons in terms of

their conservation, and on how to preserve local livelihood values and culture within the existing Protected Area framework.

5.1 Commons and Property Rights

The literature on commons defines four main types of property regimes: i) open access, ii) private/individual property, iii) State property, and iv) common/group property (Berkes & Farvar, 1989; Ostrom et al., 1999). These are commonly explained as follows:

i) Open Access is the absence of well-defined property rights, where access to the resource is open to everyone; ii) Private Property establishes individual rights to exclude others and regulate the use of the resources; iii) State Property rights are vested in the government to decide access to and levels of exploitation of resources; and iv) Common Property is held by an identifiable community of interdependent users who exclude outsiders while regulating use by members of the local community. Common property in the context of northern Pakistan can also be divided into two categories, as follows. First, “managed common property” is the category where an identifiable community has control of exclusion and control to include others, such as the pasture resources in Shimshal. For example, communities of permanent settlers of a village have formed a local institution to manage the resources, such as a *Jirga* or committee, with the responsibilities to properly manage a resource, impose rules and regulations on local users, and ensure outsiders respect their rules and do not enter into conflicts. Second, “unmanaged common property” is the category in which an identifiable community has no proper management strategy; access to resources is not open to everyone. For example, access rights were given to communities who moved to the village (e.g., the

Gujars) but these newcomers have no rights to exclude others from accessing pastures in Naltar Valley. In such cases, newcomers remain powerless but retain a share in resource use. However, the use rights do not promise their share in the benefits and revenues generated from community-based conservation projects.

In the literature, a limited number of studies on the combination of these property regimes are available. A key question that arises here is how the State property under community control would work. The inheritance of State property rights within a co-management arrangement may not be acceptable to the local communities. How would the community be able to exclude others in a co-management arrangement? This question leads one to understand that property rights cannot only be held as exclusive rights; rather, they need to be shared. This kind of conceptualization of property is especially critical for analyzing property rights in the context of a co-management arrangement because such an arrangement could not be clearly defined either as State or common property within the given definitions.

In this context, co-management is understood as a process for sharing management rights and responsibilities between parties (Ruitenbeek & Cartier, 2001). This suggests that it would include characteristics of both State and common property regimes. The combination of the rights may vary depending on the negotiations between the parties. However, the inheritance of State property rights in a co-management arrangement may not be acceptable for the communities, and if the community retains the excludability rights, State property control will be eliminated. Thus, such an arrangement will create a new partnership in property rights, and this may be described as “Community-Owned, State-Regulated Property.” The property can be defined as a

combination of two properties, and both can have their exclusivity but at different levels. In the context of property rights, it appears that property rights regimes are stable but they are dynamic, changing from one to another. These dynamic property rights regimes are responding to several factors and drivers both at the local level as well as the international level (Nayak & Berkes, 2011).

5.2 Perspective on Commons as a Process

A recent analysis of the commons which captures changes in the economic, social, and political spheres has been conceptualized succinctly by Nayak and Berkes (2011). They call such changes “processes of commonisation and decommonisation.” Changes in commons status may result from shifts in policies towards more economical gains. In some cases, the conversion of commons to State property may take place as a result of influences from external drivers. Following Nayak and Berkes (2011), I use the concepts of “decommonisation” (Nayak & Berkes, 2011) and commonisation, to examine the governance of mountain commons in northern Pakistan. Here, the term “decommonisation” refers to a process through which jointly used resources under commons institutions lose the essential characteristics of commons. Following Nayak and Berkes (2011), I am using the term “new-commonisation” to refer to a process through which resources get converted into a jointly used resource, as in the case of northern Pakistan, where the commons get converted to “conservancies.” I prefer to use the term, “new-commonisation,” because this is a new arrangement in which commons get converted to “conservancies” under a new arrangement for resource management. For

examining mountain commons, it is important to understand the categories of commons as described earlier: managed commons and unmanaged commons.

In northern Pakistan, two categories of commons exist to varying degrees. There are commons that are strictly controlled by the communities, i.e., Shimshal Pastures, and other commons that are not well managed, i.e. Naltar Forest and Pastures. However, both the categories have undergone shifts from one regime to another, and therefore, it is important to view commons as a process to analyze the shifts in commons and determine the factors associated with them. Nayak and Berkes (2011) describe this process: “resources can enter into a process of commonisation; already established commons or resources that are being commonised could also revert back into decommissioning” (Nayak & Berkes, 2011, p. 133). In a new form that I refer to as “new-commonisation,” it does not revert back. Rather, it transforms into a new arrangement, that is, with more refined rules and a management system, complementing the resource use and protection, as well as complementing the traditional practices and values.

I therefore intend to examine the decommissioning process, first, to see the impacts and the factors that have contributed to them. I use the Shimshal case to analyze the shift from a common property regime to a State property regime as a point to illustrate how resources can be commonised. In analyzing the Shimshal case, I specifically focus upon determining the following:

- i) social costs (loss of rights, access, subtractability, excludability), loss of ecological resource, pastoral land and cultural amenities (affiliation to the hereditary herding practice), enhanced inequity, and disconnection of the community from the commons (Narayan et al., 2000);

- ii) the power of external drivers in the conversion process;
- iii) the significance of power relations; and
- iv) options for retaining commons characteristics in Protected Areas (State property).

To analyze the commonisation or new-commonisation process, I use the example of unmanaged commons (pasture resources) with no proper commons management system as a point to illustrate new-commonisation facilitated by international organizations, and to examine key challenges regarding the following:

- i) shared benefits and equity effects, and
- ii) the inclusion of marginalized communities.

5.3 Case Study I: Management of the Pasture Commons in Shimshal by Local Communities

The commons have been seen by many authorities, especially by the State, as a resource that will eventually be degraded by free access, as Garret Hardin (1968) hypothesized. Many scholars (Ostrom, 1990; Berkes et al., 1989; Brosius et al., 1998) have argued against and criticized this view, which has led to more thorough examinations of the commons. There has been a growing body of literature on common property resources to show that users are able to restrict access and establish rules among themselves for the sustainable use of natural resources (Berkes, 1986, 1989; McCay & Acheson, 1987; Berkes et al., 1989; Ostrom, 1990; Bromley et al., 1992). A wide range of common resource systems have been developed and maintained by the local communities in many different societies in the past (Ostrom, 1990; Nayak & Berkes, 2008). In the

context of northern Pakistan, common resources have remained under community control since the time of the Mirs (rulers had this title since the Mughols and British rule in the Indian subcontinent), where communities established the traditional management system and customary laws to regulate their rights and access to the resources in an effective manner at the local level (Bilal et. al., 2003).

In the following section, I will analyze the commons under different regimes and in the present Shimshal yak herding system as examples of the traditional sustainable way of governing commons. To make my argument, I will attempt to highlight how communities have governed the commons and sustained the resources for centuries, and how they have used traditional institutions to control the commons.

5.3.1 Traditional yak herding system in Shimshal.

Shimshal herding practice is used as a tool to manage pastures by harvesting forage to produce livestock to maintain plant composition (NASSD, 2003). Livestock are central to the Shimshal livelihood, contributing a total of 38% of the total economy, and they play a vital role in the region's food security (Ali & Butz, 2003). Shimshal herding practice follows a traditional pattern, profoundly influenced by climate and seasonality, by the topography of the land, and by social and cultural influences. Their traditional herding system relies on centuries of experience, knowledge of the productivity of pastures, the availability of water during summer and winter seasons, accessibility, and vulnerability to predators. An important aspect is the socio-cultural features which are embedded in their self-identity as "Shimshali." It is a community that is highly devoted to

maintaining their culture, rituals and hereditary resources, as these are interwoven with the livestock herding system (Butz, 1996; Ali & Butz, 2003; Butz, 2006).

The decision-making process regarding the herding system takes place at three levels: i) household level, ii) community level, and iii) pasture-cycle level (Butz, 1996). The initial decision process starts at the household level, where the household members get together to plan how many livestock need to be sent to the pastures. Decisions are made by considering several factors: a) the available number of persons (labour), b) the affordability of the cost in terms of cash or in-kind (material), and c) the number of milking animals available.

At the community level, various factors are involved in the decision-making process. These include the appropriateness of pasture for the specific number of livestock, the mapping of pastoral movements based on their years of experience, cultural festivals, and the timing of rituals and ceremonies. The community level decisions ensure that all households get an equal opportunity in the shared resource. It is important to note that the community motivation for conserving their resources is the main priority, and it is reflected in their resource use activities. An important element is the selection of people that will accompany the livestock. In the case of yak herding, two people always get selected that are well aware of the pastures and know the routes.

The third level of decision-making takes place at the herdsman level (pasture level). Herdsmen make decisions based on their past experience of weather and regional climatic conditions, status of the pasture, access to pasture during winter, and availability of water. The herdsmen intend to ensure that the livestock herd is safe from predators and that there is enough fodder to feed on. They also need to ensure that the water

requirement of the herd is fulfilled. They are responsible for the timely departure to other pastures as well as to the village prior to the celebration of “Kutch” -- an event to offer gratitude to the creator for his blessings for their safe return with animals and wealth.

In achieving these goals, community members practice primarily two kinds of herding system: i) summer pasturing, and ii) winter pasturing. During both summer and winter pasturing times, caring for their ancestral resources, which they affiliate with Mamu Singh, the founder of Shimshal, is common. According to one popular legend, Mamu Singh -- a Burusho (brushski speaking) from Baltit (Central Hunza) -- discovered the Shimshal region about four centuries ago. His son, Sher, discovered all other territories, including Pamir. The lineage of Shimshal – Gazikator, Bakhtikator and Baqikator – claims it as their ancestral land (SNT, 2007).

During the group discussion in Shimshal at Sifat Guest House in 2007, communities defined the mechanism of the herding practice and the management of the resource as described in Table5.1.

Table 5.1. Key Mechanisms of Pasture Resources Management in Shimshal

Mechanism	Purpose
Village level decisions: all village heads and household heads have a role in the decision-making process. The village elder (lumberdar) makes the decision.	Involve all village heads and household heads in decision-making. To provide equal opportunity to every household and to bound every individual to abide by collective decisions and the regulations made by the community.
Household level decisions: all members of the household have a role in household level decisions.	Involve all household members in decision-making process and provide equal opportunity to every household member. To ensure their commitment, availability, contribution in labour work.
Pasture-cycle level decisions: all herders have a role in these decisions.	Informed decision based on climate conditions, accessibility, availability of fodder and safety of the livestock.

Mechanism	Purpose
Pasture management: a series of pasturing decisions on the specific pastures, pasturing cycles, and times of pasturing to determine duration and livestock numbers.	To attain maximum benefit from the resource; to maintain pasture quality and to ensure the continuous supply of fodder for the livestock in different seasons and facilitate new growth of vegetation. To retain their tradition and heritage, a symbol of their pride.

Source: Focus Group Discussion with Community Elder Group (2007).

5.3.2 Summer pasturing system.

Summer pasturing requires a combination of ecological knowledge and climate, vegetation and carrying capacity, as they play a key role in the success of this endeavour. This arrangement is made based on two criteria: first, the availability of new vegetation in pastures for livestock, and second, community needs to cultivate agricultural products within a short season since afterwards, agricultural fields are required to be closed for grazing. Upon the completion of village-level decision-making about who will be going with the livestock, the herders are required to leave the village by the first week of May to Shujerab, the nearest pasture (Figure 5.1). Before moving the livestock to the pastures, a selected team of villagers repair the treks and the cattle and shepherd sheds in places where damage from heavy snow and landslides has taken place.

A group of herders, which includes elderly women with experience of the pastures, leads in summer pasturing (Abidi-Habib & Lawrence, 2007). The move to the next pasture is determined by weather conditions and the availability of new vegetation in the pasture. Limits are placed in terms of the total duration of grazing on each pasture, with a time cushion of three to four days. The pasture cycle continues, and several periodic stays are made at different pastures, Sher Lakhsh, Furzin-i-Dasht, Gorjerav, Sher Bulak, Gharsar and Sher-a-lik, until they reach their final destination, Pamir, where they spend two and half months.



Photo 5.1. Livestock in summer pastures

Source: Photo by Karim



Photo 5.2. Women milking livestock in summer pastures

Source: Photo by Shah

Most of the production of butter and other animal products takes place in Pamir. In Pamir, women play the pivotal role; their prime responsibilities include milking, butter-making, and qurut-making.

Their main rituals are performed here in Pamir. From the perspective of herder women, Pamir pastures are mystical and pure, and purity is a must attribute to gain the blessings from “God.”

As Musk (a female herder) described:

Our several rituals are associated with herding in Pamir. On arrival to Pamir pasture, we (women) perform a number of rituals: Mirgichig (purification) before starting any activities and then the first product of the new season is sent to our families in the village, which is consumed in a special festival with thanksgiving prayers. We have these rituals that connect us with “God” for his creation and his blessings through the wealth in the form of the products we gather from our pastures. (Musk, female , 57, herder, Shimshal)

This expression reflects the affiliation of herders with nature and their struggle for survival in these pastures. After completing their summer pasturing, spending over five months in pastures, herders prepare for their return home. At the end of the summer period, by September 10th, herders are required to leave Pamir pasture, and delays or an early return would put the livestock at risk. Delays in the return would make them end up facing cold temperature or snow on high altitudes. Similarly, an early return would put the livestock at risk because they would have to cross several water routes. At peak water flows, it is difficult to cross these routes. As stated earlier, the arrival of herdsmen to the

village from the pastures is celebrated with an event called “Kutch.” This is a special occasion to thank God for their safe return with the accumulated wealth -- butter, qurut (milk product), cheese and many other products. The celebration continues for a week, with friends and families invited to their homes. Similar summer pasturing is done by other herders in other main pastures such as Gujerab, Luggar, and Yazghel.

5.3.3 Winter pasturing system.

Winter pasturing is carried out predominantly with yaks. Yak herders stay with the yaks to protect them from attacks by wolves or snow leopards, especially at the time of calving, and to prevent the herd from straying. Yak herding in Shimshal is practiced with a specific purpose of utilizing and managing pastures. Although it is very difficult to graze their yaks in winter, the community has been practicing winter pasturing for centuries to maintain the pasture resource. The community’s experience and knowledge has revealed that after grazing their livestock in the summer, certain pastures remain untouched, and if those parts have not been grazed, then those pastures become less productive in the following year.

Yak herds are moved periodically based on weather conditions and the availability of food and water. There have been several incidents when the yak herds were killed due to heavy snow. Given the fact that Shimshal community has limited land available in the village to feed their livestock, especially yaks, the pasture resource is crucial for their livelihoods.

Reflecting upon the challenges herders face, Majidullah said:

Winter yak herding is not an easy task. We move yaks from one pasture to another so that we can maintain the pasture condition, as well as food for the yak, so we can sustain both. We cannot afford degrading the pasture and starving the yak. Thus, we have to struggle to do this, but we do it because yaks are our survival and it's our tradition. (Majidullah, herder, 49, Shimshal)



Photo 5.3: Herdsmen moving yak herds during winter

Source: Photo by Pamir Times

5.4 “Decommissionisation” of the Pastoral Resources: Key Factors in the Loss of Collective Rights and their Effects on Livelihoods

Protected Areas as a major driver of decommissionisation.

In the context of mountain areas, commons were converted by a major shift in government or public policy to Protected Areas (i.e., State property), mainly to conserve the quality of wilderness and their biodiversity values (IUCN, 2003). In doing so, Protected Areas truncated local resource use systems and excluded indigenous peoples from their legacies associated with natural resources, contributing to the impoverishment of local communities, and also building antipathies between parks and people (Hoole, 2008). This system has largely neglected the communities who are dependent on these common resources. Communities have traditionally been able to restrict outsiders from access to the resources and established rules among themselves for the sustainable use of natural resources (Berkes, 1989; McCay & Acheson, 1987; Berkes et al., 1989; Ostrom, 1990; Cronkleton et al., 2008).

As a result, communities’ responses have been in most cases to “resist” such a public policy shift and disregard Protected Area provisions. Such practices have led to the degradation of the Protected Areas, and in some cases where those provisions are enforced strictly, conflicts have arisen between communities and the governments. These situations threaten both biodiversity and cultural diversity in Protected Areas. The Khunjerab National Park (KNP), in northern Pakistan, is a notable example of the conversion of a common resource to a Protected Area (State property), in an area where the local community has followed sustained herding practices for centuries, controlled

resources through customary rights under local institutions, and ensured sustained yields (Butz, 1996; Knudsen, 1999; Khan et al., 2011).

As per the group discussions with the community in Shimshal, the establishment of a Protected Area was a plan of the national government to take their pasture land away, to take away their right of access and extraction, and to place restrictions on grazing to several pasture resources. These restrictions resulted in reduced grazing areas, as well as confined traditional yak herding practices into smaller areas. They also impacted the traditional grazing routes in main pastures.

As one of the members expressed:

Our traditional routes are now in the hand of the government. If we are confined to a few pastures, we won't have enough pastures to feed our livestock. Where will we take our livestock? The pastures in these areas have low productivity and if we keep our livestock longer then we won't be able to graze our livestock in these pastures next year. He added, "We will have to reduce our livestock because we cannot afford, as there are no other options of livelihood in this area" (Qurban, 43, Shimshal).

The local communities' response in this case was clearly against the government decision, and they were unwilling to hand over their ownership rights on their pastoral resource to the government. Whether government restriction in the newly created Protected Areas of the previous commons will bring about benefits for "conservation" is questionable.

In reality, government control means disconnecting people from their resource and their belongingness to the resource. In remote areas, the government lacks proper human resources, infrastructure and other associated instruments to control resources, which in turn, leads to the misuse of resources. In such remote areas, if the property ownership of resources does not belong to the local community, the resource belongs to no specific member of society. Everyone takes advantage of it, and thus the resource ends up in a condition where little hope exists for sustainability.

My investigation in the study areas reveals that communities' acceptance of government rules was negligible, and it was evident that the illegal resource extraction, particularly logging and timber cut, remained high in areas where government control was lacking. In Naltar Valley, illegal timber harvest by outsiders was relatively higher than in other villages where community control was relatively stricter. In the Naltar Valley area, a forest control group used to manage access and the appropriation of forest resources. With the introduction of government control of the forest, their role diminished. In the case of Shimshal, in the face of the imposition of rules and regulations by the government, traditional institutions transformed themselves into more formalized institutions to protect their resources. The process has also generated strong anti-governmental sentiments among local communities.

5.5 “Decommonised” Forests – Case II: Effects on Community Rights and

Livelihoods

The commons management approaches in northern Pakistan have undergone some significant alterations from the Mir's control during the pre-British and British colonial periods to State control after the abolition of the princely states by Bhutto in 1974. One

such major shift was the introduction of the so-called centrally controlling mechanism of the commons -- centralized agencies of the national Government of Pakistan. For example, forest and wildlife departments replaced the authority of local institutions. The decision-making capacity regarding management of the forests and their resources moved from the local community to a centralized administrative control. As a result, village-level cooperatives became either dormant or dysfunctional or, in exceptional cases, newer forms of local institution emerged. In this context, it is important to assess the implications of such decommissioning by the State upon the livelihoods of the local communities and the sustainability of natural resources.

Community rights in State-controlled forest in Naltar.

Until 1967, in the Naltar area, local tribes were free to sell their forest products to contractors, but the sales agreements had to be attested by the assistant political agent. The attested deeds were then assessed by the Divisional Forest Officer for tree marking. Harvesting was regulated through written contracts that gave the Northern Areas Forest Department power to control violations. In return, the forest department received royalties -- a portion of the revenue from the sale of forests. In 1957, the Department of Forest received 12 rupees per log as a royalty. It was increased to 25 rupees per log in 1958, irrespective of species and size (Bilal, et al., 2003). In the early 1970s, with the abolition of the Mir's regime by the former Prime Minister, Zulfikar Ali Bhutto, the principalities were declared State property, while in areas such as Darel and Tangir within the Diamer district, where there was a tribal system, the tribal councils negotiated with the government to retain their ownership rights (Bilal, et al., 2003).

The Gilgit Private Forests Regulation was enacted in the early 1970s for the protection and scientific management of forests, as well as for forest conservation, and this was applied to Naltar Forest. The penalties for forest offences stipulated in the Forest Act of 1927 were also adopted in the Northern Areas. Rules under the Gilgit Private Forest Regulation of 1970 made a provision for access to the forest resources by the communities residing in the vicinity of the forest; these rights included the free grant of trees on permission, grazing and the collection of dead or dry trees. Grazing was allowed only in those areas that were not closed for regeneration (Gilgit Forest Department, 1990).

With the regulations that were enacted in the 1970s, every outsider received access to retrieve forest resources under the statutory laws, and as a result, most of the so-called outsiders obtained the benefits. The Government of Pakistan passed the Forest Act 1975; under this Act, the state then received entitlement to all the resources except the forests in a few selected parts of the Northern Areas, like in Darel of Diamer district, where the clans owned the forest.

Local resistance to modernization stemmed from efforts to protect local culture and tradition as well as to save the means of survival in northern Pakistan. Despite the local communities' strong resistance, roads were constructed using public funds, and forest resources were harvested commercially by the government to earn revenues. With this change of control and the construction of Karakorum Highway (KKH), exploitation of the resources was made easy for non-locals. But the State authorities blamed the local people for overexploitation of forest resources (Bilal et al., 2003).



Photo 5.4. Livestock in Protected Forest in Naltar (Photo by: Shah Raees)



Photo 5.5. Fuel wood Collection by Gujars Naltar (Photo by: Shah Raees)

The case studies from Nepal in Himalayan region suggests that hill side farmers are not the prime cause of environmental degradation and are not the culprits for causing deforestation; it is the lowland population growth and the demand of timber which resulted in the commercial harvest of the Himalayan Forest (Ives & Messerli, 1989). Evidence from northern Pakistan suggest that there were many other non-local actors involved in such exploitation of forests that included the military authorities who used forest products extensively for constructing buildings and bridges (Ali, 2005).

As one community member commented:

It is not in our hands to control the illegal cutting of the forest, and even if I resist them and stop them, government agencies would blame me rather than trying to catch the offender. These are illegal activities, and unfortunately, government people are directly involved. If it was in our control, our forest would not have disappeared. (Respondent who wanted to be anonymous, Naltar Payeen)

As Muhammad Yar said:

The forest has been depleted so much that there may be no forest left and our valley will be a barren land. People have encroached the forest and developed patches of agriculture fields in the middle of the forest, and Gujar community is involved in the encroachment in forest land. It is very common that people come from Gilgit town, fill up their tractors and take the timber out. The threat is that our villages will be swiped away if the forest is gone. (Muhammad Yar, 34, teacher, Naltar Payeen)

During the household interviews, respondents stated that communities were stripped of receiving any rights to access forest resources. When they applied for fuel wood permits to the forest departmental authorities, the forest officer subjectively decided to accept or reject the request. There was no transparency in fuel wood distribution by the local government authorities.

As one of the respondent expressed:

I have forest around me but others enjoying the benefit from it. The forest is not in our hands; government decides whom to give. As a result, deserving people are not getting it. Why they will give it to us when they get more money from those illegal operators? (Interview with a resident, who wants to be anonymous, in Naltar Payeen)

It is very difficult for the poor to acquire fuel wood. A local resident elicited: “Only those people are getting fuel wood who have links with the government officials. Only a few people have access to those permits, and these include people working for the government and contractors, but not us” (Interview with a resident, who wants to be anonymous, in Naltar Payeen).

During my field surveys, I noticed that not all community members collected fuel wood from the forest. The reasons for their reluctance were related to several factors, which included:

- i) it was a time-consuming endeavour to move deep into the forest,

- ii) government officials have generally been non-cooperative in using the rights of the local communities to collect fuel wood, and
- iii) it was difficult to obtain a permit; only those who had a strong personal network with government officials received such permits.

As per my field data, the total fuel wood collected from the forest and pastures was 43,714 kg, worth 131,140 Pakistani rupees (US \$ 1,457), in one year, by both Naltar Bala and Naltar Payeen villages.

A unique feature in the Naltar region was the conflict between the locals and non-locals. The conflict was over rights for fuel wood and grazing between the communities of Naltar Bala, who are mainly the Gujars, and those of Naltar Payeen, who are earlier settlers of Naltar Valley. The Gujar community immigrated to Naltar to graze their animals during summer season and eventually made permanent and semi-permanent settlements in Naltar Bala. This happened during the last 30-40 years. They continued to avail the rights of grazing and of collecting fuel wood. However, the early settlers were unclear about how this acquisition of rights of the newly settled Gujar ethnic groups was decided by the government.



Photo 5.6. Encroachment in Naltar Forest

Source: Photo by Danial Shah



Photo 5.7. Military resort in the Naltar Bala

Source: Photo by: Photo by Danial Shah

In turn, such lack of clarity and the “encroachment” (Photo 5.2) of new settlers in resource use have led to ethnic conflicts and rivalry.

However, there are military resorts, a ski slope, and government guest houses in this reserve forest; they fulfill their fuel wood requirements from the forest. These facilities are not open to the public and no opportunities are given to locals in these resorts.

The rules under the Forest Act of 1927 describe the access rights (Table 5.2) to forest resources for communities residing in the vicinity of the forest. In reality, such access of the community members to forest resources is very limited; local communities are not involved or consulted in the management of forest. There is now no such allocation of free grants of trees.

As one of the residents said:

Government is neither sincere with us nor with the matter of forest management. We used to have dense forests. It was under government control, and now, only patches left as most of the forest got extracted illegally with the help of forest department. The forest resources were given to the outsiders and we don't get dead trees to use as fuel wood.

He added, “If you look at the houses of these forest people, their walls are covered with deodar, the expensive timber. What do you think? He then questioned, “Are they protecting the forest?” (Resident who wants to be anonymous, Naltar Payeen).

We used to bring the dead fallen trees, and we would go up to Naltar Lake. The forest was dense, but gradually, it started depleting. We used to value our forest

because we were part of it. Since the intervention of government, we have been separated from our forest. (Shafa Ali, 54, Naltar Payeen)

Table 5.2. Protected Forest in the Northern Areas

District	Area Ha	Forest Type	Significance	Rights	Remarks
Gilgit (Gilgit and Nagar)	17028	Montane dry temperate and sub-alpine	Subsistence timber, fuel wood, grazing and other NTFPs (non- timber Forest Products) biodiversity, watershed, ecotourism, and logging for civil works.	In Nagar, free grant of timber and fuelwood to local right holders, as per notification of 1974. In Gilgit, timber at concessional rates to locals; free fuel wood from dead and dying trees.	No forest in Hunza
Ghizar (Punial)	7740	Montane dry temperate and sub-alpine	Same	Free grants of timber and fuel wood to local right holders, as per notification of 1974 ¹²	Scarce forest resources in Ghizar; no forest in Punial and Gupis
Diamer	30960	Montane dry temperate and sub-alpine	Same	Free grant of timber and fuel wood to local right holders, as per Alian No. 40 of 1940	All forests in Chilas, Darel and Tangir are private forests
Skardu	9288	Montane dry temperate and sub-alpine	Same	Timber at concessional rates to locals; free fuel wood from dead and dying trees	Limited forest resources in Skardu district. No forest in Ghanche district.
Total	65016				

Source: Northern Areas Forest Department, 1990

¹² Although there is a provision of free grant of timber and fuel wood to right holders, but these provisions are merely in the records and these services are not practiced.

5.6 Was “Decommonisation” a Failure to Conserve Resources?

The key point in the conceptualization and implementation of “decommonisation” was the failure of the government to recognize the interconnectedness between local communities and the conservation of forests or pasture lands. There was a clear inadequacy in understanding the linkage between the livelihoods of the local community and their well-being on the commons, which are endowed with natural resources. The cases of Shimshal and Naltar provide a clear illustration of disconnecting people from their resource base as a result of external institutional intervention through a State-controlled approach. They also depict the ground realities of the mismanagement of the forest and pasture resources. The imposition of rules and regulations through decommonisation has resulted in the loss of local rights and ownership of local communities. In other cases, due to the lack of protection and control, the reserve forests face the threat of depletion. Thus, the survival and sustainability of the forest resources come under question under the State control.

The key factors (Table 5.3) of the decommonisation processes can be summarized as follows:

Table 5.3. Key Factors of the Decommonisation Process in the Study Area

Key factors	Indicators
International initiatives by professional and governing institutions	<ul style="list-style-type: none"> ● International conventions and treaties as drivers of change
Change in national government policies	<ul style="list-style-type: none"> ● Shift in focus from community managed to centralized control ● Interference of government ● Focus on “conservation” strict in Protected Areas
Creation of Protected Areas by national governments	<ul style="list-style-type: none"> ● Protected Areas superimposed in commons, which used to be managed effectively under customary rules to exclude others
Loss of rights of local communities	<ul style="list-style-type: none"> ● Loss of access rights and institutional base resulted in conflicts and issues of access, loss of grazing lands

Key factors	Indicators
Erosion of traditional local institutions and emergence of new local institutions	<ul style="list-style-type: none"> ● Centralized agencies such as forest and wildlife departments replaced local institutions or tried to replace them. ● Decision-making control moved from the local community to a centralized administrative control. ● Village level cooperatives became either dormant or dysfunctional or new forms of local institution emerged.
Change in grazing practices	<ul style="list-style-type: none"> ● Collective method of pasturing was reduced or traditional practice of Shimshali yak herding restricted ● Keeping of small livestock reduced, as in Naltar Bala ● Shift from livestock rearing to agriculture-oriented activities
Sense of disconnect from pasture and forest resources	<ul style="list-style-type: none"> ● Ecological, social and economic disintegration, and unsupportive political decisions initiated a process of disconnect ● Growing resource degradation (loss of forest in Naltar); there is no sense of belongingness in forest ● Aggravation and resistance of Shimshal community ● Disconnect between the government and the local communities

Source: Focus Group Discussions, 2006-2007.

In all, the inertia of creating Protected Areas with a national vision for conservation has resulted in changing the characteristics of commons from being an entity of natural resource endowment to support local livelihoods to an entity disconnected with local communities. Consequently, conflict between the local communities and the national government has risen astronomically over rights, exclusion and subtraction.

5.7 Efforts toward “New-Commonisation” to Conserve by Integrating Local Communities

The two cases presented above demonstrate the negative outcomes of a State-controlled resource. As in the forest case, State control has led to occupation by non-locals, and illegal timber harvest and degradation. In the other case of pastures, conflicts have arisen between communities and governments over resource use rights. It is apparent that the strict Protected Areas approach – which views human agents and nature

as separate entities, asserts the presence of communities as a concern and incompatible with conservation, and requires the exclusion of communities from the PAs – has resulted in failure to achieve the conservation objectives not only in northern Pakistan but also in many other parts of the world (Borrini-Feyerabend et al., 2004a; Hansen & DeFries, 2007). Studies have shown that PAs have not succeeded in meeting their management objectives, chiefly because of conflicting views of nature, different definitions of conservation, and a profound misunderstanding of the communities (WWF, 2004). The State institutions have undertaken the “conservationist” point of view on the understanding of nature and on the practices of indigenous communities, and they have made ineffective decisions that have resulted in separating humans from nature (Hough, 1988, 1994; Hoole, 2008).

In the face of stern criticism and in recognition of the failure of a strict “conservationist” approach, new initiatives were taken to build communities for collective action in managing the common resources that were under pressure for sustainable use; this can be termed the “new commonisation” process. The purpose of these new initiatives was to conserve resources and biodiversity values and simultaneously provide livelihood security to local communities (IUCN 2006). New-commonisation initiatives have focused on marginalized and resource deficient communities which desire to have common resources for their livelihood security.

