

**Mapping Local Disputes Over Natural Resources in Hunza and  
Nagar: A Formal and Informal Perspective**



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## CERTIFICATE

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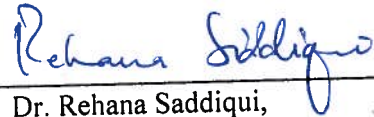
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## **DEDICATION**

I dedicate this dissertation to my family members; especially to my parents, my brothers and my sisters for their love, affection, close care, endless support and encouragement.

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## **List of Abbreviations**

<b>NRs</b>	Natural Resources
<b>NRC</b>	Natural Resource Conflicts
<b>NRM</b>	Natural Resource Management
<b>NRCR</b>	Natural Resource Conflicts Resolutions
<b>NRMC</b>	Natural Resource Management Conflicts
<b>GB</b>	Gilgit Baltistan
<b>VO</b>	Village Organizations
<b>FGD's</b>	Focus Group Discussions
<b>KII</b>	Key Informant Interviews
<b>DC</b>	Deputy Commissioner
<b>AC</b>	Assistant Commissioner
<b>HH</b>	House Hold
<b>HHH</b>	House Hold Head
<b>SPSS</b>	Statistical Package for Social Sciences
<b>RCABH</b>	Regional Conciliation and Arbitration Board of Hunza
<b>GoP</b>	Government of Pakistan

## **ABSTRACT**

Natural resources like land, water, forest and mineral and gemstones are the main source of livelihood and main bases in Hunza and Nagar district of Gilgit Baltistan. The aim of this study is to investigate the natural resource conflicts with respect to land, water, forest and minerals and gem stones. And institutional mechanisms for resolving these natural resource conflicts in district Hunza and Nagar. In this regards primary survey of 390 household heads was conducted, three focus group discussion and eight key informant interviews were conducted from the both districts. The methodology of mixed method approach was used as a research design. Descriptive statistics, a binary logistic model is used for econometrics analysis. The findings show that 59.2 percent land conflicts have existed in the study area, 59.7 percent conflicts are on the water, 59.6 percent forest conflicts and 57.9 conflicts on minerals and gemstones.

Along with existence of natural resource conflicts the study also finds the formal and informal institutional mechanisms used for natural resource conflict resolutions in the study area. The results prevail that the informal institutional mechanism is strong in the study area.

**Key Words:** ( Natural Resource Conflicts, Formal Institutional Mechanisms,  
Informal Institutional Mechanism)

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

Natural resources are very important pillars of every economy and free gifts of nature. These resources are present in nature in the form of land, forest, water, and minerals, which provides sources of income to households, identity to the community and raw products to industry (Helvatas, 2007). Developing countries more likely depends upon natural resources and these resources are a primary source of livelihood. It has been estimated that half of the world rural population rely on natural resources (Peace, 2007).

The World Bank defines natural resources as “*materials that occur in nature and are essential or useful to humans, such as water, air, land, forests, fish, and wildlife, topsoil, and minerals.*”

Natural resources conflict (NRC)<sup>1</sup> is not a new phenomenon, however, there are different factors, which tend cause the conflicts over natural resources. These conflicts are the causes of disputes and disagreements over access to use and control of natural resources (FAO, 2000). The conflict arises because people have different use patterns of the NRs such as water, forest, pastures, and land. The conflicts also arise due to the absence of a proper mechanism to control and manage the resources which give benefits to individuals and community. Disagreements escalate the conflict in the societies, disagreements occur when priorities of different user groups are not considered in policy making, project implementation, and long run. If the disagreement or conflicts regarding NRs cannot be addressed properly in the society,

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<sup>1</sup> NRC: "Natural resource conflicts are disagreements and disputes over access to, and control and use of natural resources"

these conflicts lead to violence, a cause of environmental degradation, undermine livelihood and disrupt projects.

In addition, natural resource conflicts always exist in every society because of competition and demand for the natural resource. The conflicts arise when user group of the resource is excluded from natural resource management. Conflicts may also occur because of unequal distribution of resources, contradiction among local and introduced management system, misunderstandings and lack of information, poor policies, poor implementation of programs(Castro & Nielsen, 2003).

The natural resource management conflicts (NRMC) occur because of the institutional failure like courts and police, which are unable to address or solve conflicts (Bennett et al., 2001). Conflict creates a significant challenge to maintain sustainable development and participatory resource management. Rising disputes can weaken formal and informal institutions and the local laws, which discourage resource governance, causes of economic decline and environmental degradation (Castro & Nielsen, 2003).

## **1.2 Natural Resource Conflicts and Natural Resource Management**

Conflicts over NRs like water, land, forest are prevailing in most of the rural areas of developing countries and these natural resources are ubiquitous Buckles & Rusnak, 1999). People around the globe compete over natural resources to enhance their livelihood, income and status irrespective of optimal and sustainable use of natural resources

Natural resource management always requires institutional cooperation due to increase in competition and over use and extraction of natural resources and different interests groups leads to conflicts and uncertainties of resources.



However, Bukles stated that "conflicts have many negative impacts but they can be catalysts for positive change" (IUCN, May 2002).

### **1.3 Problem Statement**

Hunza and Nagar are rich in natural resources and contribute important role in lives of both districts inhabitants. Due to a high economic value of these natural resources, increase in population, urbanization, migration and unemployment the NRs become the cause of conflicts among individuals, communities, and villages. The consequences of these factors lead to increase in natural resource conflicts in the Hunza and Nagar, which leads to increase in poverty and affect the livelihood of both areas people. For example, the construction sector creates pressure on natural resources because the raw materials for construction like wood, stones, clay, and water are frequently used from common resources. Recently the demand for these raw materials has increased in the area. The increasing demand of these resources has led to intensification or competition among individuals, user groups and communities to extract these NRs. This competition has caused conflicts among local inhabitants, societies and villages on natural resources have led to depletion of natural resource bases, over exploitation of natural resources, environmental degradation, and vulnerability in the living of people.

### **1.4 Livelihood in Hunza and Nagar**

IUCN (2008) explains that the livelihood of northern areas people depends on NRs. The livelihood of the people of Hunza and Nagar depends on agriculture, water, tourism, minerals, and services sector. The main occupation of the people in the regions is subsistence farming around 85 percent of the population of Gilgit-Baltistan rely on subsistence farming as a source of livelihood (Khurshid, 2013 ). Due to non-availability of other industries like manufacturing industry, people also rely on NRs

like pastures, extraction of gem stones, forests, fishery and communal land. These are the places where people can earn income without any hesitation of propriety and ownership rights of the places. These are the places which are mostly owned by community. It is evident that rural people take their cattle's for grazing to pastures in order to earn income by selling animals and locally made products. Some key factors which affect the livelihood and causes conflicts are over use of these common resources, poor management of mining, non-availability of the modern irrigation system and lack of management causes conflicts over use of resources.

The NRs play important role in poverty reduction and increase in local economic opportunities of rural areas by emphasizing on community level natural resource management. It is evident from the study of GoNWFP and IUCN (2007) which explored that, the community level natural resource management is the best mechanism to control and distribute NRs among poor people of rural areas. They illustrated the example of "*chalgoza*"<sup>2</sup> a seed collected from pine trees. Before introducing the community based natural resource management (CBNRM), superior caste, tribe and powerful people collect *chalgoza* from the forest of Diامر, a district of GB. Poor and marginalized people were not allowed to collect *chalgoza* from the forest. By the introduction of CBNRM, poor and marginalized people were allowed to collect *chalgoza* from pine trees in order to enhance their livelihood and income.

### **1.5 Natural Resources in Hunza and Nagar**

Land, water, Forests, minerals and gem stones are main natural resources found in Hunza and Nagar. Pastures, irrigation system and mining areas, are other main important natural resources found in Hunza and Nagar. The conflicts over these resources vary from, village to village, tribe to tribe and region to region (Buckles &

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<sup>2</sup> Chalgoza ; A fruit collect from pine trees

Rusnak, 1999). The conflicts arise due to brutal use of resources to meet the increasing demands of daily survival of humans and to feed animals as well (Castro & Nielsen, 2003). Besides primary income activities like agriculture and farming, the people of the region are also dependent on NRs or common goods. As the characteristics of common resource non-excludability and non-rivalry, the resources are over exploited and degraded which leads to uncertainties among communities and create new conflicts. It is evident from GoNWFP and IUCN (2007) that in every village of district Diamer each village has its own hill side catchments, which are most common resources. Access to these lands is defined according to land ownership and traditional rights are defined by local people at local level. One of the managerial practices of collecting *chilghoza* from the forest for landless and tenants are decided between community levels by the elders.

To manage the conflicts and disputes over natural resources, people use different methods or tools for natural resource conflict resolution. People use indigenous local practices and legal practices for resolving the conflicts and disputes. In Hunza and Nagar people use both formal and informal institutions for their conflicts resolutions but in many cases, people prefer informal institutions like *Lumbardari system*, because of indigenous knowledge about the division and usage of natural resources which were predetermined by the ancestors of local people. These local institutions mainly settled the conflicts through negotiations<sup>3</sup>, arbitration<sup>4</sup>, mediation<sup>5</sup>, coercion<sup>6</sup> and adjudication<sup>7</sup>. These services are provided by informal institutions and these are on a voluntary basis.

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<sup>3</sup> Negotiations: Following a voluntary process in which parties reach agreement through consensus.

<sup>4</sup> Arbitration: Submitting a conflict to a mutually agreeable third party who renders a decision.

<sup>5</sup> Mediation: Using a third party to facilitate the negotiation process.

<sup>6</sup> Coercion : Threatening or using force to impose one's will.

<sup>7</sup> Adjudication : Relying on a judge or administration to make a binding decision.

## **1.6 Research Questions**

The main research questions of the study are:

- What is the Natural Resource base in Hunza and Nagar and type of natural resource conflicts occur in these districts?
- What mechanism/tools, people of Hunza and Nagar use for conflict resolution?
- What are the barriers faced by people in NRC resolutions?

## **1.7 Objectives of the Study**

The main Objectives of the study are to:

- Analyse the prevalence of natural resource conflicts in Hunza and Nagar.
- Identify the major reasons behind natural resource conflicts (land, water, forest and minerals and gem stones).
- Examine formal and informal mechanism for conflict resolution in Hunza and Nagar.
- Access the perceptions of people regarding mechanisms of natural resource conflicts.
- Highlighting the barriers in conflict resolution.

## **1.8 Significance of the Study**

So far natural resource conflicts and mechanisms for resolving the issues has not been academically studied in Hunza and Nagar. Few studies or projects had been conducted some districts of GB which main focused availability of NRs in GB but those studies could not address the conflict mechanisms and conflict resolutions. The study investigated formal and informal channels of conflict resolutions which people of the area used for NRC resolutions. The study also explores the relationship between local disputes, natural resources, control over the natural resources, means of

livelihood and mapping of formal and informal dispute resolution mechanisms. This study focuses on the involvement of community in conflict mediation and the power players behind the natural resource conflicts.

### **1.9 Organization of the Study**

The first chapter of the study includes an introduction to study. The second chapter includes literature review. The third chapter includes methodology of the study. The fourth chapter includes estimation of the study. The last chapter includes conclusion and recommendations.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter includes different literature on natural resources conflicts which was taken from different articles, journals, books, and magazines. The literature of the study is divided into different themes which will help us link different parameters of natural resource conflicts with respect to natural resources and Institutions.

#### **2.2 Livelihood, Natural Resources and Natural Resource Conflicts**

Access to natural resources is very important to achieve a livelihood. Especially in the poor communities, households often rely on NRs for their livelihood and survival. However, livelihood activities of poor communities are dependent on NR assets, which have been destroyed, depleted and overused by local people. The overuse of natural resources leads to desertification, soil erosion, deforestation, livelihood, inequality, disproportionate burden on women and decline the water level. In the same way, NRs degradation also leads to poverty and environmental conflicts on water, forest, biodiversity loss and air quality. These issues create natural resource management (NRM) uncertainties at local, national and international level. The natural resource management conflicts (NRMC) are caused due to economic and social factors, like improper land use and planning, ineffective implementation of policies and interventions. Therefore, these factors impact long term sustainability of the environment (Bob & Bronkhorst, 2010).

Conflicts over natural resources like forest, land, and water are ubiquitous (Ayling & Kelly, 1997). People everywhere in the world have competed for the natural resources to enhance their livelihood. However, the intensity, dimension and level of conflict vary greatly. Conflicts over the natural resources also occurred because of classes of

people, which put the people in groups that those who own the natural resource, against those who do not own natural resources but whose works make the resource more productive (Chevalier & Buckles, 1995). Different factor plays a different role in natural resources conflicts at their own level and capacity such as political factors, political dimensions may dominate where the state has a keen interest in public goods such as conservation (Fisher et al 1999). The power difference between communities also leads to natural resource depletion on which people livelihood is dependent (Buckles & Rusnak, 1999).

The use of the natural resource is vulnerable to conflicts for several reasons, for example, natural resources are embedded in an environment where the action of one individual, community or a group effect other. For example, the use of water for irrigation in the upper region of the Calico river in Nicaragua pitted upper stream communities and landowners against downstream people and communities in need of water for domestic use and consumption.(Chevalier & Buckles, 1995).

The economic value of the natural resources has a great significance on sustainable natural resource management and use of natural resources. In many parts of Indonesia majority of the population is dependent upon natural resources for their livelihood and income generating activities. Similarly, many parts of developing countries, rural people do not only rely on single income opportunity or occupation but people have diversified opportunities in order to secure their livelihood. The purpose behind this is to minimize the risk associated with prices of outputs and bad harvest.