The key purpose in the new-commonisation process was to reverse the failure of the government to recognize the complexities of the local community, the linkages of livelihood with the commons and natural resources, and the welfare of the local communities. The establishment of traditional PAs was not an effective measure to

conserve the biodiversity because the local communities relied on these resources for their survival. These conventional PAs have led to severe social conflicts in Pakistan and other parts of the world. Thus, there was a call for achieving a balance between “conservation” and the resource-use needs and practices of local communities. In response to a call to adopt an approach that would bring the local communities back to managing the commons, PAs, and other natural resources, many new experiments or pilot projects were undertaken. Pakistan was no exception, where several community-focused conservation projects were developed as experiments. One such experiment was the Mountain Area Conservancy Project (MACP), which I will examine in the following section.

5.7.1 Experiment of the Mountain Area Conservancy Project (MACP) and lessons learned.

The Mountain Area Conservancy Project (MACP) was one of the largest conservation programs implemented in mountain areas of Pakistan. It was jointly implemented by the International Union for Conservation of Nature (IUCN)/World Conservation Union, World Wide Fund for Nature (WWF-Pakistan), United Nations Development Program (UNDP), Government of Pakistan, and Global Environmental Facility (GEF). The MACP was implemented over a 7-year period (1999 to 2006), after completion of a 4-year PRIF project (Pilot Phase 1995-1999), at a total cost of US \$10.35 million (121.5 million Pakistani rupees). The project was implemented in four conservancies in northern Pakistan: Gojal, Nanga Parbat, Qashqar, and Trichmir (Table 5.4). MACP was grounded on a strategy to form a shared vision for pursuing conservation

and sustainable development in the Mountain Areas of Pakistan by developing an approach of extensive, multiple-use conservancies as a new element in a national conservation system (IUCN, 2003).

Table 5.4. MACP Conservancies

Conservancy	Province	Mountain Region	Habitats	Area (sq. km.)	Contiguous PAs
Gojal	NA	Karakoram	Cold dry Alpine desert	4,830	Khunjerab NP
Nanga Parbat	NA	W. Himalaya	Dry temperate coniferous forest, dry Alpine habitats	4,905	Deosai Plateau NP Satpara WS Astore WS
Qashqar	NWFP	Hindu Kush	Dry temperate forest	3,050	Goleen Gol and Mahudand GRs
Tirichmir	NWFP	Hindu Kush	Cold dry Alpine desert	3,580	Chitral Gol NP

Source: IUCN 2006

5.7.2 The main purpose of the MACP.

The purpose of MACP was to develop a mechanism for introducing and testing a new co-management system for Mountain Areas conservancies and to empower the local village and valley communities to safeguard the natural environment and wildlife at the same time. The emphasis on the local communities' capacities stemmed from the concept that local individuals and institutions develop their economies and livelihoods based on the sustainable harvest of natural resources (IUCN, 2003). The MACP project was designed around the seven distinct components aimed at attaining the intended results in four conservancies:

- i. Strengthen and engage local community institutions for planning and management

- ii. Enhance local community education and awareness
- iii. Develop and implement a project monitoring and evaluating system
- iv. Formulate and implement village eco-developments
- v. Strengthen village livelihoods and sustainable uses of natural resources
- vi. Mobilize supportive government institutions to assist in community-focused policies and regulations
- vii. Develop and implement a sustainable financing mechanism for conservancy management

5.7.3 The approach of MACP.

MACP used the platform of the pioneering work done by the Aga Khan Rural Support Program (AKRSP) in community mobilization and organization. MACP implemented the initial phase (PRIF Phase 1995-1999) for four years. Based on the lessons learnt under PRIF phase, the project had three major thrusts: a) empowering, organizing and enhancing the capacity of local communities to conserve biodiversity; b) enhancing the value of components of biodiversity for the local people; and c) creating a policy, along with the necessary legal and financial framework, that supports community-based conservation. MACP facilitated and organized villages, valley communities, and district level conservation committees, and took all key decisions at local levels. MACP approached the villages with the help of AKRSP, and initial meetings were arranged with the communities through the AKSP network of social organizations. Afterwards, the MACP staff facilitated in developing conservation plans at the village level.

The village development plans were prepared by the Village Organizations (VOs) themselves, with the assistance of project staff. Once completed, they were ratified by the general assembly of the villages and signed by the VO representatives. During the planning process, the villagers identified an important resource that they wished to conserve as part of the agenda for “biodiversity conservation,” and they defined a regime for its sustainable use. The implementation of village development plans were carried out in collaboration with AKRSP, and linkages were sought by the VOs with other development assistance opportunities through the government and other agencies. Thus, serious efforts were made to establish vertical linkages between VOs and development partners from government agencies, national and international non-governmental organizations, and professional conservation associations.

The project staff worked with the VOs on the Resource Conservation Plan (RCP). The preparation of the RCP involved taking a census of wildlife, doing a habitat survey, and identifying the ways and means to mitigate the underlying causes. It also involved preparing community rules for the conservation and use of natural resources (pastures, forests and wildlife), prescribing sanctions for violations of these rules, defining a basis for income-sharing, determining the capitalization needs of a village conservation fund, setting it up, and assessing the local training needs. RCPs were approved by a District Conservation Committee and thus they became a means of empowering the VOs to implement the plans. To establish a partnership between the project and the VOs, roles and responsibilities were clearly defined, and mutually agreed terms of partnership (ToP) were signed by both parties (IUCN, 2010). Thus, each village formulated a conservation plan.

To empower the communities, it was necessary to develop a platform, where communities could negotiate. In Pakistan, all powers are generally vested with the bureaucracy and the military establishment. Thus rural people in particular are placed in subordinate positions. Therefore, the idea of conservation through community development would be meaningless unless local communities were empowered, particularly with decision-making authority. For that reason, the establishment of District Conservation Committees (DCC) was deemed necessary. The Committees were headed by the Deputy Commissioner, and members were drawn from the Divisional Forest Officer Wildlife, the Assistant Commissioner, the Deputy Superintendent of Police, representatives of local NGOs, and village representatives from the project valleys. The villagers had never before had the occasion to sit at the same table with the district-level authorities and discuss local issues with them. From the point of view of villagers, the DCC forum contributed importantly to breaking down this communications barrier, it raised the villagers' self-esteem, and it contributed to building their self-confidence. The approval of the RCPs by the DCCs empowered the communities to make conservation their "own" agenda and to provide the impetus for its implementation (IUCN, 2010).

5.7.4 Performance assessment of MACP experiment.

The MACP project document (1998) states that "accordance to communities of (use) rights over wild resources...is critical and...the Government of Pakistan has agreed to take necessary policy and regulatory measures to decentralize the control and ensure effective implementation of the strategy" (IUCN, 1998, p. 12).

This promise by the Government of Pakistan, however, never materialized. In Edwards's words, "No law or policy has been adopted which clarifies the nature of the conservancies or the communities' rights to manage the natural resources within them" (Edwards, 2006, p. 22), and the people's rights to use natural resources remained unresolved.

The MACP suffered from numerous shortcomings. One such critical drawback was that the local communities were encouraged to introduce natural resource conservation measures before it was confirmed that local people were aware of their rights over these resources. This approach was the International Agency-driven agenda of conserving resources by establishing conservancies, and the local communities did not know if their specific access rights were clearly formulated.

The efforts to engage senior level governmental machinery through the establishment of the DCC (headed by the Deputy Commissioner and with the participation of the Divisional Forest Officer Wildlife, the Assistant Commissioner, and the Deputy Superintendent of Police) generated mixed results in advancing the process of conservation. On the one hand, the process enabled to initiate a process for vertical linkage between local institutions and senior level government agencies, as well as to expand attention towards conservation issues among the broader communities. On the other hand, because of mistrust and asymmetrical relationships between local community members and senior bureaucrats, many local members were reluctant to work along with the bureaucrats and thus to participate in conservation programs. As one of the community members said, "The decisions are not made by us; rather, again, it is imposed on us and we have to follow them."

The MACP introduced the provision for trophy hunting, based on the South African/Namibian model for establishing such conservancies. Trophy hunting is basically limited hunting of game animals such as ibex, markhor (mountain goats), or any other animals in the wild in community-controlled areas. The revenue from that animal can be used for conservation activities where the communities do not have the necessary financial resources. The price of trophy hunts may vary, but in Northern Areas it is 300,000 Pakistani rupees (US\$ 5000) per animal. The hunter keeps the head or entire body as a souvenir of the successful hunting. Experience with trophy hunting in the Northern Areas, North-West Frontier Province and Balochistan shows that trophy hunting can be a very effective means for conservation, for managing animal populations, and for generating valuable revenues for the communities and the government (IUCN, 2001). In northern Pakistan, the MACP, however, had caused some detrimental effects in these conservancies (Nuding, 2002). The trophy hunting provision created fierce competition and a power struggle among the communities to link with government personnel. A local community member expressed this problem in the following words, “IUCN has introduced this program, but they are not there when issues arise. There were other areas, for example, in Bar valley, where the community got split because of the disputes with money distribution from the Trophy Hunting.”

As a respondent who wants to be anonymous said: “Communities who have linkages with government officials received the hunting permits.” Another local resident suggested that the conservancy concept was not a new phenomenon. In his words, “We used to hunt Ibex that were old and used to share it with the community in the village, now IUCN call this as ‘trophy hunting’.”

The outcomes of the focus group discussions (FGD) in Shimshal 2007 indicated the mixed performance of MACP. Some communities received direct financial benefits and therefore viewed the “trophy hunting” provision as a success. As one of the members said, “We get tourism through trophy hunting program and more specifically in fall season. But when there are no hunters coming during winter, it is problematic. We do not have consistent income seasonally, so we cannot rely on trophy hunting.”

It is obvious from the field results that the views of the communities about MACP were divergent. Out of 9 participants in the focus group discussions (FGD), 3 were in favour of the trophy hunting, 4 were against trophy hunting, and 2 favoured wildlife watching as an eco-tourism opportunity for the village. The following were the outcomes of FGDs:

- Even though the labeling of MACP was community-focused, power and control were still with government officials, particularly in regards to management of common resources.
- The issuance of permits favoured particular preferred communities, because of their linkages with government authorities.
- The amount charged for permits was not standardized; such variable fees encouraged corruption and favouritism.
- Deals were made with individual hunters rather than using a tender system that focused on outfitters.
- IUCN withdrew itself when there were issues and disputes over resources and/or decision-making.

My own observation is that the project promoted was not Community-based Conservation. Rather, I would call this model a co-management experiment by IUCN that raised issues I have pointed out above.

In a nutshell, the achievement of the MACP was that it built the capacities of local communities to negotiate their rights to the natural resources. However, the major drawbacks of this project were:

- The project fostered dependencies on external funding and revenues from trophy hunting rather than making communities self-reliant.
- The alternative provision was to rely on government subsidies and compensations, which again fostered dependence on external resources.

The lessons learned from MACP were that the community members in northern Pakistan would need to find ways to use and sustain the existing natural resources as a basis for their economic and human development by strengthening existing institutions and by promoting self-reliance. Such a process could make the communities strong allies of conservation as well as support livelihood security.

5.8 An Experiment on Local Institutions and New Partnerships in Commons

Management: A Way Forward

While “decommonisation” has generally failed to address the issues of management of the commons, conservation of biodiversity, and support to local livelihoods, the significance of local institutions is “embedded in social relations, emerge historically and have potential to manage natural resources (Khan, 2011). Informal

institutions have played a key role in maintaining the commons in many parts of the world. For example, the Törbel peasants in Switzerland have maintained their Communal High Alpine Meadows for centuries (Ostrom, 1990).

Informal institutions have been understood as dynamic entities, deeply associated with the social, ecological, and economic affairs in different settings (Berkes, 2006; Berkes et al., 2003; Ostrom, 2005). These institutions are linked with controlling the behaviours of individuals or groups that affect the outcomes, and they play a key role in natural resource management. These local-level institutions are deeply rooted in the local traditions, norms and all aspects of life, and have evolved over time, gradually becoming more refined, functional and effective at the village level (Robson & Nayak, 2010). These institutions are embedded in cultural complexities; they are dynamic, effective and capable of adapting to new situations as well as retaining the power of current and future relationships (Berkes, 2006). These local-level institutions are as important as higher level institutions because cross-level linkages are required for the effective functioning of institutions (Khan, 2011; Nayak & Berkes, 2011).

In an earlier section of this chapter, I explained the traditional mechanism of pasture management in Shimshal, which is a prime example of a local informal institution for managing commons. This informal institution evolved over the centuries, and maintained its rules and regulations. However, in response to the emerging loss of control over natural resources and the commons by the local community members, and as a method of “self-organization” (Berkes, 2006), some local institutions have attempted to take on new shapes with reformed mandates.

The local informal institution of Shimshal felt it was losing the power to defend the community against the State. With this concern, they formulated a plan to formalize the traditional institution. Such an experiment resulted in the Shimshal Natural Trust (SNT), which is a newly transformed formalized institution, but grounded on the traditional informal institution. This transition can be recognized as evidence of the adaptive capacity of local-level institutions to learn, adapt and self-organize under uncertainties and changes in social-ecological systems (Berkes, 2006; Abidi-Habibi & Lawrence, 2007).

The birth of the Shimshal Nature Trust (SNT) is an example of the evolution of an informal institution to recognize its power of “self-governance” and “self-organization” in a time of adversity (Ostrom, 1990, 2005), in response to the establishment of the Khunjerab National Park. The initial resistance of Shimshal communities, expressed through a collective voice by informal institutions to defend Shimshali’s rights and ownership over the park, was not respected by the governmental policy and practice. Local resistance through the informal institution did not accomplish success in protecting their “self-governance” over the resources, and the conflict over the Park and Protected Areas and their resources remained unresolved.

The transformation of the traditional institution was obviously a result of a new way of thinking about how to defend local interests with a view to a “more intellectual and formalized engagement” with the State (Abidi-Habib & Lawrence, 2007, p. 35). The aim was to receive recognition of the common voices of the community, to retain all the aspects of the informal institution the communities had been practicing, and to manage the natural resources through traditional rules and regulations, but in a modernized way.

In was, indeed, a strategy adopted by the local community to maintain their self-control over their own resources and to respond to the emerging situation.

The community transferred the entire commons pastures to Shimshal Nature Trust as “Waqf” (given away), which was inalienable under Islamic law. The SNT held the common territories of Shimshal under a legal trust against national park paradigms (Abidi-Habib & Lawrence, 2007). In this case, Shimshal Nature Trust earned its recognition, with the power and authority of local community, and in terms of its functional role, SNT transformed itself into the type of more formalized institution needed nowadays. The institution was in the process of gaining recognition and political and legal entitlement to supplement other partners in “conservation.” The governance structure of SNT validated their efforts in both horizontal and vertical integration towards achieving its goals (Figure 5.2).

In this governance model, which I termed as “New-commonsisation” Shimshal Nature Trust has all the authority to make the decisions at the village level, based on mutual consensus of the advisory committee. The advisory committee includes the village heads from all five villages and members selected by each village as representatives to discuss their village’s point of view. These members are elected by the village through an annual election process. The nominations are based on the proposed representatives’ ability to lead the village in the conservation and development work.

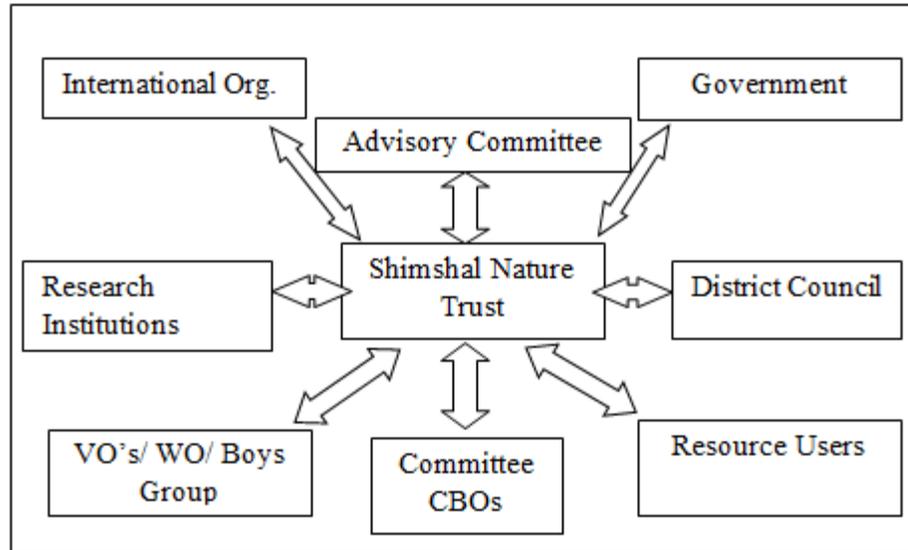
A task force exists in Shimshal Valley, comprised of a Village Organization (VO), established by the Aga Khan Rural Support Program, a Women’s Organization (WO), the Boy Scouts, and Girl Guides. These teams are volunteer groups which perform certain tasks to help the village community. As no government controlling body exists within the

village, these volunteer groups facilitate the community for their arrangements, during cultural ceremonies and events.

The community as a whole represents a “Resource User Group” which follows the rules and regulations defined and implemented by SNT (the institution). SNT has developed linkages with a number of international organizations such as the International Union for Conservation (IUCN), World Wide Fund for Nature-Pakistan (WWF-P) and researchers like David Butz, Abidi-Habibi, and others who are contributing to the community through their investigations.

There is very little involvement of the government in conservation efforts at this point in time, except for the issuance of trophy hunting licences. However, state involvement would be needed to generate opportunities and to facilitate the communities’ efforts to conserve the local resources and sustaining the livelihoods through building eco-tourism in the region that would help sustain the livelihoods as well as the conservation of the resources include both biological as well local culture and traditions.

Figure 5.2. Governance Model and Linkages at Cross-scale

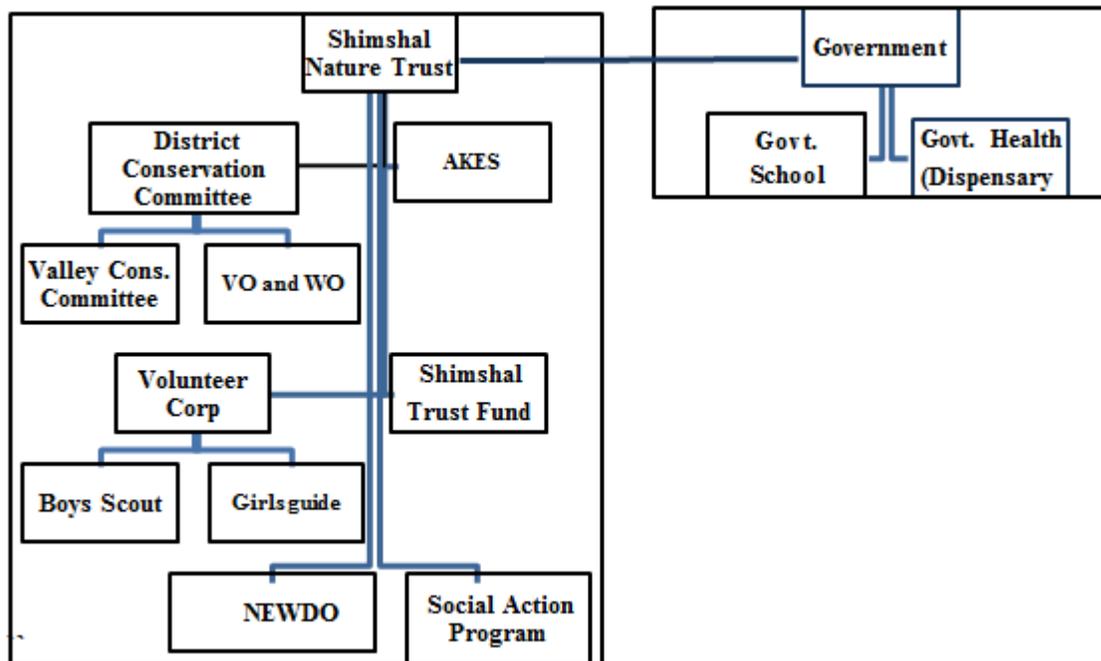


The outcomes of the FGDs in Shimshal clearly illustrated that SNT is deeply involved in strengthening cross-scale linkages. SNT is working together with these formal and informal organizations to protect the natural resources and to share the benefits received by the local community for conservation activities through the following activities:

- Obtain recognition of the institution at the regional, national and international levels
- Ensure economic benefits for the village from the sustainable use (trophy hunting) of wildlife
- Provide training of the local community in wildlife surveys
- Introduce environmental education programs for the schools
- Formulate and implement the management of pasture resources with sustainability goals

Other organizations with which the community has linkages are involved in the development of the village. For example, these include formal institutions like Aga Khan Education Service (AKES), Social Action Program, which is currently working on providing a supply of drinking water, volunteer corps (discussed earlier), Naunihal Education Welfare and Development Organization (NEWDO), which is an English medium school established by the community with the help of various donors, and Shimshal Trust Fund. All these institutions are working under the umbrella of Shimshal Nature Trust (SNT).

Figure 5.3. Formal and Informal Institutions in Shimshal



The following are the outcomes of the focus group discussions in Shimshal concerning revenue generation for the management of the park.

- i. Development of a detailed map (features of the park)

- ii. Designation of park features (declaring core zones for the breeding of wildlife, site-seeing, wildlife watching, and camping)
- iii. Levy of an entry fee for vehicles passing through the park on Karakoram Highway (KKH)
- iv. Levy of a fee on vehicles, which will generate an estimated annual income of 3,600,000 Rs per annum based on Rs. 100 per vehicle and an average of 100 vehicles per day. With the expansion of KKH and travel between China and Pakistan, the number may go up.
- v. Levy of an entry fee for visitors entering the park for pleasure or hiking
- vi. Trophy hunting (sustainable harvest) of ibex and Blue sheep
- vii. Establishment of trails to site-seeing areas
- viii. Annual census of wildlife (ungulates) as well as other animals
- ix. Summer eco-tourism to pastures (showing the traditional way of yak herding and the traditional pastoral system for education and learning)
- x. Identification of important plants (medicinal and other important plants)
- xi. Conservation and maintenance of soil and water resources
- xii. Developing criteria and indicators for the conservation and maintenance of biodiversity and ecosystem functions.

Is New-commonisation a Right Strategy towards Sustainability of Commons?

The key argument in the conceptualization and implementation of “new-commonisation” is that local communities are the drivers of the resources; this recognizes that the communities’ role in the management of the resource is vital for its protection

and sustainability. It also takes into consideration the role of the international community to intervene and facilitates the process when local communities are lacking in financial as well as technical resources for the conservation of forests or pasture lands. There is a clear understanding of the interconnectedness of the communities with the resource and the dependency for their livelihoods. The case of Naltar provides a clear illustration of disconnection from their resource base as a result of external institutional intervention through a State-controlled approach. It also depicts the ground realities of mismanagement of the forest and pasture resources. In other cases, due to lack of protection and control, the reserve forests are facing the threat of depletion. Thus, the survival and sustainability of the forest resources become questionable under State control. It is important to initiate the process of new-commonisation, not only for the commons but also in Protected Areas that are considered no one's property, as in the case of the reserve forest in Naltar.

The key factors (Table 5.5) of the new-commonisation processes can be summarized as follows:

Table 5.5. Key Factors of the New-Commonisation Process in Northern Pakistan

Key Factors	Indicators
Favorable resource conditions	<ul style="list-style-type: none"> ● A good resource base and sound ecological health ● Better ecological condition of the resource and regulated grazing practices for maintaining pasture productivity ● Shared benefit for everyone ● Low conflict
Rules about inclusion and exclusion (under customary rights)	<ul style="list-style-type: none"> ● Only selected villages have the rights for grazing in selected pastures ● Outsiders from the village are not allowed for any extraction of resources except those who have acquired permission from the community to graze livestock for one season, based on the productivity of the pastures.

Key Factors	Indicators
Strong local institutions	<ul style="list-style-type: none"> • Village level local institutions for resource management • Distribution of functional responsibilities amongst institutions • Community-based institutions in command
Relatively low population densities	<ul style="list-style-type: none"> • Sparsely distributed populations • Difficult for grazers to form more cohesive and manageable groups
Clear rights and entitlements	<ul style="list-style-type: none"> • Customary practices established specific rights of villagers with regard to access, use, management • Resource rights mutually sanctioned by community and recognized through legal arrangements
Government policies	<ul style="list-style-type: none"> • No interference • Recognized local management of resource through Jirga system
Grazing practices	<ul style="list-style-type: none"> • Season-based, specific pastures • Focused on resource sustainability • Based on collective action involving village groups or the entire village
Sense of connection to High pastures	<ul style="list-style-type: none"> • Social and economic benefits, ecological and political advantages, cultural practices kept the communities connected to the high mountain pastures • Living within mountains with livestock a “way of life” and sense of belonging

Source: Focus Group Discussions 2007-2008.

Summary

The chapter provided an insight into the conversion of the commons and factors affecting the commons. First, it discussed the property regimes: i) open access, ii) private/individual property, iii) State property, and iv) common/group property. It found two further categories of commons based on the management: i) “managed common property,” which has an identifiable community with control of exclusion, and ii) “unmanaged common property,” which is the category that has an identifiable community without a proper management strategy, but access to resources is not open to all. The chapter also discussed the issue of combined property regimes under a co-management

arrangement. This question led to an understanding that property rights cannot be held only as exclusive rights; rather, they need to be shared. This kind of conceptualization of property is especially critical for analyzing property rights in the context of a co-management arrangement because such an arrangement cannot be clearly defined either as State or common property within the given definitions. For such a combination, community-owned State property seems an appropriate property regime.

Then the chapter dealt with the issue of the conversion of the commons to study the “decommonisation” process. Following Nayak and Berkes (2011), I studied: i) the case of the Shimshal herding system and the impact of the establishment of Khunjerab National Park; and ii) the traditional rights of the Naltar community and the impacts under State-controlled reserve forest regulations. I used the concept of “new-commonisation,” which I proposed for the study to understand the emerging trend of involving local communities and the government in a joint venture in commons management in northern Pakistan. I assessed the Mountain Areas Conservancy Project (MACP), its impacts, and the lessons learnt from it. Finally, I examined the case of Shimshal Nature Trust (SNT), a transformation of a traditional institute to a formalized institution, as well as the best practices on how to sustain the commons through conservation and the preservation of local livelihood values and culture within the existing Protected Area framework.

Chapter Six: Discussion of Sustainable Mountain

Livelihoods and the Future of Commons

In this chapter, I intend to provide my insights on sustainable livelihoods in a complex mountain system through a discussion on the findings of my research. It therefore elaborates on resources in mountain social-ecological systems, mountain livelihood vulnerabilities, and how the distinct characteristics of a mountain affect community livelihood strategies. It generates a discussion on how deeply mountain communities are embedded in the historical development of social and cultural resources and are interlinked with nature. I also formulate a sustainable mountain livelihood framework that can be applied in similar contexts to analyze livelihoods from the perspective of measuring some resource (assets or capital) and vulnerability indicators, but from the perspective of a “way of life” adapted to the complex mountain system. My discussion further deals with natural and other pertinent resource management issues, and it synthesizes perceptions and suggestions from the mountain communities on how they would take a “sense of ownership” in resource management.

In the context of northern Pakistan, the general failure of the top-down, technobureaucratic approach of State-controlled resource management, the rapid depletion of natural resources, and the incremental constraints on local livelihood security have revealed that the State, alone, as a discrete institutional entity, may not be able to “control” resource use and the degradation of resources, if the local communities are not deeply involved. My research in northern Pakistan communities further revealed how strengthening traditional management systems (i.e., use and maintenance) and local

communities' rights to the surrounding natural resources could be used to enable an effective management system that would be locally acceptable and could contribute to livelihood security and conservation. This new thinking advocates for strengthening local-level institutions to enable them to establish linkages with national-level NGOs and government agencies. It also calls for fostering a community-based resource management strategy that binds conservation and livelihoods together.

6.1 Sustainable Mountain Livelihood Framework

In the literature, there is a general reluctance to consider mountain livelihoods as a distinct, complex, uniquely vulnerable “way of life” in which tradition and culture have profound roles in maintaining both social cohesion and the sustainability of natural resources. A number of sustainable livelihoods frameworks have evolved in the discourse of rural development studies and been applied in the field to assess livelihoods (Scoones, 1998; Ellis 2000; DfID, 2003). In essence, these are “people-centred” approaches to analyze and understand the dynamics of livelihood strategies based on the assets and opportunities available within the context of the relevant external and institutional environment. These people-focused approaches have helped to understand how the communities make use of their resources (assets) and their natural, physical, human and financial capital to adopt livelihood strategies, as well as how they cope with stresses to achieve desired outcomes, including food security, well-being and the sustainable use of natural resources.

As discussed in Chapter 2, Scoones (1998) identified five key elements to emphasize Sustainable Livelihood Analysis: i) the number of working days (on or off-farm, as part of the labour system, or subsistence production system); ii) poverty

reduction measures that help to reduce poverty; iii) well-being and capabilities; iv) livelihood adaptation, vulnerabilities and “resilience” – defined as the ability to adjust to temporary or long-term stresses; and v) natural resource sustainability. Scoones’s (1998) framework (Figure 2.1) provides a relatively comprehensive structure for understanding the various components. It offers all the elements of contexts, history, agro-ecology, power relations and politics. The framework focuses on institutions as the central force.

However, these mainstream livelihood analytical frameworks do not guide a specific way of thinking about livelihoods or an understanding of the complexities of mountain livelihoods and the factors that affect them in such social-ecological systems. What is missing in the mainstream approaches is the overwhelming role of societal attributes, which Putnam (1993) called social capital and Daskon and Binns (2009) termed the culture resources, in providing livelihood security (Schutte & Kreutzmann, 2011). The unique characteristics of mountain social-ecological systems are captured in “the mountain specificities” (Jodha, 1992), fragility, marginality, inadequate accessibility, and the physical and social vulnerabilities of the mountain communities, which include exposure, sensitivity and adaptive capacity (IPCC, 2007).