### **2.3 Socio Economic Factors and Natural Resource Conflicts**

From an economic perspective, natural resources such as water, forest, wild life provided a wide range of the source of income. The income can be earned by selling fruits, mushrooms, herbs used for medicines, mats, fuel wood. Sustainable natural

resource utilization and management depend upon decisions of resource users. For instance, the sustainable use of land is dependent on land users, who are mostly farmers. These farmers are often poor, risk averse, unavailability to access the credit, absence of recent information and new technology, whereas the desire of the farmers is to maximize their own welfare of the household at a community level (Coxhead & Buenavista, 2016).

In developing and low income countries natural capital account more wealth as compared to developed countries. So, therefore, in many developing and low income countries poor people are mostly dependent on natural resources as compared to middle income and developed countries and these people are more vulnerable to natural resource shocks (Goldman & Young, 2015).

## **2.4 Water**

According to Bob and Bronkhorst (2010) by 2050 increase in water demand could produce extreme competition. For this essential substance (water) there will be few water areas on the planet. Countries that share water/rivers with other countries will have a high risk of water war and military disputes. Several countries rely on water which comes from other countries, this may cause local and international competition over water. The water will not only source of conflict but under water resources also point of contestation. The problem effect that areas where boundaries are not defined and communities have competing claim for the resources. Water conflicts have direct link with food security and provision of fresh water. Water is a crucial resource for agriculture productivity and contestation over water rights and access can undetermined agriculture productivity level.

Natural resources such as water, forest, natural gas, minerals, and oil are the main source of national income and GDP of every economy. These resources also cause of



conflicts and instability if these resources are unfairly distributed, mismanaged, share unfairly and unequally. To manage natural resources in a sustainable way, natural resource governance is important where societies which are divided on geographic, ethnicity and language. The natural resource governance will control the natural resources from over exploitation, enhance better wealth sharing mechanism, ownership management, and control NRC.

According to Yasmi (2007) the natural resource management conflicts are widespread, pervasive and sometimes destructive. Which occurs approximately in all contexts such as land allocation, water management, fishery, mining, and forestry. So equally and importantly conflicts arise because of competing over resources by few people. The range of NRM conflicts varies from local to national level, local level conflicts arise due to un-involvement of local people in NRM. This is evident from study held in Indonesian forest. People of that areas livelihood depends upon the forest, where they collect latex from Jelutung (*Dyera Costulata*) and get their income. The timber company cuts Jelutung from Sumartarn forest which creates conflicts among people and company. This conflict was due to undefined boundaries of forest and other conflicts like customary laws. For example, the conflicts among Melay and Dayak people are often related to timber sale, destructive fishing gears these conflicts are due to unclear boundaries and un clear fishing zones.

Hasan and Mulamoottil (1994) explained the managerial issues of natural resources like land, water and forest of Bangladesh. Most of the rural and urban land in Bangladesh is owned by elites who do not cultivate the land. 23 % of total land is cultivated by tenants and 45 % land is cultivated by daily wage labors. Furthermore, 60% of total energy source is fire wood and 67% of this energy is consumed as a fuel for household's consumption. In two urban cities of Bangladesh, Chittagong and

Dhaka fire wood is used as a main source of energy in hotels. In Bangladesh, 6% land is severely flood prone while 23% is moderately flood prone. This was due to improper natural resources management and non-availability of substitute of fire wood.

## **2.5 Climate Change and Natural Resource Conflicts**

Climate change is not a direct cause of natural resource conflict but it escalates natural resource scarcity and increases vulnerability among poor people who rely on a specific natural resource. Climate changes usually present as a threat multiplier, weakening the institutions' capacities in order to resolve conflicts in a democratic way, political instability (Note, 2013).

Benjaminsen (2016) stated that in the global media and politics indicate a very close connection between the conflicts and the climate change specifically the pastoralists conflicts of Sahel. The prominent global narratives are about the climate change at the global level which leads to the problem of scarcity of resources due to droughts and desertification and that resource scarcity leads to the birth of new conflicts or it exacerbates the existing conflicts. The critically assessed the claim based on the case studies from Mali and international research review. There is no clear link between the scarcity of resources of Sahel and global climate change in 1980. However, the link between the scarcity and higher level of conflicts cannot be ignored even if the international research questions and empirical results are questionable about the correlation validity. In Sahel, the conflicts are generally associated with the policies of the states and these conflicts are generally caused by the politics but not the climate change.

Goldman and Young (2015) stated that around the economies natural resources play a significant role in creating and continuation of violent conflicts. Natural resource play

a role in promoting peace or fueling conflicts. In many areas of developing and low income countries, poorest people are mostly dependent on natural resources as compared to people of middle income and developed countries. These developing countries are more vulnerable to natural resource shocks which have a huge impact on security, livelihood, community resilience and long term sustainability. Local disputes arise because of internal conflicts among livelihood groups like herds and farmers over the access of natural resources.

To resolve large scale natural resource conflicts over, use and access of natural resources cooperative resource governance, resource benefit-sharing and strengthen the institutions to avoid NRs conflicts (Young & Goldman, 2015).

## **2.6 Gender, Natural Resource Conflicts, and NRM**

In developing countries like India, the rural people of Nagaland specifically women are mostly dependent on NRs for their immediate livelihood. Women played a vital role in household activities, women collect natural resources like fodder, fuel wood, water, and wild vegetables for their daily household needs and consumptions (Kikhi & Kikhi, 2009). Women are a main user of NRs in Niro Mail, . Degradation of natural resources affect everyone irrespective of gender, age, race, and status. However, the individual effect of NRs degradation depends on economic status and gender separately (Course, 2010).

A study of Course (2010) showed that mostly in developing countries women are marginalized because of social structures of societies and roles and responsibilities given by society to the women. Which forced women to rely on the good which is provided by nature. Approximately world 70% poor and 65% of illiterate are women and most are living in rural areas. Rural people mainly, women are isolated from economic opportunities and have little access to social services, therefore women are

relying on natural resources. In South Asia, 60% of households income is generated from nonfarm sources. NR's have been degraded because of non-availability of economic opportunities for women.

The depletion of the natural resource directly affects the women and impact on the overall livelihood of people who rely on the natural resources. However, for NRM, because of the differences in roles and responsibilities of men and women due to social and economic factors, like the division of labor leads to the problem of equity. Correspondingly men and women are equally responsible for sustainable development and conservation of NRs. Excessive degradation of the natural resource affect the sustainability of NRs and income of future generation (Kikhi & Kikhi, 2009).

Women are directly and indirectly involved in NRMC. Direct involvement of women in the conflicts of natural resource results in their suffering from violence, loss of income, loss of access to resources and restriction on the frequent use of NRs. While the indirect involvement of female leads to internal household conflicts and societal conflicts. Institutions are necessary to manage NRMC by integrating women in management mechanisms. The integrating process enhances women participation in NRM activities in order to build the capacity building of women (Elisabeth et al., 2005). In addition to Kioboe women participation in NRM Quisumbing (2003) explained the sustainable natural resource management and other problem like un-involvement of women in NRM programs. The author focus on females who were not involved in NRM policies and programs. Generally, the author explains the relationship between environment and society that seems to affect male and female in a similar way but the reality is different due to responsibilities, rights, and the role of male and female. The factors which stop female to participate in NRM programs are due to male dominance in societies, cultural, social, economic and many other factors

like confidence and language which has been used as a medium of communication in NRM projects which makes a barrier for women to participate in NRM programs. While solving the problem in NRM and gender involvement, NRM programs must consider both men and women right to access and control over natural resources. Both men and women should be involved in the decision making. NRM should consider the indigenous knowledge of both men and women. The advantage of involving women in NRM is decreased the inequalities in communities.

### **2.7 Failure of Policies and Developmental Projects**

The causes of natural resources conflict in societies were also a failure of poorly commutated developmental policies (Kant and Cooke 1999). In many regions, lack of government involvement in natural resource management activities, resource users like indigenous people, small farmers, large scale farmers, big co-operations influence NRM, forest, agribusinesses, and mining. Natural resources are used in a way which undetermined livelihood (Buckles & Rusnak, 1999). Improper government policies and programs in one sector may affect other sectors of the economy. For example, the lack of forest and land policy leads to degradation of forest and agriculture land i.e. improper policies regarding housing sector leads to decrease in the forest. In Bangladesh 1982-83 the forest area was 1.9 million hectare (ha) after 1986-87 the forest area was decreased by 6% and the area became 1.8 million hectares. In the management of water non-availability of water sharing agreement with India may also threat to Bangladesh. For better NRM, authors suggested that NRM policies must include indigenous people or integrated approach in making NRM policies and programs (Hasan & Mulamoottil, 1994).

While the successful example of natural resource management is water shed management in Nepal, (Bob & Bronkhorst, 2010) stated that Nepal is the first

country of South Asia which started community based water shed program. From the perspective of community based watershed management, the people of Nepal get two type of benefits firstly the success of conservation of natural resource by strengthening local institutions. The second benefit is its multiple effects of community development, social mobilization, women empowerment, improvement in governance of natural resources at local level and increasing in livelihood opportunities for the local people.

Power differences among the user groups can be a big challenge for the survival of poor people whose livelihood is based upon natural resources. These differences create conflicts which result in natural resources depletion on which the livelihood of society is based.

It is evident from the study of Bob and Bronkhorst (2010) that due to non-formulation of policies regarding environmental protection and conservation of natural resources. The absence of policies leads to conflicts.

## **2.8 Communication Media and NRM**

According to FAO (2003) during 1970-99 the natural wealth of earth freshwater ecosystem, forest, oceans and coastal decline by 30%. Almost 34 % of fish species and 54 percent of coral reef are under threat. In next fifty years, world population predicted to be increased to 9.3 billion approximately by 50% of the 2003 population.

As these statistics, could go on and on, the people of the world could not properly manage the resources. The resources become vulnerable the reason is resource use because of the proportion of footprints of marginalized and poor is small as compared to rich people. As time continues due to improper resource management, the fertility of land become harder, fish catch decreases in order to reduce these loses communication used as a tool for the better natural resource management. Much of

poverty in rural parts of Asian countries is concentrated with limited access to information. More importantly, improvement in access to information leads to diversification of livelihood of rural people and management of the resources in an optimal way. It is evident from these examples in Sri Lanka. internet radio has been installed through which environmental education has been enhanced and stimulating environmental positive practices. To promote NRM separate program on the role of male and female in NRM has been forecasted to enhance better resource.

The second example in Gambia and Jordan USAID made GREENCOM project, the objective is to improve environmental education and critically focus on awareness, knowledge, attitude, skills and participation in environmental problems.

## **2.9 Religious leaders**

Nukunya (2003) Stated that it was leaders who had control over depletion of resources like the harvesting of fish in Ghana. Religious leaders introduce a practice where fishermen were restricted to catch the fish during the breeding season. To open the fish catch they set traditional ceremonies after the ceremony people are allowed to catch fish for a specific time period. The practice leads to sustainable resource exploitation.

Traditional societies had adherence the taboos in the management of protected areas because these areas are rich in bio diversity. Religious leaders restricted the access and activities in order to prevent from environmental degradation and loss of bio diversity because these protected areas are the reservoir of bio diversity (Gorjestani, 2004).

John and Yao (1999) explained that to preserve the culture and traditional customs ethnic groups created a traditional festival. These festivals are being used as a platform for NRM activities.

## **2.10 Environment and Natural Resource Conflicts**

Conflicts emerge in such a way when stakeholders have incompatible interests' irreconcilable differences, goals, values, perceptions, and values about resources. Additionally, unmanaged and unresolved conflicts intensify and escalate natural resource conflicts (Alfonso & Nielsen, 2003) and (Yurdi, Heiner, & Agus, 2006).

Competition over finite natural resources, divergent beliefs and attitude and institutional factors leads to increase in environmental conflicts (Hellström, 2001).

Different type of environmental conflicts had been addressed in literature such as biodiversity and conflicts. White et al. (2009) stated about conflicts among people about wild life, conflict about conservation of protected areas and green landscapes.

## **2.11 Formal and Informal Institutions**

Across the world individuals, communities and nations use the different type of mechanism for the conflicts resolutions. The study of Schweithelm, Kanaan, and Yonzon (2006) described that for the settlement of conflicts and conflict resolution over natural resources in Nepal, people use two types of institutional mechanisms comprising formal and informal institutions. The low level local conflicts and community level conflicts are settled under traditional way where people use informal institutions which work under village elders or religious leaders. These conflicts are often between households and families who belong to same ethnic group or caste. The high-level conflicts are settled down in courts which are formal institutions. In the same way, disputes are settled through district development councils (DCC) and village development communities (VDC) which are legally powered for solving conflicts.

Asad et al 2003 stated that Natural resources in many parts of the Northern Areas are still being managed under unwritten customary laws passed down through oral



tradition which have now been adopted by the community. Presently two different types of traditional law operate in the Northern Areas with reference to use rights and management of natural resources. These are *Rawaj* (customary law) and *Shariah* (Islamic law).

## **2.12 Management and Natural Resource Conflicts**

Natural resource management conflicts are widespread, pervasive and sometimes destructive, which occurs approximately in all contexts such as land allocation, water management, fishery, mining, and forestry. So equally and importantly Conflicts arises because of competition over resources by few people. Yasmi (2007) explained that the range of natural resource management conflicts (NRMC) varies from local to the national level; The local level conflicts arise due to un-involvement of local people in natural resource management (NRM). For instance, the livelihood of two villages of Indonesia depends upon the forest, where they collect latex from Jelutung (*Dyera Costulata*) and get their income. The timber company cuts Jelutung from Sumartarn forest which creates conflicts among people and company, this conflict is because of undefined boundaries of forest. The study also finds other sources of conflicts are differences in customary laws. the conflicts among Melay and Dayak people are often related to timber sale, destructive fishing gears are due to unclear boundaries and un clear fishing zones.