6.1.1 Societal dimensions in livelihoods.

The societal attributes and the traditional institutions are central to mountain livelihoods, and they are important elements in providing livelihood security. The mainstream sustainability frameworks have generally ignored the aspects of opportunities generated by cultural resources, whereas in the context of mountain livelihoods they are pivotal. In order to establish the distinctiveness of mountain livelihoods from rural and

other livelihood systems, an exploration into the unique characteristics of mountain systems is needed. Social cohesion and solidarity through the local institutions (such as family, clans, and tribes) are unique in the mountain environment. These aspects are well reflected in a commentary made by one of the respondents:

Even though we belong to different families, we are together – we are just like the sons of one parent. If someone in the village is building a house and for some reason he couldn't finish building, a group of community members would join him to build the house. If a male person is away and if one of his family members is sick, any member of the community member will take him to a hospital for treatment; these are our social values. If someone in the family passed away, the whole community would share the sorrow with the family; this is our tradition that keeps us united in times of difficulty. The whole village would gather for the family in the rituals organized by the family of the deceased member. Community will bring food and other life-support items for the family, and this practice continues for 40 days, that is, 'til the recovery of the family. If I am away during that time, I would send a message to that family, and on my return to the village, the first thing I would do is to visit the family of the deceased and say "*Fathiha*." These values keep us bonded together and help us to deal with any crises. Similarly, in wedding ceremonies of any members of the community, the whole village celebrates one's wedding; people gather to watch and bless the bride and groom, food is served to all village members, and everyone in the village enjoys the traditional music and dance. (Daulat Amin, Shimshal, 2007)

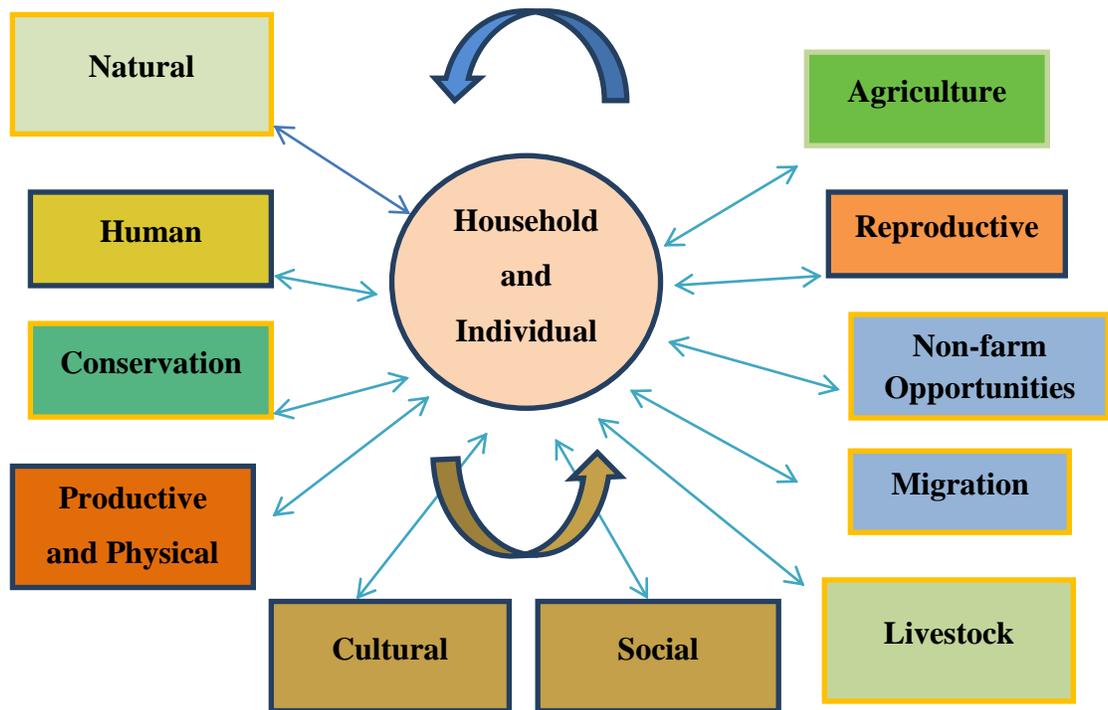
This narrative explains that the spirit of sympathy and help is embedded in the social organization and cultural practices of mountain communities. “Social capital” is reproduced here in mountain communities, generation after generation, in various forms of customs, rituals, norms, and ceremonies which often override economic priorities. In dispute and conflict resolution, social cohesion also receives priority over individual rights. From these perspectives, mountain communities possess unique attributes.

The collective role of communities in the management of natural resources has also been generally overlooked in the mainstream pertinent literature. As I have explained in Chapter 4, this is revealed in the use of pasture resources in Shimshal, which reflects the local tradition of protecting their ancestral resources by carefully managing the pasture. Learning gained from their experiences on annual and season trips to the pastures has traditionally provided the mountain communities the feedback to make the necessary adjustments. Such unique experiential knowledge then is transferred to fellow community members as well as to the following generations.

The livelihood strategies are thus related to mountain communities’ deliberate adaptation from their unique experience and learning, and their evolving culture and values. Understanding the dynamic interaction between their livelihood strategies and natural resources provides a unique perspective of their assets beyond an economic value-oriented paradigm. Their livelihood strategies are driven on a number of specific types of portfolios (Figure 6.1). I observed that both my study villages have their own portfolio, according to the livestock herding and agriculture activities that complement each other; the household composition; the access to natural resources; the religious sects, norms, values, rules, and regulations; the social organizations and cultural institutions; and the

adapted activities. Within these regional household portfolios, I registered significant variations. For example, the livestock herding activities varied from semi-nomadic behaviour in the Naltar Bala to a settled yak herding community with unique traditions and an affiliation with pastures in Shimshal.

Figure 6.1. Livelihood Strategies: Assets Decisions and Activity Portfolios



Overall, the mountain communities represent a symbolic way of life where they relate themselves with their natural environment. While they lack easy access, by adapting to the conditions, they live in a socially cohesive manner with well-established traditions of cooperation and collective work. These are unique elements that exist in mountain communities. Through the multifarious survival and coping strategies that the communities undertake in the face of extreme vulnerabilities to natural calamities, the

mountain communities collectively respond and construct systems to nourish and maintain their resources and thereby ensure long-term sustainability.

The attributes stated above concerning mountain social-ecological systems offer a strong justification to recognize that the mountain communities are distinct and need to be analyzed through a contextual lens, so that the meanings are acceptable both to the scholarly community as well as to the local communities. The recognition of societal attributes, which are larger than the conventional concept of “social capital,” immediately establishes the relevance of commons management in mountain environments. The emotional and spiritual aspects are embedded in mountain societal attributes, whereas in the Western concept of “social capital,” these are generally excluded from components of social network and linkages.

With the above justification, I would now like to present a Sustainable Mountain Livelihoods Framework (SMLF) to enhance our understanding of mountain livelihoods, the relationships between the factors that condition livelihood strategies, and the effects on resources, with special emphasis on the human, natural, social, and cultural aspects that are interwoven and inseparable from each other. The other characteristics of mountain systems, including marginality, fragility, diversity, inaccessibility and recent climatic variation, have profound impacts upon the livelihood systems. The mountain communities are subject to climatic variations and their associated environmental extremes, which have some noticeable impacts on livelihoods (Kohler & Maselli, 2009). These include heavy rains, floods, landslides, variation in seasonality, and change in the times of sowing and harvesting, which disrupt the mountain livelihoods significantly. These stressors are not only affecting the production of goods, commodities and services

in the localities, but also enhancing their vulnerabilities. In the face of such emerging challenges, the inhabitants rely on their capacities to self-organize and to adapt.

To comprehend the full sense of mountain livelihoods within the context of the complex mountain social-ecological system, I have used Scoones's (1998) livelihood framework as a base and added dimensions of societal attributes and culture resources, which I have described in the above section. To capture the mountain vulnerability context, I have modified two well-established but overlapping vulnerability frameworks: i) the Mountain Specificities Framework developed by N. S. Jodha (1992), and ii) the IPCC Vulnerability Framework (IPCC, 2007).

6.1.2 Mountains' unique attributes.

The unique attributes of mountain social-ecological systems were termed by Jodha (1992) as "mountain specificities" to refer to the mountain ecosystem challenges and mountain characteristics. Jodha (1992) classified these distinct attributes as either limiting features, such as *accessibility*, *marginality* and *fragility*, or as enabling features, such as *diversity*, *niche*, and *human adaptive capacity*. Within the Mountain Specificities Framework, the term *accessibility* captures elements of distance, mobility, and the availability of risk management options. From my study of northern Pakistan communities, I can say that accessibility is a very significant factor in the change of livelihood strategies. The newly built access road in Shimshal, for example, may facilitate a transformation process by allowing the local people to gain access to outside markets. But for some communities, physical access may have negative effects on the mobility of females in the community for cultural reasons. For instance, in Naltar Bala, the opening

of the new road linking with outside towns and cities has restricted women's mobility because non-locals have begun to visit the village.

Marginality refers to the relative “endowments” of a system. In a mountain system, marginality is created by the simultaneous effects of steep slopes, high altitude and low crop productivity, reinforced by the lack of infrastructure and financial resources (Jodha, 1992). Mountain communities also frequently face difficulties in securing tenancy rights over land and forests; they also face challenges to gain access to social services (e.g. credit, education, and health). These are partly attributed to rugged terrain and physical constraints, and partly due to the communities' inadequate representation in policy-making bodies.

Fragility can best be understood as the diminished capacity of a social or ecological system to buffer shocks. Ecologically, mountains are fragile due to a low carrying capacity, slopes and relief. Fragility has social dimensions as well, because most people in these areas live on scattered, scarce and periodically unavailable livelihood resources. *Adaptive capacity* can refer to “the ability of a system (social or ecological) to adapt to change and respond to disturbances” (Amritage, 2005, p. 706). Adaptive capacity includes diversity i.e bio-diversity, ethnic/livelihood; resilience as a part of adaptive capacity, knowledge transfer, and complementarity i.e land use practices contributes to adaptive capacity of the mountain communities.

This explains how diverse mountain livelihoods can be. Plenty of adaptation possibilities exist, which I discuss in section 6.2 of this chapter. However, livelihood adaptation strategies are adversely impacted by multi-level drivers at the local, regional, national and international levels. I elaborate on these constraining drivers in section 6.2.

6.1.3 IPCC framework on vulnerability.

The IPCC framework was developed to assess climate change vulnerability. It builds on both hazard risk approaches to assess disasters and livelihoods approaches, thereby situating vulnerability in the broader social fabric (Ribot & Norton, 2010). However, the livelihood approach is very limited in scope in the IPCC Vulnerability Framework. The IPCC defines vulnerability as “a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity” (IPCC, 2007, p. 21). Within this definition, *exposure* is defined as “the nature and degree to which a system is exposed to significant climatic variations;” *sensitivity* is defined as “the degree to which a system is affected, either adversely or beneficially, by climate-related *stimuli*;” and *adaptive capacity* is defined as “the ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences” (IPCC, 2007, p. 21). While the IPCC framework provides a comprehensive point of departure for vulnerability assessments, it lacks the necessary level of detail and specificity to make it a useful operational tool for assessing livelihood strategies in mountainous regions. Thus, by integrating the dimension of livelihood strategies with vulnerability, I have formulated the Sustainable Mountain Livelihood Framework. The unique mountain characteristics in relation to livelihoods are depicted in Figure 6.2.

Figure 6.2. The Sustainable Mountain Livelihood Framework

	Resources	Institutions	Exposure	Mountain Attributes												Sustainable Outcomes	
				Sensitivities						Adaptive Capacity							
				Marginality				Fragility		Diversity		Resilience	Knowledge Transfer	Complementarity	Accessibility		
				Spatial Marginality	Social Marginality	Political Marginality	Economic Marginality	Resilience	Social Fragility	Biodiversity	Ethnic/Livelihood				Spatial Accessibility		Social Accessibility
The Context	Physical Resource	Traditional Institutions	Frequency of geo-physical disasters Landslides	Agriculture production per unit area	Number of household below poverty line of a particular group, class, gender	Right to Vote	Access to Education	Recovery rate of mountain pastures after a drought	Household Debt	Plant crop diversity index	Production of household income from non-farm sector	Number and intensity of shocks the communities has faced	Formal and non formal Education	Land use patterns and scenarios	Access road distance	Male and Female literacy rate	Well-being and capabilities Improved
	Natural Resource	Formal rules and Informal norms				Freedom of speech	Access to potable water		Loss of income because of the land slide	Native flora ratio per unity area			Number of professions and trades in the village				
	Social Capital	Customary Practices	Participation in political activity		Access to Health care	Limited Opportunities	Number of wildlife species	Percentage of traditional knowledge passed on from one generation to another	Communities capacity to cope with changes	Inter and intra dependency	Condition of road						
	Cultural Resource	Cultural and Religious Taboos.			Infrastructure	Lack of resource within the village							Existence of traditional practices	Time needed to markets	Percentage of working males and females in the village		Valued and maintained Cultural resource
Financial Resource	New forms of Institutions State and NGO lead CBO's	Flood/Snow/rains	Number of livestock per unit area in a pasture	Number of working force per household	Existences of political parties	Assets holding	Regeneration rate of pasture										
Livelihood Strategies				Intensification/ Extensification				Migration		Diversification						Natural and Culture resource Base Sustainable	

Source: After Scoones (1989) and IPCC (2007) Framework and Haque (2012)

of the linkages between the livelihood strategies are shown as separate entities the boundaries separating livelihood diversification, migration and intensification strategies are by no means exclusive from each other. Although these three areas represent interlinked tendencies which are often studied in isolation, they are implicated together in the formation of the Sustainable Mountain Livelihood Framework.

The context within which livelihood diversification is undertaken relates to our understanding of the various aspects of mountain livelihoods, the activities undertaken, and the values and cultural practices associated with them. It also points out some of the favourable factors and constraints against livelihood diversification identified during the interviews. I bring together the overriding themes of unique mountain characteristics that were elaborated earlier to describe the unique attributes of the mountain system. In the following section, I would like to discuss the nature of livelihood diversification, with great hope in the future of mountain communities, as well as the issue of the relative accessibility of mountain communities. Finally, I will set out guidelines for examining livelihood diversification as it relates to the formation of the Sustainable Mountain Livelihood Framework (MSLF).

6.2 Livelihood Diversification

Livelihood diversification is an important strategy that mountain people employ to achieve sustainable livelihoods. But it operates in conjunction with other strategies that also contribute to the formation of sustainable mountain livelihoods. Two of the strategies which complement livelihood diversification, and which are being considered as part of

my study, are: i) out-migration of local community members; and ii) diversification to supplement income and other resources.

A significant portion of Shimshal community migrates to high alpine pastures during the summer months. In itself, such a temporary migration is part of their efforts towards livelihood diversification. Moving from the village base resources in the valleys and slopes to alpine base resources (pastures) is a way of diversifying their livelihood strategy. Migration forms a central component of livelihood diversification for the *Gujar* community in particular, as it offers a way of earning wage labour in the city of Gilgit and surrounding areas. Other causes of out-migration are related to rapid population growth rates that have forced mountain communities to adopt livelihood diversification strategies to supplement incomes derived from traditional farm sources. Opportunities for diversification have stemmed mainly from two means: i) the growth of mountain tourism during the 1980s and 1990s and ii) out-migration and active participation in tertiary sector jobs. Tourism became the major off-farm source of livelihood in many communities (Rasmussen & Pervez, 2002), such as Shimshal, starting in the 1980s. It was facilitated by the easier access to mountains made possible by investments in roads and other infrastructure. However, there were trade-offs with the increased accessibility and livelihoods diversification. Serious concerns were expressed by many local communities about the implications of roads for the social and cultural attributes of mountain life (Cooks & Butz, 2012).

Wider scope exists for further diversification of livelihood means in mountain areas. What is important in the mountain regions is that the communities are blessed with a wealth of natural beauty and aesthetic value, which the local people can turn into

income-generating resources. The magnificent mountains, such as Mount Everest in Nepal, K2, Naga Parbat Rakaposhi, Deeran Peak, Golden Peak, Gashabroom and many others in Pakistan are recognized sources of national income from international tourism, trekking and mountaineering (UNEP, 2007; Nepal, 2002). The aesthetic value of alpine meadows and the socioeconomic value of the endemic plants (medicinal plants) have not yet been well explored.

In the last few decades there has been a dramatic increase in visitor numbers to such areas, for example, the world's highest national park, the Sagarmatha (Mt Everest) National Park in Nepal (Nepal, 2002), as well to Costa Rica and Belize (WTO, 2000). Similarly, many countries are promoting eco-tourism in central Asia (Nepal, 2002). Eco-tourism is defined as:

environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy, study and appreciate nature (and any accompanying cultural features - both past and present), that promotes conservation, has low visitor impact, and provides for beneficially active socio-economic involvement of local populations. (Ceballos-Lascurain, 1993, p. 8)

However, literature on mountain-specific ecotourism is scanty, partly because the focus of ecotourism research is limited to well-known destinations and well-known Protected Areas, not all of which are located in the mountain regions (Nepal, 2002). There are negligible empirical studies on the impacts of ecotourism in mountain areas in the context of northern Pakistan. There are very limited economic, ecological, and social evaluations of the even so-called eco-tourism destinations, that provide a breath of eco-tourism impacts that include effects on culture, norms, language and the living style. The

existing literature is more related environmental impacts (UNEP, 2007; Berkes & Gardner 1997). In the case of Shimshal, the community is deeply involved in tourism, more specifically in mountaineering. Although the community is benefiting financially and their economy is diversifying, they fear that tourism activities may degrade their traditional practices. However, there are good examples of eco-tourism practices that may be adapted to create a balance between conservation and developments. Eco-tourism, “nature tourism” can play a pivotal role in conserving the local resources, culture, and aesthetics and in maintaining the environment in northern Pakistan. However, there are political and external drivers that are affecting negatively the growth of tourism industry.

However, the range of possibilities for livelihood diversification has been impaired by international, national and regional drivers. For example, the single episode of terrorism with 9-11 in the year 2001 brought a complete halt to the ongoing mountain tourism activities in Shimshal, resulting in the closure of one of the largest sources of livelihood in the area. In addition, the failure of the federal government of Pakistan to maintain law and order in the northern regions and the absence of long-term policy and development perspectives acted as additional factors. Laws advocating the establishment of Protected Areas and replacing community rights and entitlements with State control, in places that were once under community control, also became drivers impacting livelihood diversification processes. Moreover, cultural taboos, individual inhibitions linked to specific cultures, and the absence of educational training and skill sets restrict community members from openly participating in livelihood diversification. In such situations, multiple drivers acting both individually and together can adversely influence the possibilities of livelihood diversification.

6.3 How can Mountain Livelihoods be secured?

To obtain an answer to the above question, one needs to focus on understanding the livelihood systems of mountain communities and to recognize how small changes may cause major impacts upon the communities. By assessing the example of the Shimshal community and their traditional systems, it can be asserted that the pastures play a pivotal role in maintaining the community's culture and the spiritual values that enrich their well-being (see Chapters 4 and 5). Mountain communities work collectively and formulate rules to secure their livelihoods and to ensure the well-being of the entire community. If rights were given to the communities to manage the local natural resources, through existing customary laws, and if the benefits derived from the resources were shared with the local communities, then these resources could be better conserved.

The success of this arrangement in the context of the study area would depend heavily on the willingness of the State to hand over the "ownership and decision-making" of these resources to the locals. The potential of new management arrangements is discussed in section 6.5. It can be made possible by enabling government policy directives that would emphasize effective community involvement and meaningful benefit-sharing in the resource management. Implementation of a new partnership between the State and communities would require recognition of the significance of traditional and local institutions, and building local capacities (Sen, 1984), so that the local people could deliver the required organizational and management services.

The customary system in northern Pakistan is structured around a basic principle that concerns collective responsibility for family and social well-being, as well as for securing livelihoods. It implies that in most cases natural resources are used in a

sustainable manner, except where the application of customary rights have been lost or taken over by the Statutory Laws. The principle of collective responsibility has been internalized by incorporating them into the structure of the customary regulatory institutions (informal), which are similar in all parts of Gilgit-Baltistan. However, there are local variations in specific powers and duties. Community members abide by the customary authorities because they are a constituent part of the local community, and pastures and forest commons are the only means and hope for their survival.

6.4 Strengthening Local Institutions and Building New Partnerships for Community Empowerment

In this section, I examine local institutional arrangements for resource management in the study area. By conforming to the existing literature, I view institutional arrangements as “conventions that societies establish to define their members’ relationships to resources, translate interests in resources into claims and claims into property rights” (Gibbs & Bromley, 1989, p. 22). I have discussed the levels of institutions that presently exist at the local level, their interplay at local and regional levels, and some of the key constraints in dealing with higher level institutions (the State). This process eventually leads to the weakening of local institutions, making them dormant by way of impacts from the higher level institutions. For example, the local traditional institutions in Naltar have been replaced by higher level institutions, leaving behind an “institutional vacuum” (Nayak, 2011) where local institutions for resource management have been replaced by the State institutions (i.e., Northern Areas Forest Department). However, historically, the local institutions enforced rules and regulations

that restrained outsiders from accessing local resources. The current situation is that there is a gap between the State institution and the local institutions, because these local institutions remain dormant and lack capacities to bring back the decision-making power. However, in another case, in Shimshal, a local institution has reorganized itself to face the threat of an external force. Instead of becoming dormant, it in turn forced the State institution out, showing its power as a strong local institution.

Variation in the local institutions exists because of a number of factors, including: i) the type of resource (forest as tangible and pasture as non-tangible for the State); ii) the homogeneity of the community, in the case of Shimshal, and diverse groups, *Sheen*, *Yaskoon* and *Gujars*, in Naltar (the latter group are still not part of the community as they are a migrant community and have no right of exclusion); iii) the linkages and interactions across local and regional levels; iv) the severity of the issues, internal dynamics and conflicts between groups; v) the stronghold of a particular community in the region; and vi) other factors that may be related to community characteristics (passive, arrogant, or egoistic).

The question is how these local institutions with varying degrees of strength and weakness can be utilized to avoid a situation of “one-size-fits-all” in a management arrangement. What type of institutional arrangement is needed in the Naltar and Shimshal areas that could lead to sustainable resource management? As mentioned earlier in this section and in Chapter 5, I have emphasized that a co-management arrangement (Pinkerton, 1989; Jentoft, 1989) between the State and communities may not be possible until the issue of rights has been resolved. In both cases, the State institutions view the local institutions as opposite forces rather than as potential partners towards a common

goal of conservation. Therefore, until the issue of rights and ownership is resolved, as a precondition, the State and local institutions cannot begin to work as partners.

However, other arrangements could be possible, such as collaborative self-governance (Ostrom et al., 1999), which I call a Community-Driven Collaborative Management (CDCM) arrangement, where the community holds the “ownership” and offers directions instead of having them dictated by higher level institutions and outside organizations. Here, bridging or boundary organizations (Brown, 1991; Folke et al., 2005; Berkes, 2009) help facilitate the process of developing cross-scale linkages (Adger, 2001; Berkes, 2006) between the local institutions and the higher level institutions.

In view of this, I am attempting to understand how such new institutions could be formed and what their function might be in the context of my study area. As elaborated in Chapter 5, the lessons learned from MACP and other experimental projects in northern Pakistan have revealed that the formal bodies established locally by the international organizations to implement the projects have faded rapidly with the termination of these projects. There is evidence, however, that some local institutions have been sustained even long after the completion of the projects, and these were based on the local traditional, informal institutions such as the “*Jirga*” (locally used term) which were reorganized and transformed into formalized local institutions.

It is important here to emphasize the proactive role of these traditional, informal institutions, i.e. “*Jirga*,” in self-reorganizing to respond to the emerging conditions, particularly the marginalization of local communities by the State. The villagers took the initiative to transform these traditional institutions into formalized organizations (Abidi-Habibi, 2007). The word “*Jirga*” (committee) can mean different forms of organization in

different areas of Pakistan; but in northern Pakistan, it is an informal body that works at the local level to manage and control local issues related to resources, i.e. water distribution, pasture management and other collective work at the village level. The organization is run on a voluntary basis, but the responsibility of each member belongs to the community, as a collective entity, with the obligation to obey the rules of the *Jirga*. As explained in Chapter 5, such institutions would be sustained in localities as they tend to adapt rapidly to changing situations over time.

These informal institutions have been understood as dynamic entities, deeply associated with the social, ecological, and economic affairs in different settings (Berkes et al., 2003; Ostrom, 2005; Berkes, 2006). In the case of Shimshal, the traditional institutions are embedded in cultural complexities. They are dynamic, effective and capable of adapting to new situations as well as retaining the power of current and future relationships (Berkes, 2006). These local-level institutions are deeply rooted in the local traditions, norms and all aspects of life, and they have evolved over time, gradually becoming more refined, functional and effective at the village level (Robson & Nayak, 2010).

Local-level institutions are as important as higher level institutions because cross-level linkages are required for the effective functioning of institutions (Khan, 2011). These institutions are linked with changing the behaviours of individuals or groups that affect the outcomes, and they play a key role in natural resource management. The formalization of the Shimshal Nature Trust (SNT), which is a newly transformed formalized institution, but grounded on the traditional informal institution (*Jirga*), provides an example of self-organization, reorganization, and transition which should be

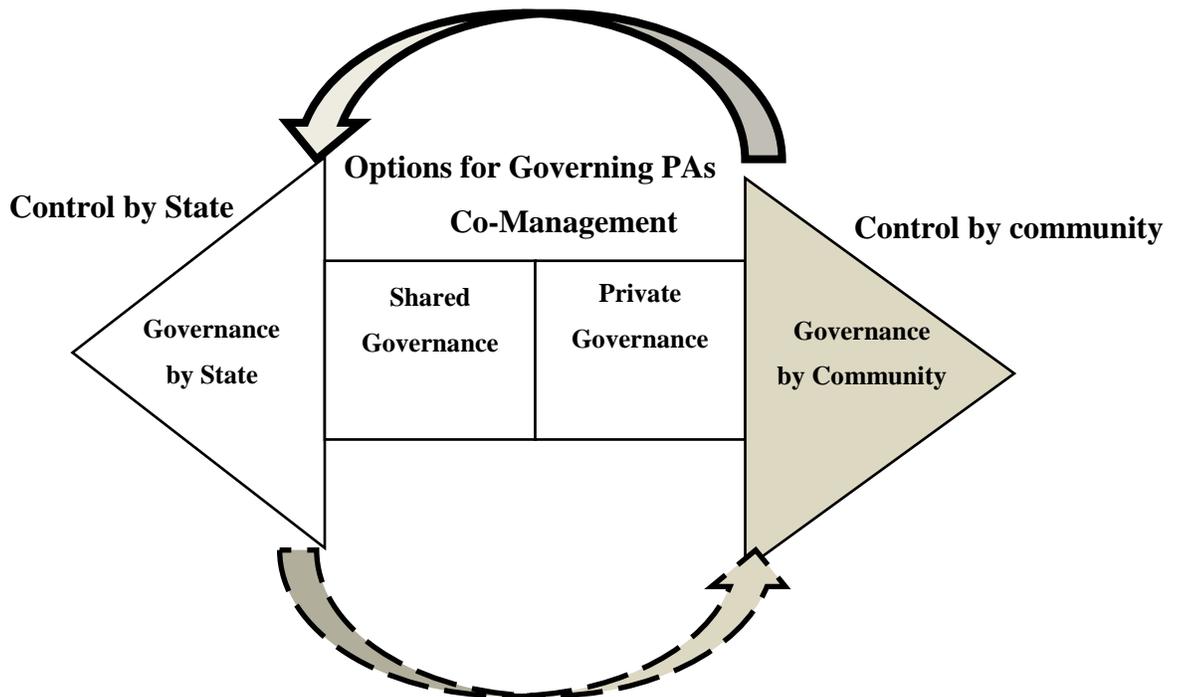
recognized as good evidence of the adaptive capacity of local-level institutions to learn, adapt and self-organize under uncertainties (Berkes, 2006; Abidi-Habibi, 2007). Similar cases of self-reorganization and transformation into formal organizations exist in northern Pakistan. In the case of Naltar, a local institution, the *Tahfuz* committee, became dormant because of the “takeover” by the higher level institutions (the State); as a result, the local *Tahfuz* committee lost interest in resource management.

The critical question here is how a new partnership arrangement could be achieved between these local institutions and the State, along with the transfer of the rights and ownership of the resources to local communities, where the commons and State properties could be managed sustainably at the local level. As discussed in Chapter 5, the government sector is lacking in resource management because of inadequate financial resources and expertise. With its authoritative approach, it has failed to provide the services needed to facilitate the economic development and livelihood of the communities in northern Pakistan. This means that government institutions, alone, cannot provide the services needed by the communities and to conserve resources. Similarly, local communities, alone, cannot administer and manage resources. A multi-level partnership is needed to assist the local communities in conserving resources. There are growing private sector interests in resource extraction, but local communities at large are not receiving any tangible or intangible benefits from the private sector. Thus, building new institutional partnerships is the most appropriate approach to revitalize traditional institutions and to enable them to practice effective management of the natural resources. This would require readjustment in State policies and mandates that could facilitate the processes to build partnerships.

In the case of Naltar, the forest is under the control of the government. The research showed that 90% of the people do not feel that the forest belongs to them, and they consider themselves disconnected. Although some of them are getting benefits through grazing, there is no explicit stake of the community in the decision-making on the future of the forest. How can this disconnect be reconnected so that they can feel that the commons (such as forests or pastures) belong to them? Several specific measures can be taken by the prevailing institutions to reconnect the communities with the common property resources. These include: i) reviving the dormant institutions (*Tahfuz* committee) and involving the faith-based institutions that exist in the villages, so that local-level institutional capacities could be enhanced; ii) giving the rights and ownership of the resources back to the local communities, and bringing the forest under community-control, would provide them a sense of responsibility, respect and ownership of the resources; and iii) focusing on local community livelihood diversification and advancement of the community would enhance the self-confidence of local entities, particularly to engage in a respectful partnership with higher level institutions. The application of a self-governance system at the local scale in resource management would strengthen its efficiency and quality, and help the communities to build a strong self-governed system. The following diagram is an illustration of different management regimes: State-controlled, co-managed or with multiple actors, privately managed or community controlled for resource management. What we see in most cases is that the commons have been changed into State property (Protected Areas), shown as a solid arrow line in Figure 6.3. However, change from State management to governance by the local community has not yet been explored in the context of northern Pakistan.

Hypothetically, in Figure 6.3, the dotted arrow offers the possibility of examining the process through which the control of strict Protected Areas could be brought under community governance arrangements. I call it the “Community-Driven Collaborative Management (CDCM)” system in which a distinct property rights regime would be created, which I term community-owned, State-regulated property. This would be possible under the current management arrangement, using the Shimshal Nature Trust as an experimental model for managing Khunjerab National Park.

Figure: 6.3. Community-Owned, State-Regulated Property



Source: Modified Dudley, N. (Ed.) (2008).

6.5 Nature of Community-Owned, State-Regulated Common Property (New Management Arrangement)

The Community-Owned, State-Regulated Common Property regime would be a new experiment in property regimes. The model I have presented in Figure 6.3 came out

of the focus group discussions, where the question was how the communities saw conservation and what they wanted from this resource. This arrangement would allow the communities to manage the resource and exclude others from using it (grazing of pastures or extraction of the resource) through implementing their customary laws. Under this arrangement, State property would need to be leased out to the community, under specific conditions and the State could monitor the resources, such as pasture conditions, to see if they are maintained, improved or degraded. They could monitor the number of livestock according to the carrying capacity, as well as the viable wildlife populations in the park, and they could determine where the communities' requirements should be supplemented through implementing community development projects on other community land where feasible.

The State would contribute to the development of the community. In this way, the State would provide guidelines to monitor the condition of pastures. In cooperation with external agents, such as scientific organizations and other institutions, the State would allow a specific number of livestock per season based on the carrying capacity of the pastures, and the community would enjoy their communal rights under such conditions. The community would have ownership of the income generated from the park, which would be reinvested in community development schemes for job creation, the development of pastures, the procurement or creation of educational materials, and the pursuit of related research. What this arrangement would need is the revitalization of the local institutions and the development of partnerships. The goal would be to provide an option to the community to continue their resource-use practices in harmony with the natural resource base and also encourage them to gain skills and knowledge for the best

use of the resource. A comparison between the State-controlled and the new management arrangements is outlined in Table 6.1.