Tiwari , M, and Bishal (2009) compared watershed management among developed and developing countries. The programs output was different from developed to developing countries. In developing countries watershed management mainly focus on local people while developed countries focused on quality and supply. In south Asia Watershed degradation is the main problem in mountain regions. Watershed management is directly linked with the livelihood and environment of rural areas

inhabitants. Besides the primary factors, other factors which were responsible for land degradation and which were not in cooperate in theory like, steepness of area, rainfall and locally involved land management factors which were the main cause of environmental degradation in sub-continent.

### **2.13 Population and Natural Resource Conflicts**

The main causes of resources depletion in Nagaland India were increase in population. The other problems are right to own and control over the resources like land in very crucial for women in Nagaland. Which affects the livelihood of women because women livelihood directly relies on Land. The research shows that Most fertile land is owned by men and marginalized land by women, which shows improper management and non-availability of social institutions which may preserve the rights of the women (Kikhi & Kikhi, 2009).

It is evident from the study of Schweithelm et al. (2006) that the community level natural resource conflicts and causes are experienced on multiple scales. Eighty percent of people in Nepal are living in rural hilly areas and the people of this area are mostly suffered from chronic diseases. In 1991 the population of the Nepal was 5.6 million and 28 million in 2006. The livelihood of rural people of Nepal is dependent on natural resources like forest and water. Forest provides fuel, wood, feed for animals, a shelter for biodiversity, building materials for infrastructure development and raw products for organic medicine for rural families. In Nepal, major causes of armed conflicts are rapid population growth, restricted economic opportunities and social structures are causes of conflicts over NRs in Nepal. Social inequalities made barriers to access over NRs and services.

Government restricted economic opportunities outside the cities result to a wide spread of relative poverty. The rapid increase in population in rural areas of Nepal

leads to degrading the hilly land and forest had been demolished. Illegal harvesting of Teri forest also degraded the forest.

#### **2.14 Conclusion**

The above mentioned literature includes the natural resources and natural resource conflicts linked with socio economic variables. The studies provided a significant contribution to natural resources and its consequences of natural resources when it became over extracted, overused.

#### **2.15 Research Gap**

While the existing studies show the existence of natural resources in the different parts of the world and how these NRs contributes to socio-economic conditions of people throughout the world. Those studies show, why NRs are conflicting prone which leads to arm conflicts etc. but this study provides the information regarding the NRC on micro a level and why these micro level NRC are being created or existed in the areas. The study gives triangular information regarding NRC because data for the study used three major methodologies of social sciences which are, FGD's, key informant interviews and survey. The research fills the following major research gaps.

- As the research is exploratory none of the studies is conducted in the study area so the research fills the gap of the existence of the natural resource base and conflicts related to land, water, forest and minerals and gemstones in the study area.
- The research also fills the gap of institutional mechanisms which are been used for natural resource conflict resolutions in Hunza and Nagar district.

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Introduction

This chapter provides the details of the study area, sources of data, tools and techniques used for data collection, sampling design and methodology applied for the study.

#### 3.2 Research Approach

The study used a mixed method of methodology for the research. As it will enable us to explore sensitive issues in depth while providing the opportunity to explore findings that have not been assumed or anticipated and hence expanding the boundaries of the study. As the study will also provide valuable insight into the cultural values and social context of these populations.

#### 3.3 Area of the Study

Two districts of Gilgit-Baltistan (GB), Hunza and Nagar districts have been selected for the study. GB is situated in northern part of Pakistan and the area comprises about 72,971 sq km, the two districts selected for the study occupy 20,057 sq.km area of land. The estimated population of GB is 1.249 million, out of which 0.160 million population lived in Hunza and Nagar (Hunzai (2013); North, 2016). Gilgit-Baltistan has 831 villages, out of which 44 villages are situated in Hunza and 36 villages are situated in Nagar (Suleri & Munir, 2002). People of Hunza and Nagar can be distinguished as *Shenaki*, *Brusho*, *Wakhi*. The other factor which identify population is on religious affiliations the people are differentiated as Sunni, Shia and Ismaili (WCS, 2015). There are three local languages spoken in Hunza and Nagar, *Brushaski*, *Shina* and *Wakhi*.

The north part of the Hunza bordered with Shikian province of China and the famous Karakorum high way connects with rest of GB and southern parts of Pakistan. The Khunjerab pass played an important entry point to do business and access to one of emerging economy of world. Through this land link, medium level of imports and exports between Pakistan and China substantially increased and benefited many local business communities. From the North West, the border touches with Afghanistan and connect Pakistan with Afghanistan through Wakhan pass. GB is famous for its unique geography on the globe, four highest mountain peaks, Himalayas, Karakorum, Hindukush and Pamirs are situated in GB (Zain, 2010). The junction of Hindukush, Karakorum and Himalayas is also situated GB. Some of the highest peaks Rakaposhi 27th and Shisper 35th highest peaks are also situated in Hunza and Nagar (Fazlur, 2007).

**Figure 3.1 Map of Hunza and Nagar**



Source: (Gilgit-Baltistan Policy Institute, 2015)

### 3.4 Target Population

The target population of the research was household heads of thirteen different villages of Hunza and Nagar.

**Table 3.1 Population of Hunza and Nagar Districts**

<b>Total villages (Hunza)</b>	<b>Population 2016</b>	<b>Union councils</b>	<b>Total villages (Nagar)</b>	<b>Population 2016</b>	<b>Union councils</b>
44	67666 <sup>8</sup>	8	36	92426 <sup>9</sup>	7

Source: (PBS, 2016)

### 3.5 Sample Size

By using sample calculator, the sample size for collecting of data is 30 respondents. Which were household heads. In the case of non-availability of household head second person was included as a respondent.

### 3.6 Sampling Methodology

Non-probability sampling methodology was used for selecting the respondents in the study area. Purposive or judgmental method was used to select respondent for the survey.

### 3.7 Basis of Sampling Selection

The criteria for selecting villages was based on the availability and presence of natural resources in the villages. In total, thirteen villages were included in this research covering eight villages from Hunza and five villages from Nagar.

Thirty respondents were selected from each village; this is based on equal proportion given to each village. Respondents for each village = Total number of sample / number of villages.

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<sup>8</sup> Population of Hunza district after 2.5% annual growth of 1998 census

<sup>9</sup> Population of Nagar district after 2.5% annual growth of 1998 census

**Table 3.2 Sample Village Selection**

<b>Hunza</b>		<b>Nagar</b>	
<b>Villages</b>	<b>No of respondents</b>	<b>Villages</b>	<b>No of respondents</b>
Nasir Abad	30	Nagar Khas	30
Murtaza Abad	30	Sumayar	30
Hassan Abad	30	Minapin	30
Ali Abad	30	Thole	30
Karim Abad	30	Nilt	30
Altit	30		
Gulmit	30		
Gulkin	30		

### **3.8 Respondent Survey Conduction**

For Respondent survey team was conducted, the team was included from two to four persons. Before going to survey training was given to the team members, where team members were guided about questionnaire and purpose of survey. The team members were trained to translate the questionnaire if the respondent could not understand English language.

#### **3.8.1 Data Collection Tools**

Structured questionnaire was prepared including open ended and close ended questions, to gather information on specific indicators. Along with questionnaire, three focus group discussions (FGDs) were conducted two FGDs from Hunza and one FGDs from Nagar. Key informant interviews were conducted from heads of institutions. As Singh and Sinha (2002) use the same tool.

### **3.8.2 Pre Testing**

Before going to survey we surveyed fifteen household as a part of pre-testing to rectify the mistakes and problems in questionnaire before going to collect actual data. Primary data was collected from the respondents directly.

### **3.8.3 Training**

Before going to conduct a survey, training was given to the team members. The purpose of training is to guide the team members regarding the purpose of the survey. Researcher clearly discussed the questionnaire with the team members in order to check their understanding of questionnaire. The Questionnaire was filled from them. Which helps the team members to clear their queries regarding questionnaire and survey. In the training session instructions were given to team member regarding the data collection and respondent selection because the sampling technique used in the study is purposive and judgmental.

### **3.8.4 Transect walk**

In order to observe socio economic conditions, existence of natural resources basis and natural resource conflicts we get information during transect walk. These transect walks helps us in identifying the true causes of natural resource conflict in the study area. Transect walk also provide local practices use for natural resource conflict resolutions. As the toolkit of Frankenberger, Luther, Becht, and McCaston (2002) shows the same process to collect true result.

### **3.9 Focus Group Discussion**

The purpose of focus group discussion FGD's is to explore the opinions and perceptions of local people about reasons of natural resource conflicts, information regarding natural resource conflicts mechanisms and resolutions which are currently prevailing by formal and informal institutions in the Hunza and Nagar district. As the



study of Singh and Sinha (2002) also used focus group discussion to get primary data for conflicts on natural resources, the study follow same method to collect primary data from respondents.

From Hunza, two FGDs was conducted one from Murtaza Abad village and other from Altit village. As we plan to conduct equal FGD's but we are able to conduct only one FGD's from Nagar district due to hard weather and lack of resources.

We used the place for FGD's where mostly people of the villages get together on most routine. In Hunza we hired a local restaurant hall to conduct FGD's at both Murtaza Abad and Altit village. Whereas at Minapin village in Nagar district we choose mosque as a suitable place for conducting FGD.

The FGD includes six to eight persons, the majority of discussants male, one female were included in FGD Altit Village. The age of focus group discussants was twenty-five to sixty-eight years. We tried to include the females in the discussion on equal basis due to the short period of the day and social factors we are unable to include them on the equal basis in the discussion.

**Table 3.3 Focus Group Discussions**

<b>FGD's</b>	<b>No. discussants</b>	<b>Age</b>	<b>Male</b>	<b>Female</b>
Murtaza Abad	8	27-60	8	0
Altit	7	25-56	6	1
Minapin	7	28-68	7	0

### **3.9.1 Layout of Focus Group Discussions**

For conducting the FGD's we nominated a team including three persons' moderator, assistant moderator and helper for video recording. Researcher was a moderator during FGD's. Moderator start the discussion on the concerned issues and researcher

assistant moderator note down the comments and helper recoded the video recording of the discussion.

### 3.9.2 Analysis of Focus Group Discussions

Most common comments of respondents of each FGD's was extracted from video recording through transcription. Comments which we extracted were exactly coded as a narrative, which were related to our concern. Themes are being made for analysis of FGD's to interpret the discussion easy and understandable way.

### 3.10 Key Informant Interviews

Key informant interviews (KII) was collected from the eight head of institutions shown in table 3.4. The key informant interviews provided information regarding occurrence and existence of natural resources conflicts in the Hunza and Nagar districts. The KII also provided us the Institutional mechanisms for NRCR which were used by the institutions. As the study of Amone and Lakwo (2014) used same methodology for collecting data in Uganda from institutions heads.

**Table 3.4 Key Informant Interviews**

<b>Institution</b>	<b>Interviewer Designations</b>
Deputy Commissioner Office Hunza	Deputy Commissioner (DC)
Assistant Commissioner office Hunza	Assistant Commissioner (AC)
Assistant Commissioner office Nagar	Assistant Commissioner (AC)
Superintendent of police Office Hunza	Superintendent of police (SP) Hunza
Superintendent of police Office Nagar	Superintendent of police (SP) Nagar
Police Station Ali Abad	Station house officer (SHO)
Regional conciliation and Arbitration board Hunza (RCABH)	Chairmen
Altit village lumberdar	Ghulam Murtaza Lumberdar

### 3.10.1 Analysis of Key Informant Interviews

Each interview is explained individually. The reason for individual explanation of the KII is different institutions dealt natural resource conflict with own resolution mechanisms. Common and different results of key informant interviews were coded as narratives with respect to our concern.

### 3.11 Econometric Methodology

In addition to qualitative work, econometrics model is also used by the study.

#### 3.11.1 Binary Logistic Model

In this study the dependent variable(Y) natural resource conflict is a dummy variable taking the value 1 for yes (onset) and 0 for no (no onset). It is not possible to predict the value outside 0-1. Therefore, we used binary logistic model, where the main objective is to estimate how the risk of conflict onset is affected by change in independent variable. We will estimate the log-odds of yes for the different values of the independent variables. We estimate following benchmark logistic model. The model is used by G. Omer Stein (2012) for the critical evolution of natural resources and civil war.

$$\text{Log} \left( \frac{P_i}{1 - P_i} \right) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} \dots \dots \dots + \beta_k X_{ki} + e_i \dots \dots \dots (1)$$

Where  $\beta_0$  is the intercept of model and  $\beta_1, \beta_2, \dots, \beta_k$  are the coefficients to be estimated for the corresponding  $X_{1i}, X_{2i}, X_{3i}, \dots, X_{ki}$ . The  $e_i$  is error term. The logarithms of the odd have the desired property not being restricted 01 bit it covers  $-\infty$  to  $+\infty$ . Each coefficient of the model measure the change in log-odd of natural resource conflict having value one for one unit increase in the independent variable (X) all other independent variable constant. Furthermore, model (1) is specified as for different sectors, like land, water, forest and minerals and gemstones.