Table 6.1. Community-Owned, State-Regulated Property

Practices	Under State Control	Under New Arrangement
Livestock grazing	Very limited or no access	Supervised grazing
Collection of medicinal plants	Very limited or no access	Supervised collection
Trophy hunting	Completely banned	Limited, based on trophy size and viability of the population
Eco-tourism, trophy hunting	Free entry allowed There is no provision for trophy hunting under the PA category of National Parks	Allowed with payment of a nominal fee; fund will be used for the development of the community and resources. Revenue from the trophy hunting will be used to build schools at the community level and community health centers.
Institutional level management	Run by a single authoritative person	Committee members comprised of elders and the well-educated
Benefits	State gets all the benefits	Sharing of benefits: community will get the benefits from protecting them.
Regular monitoring	With very limited funds available to the government there is no monitoring	Community will provide regular monitoring through selected individuals and with partner organizations (WWF, IUCN) to conduct wildlife census and determine caring capacity.
Protection of culture	Not a mandate	Retaining culture will be the main priority.

Source: Semi-Structured Interviews, Group Discussions, 2007-2008.

What makes this arrangement different from co-management is that the decision-making power is in the hands of the local community, and all the benefits from the property are distributed within the community for its development. The State provides an advisory role in consultation with the scientific community and conservation organizations. In the case of the above arrangement, the community enjoys the power of making decisions related to their resources, the State acts as an advisor, and conflicts of rights and ownership can be resolved through multi-level negotiations. The main purpose of the Protected Area can thus be achieved. However, the implications of this

arrangement may vary in different contexts. A thorough study of the community and their capacities and institutional arrangements would be needed.

One of the theoretical underpinnings of my research therefore is to analyze how the commons will be managed. The conversion of the commons to State “decommonisation” has not presented any positive results, nor have the international non-governmental organization-driven programs brought the commons to a stage where they are sustainable. The only way to manage the commons effectively in the context of northern Pakistan is by building the local institutions and their capacities to manage the commons. The challenge is to empower local communities to actively and effectively participate in the management of resources and decision-making. In Chapter 5, I discussed the issue of equal partnership in a joint management or co-management arrangement and expressed the necessary ground realities of respectful power sharing for managing resources. They do not yet exist on the ground, more specifically in areas where illiteracy is high, proper rights are deprived, and the State institutions are bureaucratic in nature. Unless this trend changes, these issues will remain unresolved, and the depletion of the resource will continue. The prevailing perception has been that the commons belong to the State, and the community is a user. A change in this perception will be needed to keep the commons as a resource available for the communities’ livelihood security as well as for the protection of the commons as a strong and sustainable resource for coming generations.

Chapter Seven: Conclusions

As we have small land holdings in the village to keep our livestock, our dependency is on pastures to fulfill the needs; the restrictions on pastures by the government will reduce the grazing area for our livestock, and our option in livelihood maintenance in these mountains will reduce, and eventually our survival will be at stake. (Dawlat Amin, 62, village of Shimshal)

Our several rituals are associated with herding in Pamir. On arrival to Pamir pasture, we (women) perform a number of rituals. We perform *Mirgichig* (purification) before starting any activities and then we send the first product of the new season to our families in the village, which is consumed in a special festival with thanksgiving prayers. We have these rituals that connect us with “God” (*Allah*) for his creation and his blessings through the wealth in the form of the products we gather from our pastures. (Musk Bibi, female herder, 57, Shimshal)

I have forest around me but others enjoying the benefit from it. The forest is not in our hands; government decides whom to give. As a result, deserving people are not getting it. Why they will give it to us when they get more money from those illegal operators? (Interview with a resident, who wants to be anonymous, in Naltar Payeen)

These narratives and expressions, based on individual accounts which were already presented in Chapters 4 and 5, illustrate the ground realities of mountain livelihood issues. The livelihoods of people in mountain areas are largely dependent on the natural resources (forest, pastures, land and water) and livestock that are associated with interwoven indigenous cultures, norms, and values to support their living and the connections between different factors that condition their livelihood strategies (MEA, 2005; Kates et al., 2001). These factors, along with the characteristics of the mountain system (e.g., marginality, fragility, diversity and accessibility) and other vulnerabilities have a profound impact on the livelihood systems (Jodha, 1992; Kohler & Maselli, 2009). The mountain communities employ mixed activities (Kreutzmann, 1993; Cavassa, 2009; Mariscal et al., 2011; Schutte & Kreutzmann, 2011) that are linked with the resources – natural and social capital and cultural resources. Such resources are also interlinked and inseparable from each other.

However, mountain communities in northern Pakistan have been facing issues of disconnect from their cultural and natural resources since the introduction of State control regulations for the commons in the form of Protected Areas (PAs). This process began in the early 1970s and became more aggravated throughout the 1980s and 1990s. In Chapter 4, I emphasized the livelihood dependencies and their associations with the pastoral activities of Shimshal and Naltar communities. I also examined the impacts of State rules and regulations used to “control” these PAs. The research findings reveal that the top-down, command-and-control approach negatively impacts the local resource endowment.

Our current understanding of conservation in the context of mountain areas urges us to rethink PA implementation. The current system of PAs needs to be readjusted to

reconcile conservation with livelihoods. The outcomes of my investigation offer a strong justification for re-examining the PAs in northern Pakistan to avoid the negative consequences, such as those seen in the case of Khunjerab National Park, which have not only reduced the livelihoods options of the local communities, but also created stress upon their interwoven socio-cultural resources.

My research introduced the possibility of a “self-governance” option for the PAs in mountain communities, which I presented in Chapter 5. With the assistance of local stakeholders, I formulated an alternative model that would “flip” the current State control of Protected Areas and allow communities to exercise their traditional rights as the custodians of the resources; this model was presented in Chapter 6. A relevant concern was whether the government was willing to reconcile their authority to control natural resources – recognized under the existing legislative frameworks, rules and regulations – with allowing local communities to manage the natural resources; this seems to be a major institutional challenge. Finally, in consideration of the mountain livelihood contexts, socio-cultural attributes, livelihood resources, and unique mountain characteristics and sensitivities, I developed a Sustainable Mountain Livelihood Framework (SMLF) for analyzing mountain livelihoods.

The above advancements of our understanding of the complex relationships between mountain livelihood and conservation were achieved by setting up the following specific objectives of my research:

- i) to analyze the characteristics of mountain livelihood resources and livelihood strategies, as well as the vulnerabilities and coping strategies of local communities in northern Pakistan;**

- ii) to analyze the shifts in institutional arrangement for conservation and for mountain commons management and their impact on livelihood security;**
- iii) to assess experimental projects on community-based conservation and determine the lessons learned for sustainable mountain livelihood; and**
- iv) to formulate, as an alternative to the Sustainable Livelihood Framework, the structure and elements of a Sustainable Mountain Livelihood Framework within which Community-Driven Collaborative Management (CDCM) would be embedded.**

The following key findings of my research respond to the research questions I put forward for my investigation.

7.1 Key Findings of the Research

Key finding 1: State-imposed strict laws and sanctions against local communities' access to natural resources, and the lack of livelihood alternatives, have negatively impacted the livelihoods of mountain communities.

The livelihoods of mountain communities are primarily shaped by their access to resources and by their socio-cultural standing. These communities rely mainly on natural resources to meet their basic needs. Mountain livelihoods are mostly based on a combination of income sources: pastoralism, agriculture, and services; more recently, tourism has been part of their income supplement, more specifically in the Shimshal community. The findings of my research indicate that the Shimshal community relies

significantly on yaks for their livelihood, and the imposition by the State of new rules and regulations in the form of Protected Areas has significantly altered the Shimshal community's traditional yak herding practices. The restrictive rules of Protected Areas have generated severe conflicts between the State and local communities that, in turn, have led to resistance to State laws, undermined the livelihood options of Shimshal community, and restricted community efforts for "conservation." My observations support claims that pastures are an important natural and cultural resource for the Shimshal community. The expression of their belongingness within nature, the symbolism of being part of the nature, can be observed from their cultural attributes, particularly the celebration of events associated with pastoral activities.

Key finding 2: Cultural resources are key elements in mountain livelihood Strategies.

The societal attributes and the traditional institutions are central to mountain livelihoods, and they are important elements in providing livelihood security. Social cohesion and solidarity through the local institutions (such as family, clans, and tribes) are unique in the mountain environment. "Social capital" is reproduced here in mountain communities, generation after generation, in various forms of customs, rituals, norms, and ceremonies which often override economic priorities. The collective role of communities in the management of natural resources has also been pivotal in building livelihood strategies. The study found that the use of pasture resources in Shimshal reflects the local tradition of protecting ancestral resources by carefully managing the pasture. Mountain communities learn from their experience in making annual and season trips to the

pastures and this new knowledge has traditionally provided the feedback to make the necessary adjustments. Such unique experiential knowledge then is transferred to fellow members of the community as well as to the following generations. The livelihood strategies are thus related to mountain communities' deliberate adaptation from their unique experience and learning and their evolving culture and values.

Key finding 3: Higher education inspires women to work in non-agriculture activities, and socio-culture is a major factor in female education.

One of the main findings concerns the relationship of education with income level. In the case of Shimshal community, the community members tend to invest more in education. The community members have recognized the importance of education as indicated by an increasing trend in attendance of girls in secondary and higher secondary levels. However, the rate of female participation in secondary and higher secondary education levels is negligible among the surveyed households in Naltar Payeen and Nalter Bala (see Chapter 4, Table 4.6). In Shimshal, girls' education is considered important, and all the school-age girls were enrolled in schools. Among the households studied, the percentage of students in them was 48 for female and 52 for males, implying a considerable female participation. In Shimshal, higher level education tends to move the female population to non-agriculture livelihood options; they get jobs in the education and health sectors, and their skills are recognized as important for livelihood security and the household economy. However, many community members in Naltar Payeen still face some restrictions that stem from the prevailing social values and ideological or religious belief systems.

Key finding 4: Some traditional institutions tend to have the capacity to self-organize.

In Shimshal, a local institution, Shimshal Nature Trust (SNT), reformed itself to face the threat of an external force. Rather than become dormant, the traditional institution defended itself, showing its power as a strong local institution. This informal institution evolved over the centuries, yet it maintained its fundamental rules and regulations. However, in response to the emerging threats from higher institutions to control the natural resources, the local institution took on a new shape with reformed mandates, as a way of “self-organization.” This transition can be recognized as evidence of the adaptive capacity of local-level institutions to learn, adapt and self-organize under the uncertainties and changes in social-ecological systems (Berkes, 2006; Abidi-Habibi, 2007). The aim has been to gain recognition of the common voices of the community, to retain all the aspects of the informal institution that the communities had been practicing, and to manage the natural resources through traditional rules and regulations, but doing so in a modernized way. It was, indeed, a strategy adopted by the local community to maintain their self-control over their own resources and to respond to the emerging situation.

Key finding 5: The management of resources through empowering local communities and providing them control over local natural resources is a key to the success of conservation efforts.

If rights are given to the communities to manage the forests through customary laws, and the benefits of the forest are shared among the multi-level partners, the

exploited forests (which are State property now) can be protected and regenerated. This arrangement would work in the context of northern Pakistan if the State were willing to hand over the resource to the locals. This would be possible if government policy directives were enabled that emphasized community involvement and benefit-sharing in the resource management. This arrangement would allow the communities to manage the resource and exclude others from using it (i.e., grazing of pastures or extraction of the resource) though implementing their customary laws. In this way the community would be able to continue their resource-use practices in harmony with the natural resource base. It would also encourage them to gain skills and knowledge for the best use of the resource. This would require a change in the management system from State control to community control by allowing local communities to serve as the “drivers” and stewards of the resources and their management.

Community-control of Protected Areas would represent a new experiment in northern Pakistan. However, this arrangement would have to be contextualized by giving specific importance to the communities and their management practices. The State would achieve its conservation goals by monitoring the local communities’ activities to ensure that livelihood and conservation pursuits are not negatively affecting each other. Such an arrangement would not only strengthen community livelihoods but also give a boost to the management of the resource itself. This would reduce conflicts between the State and the communities, and simultaneously lead to effective conservation of local natural resources.

Key finding 6: Mountain communities' coping and survival strategies are dynamic but limited.

People living in resource-deficient areas have very few options for their survival. In shaping their livelihood, communities adapt strategies that are diverse but limited and continually changing; hence such strategies are dynamic but also fragile (Ellis, 1998; Tao, 2009). The local communities obtain their living from a combination of sources: pastoralism, agriculture, services and trades. More recently tourism has contributed to the income of some communities (Ehlers et al., 2000). For Shimshal community, using the pastoral resources is the main option for survival, though recent development projects (e.g., access road construction) have brought some new opportunities to the communities. Agricultural production, particularly potato production, has increased in the last few years, but communities are reluctant to invest and take risks because of the uncertainty that stems from the condition of access roads. During high production season, the condition of access roads to the main markets is unpredictable with varying weather conditions. Other coping and survival strategies draw upon the close family relations and bonding; Shimshal community has strong ties through the family system, and people have a strong sense of belonging as “Shimshali,” which brings families together in times of crises. If a family member is in need of help, the community extends their assistance, both emotionally and materially, without any reward or return.

In Naltar Bala, the *Gujar* community has adopted migration to underdeveloped areas as one of their survival strategies. For the *Gujars*, migration in winter is one of their main coping and survival strategies. People who remain in the village in the winter are more resource-deficient and thus unable to migrate. Other common survival strategies of

the *Gujar* community include selling livestock in the winter time, and borrowing money from shopkeepers on mutually agreed upon terms to return. Although there is no legal binding (notarized form of agreements), by following the customs, the credits they receive from the creditor must be returned within specified time parameters. In most cases, the community members pay off their debit from earnings through selling livestock and potato production the following year; any debt amount exceeding their total earnings in a given year is paid from another year's earnings. However, there are risks involved with livestock rearing and agricultural production. The sale of livestock and agriculture products depend on access to bigger markets and climatic conditions. The main road, Karakoram Highway (KKH), is the only road that connects the Northern Areas to the main cities in Pakistan. However, with the severe climatic conditions and improper management of the road, access remains closed during peak season and it becomes impossible to access the major markets. This not only impacts the agriculture, but also negatively impacts the tourism industry. Therefore, the community remains limited in its survival strategies.

Key finding 7: State policies and the current resource management practices are major drivers of forest degradation, which adversely affects the local livelihoods.

The complexity of the mountain communities' relationships with the forest and forest resources often contributes to misunderstandings with the government department. Often, the local people are considered the culprits responsible for deforestation. In my research, I found that the main reason for deforestation is not related to the poor seeking

livelihoods, but is linked with the rich, vested interest groups, who are able to manipulate the weaknesses and loopholes of the centralized government system. It was revealed that the strict protection rules aimed at controlling locals have had negative impacts on the forest. These rules are applicable only to local communities, and not to the non-locals who are manipulating the government system and extracting a massive volume of forest products. A reduction in the total acreage of forest coverage over the past 10-15 years was apparent; more than 90% of respondents opined that forest coverage has been declining over that period. Such a decline can be related to the government's rigid, ineffective forest policy in northern Pakistan, which is chiefly concentrated on generating revenues.

All the forests in the Naltar area are categorized as Protected Forest, which allows local communities only very limited rights of grazing and fuel wood collection. However, inequalities in rights exist as some people, i.e. non-local contractors, always get to benefit from such arrangements, whereas the locals are barred from accessing the forest, especially the *Gujar* community at Naltar Bala.

Key finding 8: Building human resource capacities for innovating alternatives in livelihoods would reduce dependencies on natural resources and assist in conservation of the natural environment and biodiversity.

The State's control of the commons through designating Protected Areas and Protected Forests, the fragmentation of land by customary inheritance laws and practices, and the rising cost of rearing livestock have reduced livelihood opportunities and options in the mountain regions of northern Pakistan. Without much education or skills in non-agricultural activities, the present generation of pastoral communities is facing an acute

shortage of livelihood alternatives. Pursuing appropriate education, vocational training and employment in service and other tertiary sectors will be possible only for new generations. Some communities have taken the initiative in this direction by investing in new generations' education and by developing infrastructure to attract new investments, such as in tourism, recreational and adventure activities by non-locals. Such diversification will reduce the dependence on the natural resource endowment *per se* and will help diversify local livelihoods.

A number of options could be explored. For example, the communities located in forest areas could make sustainable use of forest products and plants that have a medicinal value. They could also explore eco-tourism opportunities, particularly around their livestock herding practices. These forests are very important for meeting the subsistence needs of the local people, providing wood, fuel, timber, grazing, medicinal plants, and food (e.g., *chilghoza*, mushrooms, honey and wild fruits). The forests also provide resources for environmental groups (e.g. water for drinking, food cultivation, and eco-tourism services). Nationally these forests are important as key watersheds.

Naltar Valley is rich in beauty and with greater potential of winter sports, i.e. ski resorts. Naltar Valley currently has a ski resort that is mainly used by military personnel but it is still not being properly managed. This could be a great source of income generation and offer a viable livelihood alternative for local communities.

Key finding 9: Communities need to diversify their livelihood options with back-up plans for their livelihood security, but they should not depend on external markets.

Mountain communities with limited options for livelihood tend to explore new areas of economic activity to generate income. However, decision-making about livelihood strategies involves the consideration of several factors; for example, the limited financial and physical capital, the difficult access to markets and the low profitability of the produce. With the newer international geopolitical situation related to terrorist threats, the decline in tourism has reduced its share in household income in Shimshal community. Shimshal community has tended to diversify its economy in the tourism sector, but the current image of northern Pakistan as an “imaginative area of terror” is a limiting factor in tourism expansion. Nonetheless, the tourism sector remains an option for diversifying livelihood options in northern Pakistan. Exploring new markets, such as the emerging major economies, China, Japan and Taiwan, would help the tourism industry rebuild in northern Pakistan.

7.2 Contribution to New Knowledge

The main contribution of the thesis has been elaborated as follows:

- 1. Understanding mountain livelihoods by introducing an innovative Sustainable Mountain Livelihood Framework (SMLF) which emphasises on two main dimensions, cultural resource and mountain specificities that are vital to analyse mountain livelihoods.**

One of the main objectives of this thesis was to understand linkages between conservation and livelihoods in the context of a mountain social-ecological system, with particular reference to northern Pakistan. The livelihood system of this area was shaped by a combination of multiple factors that were inherently linked to social, cultural,

economic, political and climatic factors, as well as numerous dynamics associated with them. Consequently, the livelihoods of the communities inhabiting the harsh mountainous regions of northern Pakistan are complex and often impacted by uncertainties and unpredictability (see Chapters 4 and 6). However, the mainstream livelihood analytical frameworks (Scoones, 1998; DfID 1999) do not offer a complete guide for analyzing and understanding the complex livelihood systems of mountain regions. These approaches seem to lack a proper focus on the key socio-cultural attributes that act as the main determinant factors of mountain livelihood systems. Such attributes are often socially and culturally defined to suit the specific local contexts and help to capture the customary and traditional nuances attached to mountain livelihoods.

It is obvious that culture plays an important role in offering directions to the livelihood trajectories of mountain communities, a phenomenon also observed by Putnam (1993). His observation that the overwhelming role of societal attributes is a missing element in the mainstream livelihood approaches resonates with the findings of this thesis. Societal attributes have been referred to as “social capital” by Putnam (1993) and as “cultural resources” by Schutte and Kreutzmann (2011), as well as by Daskon and Binns (2009). The latter emphasizes the role of societal attributes in ascertaining livelihood security. These factors also determine the nature of formal and informal resource management institutions at the community level. Social cohesion and solidarity through the local institutions (such as family, clans, and tribes) are unique in mountain environments, which I have discussed in the context of the Sustainable Livelihood Framework in Chapter 6. The dimension of “cultural resource”, which provides a sense of identity, sense of belonging, traditions and the rituals that symbolize “eternal

happiness” and affiliation with nature, has been added to the in the mountain livelihood framework.

The second dimension is the “mountain specificities” termed by Jodha (1992), which have not been used previously in any livelihood frameworks. This is a unique dimension of mountain characteristics that a main contributing or enabling factor in mountain livelihoods. Jodha (1992) classified these distinct attributes as either limiting features, such as *accessibility*, *marginality* and *fragility*, or as enabling features, such as *diversity*, *niche*, and *human adaptive capacity*. Within the Mountain Specificities Framework, the term *accessibility* captures elements of distance, mobility, and the availability of risk management options. From my study of northern Pakistan communities, I can say that accessibility plays a significant role in the livelihood strategies. The newly built access road in Shimshal, for example, may facilitate a transformation process by allowing the local people to gain access to outside markets. For some communities, physical access may have negative effects on the mobility of females in the community for cultural reasons. For instance, in Naltar Bala, the opening of the new road linking with outside towns and cities has restricted women’s mobility because non-locals have begun to visit the village. However, from the livelihood perspective, it has generated opportunities to diversify the livelihoods.

Marginality refers to the relative “endowments” of a system. In a mountain system, marginality is created by the simultaneous effects of steep slopes, high altitude and low crop productivity, reinforced by the lack of infrastructure and financial resources (Jodha, 1992). Mountain communities also frequently face difficulties in securing tenancy rights over land and forests; they also face challenges to gain access to social services

(e.g. credit, education, and health). Other factors of marginality i.e. political marginality, economical marginality also influence mountain livelihoods. These are partly attributed to rugged terrain and physical constraints, and partly due to the communities' inadequate representation in policy-making bodies.

Fragility can best be understood as the diminished capacity of a social or ecological system to buffer shocks. Ecologically, mountains are fragile due to a low carrying capacity, slopes and relief. Fragility has social dimensions as well, because most people in these areas live on scattered, scarce and periodically unavailable livelihood resources. *Adaptive capacity* can refer to “the ability of a system (social or ecological) to adapt to change and respond to disturbances” (Amritage, 2005, p. 706). Adaptive capacity includes diversity i.e bio-diversity, ethnic /livelihood; resilience as a part of adaptive capacity, knowledge transfer, and complementarity i.e land use practices contributes to adaptive capacity of the mountain communities. My research outcomes explained these attributes in Chapters 4 and 6, and extended the theoretical discussions on the Sustainable Livelihood Framework by showing a way to incorporate some of the key attributes in analyzing complex mountain livelihoods.

2. The concept of “new-commonisation” in the mountain context as a way to understand new institutional arrangements in state controlled protected areas.

A recent analysis of the commons which captures changes in the economic, social, and political spheres has been conceptualized succinctly by Nayak and Berkes (2011). They call such changes “processes of commonisation and decommonisation.” Changes in commons status may result from shifts in policies towards more economical

gains. In some cases, the conversion of commons to State property may take place as a result of influences from external drivers. Following Nayak and Berkes (2011), I use the concepts of “decommonisation” (Nayak & Berkes, 2011) and commonisation, to examine the governance of mountain commons in northern Pakistan. Here, the term “decommonisation” refers to a process through which jointly used resources under commons institutions lose the essential characteristics of commons.

Following Nayak and Berkes (2011), I used the term “new-commonisation” to refer to a process through which resources get converted into a jointly used resource, as in the case of northern Pakistan, where the commons get converted to “conservancies.” I used the term, “new-commonisation,” because this is a new arrangement in which commons get converted to “conservancies” under a new arrangement for resource management.

In northern Pakistan, two categories of commons exist to varying degrees. There are commons that are strictly controlled by the communities, i.e., Shimshal Pastures, and also the state controlled protected areas and the others commons that are not well managed, i.e. Pastures else where. However, both the categories have undergone shifts from one regime to another, and therefore, it is important to view commons as a process to analyze the shifts in commons and determine the factors associated with them. Nayak and Berkes (2011) describe this process: “resources can enter into a process of commonisation; already established commons or resources that are being commonised could also revert back into decommonisation” (Nayak & Berkes, 2011, p. 133).

However, a new form that I refer to as “new-commonisation,” it does not revert back. Rather, it transforms into a new arrangement, that is, with more refined rules and a management system, complementing the resource use and protection, as well as complementing the traditional practices and values. In this process there are two main variants:

- i. NGO led new-commonisation
- ii. Community led new-commonisation

If new commonisation happens through external forces and interventions then it could be termed as NGO led new-commonisation and if the process resulted through inner dynamism to bring the change in the system through formalization of traditional institution, it would be termed as community led new-commonisation.

3. Defining Co-management Property Characteristics

Community-Owned State Regulated Property

A proper understanding of the property rights system is essential to an analysis of livelihood systems because a strong set of property rights can become an effective basis of sustainable livelihoods. Resource management approaches and institutions are also influenced by the scope and limits of the property rights regime. For example, in a State property system, it is often government and bureaucratic institutions that take up the management responsibilities, with minimal or no role for the community institutions. However, in a common property regime the opposite prevails whereby community norms and rules take precedence in the effective management of the resource. However, co-management arrangements that try to combine State management

with community management do not fit into the existing property rights categories as discussed in the literature. This thesis highlights the importance of the combination of property rights under a multiple partner-based collaborative management arrangement and advocates for understanding a variant of co-management that emphasizes “local community in the driver’s seat,” using the lens of property theories.

In the literature, a limited number of recent studies have focused on the combination of property rights regimes. Prominent among those is the lagoon study by Nayak and Berkes (2011, p. 142), who clarify that “the changing nature of property rights and the emergence of mixed property regimes offer interesting theoretical and practical challenges for understanding commons dynamics, and perhaps more importantly how to keep commons as commons in the long run.” However, I emphasize in this thesis the need to extend the mixed property rights discussion to the understanding of co-management, with particular reference to mountain commons (See Chapter 5). Therefore, the theoretical contribution of this thesis pertains to the importance of linking the property rights discussion with collaborative resource management by highlighting that the latter invariably includes a mixed property rights regime. It is essential to resolve any existing tensions between different property rights before a collaborative management arrangement can be formed. Thus, the resolution of conflicts between property rights regimes becomes a precondition to the success of collaborative resource management. In the context of northern Pakistan, successful collaborative resource management would entail an arrangement where the community becomes not only a major partner in the management of mountain areas that were previously under the exclusive ownership of the State, but also the major “driver” of

resource management. Thus, collaborative management in this context implies the commons as “community-owned State property.”

In this context, a collaborative management arrangement could not be clearly defined either as State or common property within the given definitions. Such an arrangement is understood as a process for sharing management rights and responsibilities between parties (Ruitenbeek & Cartier, 2001). This suggests that it would include characteristics of both State and common property regimes. The inheritance of State property rights in a collaborative management arrangement may not be acceptable to the local communities. If the community retained the excludability rights, State property control would be eliminated. Under a new partnership arrangement in property rights, which may be described as “Community-owned, State-regulated property,” the State property could be transferred to the community to control, but it would be regulated and monitored by the State in accordance with the multi-party agreements. In this way, both property regimes could have their exclusivity but at different levels.

In the context of property rights, it appears that property rights regimes are stable. However, a close examination of them provides a different perspective, that is, that characteristically, they are dynamic and change from one regime to another. These dynamic property rights regimes are responding to several factors and drivers both at the local level as well as the international level (Nayak & Berkes, 2011). In property regimes, shifts may occur in response to various internal and external forces and powers, and policies need to be in place to protect the property rights of local communities.

7.3 Research and Policy Implications: Closing Remarks

Based on the research findings, a number of issues can be resolved through policy interventions. In the context of Khunjerab National Park (KNP), instead of restricting yak herding, maintaining a yak population based on the carrying capacity of the pastures should be considered for sustainable park management. The integration of the yak herding would help both the livelihood of the local communities and the conservation of the natural resources.

Shimshal community's involvement in yak herding is a traditional livelihood activity that was sustained over centuries, but in the eyes of park management it is considered detrimental to ecological stability. This needs to be resolved on the basis of logic, equity and fairness, and more importantly, for the survival of the local communities. Specific research is needed to explore other associated areas that might benefit from this traditional system of resource use; for example, there is a need to explore further the effects of herding on maintaining pasture landscape. In this context, the role of yaks in the socioeconomic structure of the households and in fulfilling the requirement for livelihood support needs to be further examined and elaborated.

The role of the local community in the park management has been neglected by the State; empowering the local community would build a sense of ownership, enable them to care for their resources, and eventually help conserve the resources. Given the situation in Shimshal and Naltar Valley, consideration should be given to changing the institutional arrangement to manage and control resource appropriation. Forest depletion cannot be controlled by a single authority (such as the State), as the State has many simultaneous priority portfolios (e.g., health, education, and infrastructure building).

Transferring “ownership” of resources including forests and pastures and giving up “control” to the revitalized but newly formalized local institutions would establish a new regime which, in effect, would likely give the responsibility for the management and control of resources to a shared multi-level partnership. It is critical to recognize here that the role of the State would not be eliminated at all under the new regime, but it would serve in advisory as well as effective regulatory entity roles in conserving the resources as well as in providing livelihood security to its citizens in the mountainous regions.

The existing Protected Area laws are specific to control the hunting of designated game animals or to protect a few designated species; focus should not only be given to other plants and animal species but also to the protection of habitats and local cultures as parts of the system. The existing PA legislation does not provide any provision for the sustainable use of resources. There should be multi-purpose Protected Area categories where local needs and conservation goals can be attained together.

Forest decline was one of the major issues in Naltar Valley. There is a need to investigate this issue further. This would require benchmark (i.e., past) data of the forest condition using satellite maps of recent years and the current condition for comparison. It is also important to identify the factors with specific reference to forest decline. A periodic assessment of the forest condition is needed to assess the changes in forest cover.

Further research is required to define property rights under community-owned, State-regulated protected forests. This would be a unique institutional arrangement in the context of the Northern Areas of Pakistan. Lesson learned from northern Pakistan then could be replicated in other parts of the world.

The research dealt with two specific issues in Protected Areas (National Parks and Protected Forest). However, there are other categories that are under State control but to a smaller degree of magnitude. The conditions of those categories were not assessed for this research. The conclusions of this research are based on these two categories and may not be generalized to other contextual base areas. The areas I dealt with have homogenous communities with a similar livelihood base. The findings in other contextual areas with multi-community groups may be varied for a similar context.

In the context of Naltar Valley, the decline in the forest cover under State management indicates an alarming situation for the future of the forest. Appropriate technical measures should be undertaken to validate the forest cover data and to monitor the forest. Relying on multi-level institutional negotiated agreements, measures should be implemented to reduce extraction of the forest where it is needed. The current practice ignores the significance of local community involvement in the management; a reversal of management decision-making is required to ensure the “sense of ownership” among the community members in managing local natural resources.

Lastly, the impact of converting commons into sustainably managed areas under the community-driven, State-regulated resource management system should be monitored and evaluated on multiple scales such as plot, patch and landscape levels. My study offers an experimental alternative to Protected Area management that would be driven and led by the local community, as well as by a collaborative partnership with the State and other non-governmental stakeholders such as private sector investors, non-governmental organizations and civil society organizations. However, this proposed arrangement would need to be contextualized by providing specific importance to the views of the local

community and their traditional management practices. Such an experimental community-controlled, sustainably managed area would need to be monitored and management strategies would have to be adapted to the emerging opportunities and constraints. By applying a collaborative management approach, these natural resources could be managed properly and livelihoods could be secured.

This research was based on the data I gathered personally, with the help of field investigators, and the interpretations of the situation are mine; therefore, I personally bear the responsibility for any misinterpretations and shortcomings.