We will estimate following model (2) for the land conflict.

$$\begin{aligned}
 NRCL_i = & \beta_0 + \beta_1 HHS_i + \beta_2 Age_i + \beta_3 Edu_i + \beta_4 Y_i + \beta_5 Mig_i + \beta_6 Lown_i + \beta_7 LY_i \\
 & + \beta_8 GvtRole_i + \beta_9 RelRole_i + \beta_{10} RolMed_i + \beta_{11} EnvirDg_i \\
 & + e_i \dots \dots \dots (2)
 \end{aligned}$$

The following model (3) will estimate for the water conflict.

$$\begin{aligned}
 NRCW_i = & \beta_0 + \beta_1 HHS_i + \beta_2 Age_i + \beta_3 Edu_i + \beta_4 Y_i + \beta_5 Mig_i + \beta_6 WDist_i \\
 & + \beta_7 WMG_i + \beta_8 GvtRole_i + \beta_9 RelRole_i + \beta_{10} RolMed_i \\
 & + \beta_{11} EnvirDg_i + e_i \dots \dots \dots (3)
 \end{aligned}$$

The following model (4) will estimate for the forest conflict.

$$\begin{aligned}
 NRCF_i = & \beta_0 + \beta_1 HHS_i + \beta_2 Age_i + \beta_3 Edu_i + \beta_4 Y_i + \beta_5 Mig_i + \beta_6 MF_i \\
 & + \beta_7 FWood_i + \beta_8 GvtRole_i + \beta_9 RelRole_i + \beta_{10} RolMed_i \\
 & + \beta_{11} EnvirDg_i + e_i \dots \dots \dots (4)
 \end{aligned}$$

The following model (5) will estimate for the mineral and gem stone conflict.

$$\begin{aligned}
 NRCMGs_i = & \beta_0 + \beta_1 HHS_i + \beta_2 Age_i + \beta_3 Edu_i + \beta_4 Y_i + \beta_5 Mig_i + \beta_6 MGava_i \\
 & + \beta_7 AreaMG_i + \beta_8 GvtRole_i + \beta_9 RelRole_i + \beta_{10} RolMed_i \\
 & + \beta_{11} EnvirDg_i + e_i \dots \dots \dots (5)
 \end{aligned}$$

**Table 3.5 Description of Variables**

Abbreviations	Variable	Description
$NRCL_i$	Natural Resource Conflict WRT land	Yes=1, No=0
$NRCW_i$	Natural resource conflict WRT water	Yes= 1, No=0
$NRCF_i$	Natural resource conflict WRT forest	Yes= 1, No=0
$NRCMGs_i$	Natural resource conflict WRT forest	Yes= 1, No=0
$HHS$	Family size	Measure in

		number
<i>Age</i>	Age of respondent	Measure in years
<i>Edu<sub>i</sub></i>	Education	Years of education
<i>Y<sub>i</sub></i>	Income	Measure in Rupees
<i>Mig<sub>i</sub></i>	Migration to area	Yes=1, No=0
<i>Lown<sub>i</sub></i>	Land ownership	Yes=1, No=0
<i>LY</i>	Land income dependency	Yes=1, No=0
<i>WDist<sub>i</sub></i>	Water Distribution System	Yes=1, No=0
<i>WMG<sub>i</sub></i>	Water management system	Yes=1, No=0
<i>MF<sub>i</sub></i>	Forest Management System	Yes=1, No=0
<i>FWood<sub>i</sub></i>	Collected of firewood	Yes=1, No=0
<i>MGAv<sub>i</sub></i>	Minerals and gemstones availability	Yes=1, No=0
<i>AreaMG<sub>i</sub></i>	Areas specified for minerals and gemstones	Yes=1, No=0
<i>GvtRole<sub>i</sub></i>	Government role in with respect to each NRCR	Yes=1, No=0
<i>RelRole<sub>i</sub></i>	Religious role in with respect to each NRCR	Yes=1, No=0
<i>RolMed<sub>i</sub></i>	Role of Media	Yes=1, No=0
<i>EnvirDg<sub>i</sub></i>	Environmental Degradation	Yes=1, No=0

### **3.11.2 Data Analysis**

Data was cleaned, arranged, and analyzed by using Microsoft Excel, Statistical Package for Social Sciences (SPSS).

### **3.11.3 Descriptive Statistics**

In order to detain socio economic conditions of respondents like monthly income, household size, education level, and other variables of our concern we find descriptive analysis for the variables. Means, median, standard deviations for continuous variables and frequency distribution and percentages for categorical variables were calculated. Pie charts and histograms are calculated for reason of natural resource conflicts and institutions mechanisms.

## CHAPTER 4

### DATA ANALYSIS AND DISCUSSIONS

#### 4.1 Introduction

This chapter explains the results and discussions of the data. As the study used both qualitative and quantitative tools to show the results. Methodological triangulations were used in the investigation to check the consistency in the results of each method.

#### 4.2 Descriptive Statistics

In order to assess the current situation of natural resource and natural resource conflicts, we have conducted the survey in order to achieve the objective of the study. In this survey total, 390 respondents were included from both districts. 240 respondents from Hunza district and 150 respondents from Nagar. In order to know the socio-economic condition of households, we ask different questions which are shown in the table 4.1

**Table 4.1 Descriptive Statistics of Demographic Variables**

Variables	Mean	Median	N	Std. Deviation	Minimum	Maximum
House hold Size	8.28	8	390	3.29	1	30
Age of Respondent	44.27	42	390	13.29	16	90
Education of HHH	10.53	12	390	5.13	00	18
Number of rooms	1.53	3	390	1.52	00	10
Average monthly income	64552	46000	390	67093	14000	400000

Source: Researcher survey, Jan 2017

Table 4.1 shows the socio-economic conditions of households. The median members of members living in the house are 8 members, the minimum number of people lived in the house is one and maximum are thirty members. The average age of household head is 44.27 years and the median age is 42 years. The minimum age of respondent

include in the survey is sixteen years old and maximum year respondent is ninety years old respondent. The reason of including 90 years old respondent in the survey is respondent know the history and demography of the area from whom we get accurate information regarding Natural resource conflicts. The reason of 16-year-old respondent is house hold head was not present at the house so we include the available respondent of the house. The average education level of household head is 10.53 years of education and median year of education is 12 years of education which means intermediate. The minimum qualification of the respondent is uneducated and maximum is post-graduation. The average number of rooms is 1.53 but the median of rooms in houses is 3 rooms. The average monthly income of household head is 64552 Rupees while the median income shows 46000 rupees.

With respect to livelihood sources of the respondent, we have asked the question about the source of livelihood of household, the results show that in table 4.2.

**Table 4.2 Livelihood of Respondents**

<b>Sources</b>	<b>Frequency</b>	<b>Percent</b>
Agriculture	30	7.7
Minerals and gemstones	14	3.6
Business	11	2.8
Government jobs	9	2.3
Private jobs	10	2.6
Agriculture and jobs	205	52.6
Agriculture and business	111	28.5
Total	390	100 %

Source: Researcher survey, Jan 2017

The table shows the sources of livelihood of the respondents. The results show 52.6 percent source of livelihood is depend on agriculture and jobs. Whereas 28.5 percent respondents source of livelihood is agriculture and business. In the same way, 7.7



percent rely on agriculture and 3.6 percent dependent on minerals and gemstones. Only 2.8 percent respondent rely on business. 2.3 percent source of income is salary from government job and 2.6 percent respondent do jobs for their income.

With respect to ownership position of natural resources in both Hunza and Nagar. We ask a different question from the respondents about the ownership position of natural resources. The results of the respondents are shown in table 4.3

**Table 4.3 Natural Resource Ownership**

<b>NRs Ownership</b>	<b>Hunza</b>	<b>Nagar</b>	<b>Percent</b>
Natural resource ownership	232	133	93.5

Source: Researcher survey, Jan 2017

Table 4.3 reveals that out of total respondents, 93.5 percent of the respondent owned the natural resources and had ownership of natural resources. The ownership of natural resources was either in form of land, minerals and gemstones, water sources and forest. The land was mostly owned by every house head.

#### **4.3 Returns from Natural Resources**

**Table 4.4 Land Occupied and Time for Resolving NRC**

<b>Variables</b>	<b>Mean</b>	<b>N</b>	<b>Median</b>	<b>Std. Deviation</b>	<b>Minimum</b>	<b>Maximum</b>
Average land area in Kanal	24.08	390	18	28.07	1	220
Average monthly income earn from NRs	12391	390	10000	11610	1000	100000
Average cost bear on NRC	5665	390	5000	4947	00	50000
Years on NRCR	12	349	10	8.65	00	40

Source: Researcher survey, Jan 2017

The table 4.4 shows that the minimum land occupied by household is 1 Kanal and maximum land occupied by household is 220 kanals. The average land occupied by the houses holds is 24.08 kanals. The average monthly income earned from the natural resources is 12391 Rupees. The maximum income earned from natural resources is one hundred thousand Rupees and minimum one thousand Rupees by households. The average cost bore by households on natural resource conflicts is 5665 Rupees. The minimum amount households spend on Natural Resource Conflicts is zero Rupees and maximum amount is 50000 Rupees. The average time period for resolving natural resource conflicts which data shows is 12 years. The minimum time period of resolving natural resource conflicts is less than a year and maximum is 40 years which is not yet resolved.

#### 4.4 Natural Resource Conflicts

In order to identify natural resource conflicts with respect to our concern natural resources land, water, forest and minerals, and gemstones we asked questions separately. The results of the occurrence of land, water, forest and minerals and gemstones conflicts is shown in table 4.5

**Table 4.5 Natural Resource Conflicts**

<b>Variables</b>	<b>Occurrence</b>	<b>Percent</b>	<b>Non Occurrence</b>	<b>Percent</b>	<b>Total Respondents</b>	<b>Percent</b>
Land conflicts	142	59.2	98	40.8	240	61.53
Water conflicts	138	59.7	93	40.3	231	59.23
Forest conflicts	124	59.6	84	40.4	208	53.33
Minerals and Gemstones	128	57.9	93	42.1	221	56.66

Source: Researcher survey, Jan 2017

Table 4.5 shows the existence of natural resource conflicts with respect to four natural resources land, water, forest and minerals and gemstones in Hunza and Nagar. On specific land, out of total 390 respondents, 240 respondents said that land resource is available in the area. Out of total 240 respondents, 59.2 percent said that conflicts on land exist in both Hunza and Nagar district. The land conflicts exist either on privately own land and common lands. In the same way, 231 respondents said water exists in the study area among them 59.7 percent of respondents said that water conflicts exist in the study area because of distribution of water, scarcity of water and water management. While only 208 respondents said forest exist in the study area. Out of them, 59.6 percent of respondents reported forest conflicts prevailed in Hunza and Nagar district. Lastly, 221 respondents said that minerals and gemstones were available in the area. Whereas 57.9 percent respondents believed that minerals and gem stones conflicts exist in the area.

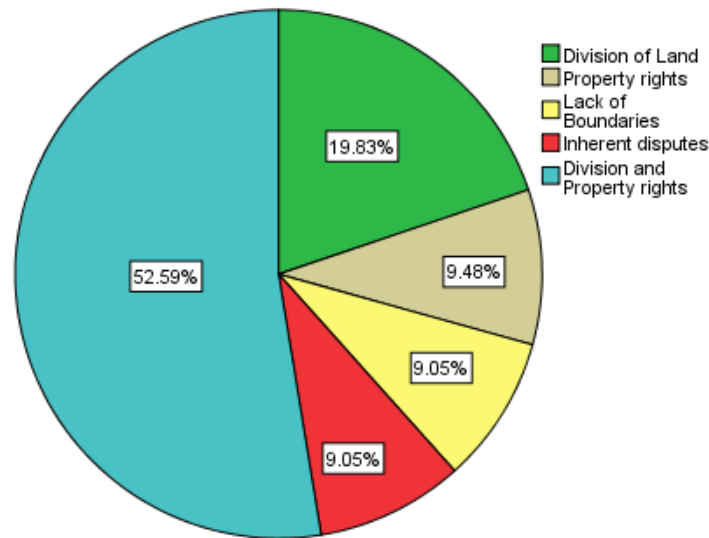
#### **4.5 Reasons for Natural Resource conflicts**

In order to know the reasons of natural resource conflicts, we ask the reasons for conflicts with respect to individual natural resource, land, water, forest and minerals and gemstones. The pie charts show the reasons of conflicts with respect to land, water, forest and minerals, and gemstones.

##### **4.5.1 Causes of Land conflicts**

The causes of the conflicts are described graphically. The pie chart shows the causes of land conflict which are prevailed from the household survey.

**Figure 4.1 Causes of Land conflict**



Source: Researcher survey, Jan 2017

The pie chart shows that the main cause of land conflict in both Hunza and Nagar district. Out of total 390 respondents, 220 respondents<sup>10</sup> reported land conflicts. The diagram shows out of 220 respondents 53 percent respondents believed that the cause of land conflict is due to division and property rights of land. While 19.83 percent people said that only division of land is the sole cause of land conflict. In the same way, 9.48 percent people believed that only property rights are the cause of land conflict where as 9.05 percent people believed the cause of land conflict is non-availability of land boundaries and lastly 9.05 percent people believed inherent disputes<sup>11</sup> as a cause of land conflicts.

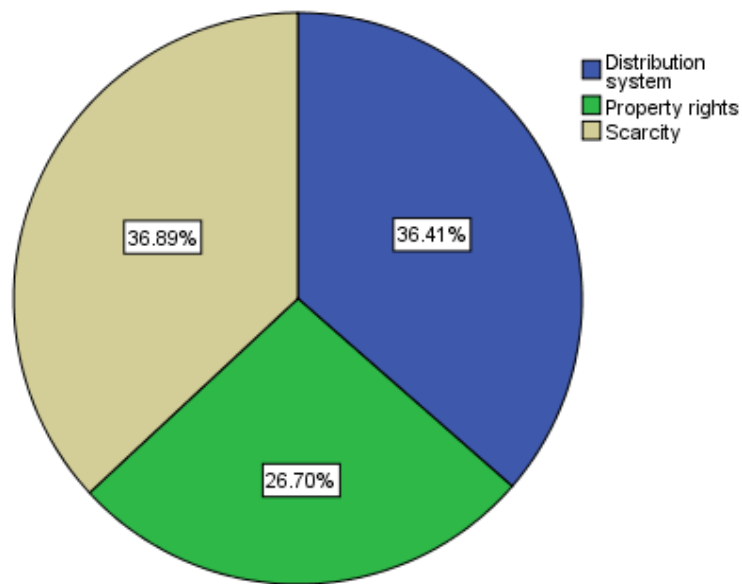
#### **4.5.2 Causes of Water conflict**

The causes of water conflict are shown graphically as the pie chart shows the causes of the water conflicts which was acquired from the household survey.

<sup>10</sup> 220 respondents: The total household survey includes 390 respondents. Out of the total 390 respondents, 220 respondents reported the land conflicts. These are the respondents who are included in the land conflict.

<sup>11</sup> Inheritance disputes: These are the disputes often within in families and between neighbors over ownership of land and value of land.

**Figure 4.2 Causes of Water Conflicts**



Source: Researcher survey, Jan 2017

The pie chart shows reasons of water conflicts in the study area. Out of total 390 respondents, only 231<sup>12</sup> respondents reported water conflicts in Hunza and Nagar district. Out of 231 who reported water conflicts 31.41 percent, respondents believed that water conflicts are due to the distribution system of water. While 36.89 percent of people said water conflicts are due to the scarcity of water in the areas. In the same way, 26.70 percent respondents believed that water conflicts are due to the property right of the water source.

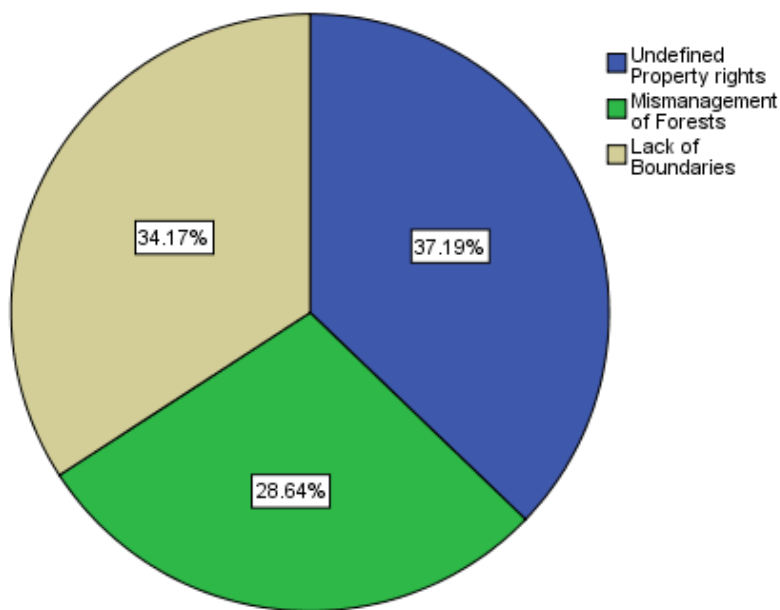
#### **4.5.3 Causes of Forest conflicts**

The main causes of forests conflicts are first shown graphically as:

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<sup>12</sup> 231 respondents: The total household survey includes 390 respondents. Out of the total 390 respondents, 231 respondents reported the water conflicts. These are the respondents who are included in the water conflict.

**Figure 4.3 Causes of Forest Conflicts**



Source: Researcher survey, Jan 2017

The table shows the reasons of forest conflicts in Hunza and Nagar, out of total 390 respondents only 208 respondents<sup>13</sup> reported forest conflicts. Out of 208 who reported water conflicts 37 percent, respondents said that forest conflicts are due to undefined propriety rights while 34 respondents said forest conflicts are due to lack of boundary line of the forest with neighboring village or tribe *qabila*. While 29 percent respondent said that because of mismanagement of forest, forest conflict exists in Hunza and Nagar.

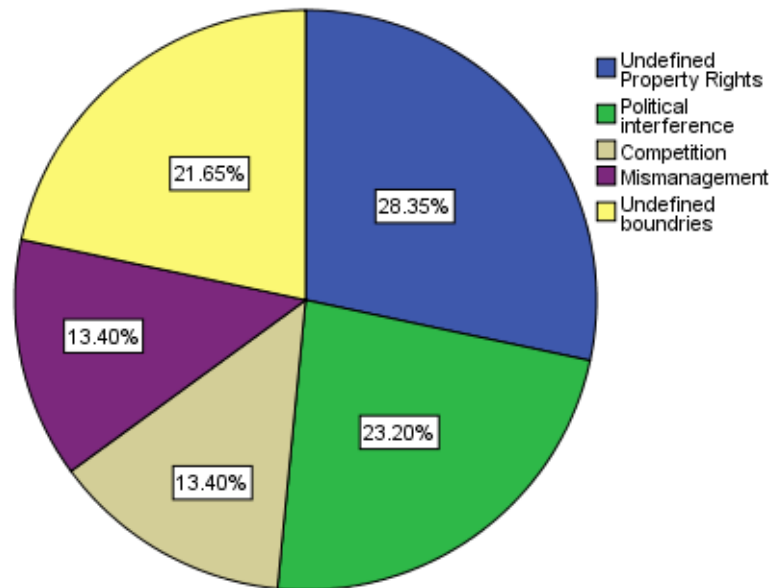
#### **4.5.4 Causes of Minerals and Gemstones Conflicts**

Graphically the main causes of Minerals and Gemstones are given as:

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<sup>13</sup> 208 respondents : respondents: The total household survey includes 390 respondents. Out of the total 390 respondents, 208 respondents reported the forest conflicts. These are the respondents who are included in the forest conflict.

**Figure 4.4 Causes of Minerals and Gemstones Conflicts**



Source: Researcher survey, Jan 2017

The chart shows that reasons of minerals and gemstones conflict out of total 390 respondents, 221 respondents<sup>14</sup> reported minerals and gem stones conflicts have existed. Out of total 221 respondents, 28 percent respondents said that minerals and gemstones conflicts are due to the undefined property right. In the same way, 22 percent respondents said that minerals and gem stones conflicts are due to undefined boundaries. While 23 percent respondents said that minerals and gem stones conflicts are due to political interference. In the same way, 13 percent of respondents said that minerals and gem stones conflicts are due to mismanagement and lastly 13 percent respondents also said that minerals and gem stones conflicts are due to competition.

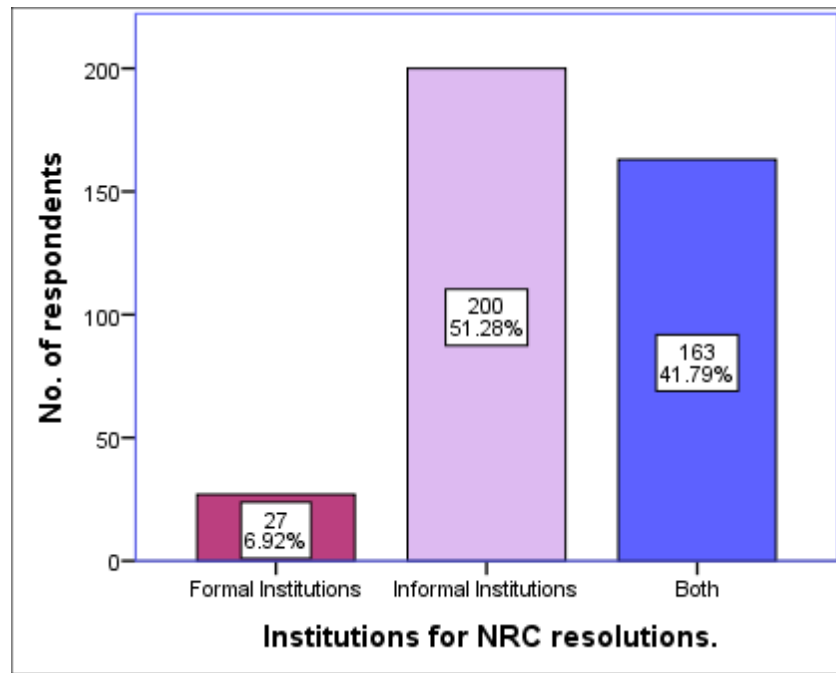
#### **4.6 Institutions**

In order to know how much people used the different type of institutions for their natural resource conflict resolutions. We ask the different question to know about the presence of institutions either in form of formal institutions or informal institutions.

<sup>14</sup> 221 respondent: respondents: The total household survey includes 390 respondents. Out of the total 390 respondents, 221 respondents reported the minerals and gemstones conflicts. These are the respondents who are include in the minerals and gemstones conflict.

The reason for asking these questions is to know, why the respondents of the Hunza and Nagar follow the formal or informal institutions for what reasons they used the different type of institution. The figure 4.5 showed the proportion of respondent who uses which type of institution.

**Figure 4.5 Institutions used for Natural Resource Conflict Resolutions**

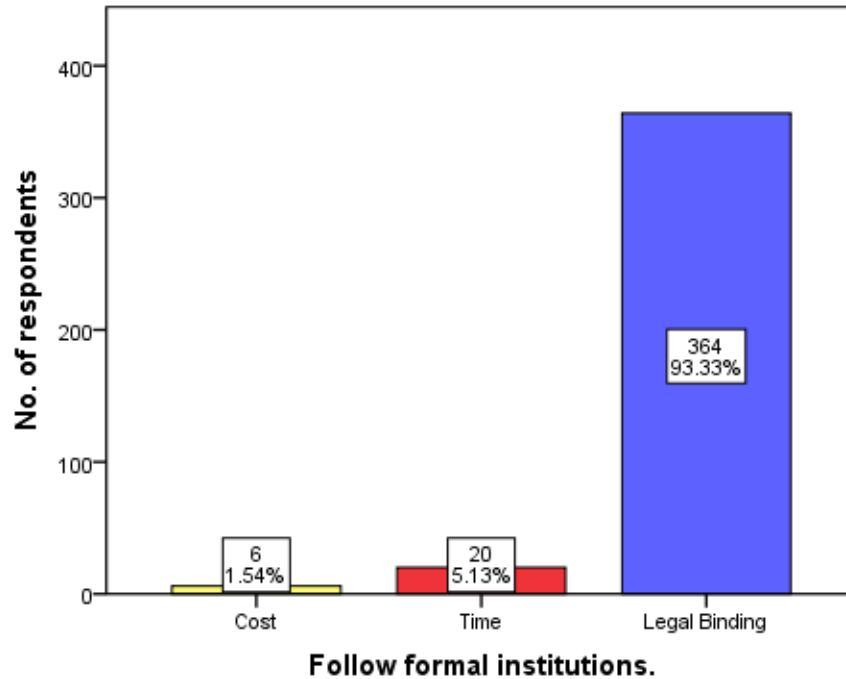


Source: Researcher survey, Jan 2017

The figure 4.5 shows the picture of institutions which are being used for conflict resolutions in Hunza and Nagar district. Only 6.92 percent respondents said that formal institutions like courts, concern departments of Natural resources like DC Office used for conflict resolutions. Whereas 51.3 percent of respondents said informal institutions like lambarderi system, Local Arbitration, and Reconciliation Boards, Imamia Supreme Council used for conflict resolutions. Lastly 41.8 percent respondents said that both formal and informal institutions are used for conflict resolutions. The reason behind the use of both institutions respondents said that first, they use informal institutions for conflict resolutions if the conflict were not resolved through informal institutions than they go for formal institutions.



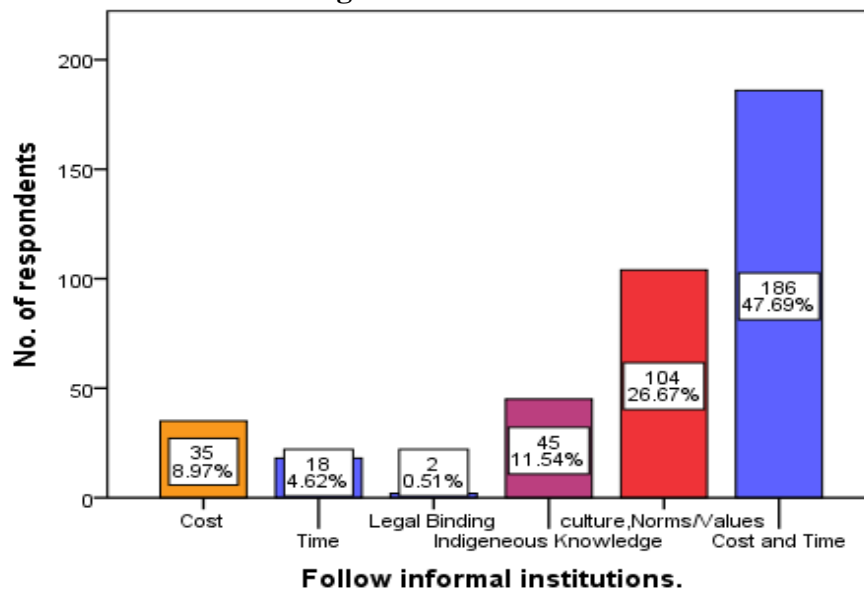
**Figure 4.6 Reason for following Formal Institutions**



Source: Researcher survey, Jan 2017

The graph shows the reasons of why people follow formal institutions out of total 93.3 percent respondent revealed that they follow formal institution because of legal binding. 5.1 percent respondents said that due to time and 1.5 percent respondents said that because of the cost we choose formal institutions for conflict resolution.

**Figure 4.7 Reason for Following Informal Institutions**



Source: Researcher survey, Jan 2017

The diagram shows why respondents follow informal institutions. Out of the total, 9 percent of respondents used informal institutions due to the only cost. 4.6 percent choose because of time in the same way 11.5 percent of respondent use due to the involvement of indigenous people and knowledge used for conflict resolutions. While 26.4 percent followed the informal institutions because of culture/norms/values and religion. The main reason for choosing informal institutions which respondents said were cost and time which was 47.7 percent of the total.