References

- Abidi-Habib, M., & Lawrence, A. (2007). Revolt and remember: How the Shimshal Natur Trust develops and sustains social-ecological resilience in northern Pakistan. *Ecology and Society*, 12(2), 35. Retrieved from <http://www.ecologyandsociety.org/vol12/iss2/art35/>
- Adams, W. M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., Roe, D., Virra, B., & Wolmer, W. (2004). Biodiversity conservation and the eradication of poverty. *Science*, 12(306, no. 5699), 1146-1149.
- Adams, W., & Hulme, D. (2001). Conservation and community: Changing narratives, policies and practices in African conservation. In D. Hulme & M. Murphree (Eds.), *African wildlife and livelihoods: The promise and performance of community conservation* (pp. 8-29). Oxford: James Currey Ltd.
- Adger, N. (2001). Scales of governance and environmental justice for adaptation and mitigation of climate change. *Journal of International Development*, 13, 921-931.
- Adger, W. N. (2003). Social capital, collective action and adaptation to climate change. *Economic Geography*, 79(4), 387-404.
- Adger, W. N. (2006). Vulnerability. *Global Environmental Change*, 16(3), 268-281.
- Adger, W. N., Huq, S., Brown, K., Conway, D., & Hulme, M. (2003). Adaptation to climate change in the developing world. *Progress in Development Studies*, 3(3), 179-195.
- Adhikari, B. (2001). *Review of common pool resource management in Tanzania*. York, UK: Centre for Ecology, Law and Policy, Environment Department, University of York.
- Agrawal, A. (2002). Common resources and institutional sustainability. In E. Ostrom, T. Dietz, N. Dolsak, P. C. Stern, S. Stonich, & E. U. Weber (Eds.), *The drama of the commons* (pp. 41-86). Washington, DC: National Academy Press.
- Agrawal, A., & Gibson, C. (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Development*, 27, 629-649.
- Agrawal, A., & Ostrom, E. (2001). Collective action, property rights and decentralization in resource use in India and Nepal. *Politics and Society*, 29(4), 485-514.

- Agrawal, A., & Ribot, J. (1999). Accountability in decentralization: A framework with South Asian and West African cases. *The Journal of Developing Areas*, 33, 473-505.
- Agrawal, B. (2001). Participatory exclusions, community forestry, and gender: An analysis for South Asia and conceptual framework. *World Development*, 29(10), 1623-1648.
- AKRSP (Aga Khan Rural Support Programme). (1998). *Institutions and organisations in pasture and forestry management. High altitude integrated natural resource management*. Skardu, Northern Areas, Pakistan: Aga Khan Rural Support Programme, and As, Norway: The Agricultural University of Norway: Noragric, Centre for International Environment and Development Studies.
- AKRSP (Aga Khan Rural Support Programme). (2005). *Effective community-based land management of Thalay Valley*. Skardu, Northern Areas, Pakistan: Aga Khan Rural Support Programme.
- Alexander, K. S., Millar, J., & Lipscombe, N. (2010). Sustainable development in the uplands of Lao PDR. *Sustainable Development*, 18(1), 62–70.
- Ali, A. (2005). *Livelihood and food security in rural Bangladesh: The role of social capital* (Unpublished PhD thesis). Wageningen University, Wageningen, The Netherlands.
- Ali, I., & Butz, D. (2003). The Shimshal governance model – a CCA, a sense of cultural identity, a way of life. *Policy Matters*, 12, 111-120.
- Ali, N. K. (2008). *Negotiating nature: Conservation, livelihood, and State-formation in rural Pakistan*. Paper presented at the annual meeting of the American Sociological Association Annual Meeting, Sheraton Boston and the Boston Marriott Copley Place, Boston, MA. Retrieved on 6 July 2011 from http://www.allacademic.com/meta/p242243_index.html
- Armitage, D., (2005). Community-based Narwhal Management in Nunavut, Canada: change uncertainty and adaptation. *Society and Natural Resources* 18(8), 715–731.
- Angelsen, A., & Kaimowitz, D. (1999). Rethinking the causes of deforestation: Lessons from economic models. *World Bank Res Obs.*, 14(1), 73-98.
- Armitage, D. (2005). Adaptive Capacity and Community-Based Natural Resource Management. *Environmental Management*, 35(6), 703–715.

- Armitage, D., Berkes, F., & Doubleday, N. (Eds.). (2007). *Adaptive co-management: Collaboration, learning, and multi-level governance*. Vancouver: University of British Columbia Press.
- Arnstein, S. (1969). A ladder of participation. *Journal of the American Planning Association*, 35(4), 216–224.
- Baden, J. A. (1998). A new primer for the management of common-pool resources and public goods. In J. A. Baden & D. Noonan (Eds.), *Managing the commons* (pp. 51-62). Bloomington and Indianapolis, IN: Indiana University Press.
- Baland, J. M., & Platteau, J. P. (1996). *Inequality and collective action in the commons* (Mimeo). Namour, Belgium: CRED, University of Namur.
- Barbier, E. (1987). The concept of sustainable economic development. *Environmental Conservation*, 14(2), 101-110.
- Baumann, P. (2002). *Improving access to natural resources for the rural poor: A critical analysis of central concepts and emerging trends from a sustainable livelihoods perspective* (LSP Working Paper 1). Livelihood Support Programme (LSP), FAO.
- Bebbington, A. (1999). Capitals and capabilities: A framework for analyzing peasant viability, rural livelihoods, and poverty. *World Development*, 27, 2021-2044.
- Beck, P. (2000). *Collaboration and credible commitments: Experiments with collaborative resource management in Uganda*. Paper presented at the 2000 meeting of the International Association for the Society of Common-pool Property (IASCP), 31 May–4 June, Bloomington, IN, USA.
- Beltrán, J., & Phillips, A. (Eds.). (2000). *Indigenous and traditional peoples and Protected Areas principles, guidelines and case studies*. Gland, Switzerland and Cambridge, UK: IUCN, and Gland, Switzerland: WWF International.
- Bennett, G., & Lopoukhine, N. (1998). *The cultural heritage: A Canadian approach to cultural resource management. (The ethics of conservation)*. UNESCO.
- Berardi, G. (2002). Commentary on the challenge to change: Participatory research and professional realities. *Society and Natural Resources*, 15, 847-852.
- Berkes, F. (1986). Local-level management and the commons problem: A comparative study of Turkish coastal fisheries. *Marine Policy*, 10, 215-229.
- Berkes, F. (Ed.). (1989). *Common property resources: Ecology and community-based sustainable development*. Belhaven Press, London, UK.

- Berkes, F. (2002). Cross-scale institutional linkages: Perspective from the bottom up. In E. Ostrom, T. Dietz, N. Dolsak, P. C. Stern, S. Stonich, & E. U. Weber (Eds.), *The drama of the commons* (pp. 293–321). Washington, DC: National Academy Press.
- Berkes, F. (2003). Alternatives to conventional management: Lessons from small-scale fisheries. *Environments*, *31*, 1, 5-19.
- Berkes, F. (2004). Rethinking community-based conservation. *Conservation Biology*, *18*(3), 621-630.
- Berkes, F. (2006). From community-based resources management to complex systems: The scale issues and marine commons. *Ecology and Society*, *11*(1), 45.
Retrieved from <http://www.ecologyandsociety.org/vol11/iss1/art45/>
- Berkes, F. (2007). Adaptive co-management and complexity: Exploring the many faces of co-management. In D. Armitage, F. Berkes, & N. Doubleday (Eds.), *Adaptive co-management* (pp. 19-37). Vancouver: University of British Columbia Press.
- Berkes, F. (2009). Evolution of co-management: Role of knowledge generation, bridging organizations and social learning. *Journal of Environmental Management*, *90*, 1692-1702.
- Berkes, F., Colding, J., & Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications*, *10*(5), 1251–1262.
- Berkes, F., Colding, J., & Folke, C. (Eds.). (2003). *Navigating social-ecological systems, building resilience for complexity and change*. Cambridge: Cambridge University Press.
- Berkes, F., Davidson-Hunt, I., & Davidson-Hunt, K. (1998b). Diversity of common property resource use and diversity of social interests in the western Indian Himalaya. *Mountain Research and Development*, *18*, 19–33.
- Berkes, F., & Farvar, M. T. (1989). Introduction and overview. In F. Berkes (Ed.), *Common property resources: Ecology and community-based sustainable development* (pp. 1-17). London: Belhaven Press.
- Berkes, F., Feeny, D., McCay, B. J., & Acheson, J. M. (1989). The benefits of commons. *Nature*, *340*, 91-93.
- Berkes, F., & Folke, C. (1993). A system perspective on the interrelationships between natural, human-made and cultural capital. *Ecological Economics*, *5*(1), 1-8.
- Berkes, F., & Folke, C. (1994). Investing in cultural capital for the sustainable use of natural capital. In A. M. Janson et al. (Ed.), *Investing in national capital: The ecological economics approach to sustainability* (pp. 128-149). Washington, DC: Island Press.

- Berkes, F., & Folke, C. (Eds.). (1998). *Linking social and ecological systems, management practices and social mechanisms for building resilience*. Cambridge: Cambridge University Press.
- Berkes, F., & Gardner, J. (Eds.). (1997). Mountain environments and sustainability. In *Sustainability of mountain environments in India and Canada* (pp. 1-18), Winnipeg, MB, Canada: University of Manitoba.
- Berkes, F., George, P., & Preston, R. (1991). Co-management: The evolution of the theory and practice of joint administration of living resources. *Alternatives*, 18(2), 12–18.
- Berg, L. B. (2007). *Qualitative Research Methods for Social Science*. Boston, MA, USA: Pearson publications.
- Biermann, F., Pattberg, P., van Asselt, H., & Zelli, F. (2009c). The fragmentation of global governance architectures: A framework for analysis. *Global Environmental Politics*, 9(4), 14–40.
- Bilal, A., Haque, H., & Moore, P. (2003). *Customary Laws*, IUCN. Pakistan: The World Conservation Union.
- Birner, R., & Wittmer, H. (2000). Co-management of natural resources: A transaction cost economic approach to determine the efficient boundary of the State. In *Proceedings of International Symposium of New Institutional Economics, 22-24 September 2000, Tübingen, Germany*.
- Bodin, O., & Crona, B. (2008). The role of social networks in natural resource governance: What relational patterns make a difference? *Global Environmental Change*, 19, 366–374.
- Borrini-Feyerabend, G. (1996). *Collaborative management of Protected Areas: Tailoring the approach to the context*. Gland, Switzerland: IUCN. Retrieved from <http://www.iucn.org/themes/spg/Files/tailor.html>
- Borrini-Feyerabend, G. (2004). Governance of protected areas, participation and equity. In Secretariat of the Convention on Biological Diversity, *Biodiversity issues for consideration in the planning, establishment and management of protected areas sites and networks* (pp. 100-105) (CBD Technical Series no. 15). Montreal, QC, Canada: CBD.
- Borrini-Feyerabend, G., Farvar, M. T., Nguingiri, J. C., & Ndangang, V. A. (2000). *Co-management of natural resources: Organising, negotiating and learning-by-doing*. Heidelberg, Germany: Kasperek Verlag, GTZ and IUCN.

- Borrini-Feyerabend, G., Kothari, A. & Oviedo, G. (2004a). *Indigenous and local communities and Protected Areas: Towards equity and enhanced conservation*. Gland, Switzerland and Cambridge, UK: IUCN.
- Borrini-Feyerabend, G., Pimbert, M., Farvar, M. T., Kothari, A., & Renard, Y. (2004b). *Sharing power: Learning by doing in co-management of natural resources throughout the world*. Cenesta, Tehran: IIED and IUCN/ CEESP/ CMWG.
- Bossel, H. (1999). *Indicators for sustainable development: Theory, method, applications*. Winnipeg, MB, Canada: International Institute for Sustainable Development (IISD).
- Brazel, Y. (1989). *The economic analysis of property rights*. New York: Cambridge University Press.
- Brockington, D. (2001). *Fortress conservation: The preservation of the Mkomazi Game Reserve, Tanzania*. Oxford, UK: James Currey.
- Bromley, D. W. (1984). *Property rights and economic incentives in resource and environmental systems* (Agricultural Economics Staff Paper Series, No. 231). Madison, WI: University of Wisconsin, USA.
- Bromley, D. W. (1991). *Environment and economy: Property rights and public policy*. Oxford, UK: Oxford University Press.
- Bromley, D. W., & Cernea, M. (1989). *The management of common property resources: Some conceptual and operational fallacies* (World Bank Discussion Paper 57). Washington, DC: The World Bank.
- Bromley, D. W., Feeuy, D., McKean, M., E Peters, Gilles, J., Oakerson, R., Runge, C.E., & Thomson, J. (Eds.). (1992). *Making the commons work: Theory, practice, and policy*. San Francisco, CA: Institute for Contemporary Studies Press.
- Brosius, J. P., Tsing A. L., & Zerner, C. (1998). Representing communities: Histories and politics of community-based natural resource management. *Society and Natural Resources*, 11, 157-168.
- Brown, D. L. (1991). Bridging organisations and sustainable development. *Human Relations*, 44(8): 807-831.
- Brown, K. (1998). The political ecology of biodiversity, conservation and development in Nepal's Terai: Confused meanings, means and ends. *Ecological Economics*, 24, 73-88.
- Brown, K. (2002). Innovations for Conservation and Development. *The Geographical Journal*, 168, 6-17.

- Brown, K. (2003). Integrating conservation and development: A case of institutional misfit. *Frontiers in Ecology and Environment*, 1(9): 479-487.
- Brundtland Commission. (1987). *Our common future: The World Commission on Environment and Development*. Oxford: Oxford University Press.
- Bruner, G., Gullison, R., Rice, R., & da Fonesca, A. B. (2001). Effectiveness of parks in protecting tropical biodiversity. *Science*, 291, 125-128.
- Bryant, R., & Bailey, S. (1997). *Third World political ecology*. London and New York: Routledge.
- Burger, J., Ostrom, E., Norgaard, R. B., Policansky, D., & Goldstein, B. D. (2001). *Protecting the commons. A framework for resource management in the Americas*. Washington, DC: Island Press.
- Butt N., & Price, M. F. (Eds.). (1999). *Mountain people, forests, and trees: Strategies for balancing local management and outside interests. Synthesis of an electronic conference of the Mountain Forum, 12 April-14 May, 1999*. Retrieved on 10 December 2007 from www.mtnforum.org/rs/econfreports/
- Butz, D. (1992). *Developing sustainable communities: Community development and modernity in Shimshal* (Doctoral Thesis). McMaster University, Hamilton, ON, Canada.
- Butz, D. (1996). Sustaining indigenous communities: Symbolic and instrumental dimensions of pastoral resource use in Shimshal, Pakistan. *The Canadian Geographer*, 40(1), 36-53.
- Butz, D. (2006). Tourism and portering labour relations in Shimshal, Gojal Hunza. In H. Kreuzmann (Ed.), *Karakoram in transition: The Hunza Valley* (pp. 394-403). Oxford and Karachi: Oxford.
- Butz, D. (2010). Autoethnography as sensibility. In D. DeLyser, S. Aitken, S. Herbert, M. Crang & L. McDowell (Eds.), *The Sage Handbook of Qualitative Geography* (pp. 138-155). London: Sage.
- Butz, D. (2010). Introduction: Places post-colonialism forgot (and how to find them). *ACME: An International E-Journal for Critical Geographies*, 10(1), 42-47.
- Butz, D., & Cook, N. (2011). Accessibility interrupted: The Shimshal road, Gilgit-Baltistan, Pakistan. *The Canadian Geographer*, 55(3), 354-64.

- Cahn, M. (2002). *Sustainable livelihoods approach: Concept and practice. Paper from DevNet Conference 2002—Contesting Development: Pathways to Better Practice, Institute of Development Studies, Massey University, Palmerston North, New Zealand, 5–7 December 2002.*
- Carey, J. W., Wenzel, P. H., Reilly, C., Sheridan, J., Steinberg, J. M., & Harbison, K. (1998). *CDC EZ-Text: Software for collection, management and analysis of semi-structured qualitative databases* (Version 3.06). Atlanta, GA: Developed by Conwal Incorporated for the Centers for Disease Control and Prevention.
- Carlsson, L. (2000). Policy networks as collective action. *Policy Studies Journal*, 28(3), 502–520.
- Carlsson, L. (2003). Managing commons across levels of organizations. In E. Berge & C. Lars (Eds.), *Commons old and new. Proceedings from a workshop on Commons: Old and new, Centre for Advanced Study, Oslo 11–13, March 2003* (pp. 23–34). Retrieved from <http://www.svt.ntnu.no/iss/Erling.Berge/Proceedings2003CommonsOldAndNew.pdf>.
- Carlsson, L., & Berkes, F. (2005). Co-management: concepts and methodological implications. *Journal of Environmental Management*, 75, 65-76.
- Carney, D. (1998). Implementing the sustainable rural livelihoods approach. In D. Carney (Ed.), *Sustainable rural livelihoods: What contributions can we make?* (pp. 3-23). London, UK: DfID.
- Carswell, G. (1997). Agricultural intensification and rural sustainable livelihoods: A “Think Piece” (IDS mimeo). In R. Ryant, and S. Bailey, *Third World political ecology*. London: Routledge.
- Cash, D. W., & Moser, S. C. (2000). Linking global and local scales: Designing dynamic assessment and management processes. *Global Environmental Change*, 10(2), 109–120.
- Cavassa, A. (2009). *Crisis could have little impact on Peru’s poor - Rural 21*. Lima, Peru: Inovación para el Desarrollo.
- CBD. (1992). *Convention on Biological Diversity* (United Nations Treaty Series).
- CBD. (2003). *Climate change and biodiversity: Interlinkages between biological diversity and climate change* (CBD Technical Series no. 10). Retrieved in March 2006 from <http://www.biodiv.org/programmes/cross-cutting/climate/interlinkages.asp>

- CBD. (2005). *Sustaining life on Earth*. Quebec, Canada: Secretariat of the Convention on Biological Diversity, World Trade Center.
- Ceballos-Lascuráin, H. (1993). *Ecotourism in Central America*. Technical Report for WTO/UNDP. Project CAM790/011.
- Chambers, R. (1983). *Rural development: Putting the last first*. London: Longman.
- Chambers, R. (1992). *Rural appraisal: Rapid, relaxed and participatory* (Discussion Paper 311, Institute of Development Studies). Sussex, UK: University of England.
- Chambers, R. (1994a). *Paradigm shifts and the practice of participatory research and development* (Working Paper 2, Institute of Development Studies). Sussex, UK: University of Sussex.
- Chambers, R. (1994b). Origins and practice of participatory rural appraisal. *World Development*, 22(7), 953-969.
- Chambers, R., & Conway, G. (1992). *Sustainable rural livelihoods: Practical concepts for the 21st Century* (Discussion Paper 296, Institute of Development Studies, Sussex). Sussex, UK: University of Sussex.
- Chape, S., Spalding M., & Jenkins, M. D. (2008). *The world's Protected Areas*. Prepared by the UNEP World Conservation Monitoring Centre. Berkeley, USA: University of California Press.
- Cheung, N. (1969). Transaction costs, risk aversion and the choice of contractual arrangements. *Journal of Law and Economics*, 18, 535-54.
- Cheung, N. (1970). The structure of a contract and the theory of a non-exclusive resource. *Journal of Law and Economics*, 113, 49-70.
- Chopra, K., Kadekodi, G. K., & Murthy, M. N. (1989). People's participation and common property resources. *Economic and Political Weekly*, 24, 189-195.
- Ciracy-Wantrup, V., & Bishop, R. C. (1975). Common property as a concept in natural resource policy. *Natural Resource Journal*, 15, 713-727.
- Ciracy-Wantrup, V. (1971). The economics of environmental policy. *Land Economics* 47(1), 36.45.
- Coase, R. (1960). The problem of social cost. *Journal of Law and Economics*, 3, 1-44.
- Cocklin, C., & Dibden, J. (Eds.). (2005). *Sustainability and change in rural Australia*. Sydney, Australia: University of New South Wales Press.

- Colby, G. (1995). Regulation, imperfect markets, and transaction costs: The elusive quest for efficiency in water allocation. In D. Bromley (Ed.), *The handbook of environmental economics* (pp: 475-502). Oxford, UK and Cambridge, USA: Blackwell.
- Colding, J., Elmqvist, T., & Olsson, P. (2003). Living with disturbance: Building resilience in social-ecological systems. In F. Berkes, J. Colding, & C. Folke, (Eds.), *Navigating social-ecological systems, building resilience for complexity and change* (pp. 163–185). Cambridge: Cambridge University Press.
- Colfer, C.J.P., Wadley, R.L. & Venkateswarlu, P. (1999). Understanding local people's use of time: a pre-condition for good co-management. *Environmental Conservation* 26(1): 41-52.
- Cook, N., & Butz, D. (2011). Narratives of accessibility and social change in Shimshal, northern Pakistan. *Mountain Research and Development*, 31(1), 27-34.
- Cox, B. (1985). No tragedy on the commons. *Environmental Ethics*, 7, 49-61.
- Creswell, J. W. (1994). *Research design: Qualitative and quantitative approaches*. Thousand Oaks, CA: Sage Publications.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage Publication.
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage Publication.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches* (3rd ed.). Los Angeles, CA: Sage Publishers.
- Crocker, D. (1971). Externalities, property rights and transactions costs: An empirical study. *Journal of Law and Economics*, 14, 451-464.
- Cronkleton, P., Taylor, P. L., Barry, D., Stone-Jovicich, S. & Schmink, M. (2008). *Environmental governance and the emergence of forest-based social movements*. Occasional Paper 49. Bogor, Indonesia: Center for International Forestry Research.
- Cutter, S. L., Boruff, B. J., & Sherily, W. L. (2003). Social vulnerability to environmental hazards. *Social Science Quarterly*, 84(2), 242-261.
- Dahlman, J. (1979). The problem of externality. *Journal of Laws and Economics*, 22, 141-62.

- Dale, A., Ling, C., & Newman, L. (2010). Community vitality: The role of community-level resilience adaptation and innovation in sustainable development. *Sustainability*, 2, 215-231.
- Dasgupta, P. (1996). The economics of the environment: Public failure and the erosion of local commons. In *Proceedings of the British Academy*, 90, 165-122.
- Dasgupta, P., & Heal, M. (1979). *Economic theory and exhaustible resources*. Cambridge, UK: Cambridge University Press.
- Dasgupta, P., & Maler, G. (1991). *The environment and emerging development issues. Proceeding of the World Bank Annual Conference on Development Issues, 1990*.
- Daskon, C., & Binns, T. (2009). Culture, tradition and sustainable rural livelihoods: Exploring the culture–development interface in Kandy, Sri Lanka. *Community Development Journal*, 45(4), 494–517.
- Davey, A. (1998). *National system planning for Protected Areas*. Switzerland: IUCN-International.
- Davies, J., & Richards, M. (1999). *The use of economics to assess stakeholder incentives in participatory forest management: A review* (European Union Tropical Forestry Paper 5). London: Overseas Development Institute.
- Dearden, P., & Rollins, R. (Eds.). (1993). *Parks and Protected Areas in Canada: Planning and management*. Toronto: Oxford University Press.
- DeFries, R., Hansen, A., Turner, B. L., Reid, R., & Liu, J. (2007). Land use change around protected areas: Management to balance human needs and ecological function. *Ecological Applications*, 17(4), 1031–1038.
- Demsetz, H. (1967). Towards a theory of property rights. *American Economic Review*, 52(2), 347-379.
- Denniston, D. (1995). High priorities: Conserving mountain ecosystems and cultures (World Watch Paper 123). *Development*, 22(7), 953-969.
- DfID. (1999). *Sustainable livelihoods guidance sheets*. Retrieved in June 2005 from <http://www.nssd.net/pdf/sectiont.pdf>
- DfID. (2000). *The Sustainable Livelihoods Approach* (Input Paper for the Integrated Training Course of NCCR North-South Aeschiried, Switzerland). Retrieved in September 2011 from http://www.nccr-pakistan.org/publications_pdf/General/SLA_Gamper_Kollmair.pdf

- DfID. (2003a). *Sustainable livelihoods: A case study of the evolution of DFID policy* (Working Paper 217). Retrieved in June 2011 from <http://www.odi.org.uk/resources/docs/172.pdf>
- DfID. (2003b). *Sustainable livelihoods, mobility and access needs* (Edited by D. F. Bryceson, D. A. C. Maunder, T. C. Mbara, R. Kibombo, A. S. C. Davis, & J. D. G. F. Howe) (TRL Report TRL544). London: Department for International Development.
- Diaz, C. (2005). *Intellectual property and biological resources: An overview of key issues and current debates*. Wuppertal, Germany: Wuppertal Institute for Climate, Environment and Energy.
- Dolsák, N., & Ostrom, E. (Eds.). (2003). *The commons in the new millennium, challenges and adaptations*. Cambridge, MA: The MIT Press.
- Dove, M. R. (1993). A revisionist view of tropical deforestation and development. *Environment Conservation*, 20, 17-24.
- Drake, L., Bergstrom, P., & Svedsater, H. (1999). *Farmers' attitude to and uptake Countryside Stewardship Policies* (Draft Final Report to the STEWPOL Project, Chapter 5, FAIRI/CT95/0709). Uppsala, Sweden: University of Uppsala.
- Drennan, L. G. (2000). The efficient mix of performance controls: A transaction cost economics perspectives. In *Proceedings of International Symposium of New Institutional Economics, 22-24 September 2000, Tubingen, Germany*.
- Dudley, N. (Ed.). (2008). *Guidelines for applying Protected Area management categories*. Gland, Switzerland: IUCN.
- Edwards, S. R. (2006). *Saving biodiversity for human lives in northern Pakistan. Mountain Areas Conservancy Project*. Karachi, Pakistan: The World Conservation Union (IUCN), Pakistan Country Office.
- Eggertsson, T. (1990). *Economic behaviour and institutions*. Cambridge, UK, Cambridge University Press.
- Ehlers, E., & Kreutzmann, H. (2001). High mountain pastoralism in northern Pakistan. *Mountain Research and Development*, 21(3), 304-306.
- Ekins, P. (2003). Identifying critical natural capital: conclusions about critical natural capital. *Ecological Economics*, 44, 277-292.
- Ellis, F. (2000). *Rural livelihoods and diversity in developing countries*. London: Oxford University Press.

- Erni, C. (2002). Community based conservation: Merging conservation and advocacy for Indigenous Peoples' rights. *Sustainability Watch*. Retrieved in June 2005 from http://www.rio10.dk/index.php?a=show&doc_id=567
- Estes, R. (1993). Toward sustainable development: From theory to praxis. *Social Development Issues*, 15(3):1-29.
- Faizi, I. (2009, March 9). Usama, America and Chitral. *The Daily Mashriq, Urdu Language News Paper, Peshawar*, 4.
- Fajber, E. (2005). Participatory research and development in natural resource management: Towards social and gender equity. In *Participatory research and development for sustainable agriculture and natural resource management: A Sourcebook. Volume 3: Doing participatory research and development* (pp. 51-57). Laguna, The Philippines: International Potato Center-Users' Perspectives with Agricultural Research and Development, and Ottawa, ON: International Development Research Centre (IDRC).
- Falconer, K. (2000). Farm-level constraints on agri-environmental scheme participation: A transactional perspective. *Journal of Rural Studies*, 16, 379-394.
- FAO (Food and Agriculture Organization) (1997). *State of the world's forests*. Rome. Italy.
- FAO (Food and Agriculture Organization). (1999). *The participatory process for supporting collaborative management of natural resources: an overview*. Rome.
- FAO (Food and Agriculture Organization). (2000). *Informal Working Group on Participatory Approaches and Methods to Support Sustainable Livelihoods & Food Security (IWG-PA) of the Food and Agriculture Organization of the United Nations (FAO)*. Retrieved in August 2009 from www.fao.org/participation/default.html
- FAO (Food and Agriculture Organization). (2005). *Trends in forest ownership, forest resources tenure and institutional arrangements. A case study from Pakistan*. Retrieved in October 2008 from <http://www.fao.org/forestry/10606-0-36.pdf>
- Feeny, D. (1988). The demand for and supply of institutional arrangements. In V. Ostrom, D. Feeny, & H. Picht (Eds.), *Rethinking institutional analysis and development* (pp. 159-209). San Francisco: ICS Press.
- Feeny, D., Berkes, F., McCay, B. J., & Acheson, J. M. (1990). The tragedy of the commons: Twenty-two years later. *Human Ecology* 18(1), 1-19.

- Fenoaltea, S. (1984). Slavery and supervision in comparative perspectives: A model. *Journal of Economic History*, 44, 635-668.
- First World Conference on National Parks. (1962). *National Parks service history*. Retrieved in August 2005 from http://www.nps.gov/hfc/products/library/world_conf.htm
- Fisher, B., & Christopher, T. (2007). Poverty and biodiversity: Measuring the overlap of human poverty and the biodiversity hotspots. *Ecological Economics*, 62, 93-101.
- Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C. S., Walker, B., et al. (2002). *Resilience and sustainable development: Building adaptive capacity in a world of transformations* (International Council for Science, ICSU Series on Science for Sustainable Development, No. 3). Retrieved from <http://www.sou.gov.se/mvb/pdf/resiliens.pdf>
- Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources*, 30, 441-473.
- Folke, C., et al. (2003). Synthesis: Building resilience and adaptive capacity in social-ecological systems. In F. Berkes, et al. (Eds.), *Navigating social-ecological systems: Building resilience from complexity and change* (pp. 352-387). Cambridge: Cambridge University Press.
- Foy, G., & Daly, H. (1989). *Allocation, distribution and scale as determinants of environmental degradation: Case studies of Haiti, El Salvador and Costa Rica*. Washington DC: World Bank.
- Fraser, E. D. G. (2007). Travelling in antique lands: Studying past famines to understand present vulnerabilities to climate change. *Climate Change*, 83, 495-514.
- Gallopín, G. C. (2006). Linkages between vulnerability, resilience, and adaptive capacity. *Global Environmental Change*, 16, 293-303.
- Galvin M., & Haller, T. (Eds.). (2008). *People, Protected Areas and global change: Participatory conservation in Latin America, Africa, Asia and Europe. Perspectives of the Swiss National Centre of Competence in Research (NCCR) North-South, University of Bern* (Vol. 3). Bern, Switzerland: Geographica Bernensia.
- Gatzweiler, F. (2004). *Institutional economics for biodiversity conservation: The case of Ethiopian coffee forest*. Biennial Conference, Oaxaca, Mexico.
- Gay, P. D. (2002). A common power to keep them all in awe: A comment on governance. *Cultural Values*, 6(1), 2. Retrieved in 2011 from <http://www.tandfonline.com/doi/abs/10.1080/1362517022019720>

- Gazdar, H. (2003). *A review of migration issues in Pakistan. Paper presented at the Regional Conference on Migration, Development and Pro-Poor Policy Choices in Asia, organized by the Bangladesh Refugee and Migratory Movements Research Unit, Bangladesh/DFID UK, Dhaka, 22-24 June. GHK/IIED.*
- Gentle, P., & Maraseni, T. N. (2012). Climate change, poverty and livelihoods: Adaptation practices by rural mountain communities in Nepal. *Environmental Science & Policy, 21*, 24–34.
- Ghimire, K. B., & Pimbert, M. P. (1997). Social change and conservation: An overview of issues and concepts. In K. B. Ghimire & M. P. Pimbert (Eds.), *Social change and conservation: Environmental politics and impacts of national parks and protected areas*. Earthscan Publications Limited, London.
- Gibbs, J. N., & Bromley, D. W. (1989). Institutional arrangements for management of rural resources: Common property regimes. In F. Berkes (Ed.), *Common property resources: Ecology and community-based sustainable development* (pp. 22-32). London: Belhaven Press.
- Gibson, C. C., Ostrom, E., & McKean, M. A. (2000). Forests, people and governance: Some initial theoretical lessons. In C.C. Gibson, M.A. McKean, & E. Ostrom (Eds.), *People and forests, communities, institutions, and governance* (pp. 227-242). Cambridge: The MIT Press.
- Gjertsen, H. (2005). Can habitat protection lead to improvements in human well-being? Evidence from marine protected areas in Philippines. *World Development, 33*(2) 199-217.
- Goodrich, N. (2002). September 11, 2001 attack on America: A record of the immediate impacts and reactions in the USA travel and tourism industry. *Tourism Management, 23*, 573-580.
- Graham, J., et al. (2003). Principles for good governance in the 21st century. In *Policy Brief, No. 15*. Institute on Governance.
- Granek, E. F., & Brown, M. A. (2005). Co-management approach to marine conservation in Moheli, Comoros Islands. *Conservation Biology, 19*(6), 1724- 1736.
- Greygory, D. (2004). *The colonial present: Afghanistan, Palestine, Iraq*. Malden: Blackwell.
- Griffin, R. C. (1991). The welfare analytics of transaction costs, externalities, and institutional choice. *American Journal of Agriculture Economics, 73*(3) 601-614.