**Table 4.6 Household Perceptions about Institutions**

<b>Institutions</b>	<b>Least effective (Percent)</b>	<b>Effective (Percent)</b>	<b>Most effective (Percent)</b>	<b>Neutral (Percent)</b>	<b>Ineffective (Percent)</b>
<b>Police</b>	43	23	4	8	23
<b>Judiciary</b>	31	49	48	19	11
<b>Local informal institutions</b>	3	36	57	2	2
<b>NGOs</b>	9	58	4	27	3

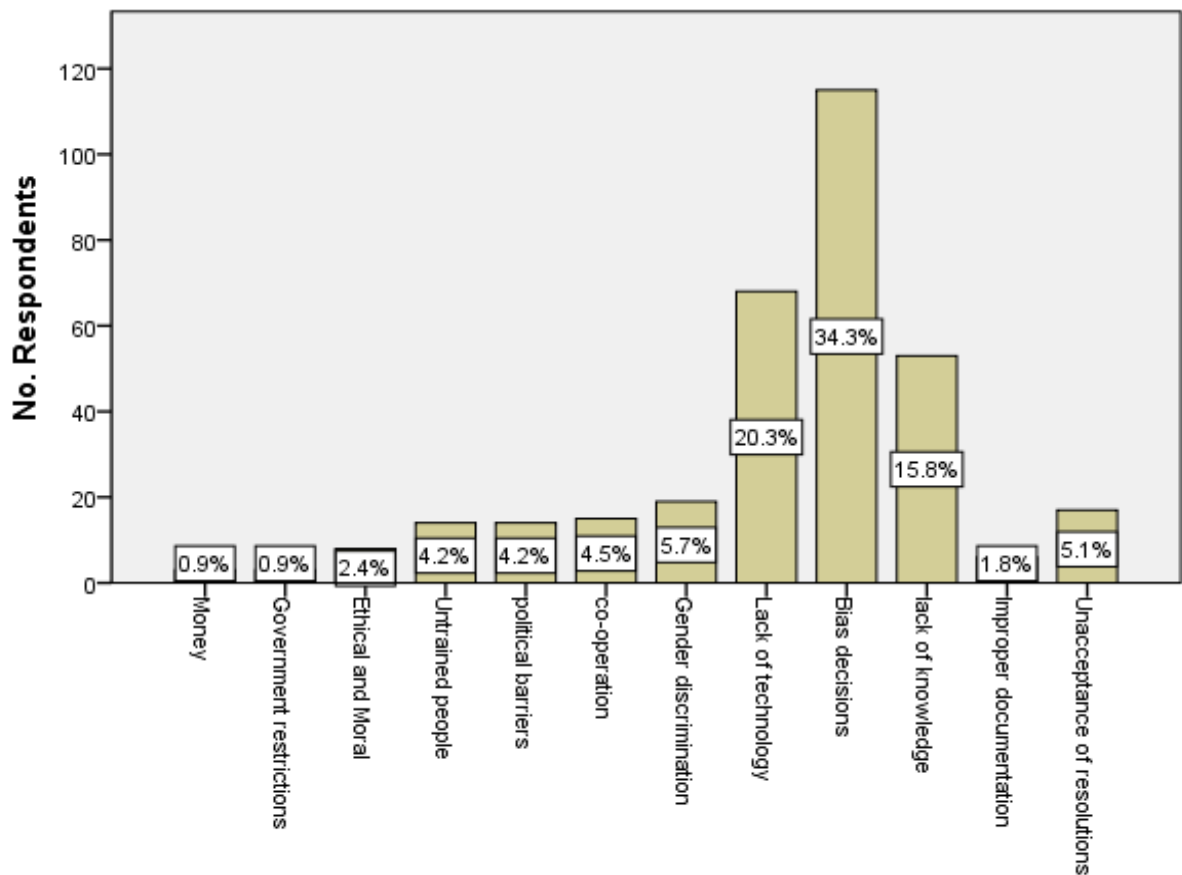
Source: Researcher survey, Jan 2017

The bale 4.6 shows the perception of the respondents regarding effectiveness of the institutions. 57 percent reveled that local informal institution as most effective in resolving natural resource conflicts. While 58 percent respondents said that NGOs are effective in NRCR. Whereas 43 percent respondents considered police as least effective in NRCR and in the same way 23 percent respondents considered police as ineffective in NRCR.

#### **4.7 Barriers in Natural Resource Conflict Resolutions**

Given blow figure depicts the main barriers in natural resource conflict resolutions.

**Figure 4.8 Barriers in Natural Resource Conflict Resolutions**



Source: Researcher survey, Jan 2017

The histogram shows the barriers faced by the individual during natural resource conflict resolutions the most common barrier which respondent faced was bias decision which was passed by institutions which were 34.3 percent of total respondents. In the same 20.3 percent respondent faced the barrier of lack of technology. Whereas 15.8 percent said lack of technology is an important barrier. Whereas 5.1 percent respondent said people unaccepted the resolutions which are being passed by institutions. In the same 5.7 percent respondent said there is gender discrimination in the institutions, resolutions are passed males. Whereas 4.5 percent people faced cooperation as a barrier. 4.2 percent respondents faced political barriers and 4.2 respondents believed that institutions had untrained people who passed

resolutions. In the same way, 2.4 percent respondents considered ethical and moral and religious barriers while passing resolutions by institutions. 0.9 percent respondents consider Government restrictions act as the barrier in conflicts resolutions. Similarly, 0.9 percent respondents consider money as a barrier which creates barriers in conflict resolutions.

#### **4.8 Focus Group Discussions**

Three focus group discussions are being conducted from three villages Murtaza Abad, Altit and Minapin as discussed in chapter 3. Each focus group discussion's were interpreted collectively. The reason of collective interpretation was all the focus group discussion villages had same types of natural resource conflicts. The mechanisms which were being used for natural resource conflict resolutions were similar in all villages. In order to know the mechanism and NRC, we interpreted collectively. The common comments of discussants in cooperate as a narrative and make a themes for the discussions.

##### **4.8.1 Demography of the Focus Group Discussions**

Individual demography of the villages of FGD's mention below.

###### **4.8.1.1 Demography of Village Murtaza Abad**

Central Hunza comprises of eight villages and Murtaza Abad is a very first village. Murtaza Abad consists of 450 houses. The population consists both the Ismaili and the Shia sect of Muslims. *Burushaski* language is spoken as native language in the village. The livelihood of the village depends on agriculture, business and private and public office jobs. The government system is through electoral elections, there are three local union council seats for men and one seat for women. Besides government system, there is also local government system which is run by five *lumberdars* of the village.

Eight inhabitants of village willingly participated in FGD's who belonged to different tribe and professions. The age of respondents was between 27 to 60 years (see Appendix B1)

#### **4.8.1.2 Demography of Village Altit**

Altit is the oldest village in Hunza valley. There are four types of tribal people *Huunukz, Susunutin, Hakalukz, Khanukuz* is living in Altit. There are 700 houses in Altit village. *Burushaski* language is spoken as the native language. Only Ismaili sect of Muslims is living in the village. The livelihood of the people of the Altit village depends up on Agriculture, business, jobs, and tourism. The village has great importance in tourism in Hunza. The oldest "Altit fort" is situated in Altit which is approximately 1100 years old. In this focus group discussion, seven inhabitants of the village willingly participated. The discussants were from the different type of tribes and different professions. The minimum age of discussant was 25 year and maximum 60 years (See Appendix B2).

#### **4.8.1.3 Demography of the Village Minapin**

Minapin is considered as one of the major village of Nagar district because of its location and natural beauty. There are 400 houses in Minapin. The livelihood of the people depends up on agriculture, jobs, business, and tourism. *Burushaski* language is spoken in the village. Shia sect of Muslims is living in the area.

The focus group discussion has consisted of seven inhabitants of the village who willingly participated in the discussion who belonged to different tribes and professions. The age of the respondents was 26 to 65 years (See Appendix B3)



Source: Researcher FGD's, Jan 2017

#### **4.8.2 Livelihood and Living in the Village**

In Hunza and Nagar, the people are living in the village whose employment and source of livelihood existed in the area. As the survey data shows 55.4 percent of respondents work outside the village. These were the people whose jobs, businesses were outside their home village. The people living in their own area whose source of livelihood exists in the area. During FGD's one of the respondents said,

*" I am living in Murtaza Abad village since my birth, my father and grandfather were born in Murtazaabad, so I live here because I have*

*my property, land, family and my relatives also live here."( Noor Uddin FGD's discussant Murtaza Abad Village).*

Another discussant from the FGD's said that,

*"I am living in the Altit Village from last fourteen years, we migrated from Upper Hunza" ( Shakir FGD's discussant Altit Village ).*

**Table 4. 7 Livelihood Sources of FGD's Participants**

<b>FGD's villages</b>	<b>Source</b>	<b>Frequency</b>
Murtaza Abad	Jobs	5
	Business	2
	Agriculture and Job	1
Altit	Jobs	2
	Business	4
	Agriculture and Job	1
Minapin	Jobs	4
	Business	1
	Agriculture and Job	2
Total		22

Source: Researcher's FGD's Jan 2017.

Table 4.6 shows the source of livelihood of the discussants of the FGD's. The table depicts that the source of income and livelihood i.e. agriculture, jobs, and business. The survey showed as 81.01 percent similar sources as found in FGD's. While discussing livelihood sources of the local people, one of the discussant said,

*" My source of income is job and agriculture. By profession, I am a teacher at the school. In spare time I am engaged in agriculture. I help my wife in agricultural activities like giving water to fields. Like me, the majority of the people of the area are involved in multiple sources of employment. As you know due to inflation and tough village life from single income we cannot afford all the household expenses,*

*educational expenses, and health expenses". ( Zahid Abbas FGD's discussant Murtaza Abad Village)*

#### **4.8.3 Natural Resource Existence and Ownership**

All the four form of Natural resources land, water, forest and minerals, and gemstones were present in the study area. As the survey data showed that 93.5 percent of respondents owned natural resources and ownership position is private. As there are three types of ownership positions of natural resources which were prevailing in Hunza and Nagar, private ownership of natural resources, common pool resources and publicly owned natural resources. During the focus group discussions, on the existence of natural resources and its ownership positions, one of the years old discussant said,

*" The Natural resources are available in the Altit village Hunza. We have our own land, we have Ultar glacier for water, minerals, and gemstones in mountains, natural forest exists but far away from the village, people have their own orchards. The ownership position of these natural resources is both private and common resource. Land which is not distributed among the tribes of the village is common pool resources like Shabaran (playground) mountains, pastures, land near to river and schools. The land which is divided among the tribes has private ownership". (Irfan Karim discussant FGD's Altit village).*

On ownership position of the land, water, forest and minerals and gemstones, on which conditions the ownership position is being given or assigned to natural resources. One of the discussants of FGD's said,

*" Land, spring, pastures, Chikisho (granite) are present in Murtaza Abad village. The natural resources which are divided among the*



*tribes (Qabilas) of the village have a private ownership which is mostly Land. The natural resources which are not properly distributed among tribes (Qabila) had a common ownership which is common pool resources. Pastures and springs which are divided among different tribes during Royal system, for example, Baratalin Ter, Deramatin Ter, Brong Ter (pastures) had private ownership of that specific qabila (tribe). If the minerals and gemstones are discovered in that specific areas the ownership right of those minerals and gemstones will belong to the specific tribal people".(Shafi FGD's discussant Murtaza Abad)*

#### **4.8.4 Natural Resource Conflicts**

Where their natural resources exist there is also a chance of conflicts. Natural resource conflicts arise when there are disagreement and disputes over access to use and control over the natural resource (FAO (2000)). Like the same results is found from the FGD's. land, water, forest, minerals and gemstones conflicts were present in the study area. As the requirement of the study, we find the natural resource conflict and its reasons with respect to each natural resource separately.

##### **4.8.4.1 Land Conflicts and reasons**

Land resource conflicts were present in the study area. The land conflicts were existing either on privately own land or the common lands as the survey data shows as 59.2 percent in (Table 4.5) During the FGD's we came to know that Land conflicts have existed in the study area for many years. The household level conflicts were prevailing on privately own land while common conflict on common land was also prevailing with other villages or communities. During FGD's One of adducer said that

" We have two types of land is existing in the area, private land, and common land. Private land is owned by every head of household of the village, some people own more land and some people own less. Privately owned land conflicts are going to increase in the whole Hunza and Nagar not only in Murtaza Abad. The reason is the increase in population and development. Development in sense, in earlier days there was joint family system in Hunza, family size was more but lived in one home. After development, the joint family system was demolished, the division of families take place. For every speared family's needs, new home. The land which was a garden (Basi) were converted into residential areas. For that newly resident area, people need access to road, water and all the necessary requirements of life. These developments create land conflicts on privately owned land. We the people of Murtaza Abad facing the conflict on Chikas<sup>15</sup> with neighboring village Nasir Abad. The reason is the undefined boundary and lack of black and white documentation of Chikas area. The history of the Chikas is that, during Royal system, Tham<sup>16</sup> (King) of Hunza used to allot the land, pastures and other natural resources to the people of the area without any documentation. The Same piece of land used to transfer to other tribes on special consideration of the Tham. After the devolution of State System in 1972 such type of dual transfers has created common land conflicts and pastures". (Shafi FGD's discussant Murtaza Abad)

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<sup>15</sup> Chikas: The common land situated between Murtaza Abad village and Nasir Abad. This is the area where granite is available, local people extract granite from this place.

<sup>16</sup> Tham: Tham is a Burushaski language word use for King.

The same problem of double allocation of land due to legal pluralism and undocumented customary tenure was discussed in the study of (Wehrmann, 2008).

Whereas one of the discussants while explained the reasons of land conflicts said,

*"Land conflicts arise because of income. In Nagar district, there is a certain rule set by indigenous people of the village for example if someone wants to sale his own land. First of all, he will inform his family or tribal people regarding the sale of the land. The conflict on land arises when an individual sell the land without informing their family or tribal people because of higher price which he can get from other people" (Abbas FGD's discussant Minapin).*

From the FGD's we come to conclude that land conflicts were prevailing in the study area which was caused by demographic variables like income, household size. This was econometrically shown in econometric section.

### **Transit walk**

During transit walk, while collecting data for survey one of the respondent said that,

*"We have inheritance land conflicts with our families or tribe because of lack of boundaries and improper division of land. But in Karim Abad, there is a common land conflict of Brong tribe with Haider Abad. Being an inhabitant of Karim Abad, I have not concerned with that land conflict which is between Brong tribe of Karim Abad and Haider Abad village because I belong to a different tribe. The conflict is only between Karim Abad Brong tribe with the overall village of Haiderabad" (Kamaran, village Karim Abad).*

**Table 4.8 Reasons of Land Conflicts**

<b>FGD's</b>	<b>Private land conflicts</b>	<b>Common Land conflicts</b>	<b>Reasons</b>
Murtaza Abad	<ul style="list-style-type: none"> <li>• Land conflict Between tribes.</li> <li>• With neighbors of land.</li> <li>• Within family land disputes.</li> </ul>	Conflict on Common land ( <i>Chikas</i> ) with neighboring village Nasir Abad	<ul style="list-style-type: none"> <li>• Lack of Boundaries.</li> <li>• Property rights.</li> <li>• Inheritance disputes.</li> <li>• Division of land.</li> <li>• Migration.</li> <li>• Population.</li> <li>• Income</li> <li>• Documentation.</li> </ul>
Altit	<ul style="list-style-type: none"> <li>• Land conflict Between tribes.</li> <li>• With neighbors of land.</li> <li>• Within family land disputes.</li> </ul>	Conflict on Common land ( <i>Baldiyatay</i> ) with neighboring with upper Hunza Village Gulmit village Nasir Abad	<ul style="list-style-type: none"> <li>• Lack of Boundaries.</li> <li>• Property rights.</li> <li>• Inheritance disputes.</li> <li>• Division of land.</li> <li>• Migration.</li> <li>• Population.</li> <li>• Income.</li> <li>• Documentation.</li> <li>• Right to way</li> </ul>
-Minapin	<ul style="list-style-type: none"> <li>• Land conflict between tribes.</li> <li>• With neighbors of land.</li> <li>• Within family land disputes.</li> </ul>	Conflict on Common land ( <i>Kachali</i> ) with neighboring village Miacher	<ul style="list-style-type: none"> <li>• Lack of Boundaries.</li> <li>• Property rights.</li> <li>• Inheritance disputes.</li> <li>• Division of land.</li> <li>• Migration.</li> <li>• Population.</li> <li>• Income.</li> <li>• Documentation</li> </ul>

**4.8.4.2 Water conflicts**

Water conflicts were exciting in Hunza and Nagar districts. The reasons for the water conflicts were scarcity, water management, and water distribution process. In Hunza and Nagar district some villages are water abundant and some villages are water

scarce. From the focus group discussions, we came to know that the water conflicts were still happening in those villages which were water abundant. As the survey results table 4.5 shows as 59.7 percent respondents reported water conflicts. During focus group discussion one of the discussants said,

*"Irrigation water comes from Hassan Abad Glacier this water is only used for agriculture crops. Spring water is used for drinking purpose which is also coming from Saykux Bul (spring water) from Hassan Abad village in the three-inch pipe line. The conflicts on water arise when the people give drinking water to their fields, lawns. As this water is in limited amount and provide to whole village" (Peyar Ali FGD's discussant village Murtaza Abad).*

On discussing the major causes of water conflicts in different villages of the study area, one of the discussants said,

*"Although Minapin village is a water abundant because Rakaposhi glacier is near to our village. The water is much more available for drinking and irrigation. Even though we are giving water to opposite village Nasir Abad which is water scarce village of Hunza. I have a land at Oyum Nagar<sup>17</sup> village which is also water scarce village, where water conflicts are present because of unavailability of water distribution and management mechanisms. In Oyum Nagar village, water is divided into the tribes, if that water is in excess for that specific tribe than other tribal people are allowed to give the water to their fields". (Rizawan FGD's discussant Minapin)*

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<sup>17</sup> Oyum Nagar: A village of Nagar district

#### 4.8.4.3 Forest Conflicts

Forest conflicts were prevailing in the study area. The forest conflicts were either on natural forest or orchards of people. As the survey data shows 59.6 percent respondents reported forest conflicts in table 4.5. While discussing on forest conflicts one of the discussants of FGD's said,

*"In earlier days we cut the trees from the forest for firewood purpose. People who had limited source of income collect firewood from the village forest whereas the rich people of the village use LPG gas and electricity. The conflict on forest increases in the area because with the passage of time population got increased, the cutting of forest also getting more for the commercial purpose, people used to sale the wood outside the village. The forest which is near to the village is vanished now. Due to not proper forest management, the conflicts on the forest is increasing".(Rizawan FGD's discussant village Minapin)*

While comparing the conflicts on Common and personal planted forests of people one of the FGD's participants highlighting the cause of forest conflict said that,

*"Forest of the area is divided either on tribes of the village or over all villages. The forests whose division is on village level have common ownership, rest of forest is either orchards or personal planted forests. The conflicts on forest occur due to lack of property rights and lack of boundaries because as ownership rights belong to specific tribe or village so forest conflict arises none inhabitant of village or tribal people who do not own the forest collect firewood or non timber products from forest" (Shaheen Khan FGD's discussant village Altit).*

#### 4.8.4.4 Minerals and Gemstone Conflicts

As the results of the survey showed 57.9 percent respondents reported that minerals and gem stones conflicts were existing in the area. During the FGD's we came to know that minerals and gemstones conflicts were there in the study area. The Minerals and gemstones like Marble, Aquamarine, Rubi, Quartz, and granite were existing in the study area. Quartz and Aquamarine of Nagar district and Rube of Hunza district are famous in the region. During focus group discussion one of the participants said,

*"Minerals and gemstones are there in the common areas of the villages, like chiksho (Granite) is existed at Chikas which is a common land of Murtaza Abad, Chumar Bakor which is famous for Komorine is also common land of Sumayar village, Marbal exists in Nasir Abad village which is also existing in common area of Nasir Abad. The conflicts on minerals and gemstones occurred because of lack of boundaries, unspecified areas for extraction of minerals"(Shafi FGD's discussant village Murtaza Abad).*

Another discussant replied on minerals and gemstones conflicts during FGD's said,

*"Minerals and gemstones exist in the mountains of the villages. People say Quartz and Rube are available in our mountains. People extract minerals and gemstones on partnerships on the shared basis. The conflicts arise if some none resident of our village starts to extract gemstones without involving the local resident in the extraction of minerals and gemstones" "(Bulbul Hussain FGD's discussant village Murtaza Abad).*

#### **4.8.5 Natural Resource Conflicts Resolutions**

Both formal and informal resolution mechanisms were existing in Hunza and Nagar for conflicts resolutions as the survey data shows in table 4.3. Same like the survey results the FGD's shows both formal and informal mechanisms are presented in Hunza and Nagar districts. In order to comprehend we explained the formal and informal conflict resolutions separately.

##### **4.8.5.1 Formal institutional mechanism**

Judiciary institutions, court and kachari are present in Hunza and Nagar for conflicts resolutions. While criminal nature conflicts are dealt by security agencies which are police department. While discussing the formal mechanism one of the discussants from the FDG's said,

*"Formal institutions like courts used legal process for conflicts resolutions. Our village has a conflict on Baldiyaty (pasture) as discussed in the discussion. The case has been registered with secession court. Through proper hiring from session, our village wins the case from the session court. But the case is not resolved yet people of Gulmit village apply in higher court. While on privately owned natural resource conflict, like water, land people of the area do not go for the formal institutional mechanism. People prefer to resolve through informal institutions as we have Aga Khan local reconciliation and arbitration board". (Bashir Hussain FGD's discussant Altit village)*

Whereas the another discussant of FGD's explained the about formal institution mechanisms said that,



*"In our village, only police station existed. The criminal nature conflict is not that much existing in the village. As you can check from the police station. The individual dispute over social issues is registered in the police station. At last, it can sort out through tribal elder or jirga ".*  
(Khalid Abbas FGD's discussant village Minapin)

#### **4.8.5.2 Informal Institutional Mechanism**

Informal institutions are much active in Hunza and Nagar for resolving both criminal and natural resource conflicts. These institutions are based on a village level, community level, and religious level. Village level institutions are under *Lumberdar* of the area. Community level informal institutions are made by different communities of the village which are mostly Village Organizations (VO). Religious level informal institutions exist on the sect of religion, for example, Aga Khan Regional Conciliation and Arbitration Board Hunza (RCABH) and Imamiya Supreme Council Nagar (ISCN). These informal institutions pass resolution according to their own tools and techniques of mechanisms. While discussing on informal mechanisms one of the discussants of FGD's said

*"On the local village level, informal institutions are available to resolve conflicts. Generally, people resolve their conflicts at the local level through local informal institutions. As I am a member of local Conciliation and Arbitration Board (LACB) for Karim Abad and Altit village. We only reconcile the natural resource conflict cases and act as an arbitrator to resolve NRC. We bring the opponents together on a single table to resolve their conflict by themselves".* (Shakir FGD's discussant village Altit)

Whereas the another discussant of FGD's share his personal experience of formal and informal mechanisms said,

*"I was facing a conflict on my land with my uncle on a boundary. I approach the Imamia supreme council to resolve the conflict between my uncle. The council called us and resolve the land conflict through Shariya. The councils act as an arbitrator and resolve the conflict. If we go for court process we would lose money and time, as our neighbor faced through the court process for last ten years. My neighbor conflict was the court for 10 years and at last resolved through Imimia Supreme Council"(Khalid Abbas FGD's discussant village Minapin).*

Local indigenous people also play vital role in resolving natural resource conflicts the discussant from FGD's said,

*"First of all when we face any conflict we try to solve at a family level. If the conflict is not resolved through family level through our tribal elders, we resolve through lambarder of the village if it is not resolved through lambarder we go for the local institution which Aga Khan local Council or LRAB. We avoid the formal institutions like police and courts" (Noor Uddin FGD's discussant village Murtaza Abad).*

#### **4.8.6 Reasons for Following Formal and Informal Institutions**

As diagram 4.1 shows the reasons for following formal and informal institutions. The focus group discussion shows due to low cost and timely decisions people of the study area follow informal institutions. While one of the discussants of FGD's said,

*"The reason for following informal institutions is timely decisions. My father in law has a land conflict with his brother on a piece of land*

*over access. Their case has been in the court for last five years. They spent more than the value of that piece of land. They decided to withdraw the case from the court and resolve through their tribal elders. These are the reason for following informal institutions" (Shaheen Khan FGD's discussant village Altit).*

In the same way one of the discussants from FGD's while giving an example said,

*"While highlighting the conflict case on granite which is extracted from the common land of both Murtaza Abad with Nasir Abad village. The people of Nasir Abad village crossed the boundary of their village and started to extracted granite from the premises of Murtaza Abad village. When the people of Murtaza Abad village stated to extract granite, the people of Nasir Abad village start violence and conflict is generated. To resolve the conflict first people of both villages try to resolve the conflict at village level through village lumbrerdars and indigenous people of both villages. The lumbrerdars and indigenous people are failed to resolve the conflict. After that the people of Nasir Abad registered the case against the Murtazaabad in court. The court passed the resolution against the both villages declaring the minerals and gemstones to public property. At last both villages withdraw the case to RACBH which resolve the conflict by dividing the area among both villages" (Shafi FGD's discussant village Murtaza Abad).*

#### **4.8.7 Effective and Sustainable Mechanism**

From FGD's we come to know that informal mechanisms are effective in sustainable in Hunza and Nagar district. The reasons which the discussants highlight is time and cost of conflict resolution. Many people of the study area recommend informal

mechanisms for natural resource conflict resolutions which are also shown from household survey in table 4.9. While discussing in the FGD's one of the discussant said the reasons for the effective and sustainable mechanisms,

*"Informal mechanisms are effective and sustainable because of acceptability of resolutions passed by informal institutions by people. The less time and cost as compared to court kacheri. The second thing is frequently secessions (trials) on the cases which are being registered with Informal institutions. Formal resolutions are more expensive because of time and cost constraints"(Jahan Gir FGD's discussant village Murtaza Abad).*

While giving an example of effectiveness and sustainability of mechanisms one of the participants of FGD's said,

*"The case with Miacher Village on (kachali) pasture was initially registered with the court. The Imamia supreme council and other informal institutions were not so much active at that time. People tried to resolve conflict through court kachari. The court passed a resolution in favor of our village(Minnipin). The Micacher village people further challenge the case in higher court. The court takes almost ten years to resolve the conflict but was unable to resolve the conflict. People money and time were wasted. Later, the people withdraw the case from the court and resolve the conflict under the local leader Mr. Qurban through negotiations"(Naibar FGD's discussant village Minapin).*

One of the discussant consider informal institutions mechanisms as a effective and sustainable, he said that

*"Informal mechanism is much effective and sustainable in our area, because they try to make a resolution on a win-win basis. But one limitation is present in the resolution of informal institutions which is no legitimacy". (Shafi FGD's discussant village Minapin).*

#### **4.8.8 Copping Strategies**

From the FGD's we came to know the coping strategies or mechanisms which are being used for conflict resolutions are shown in table 4.8 .