- Grima, A. P. L., & Berkes, F. (1989). Natural resources: Access, rights-to-use and management. In F. Berkes & C. Folke (Eds.), *Linking social and ecological system: Management practices and social mechanisms for building resilience* (pp. 33-54). Cambridge, UK: Cambridge University Press.
- Grimble, R., & Wellard, K. (1997). Stakeholder methodologies in natural resource management: A review of principles, contexts, experiences and opportunities. *Agriculture Systems*, 55(2), 173-193.
- Grimwood, I. R. (1969). *Wildlife conservation in Pakistan* (Pakistan National Forestry Research and Training Project Report No. 17). Rome, Italy: UNDP/FAO.
- Grumbine, R. E. (1994). What is Ecosystem management? *Conservation Biology*, 8, 27–38. doi: 10.1046/j.1523-1739.1994.08010027.x
- Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology Journal*, 29(2), 75-91.
- Guba, E. G. (1990). The alternative paradigm dialogue. In Guba E. G. (Ed.), *The paradigm dialog* (pp. 17–27). Newbury Park, CA: Sage.
- Gunderson, L. H., & Holling, C. S. (Eds.). (2001). *Panarchy: Understanding transformations in human and natural systems*. Washington, DC: Island Press.
- Haan, L. J. (2000). Globalization, localization and sustainable livelihood. *Sociologia Ruralis*, 40(3), 339-365.
- Haas, P. M. (1992). Introduction: Epistemic communities and international policy coordination. *International Organization*, 46(1), 1–35.
- Hamilton, C. (2004). Medicinal plants, conservation and livelihoods. *Biodiversity Conservation*, 13, 1477–1517.
- Hanna, S. (1992). Lessons from ocean governance from history, ecology and economics. In B. C. J. N., D. W. Cicin-sain (Eds.), *Ocean governance: A new vision* (pp. 23-25). Newark: Center for the Study of Marine Policy Graduate College of Marine Studies, University of Delaware.
- Hanna, S. (1995). Efficiencies of user participation in natural resource management. In S. Hanna & M. Munasinghe (Eds.), *Property rights and the environment: Social and ecological issues* (pp. 59-68). Stockholm, Sweden: The Beijer International Institute of Ecological Economics and Washington, DC: The World Bank.

- Hanna, S., & Munasinghe, M. (1995). An introduction to property rights and the environment. In S. Hanna & M. Munasinghe (Eds.), *Property rights and the environment: Social and ecological issues* (pp. 3-11). Stockholm, Sweden: The Beijer International Institute of Ecological Economics and Washington, DC: The World Bank.
- Hansen, A. J., & DeFries, R. (2007). Ecological mechanisms linking protected areas to surrounding lands. *Ecological Applications*, *17*, 974–988. Retrieved from <http://dx.doi.org/10.1890/05-1098>
- Hardin, G. (1968). The tragedy of commons. *Science*, *162*, 1243-1248.
- Hardin, J. L. (1988). Obstacles to effective management of conflicts between national parks and surrounding human communities in developing countries. *Environmental Conservation*, *15*(2), 129-136.
- Hardner, J., & Rice, R. (2002). Rethinking green consumerism. *Scientific American*, *286*, 88-95.
- Harris, J. (2001 August). Camping in the Naltar Valley, northern Pakistan. *Nature & Society, the Journal of Nature and Society Forum*.
- Harrison, L. E., & Huntington, S. P. (2000). *Culture matters: How values shape human progress*. New York: Basic Books.
- Hart, O., Shleifer, A., & Vishny, R. W. (1997). The proper scope of government: Theory and applications to prisons. *Quarterly Journal of Economics*, *112*, 1127-1161.
- Hassan, R., Robert, S., & Ash, N. (Eds.). (2005). *Ecosystems and human well-being: Current state and trends. Findings of the Condition and Trends Working Group* (The Millennium Ecosystem Assessment Series V 1). Washington, DC: Island Press.
- Hayes, T. M. (2006). Parks, people, and forest protection: An institutional assessment of the effectiveness of Protected Areas. *World Development*, *34*(12), 2064-2065.
- Hazlewood, P., Kulshrestha, G., McNeill, C., & Roe, D. (Eds.). (2002). *The Millennium Development Goals and conservation: Managing nature's wealth for society's health*. London: International Institute for Environment and Development (IIED), Russell Press.
- Hecl, H. (1978). Issue networks and the executive establishment. In A. King (Ed.), *The new American political system* (pp. 87–124). Washington, DC: American Enterprise Inc.

- Hecox, E. (1998). *The role of donor support in Zimbabwe's CAMPFIRE Program*. Retrieved in June 2005 from <http://www.coloradocollege.edu/Dept/EC/Faculty/Hecox/erichecox/html>
- Hector, A., Joshi, J., Lawler, S. P., Spehn, E. M., & Wilby, A. (2001). Conservation implications of the link between biodiversity and ecosystem functioning. *Oecologia*, 129(4), 624-628.
- Heinen, T., & Acharya, S. (2011). The non-timber forest products sector in Nepal: Emerging policy issues in plant conservation and utilization for sustainable development. *Journal of Sustainable Forestry*, 30, 543–563.
- Helliwell F. (2001). *The contribution of human and social capital to sustained economic growth and well-being*. International Symposium Report edited by Aneta Bonikowska. Hull, QC, Canada: OECD and Human Resources Development Canada.
- Hewitt, K. (1998). *Recent glacier surges in the Karakoram Himalaya, South Central Asia*. Retrieved in October 2005 from http://www.agu.org/eos_elec/97016e.html
- Hobley, M., & Wollenberg, E. (1996). A new pragmatic forestry or another development bandwagon? In M. Hobley (Ed.), *The process of change in India and Nepal* (Rural Development Forestry Study Guide 3). London: Participatory Forestry, Overseas Development Institute.
- Holling, C. S. (Ed.). (1978). *Adaptive environmental assessment and management*. New York: Wiley.
- Holling, C. S. (2000). Theories for sustainable futures. *Conservation Ecology*, 4(2), 7. Retrieved from URL: <http://www.consecol.org/vol4/iss2/art7/>
- Holling, C. S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems*, 4, 390-405.
- Holling, C. S. (2003). The backdrop to sustainability. In F. Berkes et al. (Ed.), *Navigating social-ecological systems: Building resilience from complexity and change* (pp. 15-21). Cambridge: Cambridge University Press.
- Holling, C. S., & Meffe, G. K. (1996). Command and control and the pathology of natural resource management. *Conservation Biology*, 10, 328–337.

- Hoole, A. (2008). *Community-based conservation and Protected Areas in Namibia: Social-ecological, linkages for biodiversity* (PhD Thesis). University of Manitoba, Winnipeg, MB, Canada.
- Hough, J. L. (1988). Obstacles to effective management of conflicts between national parks and surrounding human communities in developing countries. *Environmental Conservation*, 15(2), 129-136.
- Hough, J. L. (1994). Institutional constraints to the integration of conservation and development: A case study of Madagascar. *Society and Natural Resources*, 7, 119-124.
- Hove, H. (2004). Critiquing sustainable development: A meaningful way of mediating the development impasse. *Canadian Undergraduate Journal of Development Studies*, 1(1). Retrieved in September 2008 from <http://www.macp-pk.org/docs/Project%20Document.PDF>
- Hulme, D., & Murphree, M. (1999). Communities, wildlife, and new conservation in Africa. *Journal of International Development*, 11, 277-85.
- Hussain, S. (2003). The status of snow leopard in Pakistan and its conflict with local farmer livelihoods. *Oryx*, 37, 33-37.
- ICIMOD (International Centre for Integrated Mountain Development). (2000). *Himalayan mountain systems in global biodiversity*. Kathmandu, Nepal: ICIMOD.
- ICIMOD (International Centre for Integrated Mountain Development). (2011). *Framework for community-based climate vulnerability and capacity assessment in mountain areas*. Kathmandu, Nepal: ICIMOD.
- IDRC. (2005). *Sustainable agriculture and natural resource management: A sourcebook. Volume 1: Understanding participatory research and development*. Laguna, Philippines: International Potato Center-Users' Perspectives With Agricultural Research and Development, and Ottawa, ON, Canada: IDRC. Retrieved in February 2006 from http://www.idrc.ca/en/ev-73443-201-1-DO_TOPIC.html#begining
- IPCC. (2007). *The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

- IIRR. (1998). *Participatory methods in community-based coastal resource management* (3 vols.). Silang, Cavite, Philippines: International Institute of Rural Reconstruction. Retrieved in February 2005 from <http://payson.tulane.edu:8085/cgi-bin/gw?e=p1c11help-env1-1-T.5.B.245.4-500-50-00e&q=&a=p&p=home>
- IISD. (1995). *Participatory research for sustainable livelihoods: A guide for field projects on adaptive strategies*. Retrieved in September 2005 from <http://www.iisd.org/casl/CASLGuide/ParticipatoryApproach.htm>
- Infield, M., & Namara, A. (2001). Community attitudes and behaviour towards conservation: An assessment of a community conservation programme around Lake Mburo National Park, Uganda. *Oryx*, 35, 48-60.
- IUCN. (1994). *Guidelines for Protected Area management categories (CNPPA with the assistance of WCMC)*. Gland, Switzerland and Cambridge, UK: IUCN.
- IUCN. (1996). Resolutions and recommendations, World Conservation Congress, Montreal (Canada), 13–23 October, 1996. *Management*, 24(4), 449–465. Retrieved on 14 February 2003 from <http://iucn.org/wcc/resolutions/resrecen.pdf>
- IUCN. (1999). *Biodiversity Action Plan for Pakistan*. Islamabad, Pakistan: IUCN-Pakistan.
- IUCN. (2000). Linking people with nature: Biodiversity conservation strategy. In *Linking people with nature: Biodiversity conservation strategy for the Himal Region. IUCN Conference Proceedings, Rajendrapur 24–25 January 2000* (pp. 12–14).
- IUCN. (2003). *Strategy for sustainable development* (Background paper). Islamabad, Pakistan: IUCN-Pakistan.
- IUCN. (2005). *Regional mountain program in Asia*. Retrieved in August 2005 from http://www.iucn.org/places/asia/pdf/fact_sheets/Mountains.pdf
- IUCN. (2006). *Mountain Areas Conservancy Project document*. Islamabad, Pakistan: IUCN-Pakistan. Retrieved from http://iucn.org/about/union/secretariat/offices/asia/asia_where_work/
- Ives, J.D. & Messerli, B. (1989). *The Himalayan Dilemma: Reconciling Development and Conservation*. New York.
- Janelle, D. G., Warf, B., & Hansen, K. (1998). The political ecology of diversity, conservation and development in Nepal's Terai: Confused meanings, means and ends. *Ecological Economics*, 24, 73-87.

- Jentoft, S. (1989). Fisheries co-management. *Marine Policy*, 13, 137-154.
- Jodha, N. S. (1986). Common property resources and the rural poor in dry regions of India. *Economic and Political Weekly*, 21(27), 169-181.
- Jodha, N. S. (1998). *Linking social and ecological system: Managing practices and social mechanisms for building resilience*. New York: Cambridge University Press.
- Jodha, N. S. (2001). *Interacting processes of environmental and social vulnerabilities in mountain areas*. Kathmandu, Nepal: ICIMOD Publication.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Kates, R., Clark, W. C., Corell, R., et al. (2001). Environment and development – sustainability science. *Science*, 292, 641–642.
- Kar-i. (2005). *Multi-media project of the Karakoram Mountains of northern Pakistan*. Retrieved in September 2005 from <http://www.utoronto.ca/%7Ekmacd/Kar-i/>
- Khan, M. I. (2003). *Bangladesher Krishok Samaj (The peasant society of Bangladesh)*. Dhaka, Bangladesh: Dibbyaprakash Publishers.
- Khan, R., & Khan, A. (2008). *Implementing Kashmir Study Group proposal*. Retrieved in November 2001 from www.ipripak.org/journal/winter2008/articles.pdf
- Khan, S. M. M. (2011). *Participatory Wetland Resource Governance in Bangladesh: An Analysis of Community-Based Experiments in Hakauki Haor* (PhD. thesis), Univeristy of Manitoab.
- Khan, S., Rehman, S., & Sunderland, T. (2011). Commons becoming non-commons in the efforts for reconciliation between conservation and livelihoods: A case study of northern Pakistan. *Journal of Horticulture and Forestry*, 3(3), 63-71. Retrieved in March 2011 from <http://www.academicjournals.org/jhf>
- Kimber, R. (1981). Collective actions and fallacy of the Liberal Fallacy. *World Politics*, 33(2), 178-196.
- Kirkby, J., & Moyo, S. (2000). *Environmental security, livelihoods, and entitlements: What is the relationship between land degradation and poverty?* ETC Netherlands.

- Kiss, A. (1999). *Making community-based conservation work*. Conference paper prepared for the Society for Conservation Biology, Annual Meeting Report, College Park, MD, June 1999.
- Kiss, A. (2005). Making biodiversity conservation a land use priority. In M. Wells (Ed.), *Making ICDPs work*. Retrieved in September 2005 from <http://epp.gsu.edu/pferraro/special/conservation.htm>
- Kitzinger, J. (1995). Qualitative research: Introducing focus groups. *British Medical Journal*, 311, 299-302.
- Knudsen, A. (1999). Conservation and controversy in the Karakoram: Khunjerab National Park Pakistan. *Journal of Political Ecology*, 56, 1-29. Retrieved in June 2009 from <http://dizzy.library.arizona.edu/ej/jpe/vol6~1.htm>.
- Kohler, T. & Maselli, D. (Eds.). (2009). *Mountains and Climate Change – From Understanding to Action*. Bern: Centre for Development and Environment (CDE).
- Kooiman, J., & Bavinck, M. (2005). The governance perspective. In J. Kooiman, M. Bavinck, S. Jentoft, & R. Pullin (Eds.), *Fish for life: Interactive governance for fisheries* (pp. 11-24). Amsterdam, The Netherlands: Amsterdam University Press.
- Körner, C., & Spehn, M. (2002). *Mountain biodiversity: A global assessment*. London, New York: Parthenon Publishing.
- Koziell, I. (2000). *Diversity not adversity: Sustaining livelihoods with biodiversity*. London: IIED.
- Kreutzmann, H. (1993). Challenge and response in the Karakoram: Socioeconomic transformation in Hunza, Northern Areas, Pakistan. *Mountain Research and Development*, 13(1), 19–39.
- Kreutzmann, H., & Schütte, S. (2004). Linking relief and development in Pakistan-administered Kashmir: Restoring Local livelihoods and economic security in earthquake-affected areas. *Mountain Research and Development (MRD). An International, Peer-reviewed Open Access Journal*.
- Kreutzmann, H., & Schütte, S. (2011). Contested commons - Multiple insecurities of pastoralists in northeastern Afghanistan. *Erdkunde*, 65(2), 99-119.
- Kumm, K.I., & Drake, L. (1998). *Transaction costs to farmers of environmental compensation*. Unpublished Report, Department of Economics, SLU, University

of Uppsala, Sweden.

- Kuperan, K., Mustapha, N., Abdullah, R., Pomeroy, R. S., Genio, E., & Salamanca, A. (1998). *Measuring transaction costs of fisheries co-management*. Paper presented at the 7th Biennial Conference of the International Association for the Study of Common Property, Vancouver. Retrieved from <http://www.indiana.edu/~iasap/Drafts/kuperan.pdf>.
- Lele, S. (2000). *Godsend, sleight of hand, or just muddling through: Joint water and forest management in India* (ODI Natural Resource Perspectives, no. 53). London, UK: Overseas Development Institute.
- Leverington, F., Hockings, M., Pavese, H., Costa, K. L., & Courrau, J. (2008). *Management effectiveness evaluation in protected areas - A global study*. Supplementary Report No. 1: Overview of approaches and methodologies. Gatton, Australia: The University of Queensland, Gatton, TNC, WWF, IUCN-WCPA, Australia.
- Libcap, G. D. (1991). *Contracting property rights*. Cambridge University Press.
- Locke, H., & Dearden, P. (2005). Rethinking protected area categories and the “new paradigm.” *Environmental Conservation*, 32, 1-10.
- Ludwig, D. (2001). The era of management is over. *Ecosystems*, 4, 758-764.
- Macchi, M. (2011). *Framework for climate-based climate vulnerability and capacity assessment in mountain areas*. Kathmandu, Nepal: International Centre for Integrated Mountain Development (ICIMOD).
- MACP. (1999). *Mountain Area Conservancy Project document*. Islamabad, Pakistan: IUCN-Pakistan. Retrieved in June 2009 from <http://www.macp-pk.org/docs/Project%20Document.PDF>
- Mahanty, S. (2002). Conservation and development interventions as networks: The case of India eco-development project, Karnataka. *World Development*, 30, 1369-1386.
- Mahmud, H. (2008). Unintended consequences of micro-credit in Bangladesh: An evaluation from human security perspective. *Asian Social Science*, 4, 127- 131.
- Malhotra, Y. (2000). *Current business concerns and knowledge management*. Excerpts interview by the Times of India. Retrieved on 28 March 2011 from <http://www.brint.com/interview/times.htm>
- Mariscal, C. B., Tassi, N., Miranda, A. R., Canedo, L. A., & Cazorla, I. (2011). *Rural migration in Bolivia: The impact of climate change, economic crisis and state policy* (Human Settlement Working Paper Series. Rural–urban interactions and

- livelihood strategies). London: International Institute for Environment and Development.
- Marschke, M., & Berkes, F. (2005). Local level sustainable planning for livelihoods: A Cambodian experience. *The International Journal of Sustainable Development and World Ecology*, 12, 21-33.
- Marschke, M. J., & Berkes, F. (2006). Exploring strategies that build livelihood resilience: A case from Cambodia. *Ecology and Society*, 11(1), 42. Retrieved on 25 January 2008 from <http://www.ecologyandsociety.org/vol11/iss/art42>
- Martin, M., & Kronstadt K. (2009). *Pakistan's capital crises: Implications of US Policy* (Congress Research Service Report). Retrieved in May 2009 from <http://www.fas.org/sgp/crs/row/RS22983.pdf>
- McCay, B. J., & Acheson, J. M. (1987). *The question of the commons: The culture and ecology of communal resource*. Tucson, AZ: University of Arizona Press.
- McCormick, J. (1991). *Reclaiming paradise*. Bloomington, IN: Indiana University Press.
- McKay, L. (2001). *Cross-scale issues in the management of Protected Areas in India: The case study of Great Himalayan National Park and Manali Sanctuary* (Master's Thesis). Winnipeg, MB, Canada: University of Manitoba.
- MEA (Millennium Ecosystem Assessment). (2005). *Ecosystems and human well-being. Volume I: Current state and trends. Findings of the condition*. Retrieved from <http://www.scribd.com/doc/38690874/Ecosystems-and-Human-Well-Being-Current-State-and-Trends>
- Mehnen N., Mose, I., & Strijker, D. (2009). *Governance in Protected Areas. Current state of research and existing research gaps*. Paper presented at 1st International Conference on Landscape Economics European Consortium for Landscape Economics, CEEP, Vienna, Austria.
- Messerschmidt, D. (1999). *Common forest resource management: Annotated bibliography of Asia, Africa and Latin America*. Rome, Italy: FAO.
- Mike, I. O., Nakajjo, A., & Isoke, D. (2008). *Socio economic determinants of primary school dropout: The logistic model analysis* (Munich Personal Repec Archive). Retrieved from http://mpira.ub.uni-muenchen.de/view/people/Okumu,_Ibrahim_M=2E.html
- Mincher, R. (2008). New Zealand's Challenger Scallop Enhancement Company: From reseeded to self-governance. In R. Townsend, R. Shotton, & H. Uchida (Eds.), *Case studies in fisheries self-governance* (Fisheries Technical Paper 504) (pp.

307–321). Rome, Italy: FAO.

- Misra, K. M. (2003). *Baseline information on medicinal plants conservation and sustainable utilization*. Retrieved in September 2005 from <http://www.frlht.org.in/html/reports/overview%20report.pdf>
- Mitchell, N. J., Hudson L., & Jones, D. (Eds.). (2003). *Speaking of the future: A dialogue on conservation*. Woodstock, VT: Conservation Study Institute.
- Mock, J. (1989). *Will it be guns on ice? Himal*. Lalitpur, Nepal: Himal Association.
- Mock, J., (1997). Mountain Protected Areas in northern Pakistan: The case of the national parks. In *Proceedings of the Third International Hindukush Cultural Conference, Karachi, Pakistan*.
- Mock, J., & O’Neil, K. (1996). *Survey on eco-tourism potential in the Biodiversity Project Area*. Consultancy report for IUCN-The World Conservation Union - Pakistan.
- Morgan, D. (1988). *Focus groups as qualitative research*. London: Sage.
- Morgan, D. (1997). *Focus groups as qualitative research* (2nd ed.). London: Sage.
- Morgan, D. (1998). *Focus group as qualitative research* (Qualitative Research Methods, Volume 16). New Delhi, India: Sage Publications.
- Mountain Watch. (2002). *Environmental change & sustainable development in mountains*. Cambridge, UK: UNEP World Conservation Monitoring Centre.
- Mumtaz, K. (1989). *Pakistan’s environment: A historical perspective and selected bibliography with annotations*. Karachi, Pakistan: Journalists’ Resource Center, IUCN-Pakistan.
- Munn, R. E. (1989). Towards sustainable development: An environmental perspective. In F. Archibugi & P. Nijkamp (Eds.), *Economy and ecology: Towards sustainable development* (pp. 49-72). Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Munro, G., Bingham, N., & Pikitch, E. (1998). Individual transferable quotas, community-based fisheries management systems, and “virtual” communities. *Fisheries*, 23(3), 12–15.
- Murombedzi, J. C. (2003). *Pre-colonial conservation practices in southern Africa and their legacy today*. Retrieved from <http://www.iucn.org/themes/ceesp/Publications/TILCEPA/CCA->

JMurombedzi.pdf.

- Naess, A. (1989). *Ecology, community and lifestyle*. Cambridge: Cambridge University Press.
- Nagel, T. (1986). *The view from nowhere*. New York: Oxford University Press.
- Nanda, S., & Warms, R. L. (2007). *Cultural anthropology*. Belmont, CA: Wadsworth/Thomson Learning.
- NASSD. (2003). *Northern Areas Conservation Strategy*. Islamabad, Pakistan: IUCN-Pakistan.
- Narayan, D, Patel, R., Schafft, K., Rademacher, A., & Koch-Schulte, S. (2000). *Voices of the poor: Can anyone hear us?* New York: Oxford University Press for the World Bank.
- Nayak, P.K. (2011). *Change in marginalization: Livelihoods, commons institutions and environmental justice in Chilika Lagoon, India*. (PhD. Thesis), Univeristy of Manitoba.
- Nayak, P. K. (2011). *Conditions for governance of tenure in lagoon social-ecological systems: Lessons from around the world. UN/FAO initiative on Governance of Tenure for Responsible Capture Fisheries*. Rome, Italy: FAO.
- Nayak, P., & Berkes, F. (2008). Politics of co-optation: Community forest management Versus joint forest management in Orissa, India. *Environmental Management*, 90, 70-88.
- Nayak, P. K., & Berkes, F. (2010). Whose marginalization? Politics around environmental injustices in India's Chilika Lagoon. *Local Environment*, 15, 553-567.
- Nayak, P. K., & Berkes, F. (2011). Commonisation and decommonisation: Understanding the processes of change in Chilika Lagoon, India. *Conservation and Society* (in press, accepted 19 August 2010).
- Neefjes, K. (2000). *Environments and livelihoods: Strategies for sustainability*. London, UK: Oxfam GB.
- Nelson, A., & Chomitz, K. M. (2011). *Effectiveness of strict vs. multiple use Protected Areas in reducing tropical forest fires: A global analysis using matching methods*. PLoS ONE, 6(8), e22722. doi:10.1371/journal.pone.0022722
- Nelson, J. (2004). *Conservation and communities in Central Africa: The need to secure indigenous rights and biodiversity*. Retrieved from

<http://www.forestpeoples.org/documents/>

- Nepal, K. S. (2002). Mountain ecotourism and sustainable development. *Mountain Research and Development*, 22(2), 104-109.
- Newmark, W. D., Leonard, N. L., Sariko, H. I., & Gamassa, D.-G. M. (1993). Conservation attitudes of local people living adjacent to five protected areas in Tanzania. *Biological Conservation*, 63(2), 177-183.
- Nishat, A., Waliuzzaman, M., & Ahmad, J. (Eds.). (2000). *Proceeding of the Consultative Workshop on Linking People with Nature: Biodiversity Conservation Strategy for the Himal Region*. Dhaka, Bangladesh: IUCN Bangladesh.
- Nuorteva, P., Keskinen, M., & Varis, O. (2010). Water, livelihoods and climate change adaptation in the Tonle Sap Lake area, Cambodia: Learning from the past to understand the future. *Journal of Water and Climate Change*, 1(1), 87-101.
- Olsson, P., Folke, C., & Berkes, F. (2004). Adaptive co-management for building resilience in socio-ecological systems. *Environmental Management*, 34, 75-90.
- Onwuegbuzie, A. J. (2003). Expanding the framework of internal and external validity in quantitative research. *Research in the Schools*, 10(1), 71-90.
- Ormsby, A., & Kaplin, B. (2005). A framework for understanding community resident perception of Masoala National Park, Madagascar. *Environmental Conservation* 32(2), 156-164.
- Ostrom, E. (1987). Institutional arrangements for resolving the commons dilemma: Some contending approaches. In B. J. McCay & J. M. Acheson (Eds.), *The Question of the Commons* (pp 250-265). Tucson, AZ: University of Arizona Press.
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. London, UK: Cambridge University Press.
- Ostrom, E. (1999). *Self-governance and forest resources* (Occasional paper No. 20). Bogor, Indonesia: Center for International Forestry Research, Indonesia.
- Ostrom, E. (2005). *Understanding institutional diversity*. Princeton, NJ: Princeton University Press.
- Ostrom, E., Burger, J., Field, C. B., Norgaard, R. B., & Policansky, D. (1999). Revisiting the commons: Local lessons, global challenges. *Science*, 284(5412), 278-282.
- Ostrom, E., & Schlager, E. (1996). The formation of property rights. In S. S. Hanna, C. Folke, & K. Maler (Eds.), *Rights to nature: Ecological, cultural, and political*

principles of institutions for the environment (pp. 127-156). Washington, DC: Island Press.

- Ostrom, V., Fenny, D., & Pitch, H. (1988). *Rethinking institutional analysis development: Issues, alternatives and choices*. Panama: ICEG. Retrieved in December 2011 from pakistan/projects/archived_projects/proj_arc_macp.cfm
- PANOS. (2004). *Voices from the mountain: Oral testimonies from Shimshal, the Karakoram, Pakistan*. London, UK: The Panos Institute. Retrieved in March 2009 from http://panos.org.uk/wp-content/files/2011/03/mountain_voices_pakistan4gCjUB.pdf.
- Parvez, S., & Stephen, F. R. (2002). *Sustaining mountain economies: Sustainable livelihoods and poverty alleviation*. Thematic paper presented at UNEP/Bishkek Global Mountain Summit, 23-28 April.
- Pearce, D., Barbier, E., & Markandya, A. (1988). *Sustainable development and cost-benefit analysis*. London, UK: Environmental Economics Centre.
- Pennar, K. (1997, 15 December). The tie that leads to prosperity: The economic value of social bonds is only beginning to be measured. *Business Weekly*, 153-155.
- Pido, M., Pomeroy, R., Carlos, M., & Garces, L. (1996). *A handbook for rapid appraisal of fisheries management systems*. Manila, The Philippines: ICLARM.
- Pinkerton, E. (Ed). (1989). *Co-operative management of local fisheries*. Vancouver, Canada: University of British Columbia Press.
- Planning Department. (2010). *Historic flood review report in Northern Areas, WAPDA, 2010*. Pakistan: Water & Power Development Authority (WAPDA).
- Possiel, J. W., Saunier, R. E., & Meganck, R. A. (1995). In-situ conservation of biodiversity. In R. E. Saunier & R. A. Meganck (Eds.), *Conservation of biodiversity and the new regional planning* (pp. 7-20). Washington, DC: Organization of America and World Conservation Union-IUCN, USA.
- Pretty, J. (2003). Social capital and the collective management of resources. *Science*, 302, 1912-1915.
- Pretty, J., & Smith, D. J. (2004). Social capital in biodiversity conservation and management. *Conservation Biology*, 18(5), 631-638.
- Pretty, J., & Vodouhe, S. (1997). Using rapid or participatory rural appraisal. In B. E. Swanson, R. P. Nemptz, & A.J. Sofranko (Eds.), *Improving agricultural extension: A reference manual* (pp. 47-56). Rome, Italy: Food and Agriculture Organization

- of the United Nations. Retrieved in September 2005 from <http://www.fao.org/docrep/W5830E/w5830e00.htm>
- Pretty, J., & Ward, H. (2001). Social capital and the environment. *World Development*, 29, 209-27.
- Putnam, R. D. (1993). What makes democracy work? *National Civic Review*, 82(2), 101-107.
- Raman, B. (2005). Unrest in Gilgit-Baltistan. *South Asia Analysis Group*, 13, 1241. Retrieved in November 2005 from <http://www.saag.org/papers13/paper1241.html>
- Randall, A. (1972). Market solution to externality problems: Theory and practice. *American Journal of Agriculture Economics*, 54, 175-83.
- Rao, M., Rabinowitz, A., & Khaing, S. T. (2002). Status review of the protected area system in Myanmar, with recommendations for conservation planning. *Conservation Biology*, 16, 360–368.
- Rasmussen, S., & Parvez S. (2002). *Sustainable livelihoods and poverty alleviation*. Draft background paper (B2) for review by the Mountain Forum Section: Sustaining mountain economies.
- Reddy, V. R. (1999). Valuation of renewable natural resources. User perspective. *Economic and Political Weekly*, 34(23), 1435-1437, 1439-1444.
- Rehman, F., Holdschlag, A., Ahmad, B., & Qadiri, I. (2009). War, terror and tourism: Impact of violent events on international tourism in Chitral, Pakistan. *Tourism, Original Scientific Paper*, 59(4), 465-479.
- Rehman, M. (1993). Irrigation and farm water management in Pakistan. *Geo journal*, 31(4), 363-371.
- Resilience Alliance. (2005). *A consortium linking ecology, economics and social insights for sustainability*. Retrieved in August 2005 from <http://www.resalliance.org>
- Ribot, J., & Norton, A. (Eds.). (2010). *Social dimensions of climate change: Equity and vulnerability in a warming world*. Washington, DC: The World Bank.
- Richards, M., Kannel, K., Marjhan, M., & Davies, J. (1999). *Towards participatory economic analysis of forest user groups in Nepal*. London, UK: Overseas Development Institute, ODI.
- Rio Conference. (1992). *United Nations Conference on Environment and Development*

- (UNCED), Rio de Janeiro, 3-14 June 1992. Retrieved from <http://www.un.org/geninfo/bp/enviro.html>
- Robson, J. P., & Nayak, P. K. (2010). Rural out-migration and resource dependent communities: Lessons from Mexico and India. *Population and Environment*, 32, 263-284.
- Roe, D., & Elliott, J. (2004). *The Millennium Development Goals and conservation - Managing nature's wealth for society's health*. London, UK: International Institute for Environment and Development (IIED), Russell Press.
- Room, J. (1980). Assessing the benefits and costs of social forestry projects. *The Indian Forester*, 106(7), 445-455.
- Rudel, T. K. (2005). *Tropical forests: Regional paths of destruction and regeneration in the late 20th century*. New York, NY: Columbia University Press.
- Ruitenbeek, J., & Cartier, C. (2001). *The invisible wand: Adaptive co-management as an emergent strategy in complex bio-economic systems* (Occasional paper 34). Bogor, Indonesia: Center for International Forestry Research.
- Runge, C. F. (1981). Common property externalities: Isolation, assurance and resource depletion in a traditional grazing context. *American Journal of Agricultural Economics*, 63, 595-606.
- Runge, C. F. (1984). Institutions and the free rider: The assurance problem in collective action. *Journal of Politics*, 46, 623-635.
- Sandberg, J. (2012). Mega-interest on microcredit: Are lenders exploiting the poor? *Journal of Applied Philosophy Society for Applied Philosophy*. doi: 10.1111/j.1468-5930.2012.00560.x
- Saunier, R. E., & Meganck, R. A. (Eds.). (1995). *Conservation of biodiversity and the new regional planning*. Washington, DC: Organization of American States / IUCN.
- Schütte, S. and Kreutzmann, H. (2011). Linking relief and development in Pakistan-administered Kashmir. Restoring local livelihoods and economic security in earthquake-affected areas. *Mountain Research and Development* 31(1), 5-15.
- Scoones, I. (1995). PRA and anthropology: Challenges and dilemmas. *Participatory Learning and Action (PLA) Notes*, 24, 17-20.
- Scoones, I. (1998). *Sustainable rural livelihoods: A framework for analysis* (IDS Working Paper 72). Brighton, UK: IDS.

- SEI. (2005). *Integrating social vulnerability into water management: New approaches to adaptive water management under uncertainty* (NeWater Working Paper No 5). Stockholm, Sweden: Stockholm Environment Institute. Retrieved in 2009 from <http://www.sei-international.org/mediamanager/documents/Publications/Risk-livelihoods/integrating-social-vulnerability-water-management.pdf>
- Sekhar, N. U. (2003). Local people's attitude towards conservation around Sariska Tiger Reserve, India. *Journal of Environmental Management*, 69, 340.
- Sen, A. (1975). *Employment, technology and development*. Oxford: Clarendon Press.
- Sen, A. (1984). Good and people. In A. K. Sen (Ed.), *Resources, values and development*. Oxford: Blackwell Publishers.
- Sen, A. (1985). *Commodities and capabilities*. New York: Elsevier Science Publications.
- Sen, A. (1990). Development as capability expansion. In K. Griffin and J. Knight (Eds.), *Human development and international development strategies for the 1990's* (pp. 41-58). New York: Macmillan.
- Sen, A. (1997). Editorial: Human capital and human capability. *World Development*, 25(12), 1959-1961.
- Sen, A. (1999). *Development as freedom*. Oxford: Oxford University Press.
- Sen, A. (2003). Human capital and human capability. In S. Fukuda-Parr S. & A. K. Shiva, *Readings in Human Development*. New Delhi, India: Oxford University Press.
- Shahbaz, B., Ali, T., & Suleri, A. Q. (2006). A critical analysis of forest policies of Pakistan: Implications for sustainable livelihoods. *Mitigation and Adaptation Strategies for Global Change*, 12(3), 441-453. doi: 10.1007/s11027-006-9050-9 c Springer.
- Shankland, A. (2000). *Analysing policy for sustainable livelihoods* (Research Report 49). Brighton: Institute of Development Studies.
- Sharma, E., Chettri, N., & Prasad, K. O. (2010). Mountain biodiversity conservation and management: A paradigm shift in policies and practices in the Hindu Kush-Himalayas. *Ecol Res*, 25, 909-923.
- Sheikh, K. M. (2001). *Ecological studies of avifauna in the Naltar Valley, northern Pakistan, with a conservation perspective* (PhD dissertation, 452). Quaid-IAzam University, Islamabad, Pakistan and Zoologisches Institut und Museum Alexander

Koenig (ZFMK), Bonn, Germany.

- Sheikh, K. (2002). Use, exploitation and prospects for conservation: People and plant biodiversity of Naltar Valley, Northwestern Karakorams, Pakistan. *Biodiversity and Conservation*, 11(4), 715-742.
- Shrestha, A. B., Wake, C. P., Dibb, J. E., & Mayewski, P. A. (2000). Precipitation fluctuation in the Nepal Himalaya and its vicinity and relationship with some large scale climatological parameters. *International Journal of Climatology*, 20, 317–327
- Shi, H., Singh, A., Kant, S., Zhu, Z., & Waller, E. (2005). Integrating habitat status, human population pressure, and protection status into biodiversity conservation priority setting. *Conservation Biology*, 19, 1273–1285
- Sidky, M. (1993). Irrigation and the political evolution of the high-mountain kingdom of Hunza. *Asian Affairs, 1477-1500*, 24(2), 131-144.
- Simorangkir, D. (2006). *Understanding forest tenure in South and Southeast Asia: Trends in forest ownership, forest resources tenure and institutional arrangements*. Rome, Italy: Food and Agriculture Organization. Retrieved from <ftp://ftp.fao.org/docrep/fao/009/j8167e/j8167e07.pdf>
- Simorangkir, D. (2008). *Understanding forest tenure in South and Southeast Asia: Trends in forest ownership, forest resources tenure and institutional arrangements*. Rome, Italy: FAO. Retrieved in August 2009 from <ftp://ftp.fao.org/docrep/fao/009/j8167e/j8167e07.pdf>
- Slocombe, D. S. (1995). An ecosystem approach to regional planning. In R. E. Saunier & R. A. Meganck (Eds.), *Conservation of biodiversity and the new regional planning: Integrating park and regional planning through an ecosystem approach* (pp. 53-66). Washington, DC: Organization of American States / IUCN.
- Smit, B., & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change*, 16, 282–292.
- Smith, K. (2004) *Environmental hazards: Assessing risk and reducing disasters* (4th ed.). London: Routledge.
- Smith, R. (1981). Resolving the tragedy of the commons by creating private property rights in wildlife. *CATO Journal*, 1, 439-468.
- Smith, R., Muir, R., Walpole, M., Balmford, A., & Leader-Williams, N. (2003). Governance and the loss of biodiversity. *Nature*, 426, 67-70.
- Snape, R., & Gunasekera, D. (1997). *Problems of the global commons. Countdown to*

Kyoto: The consequences of the mandatory global carbon dioxide emissions reductions. Australian APEC Study Centre, Canberra, 19–21 August 1997.

Snidal, D. (1985). Coordination versus prisoner's dilemma: Implications for international co-operation and regimes. *American Political Science Review*, 79, 23-42.

SNT. (2005). *Shimshal Nature Trust (SNT)*. Retrieved in October 2005 from <http://www.snt.org.pk/aboutus.html>

SNT. (2007). *Shimshal History*. Retrieved in October 2008 from <http://www.snt.org.pk/aboutus.html>

Songorwa, A. N., Bührs, K. & Hughey, K. (2000). Community-based wildlife management in Africa: A critical assessment of the literature. *Natural Resources Journal*, 40(2), 603-643.

Space for Nature. (2005). *History of Conservation*. Retrieved in July 2005 from www.spacesfornature.org

Stadel, C. (2009). Vulnerabilidad, resistividad en el campesinado rural de los Andes tropicales. *Anuario Americanista Europeo*, 6-7, 185-200.

Stephen, G. (2003). *Quantitative methods in social science. The role of numbers made easy*. London, UK: Continuum.

Stevenson, G. G. (1991). *Common property economics: A general theory and land use application*. Cambridge: Cambridge University Press.

Stewart, F. (1989). Basic need strategies, human rights and the rights to development. Human institutional analysis and development framework. *Human Rights Quarterly*, 11, 347-374.

Sugden, R. (1984). Reciprocity: The supply of public goods through voluntary contributions. *Economic Journal*, 94, 772-787.

Tacconi, L. (2000). *Biodiversity and ecological economics. Participation, values and resource management*. London, UK and Sterling, VA: Earthscan.

Tao, T. H., & Wall, G. (2009). Tourism as a sustainable livelihood strategy. *Tourism Management*, 30, 90–98.

Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage.

Thapa, G. B., & Niroula, G. S. (2005). Impacts and causes of land fragmentation, and lessons learned from land consolidation in South Asia. *Land Use Policy*, 22,

358-372.

- The News. (2008, 27 May). Osama hiding in K2 area: Report. *The Daily News International, Islamabad*. Retrieved on 27 May 2008 from http://www.thenews.com.pk/top_story_detail.asp?Id=14945
- Toner, A. (2003). Exploring sustainable livelihoods approaches in relation to two interventions in Tanzania. *Journal of International Development, 15*, 771–781.
- Townsend, R., & Shotton, R. (2008). Fisheries self-governance: New directions in fisheries management. In R. Townsend, R. Shotton, & H. Uchida (Eds.), *Case studies in fisheries self-governance* (Fisheries Technical Paper 504) (pp. 1–19). Rome, Italy: FAO.
- Trakolis, D. (2001). Local people's perceptions of planning and management issues in Prespes Lakes National Park, Greece. *J Env Manag, 61*, 227-241.
- UN. (2003). *United Nations list of Protected Areas*. Gland, Switzerland and Cambridge, UK: IUCN, and Cambridge, UK: UNEP World Conservation Monitoring Centre.
- UNEP. (1998). *UNEP Environment Assessment Programme for Asia and the Pacific*. Retrieved in April 2012 from <http://www.rrcap.unep.org/lc/cd/html/countryrep/pakistan/contents.html>
- UNEP. (2007). Tourism and mountains: A practical guide to managing the environmental and social impacts of mountain tours. *Conservation International*. Retrieved in May 2012 from <http://www.unep.fr/shared/publications/pdf/DTIx0957xPA-MountainsEN.pdf>
- UNEP-WCMC. (2009). *Progress towards the Convention on Biological Diversity terrestrial 2010 and marine 2012 targets for protected area coverage*.
- USDA. (2009). *Pakistan Agricultural Economy and Policy Report, February 2009*. Retrieved in May 2009 from <http://www.fas.usda.gov/country/Pakistan/Pakistan%20Agriculture%20and%20Policy%20Report.pdf>
- Varughese, J. (1999). *Villagers, bureaucrats, and forests in Nepal: Designing governance for complex resource* (Unpublished PhD dissertation). Indiana University, Bloomington, IN.
- Virk, A., Sheikh, K., & Marwat, A. (2003). *Northern Areas Strategy for Sustainable Development Background Paper: Biodiversity*. IUCN-Pakistan, Northern Areas Programme, Gilgit.
- Wade, R. (1987). The management of common property resources: Collective action as

- an alternative to privatization or State regulation. *Cambridge Journal of Economics*, 11, 95-106.
- Wallace, M. B. (1981). *Solving common-property resource problem: Deforestation in Nepal* (Unpublished PhD dissertation). Harvard University, Cambridge, MA.
- WCED (World Commission on Environment and Development). (1987). *Our common future*. New York: Oxford University Press.
- WCPA. (2000). *Application of IUCN Protected Areas categories. Australian handbook. WCPA Australia and New Zealand Region*. Retrieved in October 2005 from http://www.unepwcmc.org/protected_areas/categories/australia.pdf
- Wegge, P. (1988). *Assessment of Khunjerab National Park and Environs, Pakistan*. Report to IUCN-The World Conservation Union-Gland. As, Norway: Agricultural University of Norway.
- Wells, M., et al. (1998). *Investing in biodiversity. A review of Indonesia's integrated conservation and development projects*. Washington, DC: World Bank, East Asia Region.
- Western, D. (2002). *In the dust of Kilimanjaro*. Washington, DC: Island Press.
- White, S., & Ellison, M. (2007). Well-being, livelihoods and resources in social practice. In I. Gough & J. A. McGregor (Eds.), *Well-being in developing countries: From theory to research* (pp. 157-175). Cambridge, UK: Cambridge University Press.
- William, J. P., Saunier, R. E., & Meganck, R. A. (1995). In-situ conservation of biodiversity: In R. E. Saunier and R. A. Meganck (Eds.), *Conservation of biodiversity and the new regional planning*. Organization of America and World Conservation Union-IUCN, USA.
- Williams, M. (1998). Aid, sustainable development and the environmental crisis. *The Journal of Peace Studies*, 3(2), 1998.
- Williamson, O. E. (1973). Market and hierarchies: Some elementary considerations. *American Economic Review*, 63, 316-25.
- Williamson, O. E. (1979). Transaction-cost economics: The governance of contractual relations. *Journal of Law and Economics*, 22, 233-261.
- Williamson, O. E. (1981). The modern cooperation: Origins, evolution, attributes. *Journal of Economic Literature*, 4, 1537-1568.
- Wood, A., Edwards, P. S., & Mang, J. (2000). *The root causes of biodiversity loss*. London, UK: Earthscan Publications.

- Wood, G., & Malik, A. (2003). *Lessons in development-AKRSP experience, poverty and livelihoods*. Islamabad, Pakistan: AKRSP.
- World Bank. (2009a). *Priorities for agriculture and rural development*. Background paper. Retrieved in April 2009 from <http://go.worldbank.org/KQ3CN5O0J0>
- World Bank. (2009b). *South Asia: Shared views on development and climate change*. Washington, DC: The World Bank. Retrieved in March 2012 from <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/0,contentMDK:22038355~pagePK:146736~piPK:146830~theSitePK:223547,0.html>
- World Congress. (1982). *Third World National Parks Congress - Bali (Indonesia) 1982*. Retrieved in June 2005 from <http://www.iucn.org/themes/wcpa/wcpa2003/english/about/intro.htm#bali>
- World Resources Institute. (2001). *Up from the roots: Regenerating Dhani Forest through community action, people and ecosystems. The fraying web of life. Forest eco-systems*. Washington, D.C: World Resources Institute.
- World Summit. (2002). *Report of the World Summit on Sustainable Development, Johannesburg, South Africa*. United Nations Publication.
- Wright, M. (1994). *Natural connections: Perspectives in community-based conservation*. Washington DC: Island Press.
- WWF. (2004). *Are protected areas working? Analysis of forest protected areas by WWF*. Gland, Switzerland: WWF International.
- WWF. (2009). *National vulnerability and preparedness report (NSBR) 2009: Risk, vulnerability and preparedness in the Northern Areas*. Tønsberg, Norway: Direktoratet for samfunnssikkerhet og beredskap (DSB).
- WWF, & ICIMOD. (2001). *Ecoregion-based conservation in the Eastern Himalaya: Identifying important areas for biodiversity conservation*. Kathmandu, Nepal: WWF Nepal Program.
- Yang, Y.W., Frazer, A., & Rees, E. (2010). Self-governance within a QMS framework: The evolution of self-governance in the New Zealand Bluff oyster fishery. *Marine Policy*, 34, 261–267.
- Yin, R. K. (1984). *Case study research: Design and methods*. Thousand Oaks, CA: Sage
- Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage Publishing.

Yin, R. K. (2012). *Applications of Case Study Research* (3rd ed.). Thousand Oaks, CA: Sage Publishing.

Yusufzai, R. (2008a, 9 June). Osama – Trekking near K-2! *The Daily News International, Islamabad*. Retrieved on 10 June 2008 from <http://www.thenews.com.pk/print1.asp?id=117466>

Yusufzai, R. (2008b, 17 August). What the media is not reporting. *Sunday Magazine of the Daily News International, Islamabad*.

Annex I



UNIVERSITY
OF MANITOBA

OFFICE OF RESEARCH
SERVICES
Office of the Vice-President (Research)

CTC Building
208 - 194 Dafoe Road
Winnipeg, MB R3T 2N2
Fax (204) 269-7173
www.umanitoba.ca/research

APPROVAL CERTIFICATE

18 July 2006

Himalayan Wildlife Foundation

TO: **Shah Raees Khan** (Advisor E. Haque)
Principal Investigator

FROM: **Wayne Taylor, Chair**
Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2006:061**
**"Linking Conservation and Sustainability Livelihoods Strategies: A
Case Study of Northern Pakistan"**

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- if you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to Kathryn Bartmanovich, Research Grants & Contract Services (fax 261-0325), including the Sponsor name, before your account can be opened.
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

Bringing Research to Life

Annex II (A)

Focus group Discussions Shimshal

<u>Time</u>	<u>Description of the Activity</u>
10-30	Tilawat
10-35	Introduction and purpose of the group discussion
10-45	In-formal introduction of the community
11-00	Historic Profile (listing events that community remembers)
11-30	Communities view of “conservation” (divide in three groups)
12:00	Communities view of livelihood (divide in three groups)
12-30	What are the issues in the village? (divide in three groups)
1-00	Tea break/snack
2-00	Park issues: Customary Rights before the establishment of KNP.
2-30	how park has affected the livelihoods? (divide in three groups)
2-50	How the Park can be managed, and by who? (divide in three groups)
2-00	What role do the local institutions play in the management?
2-30	Presentations
3-30	Tea/snack

Annex II-(B)

Focus group Discussions Naltar Valley

<u>Time</u>	<u>Description of the Activity</u>
10-31	Tilawat
10-36	Introduction and purpose of the group discussion
10-45	In-formal introduction of the community
11-00	Historic Profile (listing events that community remembers)
11-30	Communities view of “conservation” (divide in two groups)
12:00	Communities view of livelihood (divide in two groups)
12-30	What are the issues in the village? divide in two groups)
1-00	Tea break/snack
2-00	Issues: Customary Rights in the Forest
2-30	What has been changed since 1974 in Customary Laws? (group discussion)
2-00	How forest can be managed? (divide in three groups)
2:30	What role do the local institutions play in the management?
3-00	Presentations
3:30	Tea/snack

Annex III

Case-Studies Semi-structure Interviews

1. What is your main occupation?
 - How long you have been engaged in this profession (farming, livestock herding, and tourism).
 - What other professions do you engage yourself in different seasons?
2. How many family members are there in your household?
 - How many members go to school?
 - What other members do?
3. What is the main source of livelihood and income for your family?
4. Does your the income covers your costs?
5. What are the major problems you face in different seasons?
6. Do you have any plans of diversifying to other sectors?
7. Any other crises that you faced this year?
8. What do you do to cope with these adversities?
9. What measures do you suggest to improve the situation, if any?
10. What is your comment on the role of government institutions in this regard?
11. Did you receive any financial assistance or help from govt.? If so, to what extent?
12. What you think how local institutions are beneficial for you?
13. What is the role of Jirga (local administrative unit)?
14. What are the conflicts between the community and government?
15. How such conflicts are being mitigated?
16. What role do the local institutions play in the management?
17. What you think the local institution can manage the resources effectively in the village?
18. Do you participate in any of the activities?
19. What are the benefits being in this community?
20. How do you see your village?

Annex IV

Annual and Quarterly household survey (A1,2, Q1,2,3,4)

PEN Prototype Questionnaire

*The prototype questionnaire gathers the information required in the common data bank (CDB) of PEN. The questionnaire **must** be used together with the Technical Guidelines, which define key concepts, elaborate and explain the questions, and specify common codes to be used (those in the “code-xxx” format in the questionnaire).*

*The wording of the questions as specified here **must** be maintained, making allowances, of course, for translation into other languages. Some minor wording changes, necessary to account for local circumstances, might be allowed at the discretion of the PEN coordinator and the PEN advisor at CIFOR. An approval is required for such changes. The reason for this rule is that deviations from the wording of the questions may invalidate future pooling, comparison, and contrasts among the various case study data sets.*

If the questions as currently worded do not adequately capture all the information the researchers seeks, it is recommended that one poses additional questions that are not part of this set of questions. Moreover, many researchers would like to add new sections reflecting the particular topic of their research.

Technical notes:

- The numbers of the questions and lines and columns in the tables will be used to give each data cell a unique digital code, and should not be changed.
- A star (*) indicates that cell information may not be entered into the database, but is used for ease of recording.
- The following generic codes shall be used, although not being specified for each question:
 - – **8 (minus eight)** is to be used to indicate that the question “does not apply” to the circumstances of the respondent(s).
 - – **9 (minus nine)** is to be used for the alternative “I don’t now” or “The respondent doesn’t know”. Naturally, one should aim to minimize use of this response, but in some cases it’s unavoidable.
- Each PEN survey shall make its own list of appropriate local units (weight and volume), with codes to be used in the survey. See the Technical Guidelines for details.
- The PEN Code List contains all the codes to be used, and must be used together with the questionnaire. The exception is the codes that apply only to single questions – these are included in the questionnaire itself.
- Several tables in the quarterly survey are “empty”, which means you should fill in the locally most relevant products and use as many rows as needed (see instructions in section 5.1 of the guidelines).

Country and Survey Information (C1)

Note: One form should be filled out for each PEN study. (If a study covers more than one country, one should fill in one form per country.)

1. Please provide the following information about the study area.

1. Name of the country	
2. Name of region(s) (province, state, etc.)	
3. Name of district(s)	

Note: More country information (economic data, poverty, land categories) will be added to the PEN CDB by the PEN coordinators in collaboration with the PEN partners.

2. Please provide the following information about the timing of the surveys.

Survey	Date (yyyymmdd)
1. Start of surveys	
2. Completion of all surveys	
3. Start of V1	
4. Start of V2	
5. Start of A1	
6. Start of A2	
7. Start of Q1	
8. Start of Q2	
9. Start of Q3	
10. Start of Q4	

Village Survey 1 (V1)

Note: See the Technical Guidelines for the appropriate source of information and respondents for the various questions in the village surveys.

Control information

Task	Date(s)	By who?	Status OK? If not, give comments
Meeting with officials			
Village/focus group meetings			
Other interviews			
Checking questionnaire			
Coding questionnaire			
Entering data			
Checking & approving data entry			

A. Geographic and climate variables

1. What is the name of the village?	1. _____ (name)	2. _____ (village code)
2. What are the GPS coordinates of the centre of the village? (UTM format)		
3. What is the latitude of the village?		degrees
4. What is the longitude of the village?		degrees
5. What is the altitude (masl) of the village?		masl
6. What has been the average annual rainfall (mm/year) in the district during the past 20 years (or less, see guidelines)?		mm/year
7. What is the coefficient of variation in rainfall for the past 20 years? (Note: To be filled in if data are readily available.)		

B. Demographics

1. In what year was the village established?	
2. What is the current population of the village?	persons
3. How many households live currently in this village?	households
4. What was the total population of the village 10 years ago?	persons
5. How many households lived in the village 10 years ago?	households
6. How many persons (approx.) living here now have moved to the village in the past 10 years (in-migration)?	persons
7. How many persons (approx.) have left the village over the past 10 years (out-migration)?	persons
8. How many different groups (ethnic groups, tribes or castes) are living in the village?	

C. Infrastructure

1. How many households (approx.) in the village have access to electricity (from public or private suppliers)?	households
2. How many households (approx.) in the village have access to (= use) piped tap water?	households
3. How many households (approx.) have access to formal credit (government or private bank operating in the village)?	households
4. Are <i>informal</i> credit institutions such as savings clubs and money lenders present in the village?	(1-0)
5. Is there any health centre in the village?	(1-0)
6. Does the village have at least one road useable by cars during all seasons? If 'yes', go to 8.	(1-0)
7. If 'no': what is the distance in kilometers to the nearest road usable during all seasons?	km
8. Is there a river within the village boundaries that is navigable during all seasons? If 'yes', go to 10.	(1-0)

9. If 'no': what is the distance to the nearest river that is navigable during all seasons?				<i>km</i>
10. What is the distance from the village centre to the nearest ... (in <i>km</i> and in <i>minutes</i> by <i>most common means of transport</i>)		1. km	2. min	3. code-transport
	1. district market			
	2. market for major consumption goods			
	3. market where agric. products are sold			
	4. market where forest products are sold			

D. Forest and land cover/use

1. Land categories in the village (approx. area in hectares).

Note: See the Technical Guidelines for definition of land and ownership categories.

1. Land category (code-land)	2. Total area (ha)	Ownership (ha)			
		3. State	4. Community	5. Private	6. Open access (de facto)
<i>Forest:</i>					
1. Natural forest					
2. Managed forests					
3. Plantations					
<i>Agricultural land:</i>					
4. Cropland					
5. Pasture (natural or planted)					
6. Agroforestry					
7. Silviculture					
8. Fallow					
<i>Other land categories:</i>					
9. Shrubs					
10. Grassland					
11. Residential areas, infrastructure					
12. Wetland					
13. Other, specify:					
14. Total land					

2. What are the main forest types, users and products in the village?

Note: The purpose is to link forest types, users and products. See the Technical Guidelines for further elaboration.

Note: The total forest area should be the same as in the above table.

1.Type of forest (code-forest)	2.Ownership (code-tenure)	3.Approx. area (ha)	Main users ¹⁾ (max. 3)			Main products (max. 3) (code-product)		
			4.Rank 1	5.Rank2	6.Rank3	7.Rank1	8.Rank2	9.Rank3

1) By "main users" is meant those who have acquired the highest value of forest products (subsistence and cash) from a given forest type in the past 12 months.

Codes: Choose the most appropriate among the following groups (as some do overlap):

1 = villagers that are members of FUG;

2 = villagers not members of FUG;

3 = subsistence oriented users in the village;

4 = small-scale commercial users in the village;

5 = large-scale commercial users in the village;

6 = subsistence oriented users from outside the village;

- 7 = small-scale commercial users from outside the village;
- 8 = large-scale commercial users from outside the village;
- 9 = other, specify:

3. Does the village practice any form of active and deliberate forest management?

Type of management	Code ¹⁾
1. Planting of trees	
2. Cutting down undesired (competing) trees	
3. Protecting certain desired (patches of) trees in the forest to promote the natural regeneration of these species	
4. Protecting areas of forest for particular environmental services, like water catchment	
5. Establishing clear use rights for a limited number of people to particular forest products (e.g., honey trees)	
6. Extension/education about forest management	
7. Enacted bylaw (e.g., no bush burning in or near forest)	
8. Mapping/inventory forest resources (e.g. mapping Brazil nut stands)	
9. Other, specify:	

1) Codes: 0=no, not at all; 1=yes, but only to a limited extent; 2=yes, they are common.

E. Forest resource base

Note: The questions should be asked in a village meeting or focus group for each of the categories in turn (i.e. column by column, and not row by row).

	1. Fire-wood or charcoal	2. Timber or other wood	3. Food from the forest	4. Medicine from the forest	5. Forage from the forest	6. Other ¹⁾
1. What is the most important product (MIP) for the livelihood of the people in the village (in this category)? ²⁾ (name)						
2. (code-product)						
3. How has availability of the MIP changed over the past 5 years? <i>Codes: 1=declined; 2=about the same; 3=increased</i>						
4. If the availability of the MIP in this category has declined , what are the reasons? <i>Please rank the most important reasons, max. 3 (leave rest blank).</i>	Reason	Rank 1-3	Rank 1-3	Rank 1-3	Rank 1-3	Rank 1-3
	1. Reduced forest area due to small-scale clearing for agriculture					
	2. Reduced forest area due to large-scale projects (plantations, new settlements, etc.)					
	3. Reduced forest area due to people from outside buying land and restricting access					
	4. Increased use of MIP due to more local (village) people collecting more					
	5. Increased use of MIP due to more people from other villages collecting more					
	6. Restrictions on use by central or state government (e.g., for forest conservation)					
	7. Local restrictions on forest use (e.g., community rules)					

	8. Climatic changes, e.g., drought and less rainfall						
	9. Other, specify:						
	10. Timber harvesting						
	11. Charcoal burning						
	12. Brick burning						
	13. Poor harvesting practices						
	14. Product attacked/consumed by forest dwelling vermin						
	15. Bush burning						
	16. Increased marketing potential for product						
5. If the availability of the MIP in this category has increased , what are the reasons? <i>Please rank the most important reasons, max. 3.</i>	Reason	Rank 1-3					
	1. Less clearing of forests for agriculture (incl. pastoralism)						
	2. Fewer local (village) people collecting less						
	3. Fewer people from other villages collecting less						
	4. Reduced use from large-scale commercial users/projects						
	5. Changes in management of forests						
	6. Climatic changes, e.g., more rainfall						
	7. Forest clearing that increases supply of product (e.g. fuelwood)						
	8. Tree planting						
	9. Other, specify:						
	10. More illegal access of protected area						
	11. Improved access rights to product						
	12. More secondary forest (as people clear land and forest regenerates)						
6. What would be most important to increase the benefits (use or income) from the MIP? <i>Please rank the most important reasons, max. 3.</i>	Action	Rank 1-3					
	1. Better access to the forest/MIP, i.e., more use rights to village						
	2. Better protection of forest/MIP (avoid overuse)						
	3. Better skills and knowledge on how to collect/use it						
	4. Better access to credit/capital and equipment/technology						
	5. Better access to markets and reduced price risk						
	6. Invest in planting trees/forest product						
	7. Develop forest user groups/collective action in harvesting						
	8. Control fire						

	9. Other, specify:						

1) Select the most important product for the village that do not fall into any of the other five categories.

2) "Most important" is defined as the most important for the wellbeing of the village, whether it be through direct use in the home, or through sale for cash, or both.

F. Forest institutions

Note: The questions should be asked in a village meeting or focus group for each of the categories in turn (i.e., column by column, and not row by row).

Note: The MIP in each category should be identical to those in the table above.

	1. Fire- wood or charcoal	2. Timber or other wood	3. Food from the forest	4. Medici ne from the forest	5. Forage from the forest	6. Other ¹⁾
1. What is the most important product (MIP) for the livelihood of the people in the village (in this category)? (name)						
2. (code-product)						
3. In what type of forest do you get the MIP? (code-forest)						
4. What is the ownership status of this forest (code-tenure)						
5. Are there customary rules regulating the use of the MIP in the village? Codes: 0=none/very few; 1=yes, but vague/unclear; 2=yes, clear rules exist If code '0', go to 7.						
6. If 'yes': are the customary rules regarding forest use enforced /respected by the population of the village? ¹⁾						
7. Are there government rules that regulate forest use? Codes: 0=none/very few; 1=yes, but vague/unclear; 2=yes, clear rules exist If code '0', go to 9.						
8. If 'yes' (code '1' or '2' above): are the government rules enforced/respected by the members in the village? ¹⁾						
9. Do the villagers require any permission to harvest the MIP? Codes: 0=no; 1=yes, users have to inform the authorities; 2=yes, written permission needed If code '0', go to next section.						
10. If 'yes' (code '1' or '2' above): does the user have to pay for the permission?	(1-0)	(1-0)	(1-0)	(1-0)	(1-0)	(1-0)
11. If 'yes': who issues this permit? Codes: 1=village head; 2=FUG; 3=forest officer (forest departments); 4=other government official; 9=other, specify:						

1) Codes: 0=no/very little; 1=to a certain extent by some groups of villagers; 2=to a certain extent by everyone; 3=yes, but only by some groups of villagers; 4=yes, by everyone; 9=no particular rules exist.

G. Forest User Groups (FUG)

1. Existence of forest user groups (FUG).

Note: See the Technical Guidelines for a definition.

1. How many forest user groups (FUG) are there in the village?					
2. Information about each FUG (use one column per FUG).					
		<i>1. FUG1</i>	<i>2. FUG2</i>	<i>3. FUG3</i>	
1.	When was the group formed? (yyyy)				
2.	How was the group formed? <i>Codes: 1=local initiative; 2=initiative from NGO; 3=initiative from government, e.g., Forest Department; 4=other, specify:</i>				
3.	Is the FUG's main purpose related to the management of a particular forest area or of particular forest product(s)? <i>Codes: 1=area; 2=product(s); 3=both</i>				
4.	If for a product (code 2 or 3 above), what is the (main) product? <i>(code-product)</i>				
5.	How many members are there in the group?				
6.	How many times per year does the FUG have meetings?				
7.	Does the group have a written management plan?	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>	
8.	What are the main tasks of the FUG? <i>Select as many as appropriate: 1-0 code</i>	1. Setting rules for use	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		2. Monitoring and policing	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		3. Silviculture & management	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		4. Harvesting forest products	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		5. Selling forest products	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		6. Tree planting	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		7. Tourism (i.e. maintaining tourist infrastructure; guiding tourists etc.)	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		8. Education/extension support	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		9. Other, specify:	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
		10. Savings and credit	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>
9.	Has any development project been implemented in the village over the past 5 years using proceeds from the FUG?	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>	
10.	Has anyone in the village been violating the rules of the FUG over the past 12 months? <i>If 'no', go to 14.</i>	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>	
11.	If 'yes': did the FUG impose any penalties on those violating the rules? <i>If 'no', go to 14</i>	<i>(1-0)</i>	<i>(1-0)</i>	<i>(1-0)</i>	
12.	If 'yes': what type of penalties? <i>Codes: 1=fee (cash payment); 2=returning collected products; 3=labour (extra work); 4=exclusion from group; 5=warning; 9=other, specify:</i>				
13.	Which group of forest users have most commonly violated the rules over the past 5 years? <i>Codes: 1=members of FUG; 2=non-FUG members in the village; 3=people from other villages; 9=other, specify:</i>				
14.	Overall, on a scale from 1-5 (1 is highest, 5 is lowest) how effective would you say that the FUG is in ensuring sustainable and equitable forest use?				

Note: Any FUGs in the village should be further discussed in the village narrative.

Village survey 2 (V2)

Control information

Task	Date(s)	By who?	Status OK? If not, give comments
Meeting with officials			
Village/focus group meetings			
Other interviews			
Checking questionnaire			
Coding questionnaire			
Entering data			
Checking & approving data entry			

A. Geographic and climate variables

1. What is the name of the village?	*(name)	(village code)
2. What was the total rainfall in the village for the past 12 months?		mm/year
3. If rainfall data not available (question 2): How was the rainfall past 12 months compared with a normal year (=average last 20 years)? Codes: 1=well below normal (< 50 %); 2=below normal (50-90%); 3=normal (90-110%); 4=above normal (110-150%); 5=well above normal (> 150%)		

B. Risk

1. Has the village faced any of the following crises over the past 12 months? Codes: 0=no; 1=yes, moderate crisis; 2=yes, severe crisis	1. Flood and/or excess rain	
	2. Drought	
	3. Wild fire (in crops/ forest/grasslands etc)	
	4. Widespread crop pest/disease and/or animal disease	
	5. Human epidemics (disease)	
	6. Political/civil unrest	
	7. Macro-economic crisis	
	8. Refugee or migration infusion	
	9. Other, specify:	
	10. Wildlife predation on livestock	
	11. Conflicts over forest resources (theft)	
	12. Land conflicts within village	
	13. Bridge/road washed out	
	14. Harassment from forest officials	

C. Wages and prices

1. What was the typical daily wage rate for unskilled agricultural/casual adult male/female labour during the peak/slack season in this village over the past 12 months? (Lc\$/day)	Peak	1.	2.
	Slack	3.	4.
2. What is the main staple food in the village? (code-product)			
3. What was the price of a kg of the main staple food during the past 12 months before and after the main agricultural harvest? (Lc\$/kg)	1. Before harvest		2. After harvest
4. What is the sales value of one hectare of good agricultural land in the village (i.e., not degraded, not too steep, and suitable for common crops, and within 1km of the main road or settlement) (Lc\$/hectare)			

D. Forest services

1. Has the village (as a community or individuals in the village) received any direct benefits (in kind or in cash) related to forest services over the past 12 months? Codes: 0=no; 1=yes, directly to households; 2=yes, directly to village (e.g., development project); 3=yes, both to household and village	
---	--

2. If the village has received payment (code 2 or 3 above), please indicate the amount the village has received.	Payments related to:	Amount
	1. Tourism	
	2. Carbon sequestration	
	3. Water catchment	
	4. Biodiversity conservation	
	5. Compensation from timber company	
	6. Compensation from mining company	
	7. Tree planting/afforestation	
	9. Other, specify:	
3. Has the village received any forestry-related external support (technical assistance, free inputs, etc.) from government, donors, NGOs) over the past 12 months?	<i>(1-0)</i>	

Note: If any such payment or assistance has been received it should be elaborated in the village narrative.

Annual household survey 1 (A1)

Control information

Task	Date(s)	By who?	Status OK? If not, give comments
Interview			
Checking questionnaire			
Coding questionnaire			
Entering data			
Checking & approving data entry			

A. Identification

1. Identification and location of household.

1. Household name and code		*(name)	(HID)
2. Village name and code		*(name)	(VID)
3. District name and code		*(name)	(DID)
4. Name and PID (see B. below) of primary respondent		*(name)	(PID)
5. Name and PID (see B. below) of secondary respondent		*(name)	(PID)
6. GPS reference point of household (UTM format)			
7. Distance of the household from the centre of village (in <i>minutes of walking</i> and in <i>km</i>)	1.	2.	
		<i>min</i>	<i>km</i>

B. Household composition

1. Who are the members of the household?

Note: Recall the definition of households in the Technical Guidelines.

1. Personal Identification number (PID)	* Name of household member	2. Relation to household head ¹⁾	3. Year born ²⁾ (yyyy)	4. Sex (0=male 1=female)	5. Education (number of years completed)
1		Household head = code 0			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

1) Codes: 1=spouse (legally married or cohabiting); 2=son/daughter; 3=son/daughter in law; 4=grandchild; 5=mother/father; 6=mother/father in law; 7=brother or sister; 8=brother/sister in law; 9=uncle/aunt; 10=nephew/niece; 11=step/foster child; 12=other family; 13=not related (e.g., servant).

2) One may ask about age, and then calculate 'year born' when entering data.

2. We would like to ask some questions regarding the head of this household.

1. What is the marital status of household head? Codes: 1=married and living together; 2=married but spouse working away;	
--	--

	<i>3=widow/widower; 4=divorced;; 5=never married; 9=other, specify:</i>	
2.	How long ago was this household formed (see definition of household)	<i>years</i>
3.	Was the household head born in this village? <i>If 'yes', go to 5.</i>	<i>(1-0)</i>
4.	If 'no' : how long has the household head lived in the village?	<i>years</i>
5.	Does the household head belong to the largest ethnic group/caste in the village?	<i>(1-0)</i>

C. Land

1. Please indicate the amount of land (in hectares) that you currently own and have rented in/out.

Note: See definitions of land categories in the Technical Guidelines.

Category	1. Area (ha)	2. Ownership (code-tenure)	Main products grown/harvested in the past 12 months Max 3 (code-product)		
			3. Rank1	4. Rank2	5. Rank3
<i>Forest:</i>					
1. Natural forest					
2. Managed forests					
3. Plantations					
<i>Agricultural land:</i>					
4. Cropland					
5. Pasture (natural or planted)					
6. Agroforestry					
7. Silviculture					
8. Fallow					
9. Other vegetation types/land uses (residential, bush, grassland, wetland, etc.)					
10. Total land owned (1+2+3+...+9)					
11. Land rented out (included in 1-9)					
12. Land rented in (not included in 1-9)					

D. Assets and savings

1. Please indicate the type of house you have?

1. Do you have your own house? ¹⁾	
2. What is the type of material of (most of) the walls? ²⁾	
3. What is the type of material of (most of) the roof? ³⁾	
4. How many m ² approx. is the house?	<i>m²</i>

1) Codes: 0=no; 1=own the house on their own; 2=own the house together with other household(s); 3=renting the house alone; 4=renting the house with other household(s); 9=other, specify:

2) Codes: 1=mud/soil; 2=wooden (boards, trunks); 3=iron (or other metal) sheets; 4=bricks or concrete; 5=reeds/straw/grass/fibers/bamboo; 9=other, specify:

3) Codes: 1=thatch; 2=wooden (boards); 3=iron or other metal sheets; 4=tiles; 9=other, specify:

2. Please indicate the number and value of implements and other large household items that are owned by the household.

Note: see latest version of "PEN codes list" for a complete list of items and codes.

	1. No. of units owned	2. Total value (current sales value of all units, not purchasing price)
1. Car/truck		
2. Tractor		
3. Motorcycle		
4. Bicycle		
5. Handphone/phone		
6. TV		

7. Radio		
8. Cassette/CD/ VHS/VCD/DVD/ player		
9. Stove for cooking (gas or electric only)		
10. Refrigerator/freezer		
11. Fishing boat and boat engine		
12. Chainsaw		
13. Plough		
14. Scotch cart		
15. Shotgun/rifle		
16. Wooden cart or wheelbarrow		
17. Furniture		
18. Water pump		
19. Solar panel		
99. Others (worth more than approx. 50 USD purchasing price)		

3. Please indicate the savings and debt the household has.

1. How much does the household have in savings in banks, credit associations or savings clubs?		Lc\$
2. How much does the household have in savings in non-productive assets such as gold and jewelry?		Lc\$
3. How much does the household have in outstanding debt?		Lc\$

E. Forest resource base

1. How far is it from the house/homestead to the edge of the nearest natural or managed forest that you have access to and can use?	1. ... measured in terms of distance (straight line)?	km
	2. ... measured in terms of time (in minutes of walking)?	min
2. Does your household collect firewood? <i>If 'no', go to 8.</i>		(1-0)
3. If 'yes' : how many hours per week do the members of your household spend on collecting firewood for family use? (adult time should be reported; child time = 50 % of adult time)		(hours)
4. Does your household now spend more or less time on getting firewood than you did 5 years ago? <i>Codes: 1=more; 2=about the same; 3=less</i>		
5. How has availability of firewood changed over the past 5 years? <i>Codes: 1=declined; 2=about the same; 3=increased</i> <i>If code '2' or '3', go to 7.</i>		
6. If declined (code '1' on the question above), how has the household responded to the decline in the availability of firewood? <i>Please rank the most important responses, max 3.</i>	Response	Rank 1-3
	1. Increased collection time (e.g., from further away from house)	
	2. Planting of trees on private land	
	3. Increased use of agricultural residues as fuel	
	4. Buying (more) fuelwood and/or charcoal	
	5. Buying (more) commercial fuels (kerosene, gas or electricity)	
	6. Reduced the need for use of fuels, such as using improved stove	
	7. More conservative use of fuelwood for cooking and heating	
	8. Reduced number of cooked meals	
	10. Use of improved technology	
	11. Increased use of non-wood wild products (ex. reeds)	
12. Restricting access/use to own forest		
13. Conserving standing trees for future		
14. Making charcoal		
9. Other, specify:		

7. Has your household planted any woodlots or trees on farm over the past 5 years? <i>If 'no', go to next section.</i>		(1-0)
8. If yes: what are the main purpose(s) of the trees planted? <i>Please rank the most important purposes, max 3.</i>	Purpose	Rank 1-3
	1. Firewood for domestic use	
	2. Firewood for sale	
	3. Fodder for own use	
	4. Fodder for sale	
	5. Timber/poles for own use	
	6. Timber/poles for sale	
	7. Other domestic uses	
	8. Other products for sale	
	9. Carbon sequestration	
	10. Other environmental services	
	11. Land demarcation	
	12. To increase the value of my land	
13. To allow my children and/or grandchildren to see these trees		
19. Other, specify:		

F. Forest User Groups (FUG)

Note: The enumerator should first explain what is meant by a FUG, cf. the Technical Guidelines.

1. Are you or any member of your household a member of a Forest User Group (FUG)? <i>If 'no', go to 11.</i>		(1-0)
2. Does someone in your household normally/regularly attend the FUG meetings? <i>If 'no', go to 5.</i>		(1-0)
3. If 'yes': in your household, who normally attends FUG meetings and participates in other FUG activities? <i>Codes: 1=only the wife; 2=both, but mainly the wife; 3=both participate about equally; 4=both, but mainly the husband; 5=only the husband; 6=mainly son(s); 7=mainly daughter(s); 8=mainly husband & son(s); 10=mainly wife & daughter(s); 9=other arrangements not described above.</i>		
4. How many person days (= full working days) did the household members spend in total on FUG activities (meetings, policing, joint work, etc) over the past 12 months?		days
5. Does your household make any cash payments/contributions to the FUG? <i>If 'no', go to 7.</i>		(1-0)
6. If 'yes': how much did you pay in the past 12 months? (Lc\$)		
7. Did your household receive any cash payments from the FUG (e.g., share of sales) in the past 12 months? <i>If 'no', go to 9.</i>		(1-0)
8. If 'yes': how much did you receive in the past 12 months? (Lc\$)		
9. What are your reasons for joining the FUG? <i>Please rank the most important reasons, max 3.</i>	Reason	Rank 1-3
	1. Increased access to forest products	
	2. Better forest management and more benefits in future	
	3. Access to other benefits, e.g., government support or donor programmes	
	4. My duty to protect the forest for the community and the future	
	5. Being respected and regarded as a responsible person in village	
	6. Social aspect (meeting people, working together, fear of exclusion, etc.)	
	7. Forced by Government/chiefs/neighbours	
	8. Higher price for forest product	
	10. Better quality of forest product	
	11. Receipt of direct payments	
	12. Makes harvest of forest products more efficient	
	13. Know forest resource better (e.g # Brazil nut trees)	
	14. Learn new skills/information	
	15. Reduce conflicts over resource	

	16. More secure land title	
	9. Other, specify:	
10. Overall, how would you say the existence of the FUG has affected the benefits that the household gets from the forest? <i>Codes: 1=large negative effect; 2=small negative effect; 3=no effect; 4=small positive effect; 5=large positive effect.</i>		
11. If you don't participate in FUG, why? <i>Please rank the most important reasons, max 3</i>	Reason	Rank 1-3
	1. No FUG exists in the village	
	2. I'm new in the village	
	3. FUG members generally belong to other group(s) (ethnic, political party, religion, age, etc.) than I do	
	4. Cannot afford to contribute the time	
	5. Cannot afford to contribute the required cash payment	
	6. FUG membership will restrict my use of the forest, and I want to use the forest as I need it	
	7. I don't believe FUG is very effective in managing the forest	
	8. Lack of forest products	
	10. Not interested in the activities undertaken by existing FUGs	
	11. Corruption in FUG	
	12. Interested in joining but needs more information	
	13. FUG exists in village, but household is unaware of its presence	
	14. Forest authorities	
9. Other, specify:		

Annual household survey 2 (A2)

Control information

Task	Date(s)	By who?	Status OK? If not, give comments
Interview			
Checking questionnaire			
Coding questionnaire			
Entering data			
Checking & approving data entry			

A. Identification

1. Identification of the household.

1. Household name and code		*(name)	(HID)
2. Village name and code		*(name)	(VID)
3. District name and code		*(name)	(DID)
4. Name and PID of primary respondent		*(name)	(PID)
5. Name and PID of secondary respondent		*(name)	(PID)

B. Crisis and unexpected expenditures

1. Has the household faced any major income shortfalls or unexpectedly large expenditures during the past 12 months?

Event	1. How severe? ¹⁾	How did you cope with the income loss or costs? Rank max. 3 ²⁾		
		2. Rank1	3. Rank2	4. Rank3
1. Serious crop failure				
2. Serious illness in family (productive age-group adult unable to work for more than one month during past 12 months, due to illness, or to taking care of ill person; or high medical costs)				
3. Death of productive age-group adult				
4. Land loss (expropriation, etc.)				
5. Major livestock loss (theft, drought, etc.)				
6. Other major asset loss (fire, theft, flood, etc.)				
7. Lost wage employment				
8. Wedding or other costly social events				
9. Other, specify:				
10. Payment for sale of hh products arrive later than expected				
11. Delayed income from forest products				
12. Fine from environmental regulation agency				

1) Codes severity: 0=no crisis; 1=yes, moderate crisis; 2=yes, severe crisis. See Technical Guidelines for definitions.

2) Codes coping:

1. Harvest more forest products
2. Harvest more wild products not in the forest
3. Harvest more agricultural products
4. Spend cash savings
5. Sell assets (land, livestock, etc.)
6. Do extra casual labour work
7. Assistance from friends and relatives
8. Assistance from NGO, community org., religious org. or similar
9. Get loan from money lender, credit association, bank etc.
10. Tried to reduce household spending
11. Did nothing in particular
12. Spent savings / retirement money
13. Reduced number of meals taken
14. Borrowed against future earnings

15. Sold food that would otherwise be used for household consumption
16. Rented out land
17. Started new business
18. Changed to different type of livestock
19. Other, specify:
20. Harvested premature crops.
21. Changed cropping patterns or types of crops planted
- 22.

C. Forest services

1. Has the household over the past 12 months received any cash or in kind payments related to the following forest services?

Principal purpose	1. Have received? (1-0)	2. If yes, amounts (values) received (Lc\$) (if nothing, put '0')
1. Tourism		
2. Carbon projects		
3. Water catchments projects		
4. Biodiversity conservation		
5. Others, specify:		
6. Tree planting		
7. Timber concessions		

D. Forest clearing

1. Did the household clear any forest during the past 12 months? <i>If 'no', go to 9.</i>		(1-0)		
If YES:	2. How much forest was cleared?	<i>ha</i>		
	3. What was the cleared forest (land) used for? <i>Codes: 1=cropping; 2=tree plantation; 3=pasture; 4=non-agric uses (Rank max 3)</i>	1.Rank1	2.Rank2	3.Rank3
	4. If used for crops (code '1' in question above), which principal crop was grown? <i>(code-product) Rank max 3</i>	1.Rank1	2.Rank2	3.Rank3
	5. What type of forest did you clear? <i>(code-forest)</i>			
	6. If secondary forest, what was the age of the forest?	<i>years</i>		
	7. What was the ownership status of the forest cleared? <i>(code tenure)</i>			
	8. How far from the house was the forest cleared located?	<i>km</i>		
9. Has the household over the last 5 years cleared forest? <i>If 'no', go to 11.</i>		(1-0)		
10. If 'yes': how much forest (approx.) has been cleared over the last 5 years? <i>Note: This should include the area reported in question 2.</i>		<i>ha</i>		
11. How much land used by the household has over the last 5 years been abandoned (left to convert to natural re-vegetation)?		<i>ha</i>		

E. Welfare perceptions and social capital

1. All things considered, how satisfied are you with your life over the past 12 months? <i>Codes: 1=very unsatisfied; 2=unsatisfied; 3=neither unsatisfied or satisfied; 4=satisfied; 5=very satisfied</i>	
2. Has the household's food production and income over the past 12 months been sufficient to cover the what you consider to be the needs of the household? <i>Codes: 1=no; 2=reasonable (just about sufficient); 3=yes</i>	
3. Compared with other households in the village (or community), how well-off is your household? <i>Codes: 1=worse-off; 2=about average; 3=better-off</i>	

4. How well-off is your household today compared with the situation 5 years ago ? <i>Codes: 1=less well-off now; 2=about the same; 3=better off now</i> <i>If 1 or 3, go to 5. If 2, go to 6.</i>		
5. If worse- or better-off: what is the main reason for the change? <i>Please rank the most important responses, max 3.</i>	Reason: Change in ...	Rank 1-3
	1. off farm employment	
	2. land holding (e.g., bought/sold land, eviction)	
	3. forest resources	
	4. output prices (forest, agric,...)	
	5. outside support (govt., NGO,..)	
	6. remittances	
	7. cost of living (e.g., high inflation)	
	8. war, civil strife, unrest	
	9. conflicts in village (non-violent)	
	10. change in family situation (e.g. loss of family member/a major bread-winner)	
	11. illness	
	12. access (e.g. new road,...)	
	13. increased/reduced land area for agric. production	
	14. religious awakening (i.e., found religion, converted to a new religion, born again or saved)	
	15. started a new business/lost or less business	
	16. livestock (gain or loss)	
	17. material assets, incl. house (gain or loss)	
	18. increased regulations	
	20. education / increased knowledge	
	21. more engaged in marketing/trade	
	22. political stability	
	23. crop failure/raiding	
	24. changed drinking habits (started/stopped drinking alcohol)	
	25. changes in natural resources (fish, etc.)	
	26. working for themselves (no longer under a <i>patron</i>)	
	27. more time to work	
	28. Joined cooperative	
	29. Forced to travel for family matters	
	30. Fire destroyed everything	
	31. Change in job	
	19. other (specify):	
6. Do you consider your village (community) to be a good place to live? <i>Codes: 1=no; 2=partly; 3=yes</i>		
7. Do you in general trust people in the village (community)? <i>Codes: 1=no; 2=partly, trust some and not others; 3=yes</i>		
8. Can you get help from other people in the village (community) if you are in need, for example, if you need extra money because someone in your family is sick? <i>Codes: 1=no; 2= can sometimes get help, but not always; 3=yes</i>		

F. Enumerator/researcher assessment of the household

Note: This is to be completed by the enumerator and/or the PEN partner. If the enumerator doing the A2 (and Q4) is **not** the one who has been doing previous quarterly surveys, those who have had the most exposure to the household should fill in questions 2-5.

1. During the last interview, did the respondent smile or laugh? <i>Codes: (1) neither laughed nor smiled (somber); (2) only smiled; (3) smiled and laughed; (4) laughed openly and frequently.</i>	
2. Based on your impression and what you have seen (house, assets, etc.), how well-off do you consider this household to be compared with other households in the village? <i>Codes: 1=worse-off; 2=about average; 3=better-off</i>	
3. How reliable is the information generally provided by this household?	

<i>Codes: 1=poor; 2=reasonably reliable; 3=very reliable</i>	
4. How reliable is the information on forest collection/use provided by this household? <i>Codes: 1=poor; 2=reasonably reliable; 3=very reliable</i>	
5. If the forest information is not so reliable (code 1 above), do you think the information provided overestimate or underestimate the actual forest use? <i>Codes: 1=underestimate; 2=overestimate; 3= no systematic over- or underestimation; 4=don't know.</i>	

Quarterly household surveys (Q1-Q4)

Note: All incomes are asked for the past month (past 30 days), except for the last sections on crops, livestock and other income sources where the recall period is 3 months.

Note: The researcher should list the most common products in the various tables, based on RRAs and pre-testing of the questionnaire. After asking about these pre-listed products, the enumerator should ask if there are any other products not mentioned that the household has harvested/collected over the past 1 (3) month(s).

Control information

Task	Date(s)	By who?	Status OK? If not, give comments
Interview			
Checking questionnaire			
Coding questionnaire			
Entering data			
Checking & approving data entry			

A. Identification

1. Identification of the household.

1. Household name and code		*(name)	(HID)
2. Village name and code		*(name)	(VID)
3. District name and code		*(name)	(DID)
4. Name and PID of primary respondent		*(name)	(PID)
5. Name and PID of secondary respondent		*(name)	(PID)

B. Direct forest income (income from unprocessed forest products)

1. What are the quantities and values of raw-material forest products the members of your household collected for both own use and sale over the past month?

Note: Income from plantations is defined as forest income, while agroforestry income is categorized as agric. income (H).

Note: The quantities of unprocessed forest products used as inputs in making processed forest products should only be reported in section C, table 2, and not in the table below.

1. Forest product (code-product)	2. Collect ed by whom? 1)	Collected where?		5. Quant ity collec- ted (7+8)	6. Unit	7. Own use (incl. gifts)	8. Sold (incl. barter)	9. Price per unit	10. Type of marke t (code-market)	11. Gross value (5*9)	12. Tran- sport/ marketi ng costs (total)	13. Purch. inputs & hired labour	14. Net income (11-12-13)
		3. Land type (code-land)	4. Owne rship (code-tenure)										

1) Codes: 1=only/mainly by wife and adult female household members; 2=both adult males and adult females participate about equally; 3=only/mainly by the husband and adult male household members; 4=only/mainly by girls (<15 years); 5=only/mainly by boys (<15 years); 6=only/mainly by children (<15 years), and boys and girls participate about equally; 7=all members of household participate equally; 8=none of the above alternatives; 9=person employed by and living with the household.

Note: Answers in columns 3 and 4 should be consistent with land categories reported in village questionnaire (VID01) and in the annual household questionnaire (AIC).

Note: Answers in columns 2 and 3 should be consistent with land categories reported in the village questionnaire (VID01) and in the annual household questionnaire (AIC).

2. How much fish did your household catch **from ponds (aquaculture)** in the past month?

1. Type of fish (list local names)*	2. From where? ¹⁾	3. Total catch (kg) (4+5)	4. Own use (incl. gifts)	5. Sold (incl. barter)	6. Price per kg	7. Gross value (3*6)	8. Costs (inputs, hired labour, marketing, etc.)	9. Net income (7-8)

1) Codes: 1=Pond owned by households; 2=Pond owned by group of which household is a member; 3=Pond owned by community/village; 4=Pond owned by others and persons can buy fishing rights (include costs in column 7); 9=Other, specify:

E. Non-forest environmental income

1. In addition to forest products and fish included in the previous tables, how much of **other wild products** (e.g., from grasslands, fallows, etc.) did your household collect **in the past month**?

1. Type of product (code-product)	Collected where?		4. Quantity collected (6+7)	5. Unit	6. Own use (incl. gifts)	7. Sold (incl. barter)	8. Price per unit	9. Gross value (4*8)	10. Costs (inputs, hired labour, marketing, etc.)	11. Net income (9-10)
	2. Land type (code-land)	3. Ownership (code-tenure)								

Note: Answers in columns 2 and 3 should be consistent with land categories reported in the village questionnaire (VID01) and in the annual household questionnaire (AIC).

F. Wage income

1. Has any member of the household had paid work over **the past month**?

Note: One person can be listed more than once for different jobs.

1. Household member (PID)	2. Type of work (code-work)	3. Days worked past month	4. Daily wage rate	5. Total wage income (3*4)

G. Income from own business (not forest or agriculture)

1. Are you involved in any types of business, and if so, what are the gross income and costs related to that business over **the past month**?

Note: If the household is involved in several different types of business, you should fill in one column for each business.

1. Cattle									
2. Buffalos									
3. Goats									
4. Sheep									
5. Pigs									
6. Donkeys									
7. Ducks									
8. Chicken									
9. Horses									
10. Guinea pigs									
11. Rabbit									
12. Turkey									
13. Guinea fowl									
19. Other, specify:									

2. What are the quantities and values of animal products and services that you have produced during the past 3 months?

1. Product/service	2. Production (4+5)	3. Unit	4. Own use (incl. gifts)	5. Sold (incl. barter)	6. Price per unit	7. Total value (2*6)
1. Meat ¹⁾						
2. Milk ²⁾						
3. Butter						
4. Cheese						
5. Ghee						
6. Eggs						
7. Hides and skin						
8. Wool						
9. Manure						
10. Draught power						
11. Bee hives						
12. Honey						
13. Curdled milk						
14. Soap						
19. Other, specify						

1) Make sure this corresponds with the above table on sale and consumption of animals.

2) Only milk consumed or sold should be included. If used for making, for example, cheese it should not be reported (only the amount and value of cheese).

3. What are the quantities and values of inputs used in livestock production during the past 3 months (cash expenditures)?

Note: The key is to get total costs, rather than input units.

1. Inputs	2. Unit	3. Quantity	4. Price per unit	5. Total costs (3*4)
1. Feed/fodder				
2. Rental of grazing land				
3. Medicines, vaccination and other veterinary services				
4. Costs of maintaining barns, enclosures, pens, etc.				
5. Hired labour				
6. Inputs from own farm				
9. Other, specify:				

4. Please indicate approx. share of fodder, either grazed by your animals or brought to the farm by household members.

Type of grazing land or source of fodder	3. Approx. share (%)

1. Land type (code-land)	2. Ownership (code-tenure)	
Total		100%

J. Other income sources

1. Please list any other income that the household has received during **the past 3 months**.

1. Type of income	2. Total amount received past 3 months
1. Remittances	
2. Support from government, NGO, organization or similar	
3. Gifts/support from friends and relatives	
4. Pension	
5. Payment for forest services	
6. Payment for renting out land (if in kind, state the equivalent in cash)	
7. Compensation from logging or mining company (or similar)	
8. Payments from FUG	
9. Other, specify:	

Attrition (drop out) and temporary absence survey (ATA)

Control information

Task	Date(s)	By whom?	Status OK? If not, give comments
Interview			
Checking questionnaire			
Coding questionnaire			
Entering data			
Checking & approving data entry			

A. Identification

1. Identification and location of household.

1. Household name and code	*(name)	(HID)
2. Village name and code	*(name)	(VID)
3. District name and code	*(name)	(DID)
4. Who did you interview ¹⁾		
5. Has the household left the PEN survey temporary (one quarterly survey only) or permanently (remaining surveys)?		(1=temporary; 2=permanently; 3=don't know yet) ²⁾

1) Codes: 1 = member(s) of the household; 2 = neighbours; 3 = relatives; 4 = village headman/leader/officials; 5 = workers; 9=others, specify: _____

2) Code 3 should only be used temporary; use 1 or 2 in final dataset.

B. Reasons for dropping out

1. What is the reason for the household to drop out of the PEN survey this quarter?	Reason	0-1 (quest. 1) or code
	1. Moved/migrated permanently	
	2. Temporarily away from village (work, visit, ...)	
	3. Divorce	
	4. (Re) married	
	5. Death	
	6. Illness	
	7. Child birth	
	8. Refuse because too busy	
	9. Refuse because don't want to reveal household information	
	10. Refuse because tired of answering the questionnaire	
	11. Could not locate the household	
	12. Religious reasons	
	13. Impersonated another community member in previous survey	
	19. Other	
2. If moved/migrated (response 1), to where? Codes: 1=within village; 2=neighbouring village; 3=to village further away (another rural area); 4=to nearest town; 5=to major town further away; 9=other: _____		
3. If moved/migrated from village, what was the reason for leaving? Codes: 1=work or look for work; 2= (government) service, incl. army; 3=study; 4=follow or move (closer) to spouse/family; 5=marriage; 6=separation/divorce; 7= utilize inheritance; 8= seek medical treatment; 9=conflicts in present village; 10=land shortage; 11=forest authority harassment; 12=bought/own land elsewhere; 13=running from debts; 19=other, _____		
4. If the respondent died (response 5), give PID number:		
5. If the respondent died, what was the reason? Codes: 1=illness; 2=old age; 3=accident; 4=violence; 5=suicide; 9=other: _____		

Annex V
Field Photographs



Photo: Shimshal Community, Focus Group Discussions



Photo: In-depth Family Studies, Shimshal



Photo: Field Surveys Naltar Valley



Photo: Rituals in Shimshal



Photo: Cultural Celebrations



Photo: Shimshal Valley