**Table 4.9 Copping Techniques for NRCR**

<b>FGD's</b>	<b>Formal Institutions</b>	<b>Informal institutions</b>
Murtaza Abad FGD	Legal process	Negotiation Arbitration Mediation
Altit FGD	Legal process	Negotiation Arbitration Mediation
Minapin FGD	Legal process	Negotiation Arbitration Mediation

During focus group discussions, we came to know that major three types of techniques used by informal institutions Negotiation, arbitration, and mediation. Whereas formal institutions use legal processes. While discussing in FGD's one of the participant said,

*"Different type of local institutions use a different type of techniques, for example, the lumbarders of the village use negotiations for solving*

*disputes. Whereas our local council and Arbitration board resolve conflicts through arbitration" (Noor Uddin FGD's discussant village Altit).*

In the same way, one of the discussants from FGD's stated that,

*"Tribal elders resolve through negotiations where as other village based community organizations resolve through arbitration and negotiations and religious organization resolved through shriya"(Muhammad Hussain FGD's discussant village Minapin).*

Whenever conflict are registered with the formal institution, people of the study area tried to withdraw the cases from formal institutions and resolved at a local level by involving local informal institutions. One of the discussants highlight the similar example in such a way he said,

*" Government institutions use legal process. Our relative cut our trees from our orchard without asking from our family. We registered our case at the police station against him. Police do legal process against that guy and arrest him. Later on, the local people and family of the person who cuts the trees requested us to withdraw the case from a police station. Their and our tribal elders including lumbarder resolve the conflict through negotiation by compensating us by money" (Iftikhar FGD's discussant village Murtaza Abad).*

#### **4.8.9 Media**

Media is not that much active in Hunza and Nagar. However, discussant of the FGD's mutually said media and education create more awareness among the people regarding the natural resources and conflicts. Print media is not that much active in

the study area. however, conflicts related issues are communicated on media. While discussing the media role one of the discussants share that,

*"Violent conflicts are more highlighted on the media. However, the media helps on those violent conflicts"(Safza Ali FGD's discussant village Murtaza Abad).*

One of the discussants shared his views of media regarding communication of natural resource conflicts, he said,

*"Now conflict and news regarding the area are being communicated in local media, before five to ten years, there was no cable system of television, no internet, no mobile service available in the area. After 2007 mobile network starts services in our area, people provide TV cable service and many local NEWS papers were introduced, so conflicts of local level are starting to highlight through local media and social media. The media also helps in resolving conflicts. The recent conflict between Haraspa Das (common land) is communicated on local media"(Khalid Abbas FGD's discussant village Minapin).*

#### **4.8.10 Barriers in Natural Resource Conflict Resolutions**

When it comes to conflicts, there are always barriers in natural resource conflict resolution. In the study area, traditional methods of conflicts resolutions are still present, the distribution of the resources was made in earlier times based eye witnesses which are still existing. The lack of proper documentation of natural resource ownership still not exists n the area. One of the discussants from FGD's shared that,

*"People sometimes give perjury for money, family relationship (reshtaderi) as courts needs witnesses. Which cause unfair resolutions*

*and creates problems in conflicts resolutions"(Noor Uddin FGD's discussant village Murtaza Abad).*

Whereas, by highlighting consequences of barriers one of the respondents said that,

*"Yes there are some barriers, if conflict resolution is passed in favor of one opponent, the second opponent cannot accept the resolutions and further appeal to other institution which may waste time and money"*  
*(Rizawan Ali FGD's discussant village Minapin).*

In the same another participant of FGD's share his views on the difficulties faced by informal institutions which create barriers for passing the NRCR.

*"Sometimes barriers occur when the resolution has been passed by the informal institution which was rejected or disowned by opponents after some time just because of no penalties or liabilities. The non-presence of penalties for those peoples who disowned or violate the resolutions creates hurdles and barriers for people and institutions for passing resolutions in future"(Jahan Gir FGD's discussant village Murtaza Abad).*

#### **4.8.11 Gender and Natural Resource Conflicts**

From the focus group discussions, we identify that only male member of the house is involved in the conflicts. Women are not involved natural resource conflicts due to cultural factors, norm, and values. Women are engaged in household activities. However informal institutions like Regional Conciliation and Arbitration Board (RCAB) include women in natural resource conflict resolution.

During focus group discussion on gender involvement in NRC female discussant shared that,



*"We are informed about natural resource conflicts but cannot properly involve in resolution processes. It is because of conflicts regarding natural resources are often settled by males in the area. I never heard female resolved any natural resource conflict in the area. The reason is culture, norm, and values. The other reason is people feel bad by sitting male person at home and conflict resolved by the female"(Samina FGD's discussant village Altit).*

In the same way while explaining the role of women and in natural resource conflict resolutions said that,

*"In earlier years' women of our houses are only engaged in the household activities like cooking, caring for children. Now trends have been changed, women are also included in the panel of local councils and Arbitration board for conflict resolutions" (Imam Yar Baig FGD's discussant village Murtaza Abad).*

#### **4.9 Key Informant Interviews**

Key informant interviews are conducted to know about the occurrence of natural resource conflicts that had been registered with the institutions. How these natural resource conflicts had been resolved and which mechanisms are being used for natural resource conflict resolution. From key informant interviews, we found the natural resource basis and natural resource conflicts as we found from the survey and focus group discussions from both Hunza and Nagar district.

##### **4.9.1 Deputy Commissioner Interview**

The interview was conducted on 16th Jan 2017 from Deputy Commissioner (DC) Mr. Sami Ullah Farooqi.

#### **4.9.1.1 Natural Resource Conflicts and Reasons**

While on natural resource conflicts incidence in the jurisdiction of the office Mr.Sami Ullah Farooqi said,

*" In the ambit of Hunza, conflicts on land, water and minerals and gemstones are present. Primarily conflicts related to land is dealt by DC office which may among communities, individuals to individuals, and government to the public. Minerals and gemstones are provincial subjects. If the conflicts on mining are occurring in the jurisdiction of DC office those mining conflicts are resolved through our office. Conflicts on the forest are also dealt by the office due to un availability of natural forest conflicts as natural forests are not that much existing as compared to Chilas area".*

#### **4.9.1.2 Reasons of Natural Resource Conflicts**

While discussing on natural resource conflicts with respect to each natural resource land, water, forest and minerals and gemstones Mr. Sami Ullah Farooqi said,

*"Land conflicts among individual to individual, government to people are existing in the area. Main reasons for the individual to individual land conflicts are due to ownership disputes because of lack of boundaries, property rights, inherited rights and family distribution whereas Government to people conflicts occurred due to the land need for public infrastructure. Water conflict on distribution also occurred. Other reasons for water related conflicts are the scarcity of water in the water scarce areas of Hunza".*

#### **4.9.1.3 Resolutions by Institution**

While corresponding to the resolutions of natural resource conflicts which has been passed by the DC office, Mr. Sami Ullah Farooqi said,

*"DC office is mainly concerned with land conflicts which are a primary duty of the DC office. Twenty-two cases related to land has been resolved by the office. On minerals and gemstones conflict on marble in Nasir Abad village is also dealt in the office".*

#### **4.9.1.4 Mechanisms of Resolutions**

While discussing on mechanisms use for natural resource conflicts resolutions Mr. Sami Ullah Farooqi said,

*"Government to individual conflicts are dealt through a legal process. For individual conflicts by watching ground realities, records and listening their point of view we give our decision and pass the resolution through arbitration or meditation. As the law gives us a corner of arbitration through arbitration act".*

#### **4.9.1.5 Response of People on Resolutions**

On discussing the people reaction on natural resource conflict resolution Mr. Sami Ullah Farooqi said,

*"Ninety percent of the people own the resolutions which we passed".*

#### **4.10 Assistant Commissioner Hunza**

The interview was conducted on 16th Jan 2017 from Mr. Assistant Commissioner (AC) Hunza at AC office Ali Abad Hunza. According to him,

*" Assistant Commissioner office cannot directly involve in natural resource conflicts. If the conflicts are on the extraction of natural*

*resources like mining, office dealt with those conflicts and office act as enforcement agency".*

#### **4.10.1 Natural Resource Conflicts and Reasons**

While discussing on natural resources conflicts in Hunza district assistant commissioner said,

*"Land and water are conflicts prone natural resources in Hunza district. Land and water conflicts occurred because of the right to way and distribution of water system. Mostly on water channels conflicts had been registered with our office. The main cause of the water conflicts which we find are right to the way of water and water channels management through people give water to their fields".*

While discussing the registration of natural resource conflicts cases with assistant commissioner office Mr. assistant commissioner said,

*"On average two cases on NRC, every month has been registered with the office".*

#### **4.10.2 Mechanisms of Natural Resource Conflicts**

While discussing the mechanisms for natural resource conflict resolutions assistant commissioner said,

*"First of all, we use arbitration as a tool for conflict resolutions. If conflicts are not resolved through arbitration, then we go for legal processes. On the other hand If conflicts had not been resolved through our office people go for civil courts".*

#### **4.10.3 Successful Resolutions**

While discussing on successful natural resource conflict resolutions passed by AC office assistant commissioner said,

*"The successful resolution that had been passed by our office was during the sewerage pipe line project of Ali Abad village. The pipe line was passing through the different areas, like house lawn, agriculture fields. The office solved conflict through the legal process".*

#### **4.10.4 Acceptance of Resolutions.**

While discussing the acceptance of resolutions Mr.AC said,

*"People accept the resolution which is passed at the office".*

#### **4.11 Assistant Commissioner Nagar**

The interview was conducted on 17th Jan 2017 from assistant commissioner (AC) Nagar district. On dealing natural resource conflicts by institution, AC said,

*"Yes, the office dealt with natural resource conflicts. Conflicts on land, minerals and gemstones and forest are existing in the region of Nagar district. Land and minerals and gemstones are more prone to conflicts and most cases are being registered on them. While the causes of the NRC are due to undefined boundaries, inheritance disputes, property rights and compensation related problems in the area".*

##### **4.11.1 Natural Resource Conflicts and reasons**

While discussing regarding natural resource conflict reasons AC Nagar said,

*"The main reasons for water conflicts is distribution system of the area. Distribution mechanism of water varies from the village. Some villages water distribution is through local pressure groups; some villages have no distribution system. The reasons for water conflicts vary from village to village. Minerals and gem stones conflicts are due to undefined prosperity rights for extraction of gemstones".*

#### **4.11.2 Mechanisms of Resolutions**

While discussing the mechanism for natural resource conflict resolutions AC said,

*"Before going to any legal process we prefer to solve the natural resource conflict through Shariya and act as an arbitrator. In the region of Nagar Informal intuitional mechanism is strong people prefer informal institutions like Imamia Supreme Council and lumbardari system rather than formal institutions".*

#### **4.12 Superintendent of Police Hunza**

The interview was conducted on 18th Jan 2017 from Mr. Superintendent of Police (SP) Hunza. On dealing natural resource conflicts by SP office he said,

*"The SP office dealt with both criminal nature conflicts and natural resource conflicts when it became violent. On the occurrence of NRC, conflicts on natural resource assets exist in the Hunza region. Conflicts such as land conflicts, water conflicts and minerals and gemstones existed in the area. None of the conflicts on a natural resource is registered with SP office from last year (2016). Sometimes conflicts on water cases come to our office. The causes of water conflicts are right to way, distribution and management issues on a water in some villages".*

##### **4.12.1 Mechanisms of Resolutions**

While discussing on mechanism for natural resource conflict resolutions, SP said,

*"Mostly criminal nature conflicts registered with our office. If conflicts on natural resource come to the office, we try to resolve the cases through mediation and arbitration. People often accept the decisions".*

#### **4.12.2 Successful Natural Resource Conflict Resolutions**

As discussing on successful resolution on natural resource SP said,

*"None of the successful resolutions had been passed by the police department. The main reasons are criminal nature type conflicts are dealt in police office".*

#### **4.13 Superintendent of Police Nagar district**

The interview was conducted on 19th Jan 2017 from SP Nagar district. While sharing his views he said,

*"The office deals with violent conflicts on natural resources. If that violent natural resource conflict occurs in the jurisdiction of the office. Conflicts on land and water are existing in the area. The causes of land conflicts are; increase in population, undefined boundaries and property rights. While the conflicts on water are occurring because of the distribution process. However, conflict on forest occurs because of illegal cutting of natural forest".*

##### **4.13.1 Registration of Natural Resource conflicts**

While discussing registration of natural resource conflict cases, SP said that

*"Common land conflicts are registered with the office. For example, the common land conflict between Jaffar Abad village and Sikandar Abad village on common land (Haraspa Das). The reason which we found was a lack of boundaries and improper implementation of the resolution passed by the court and other informal institutions".*

##### **4.13.2 Mechanisms of Resolutions**

While discussing on methods used for conflicts resolutions SP said that,

*"Police work is the implementation of a resolution passed by courts. We use legal process".*

#### **4.13.3 Successful Resolution**

While discussing on successful resolutions SP said that,

*"SP cannot resolve the natural resource conflict. But on violent conflicts cases on natural resource conflict cases, we made a legal process. Mostly for resolving natural resource conflicts, people use Imamia Supreme Council of Nagar which resolved conflicts through Shria. People accept the resolutions which are passed by it".*

#### **4.14 Station House Officer Aliabad**

The interview was conducted on 18th Jan 2017 from Station House Officer (SHO) Aliabad Hunza. The main purpose of taking this interview was when any type of conflict occurs it is initially registered with police station while starting any legal process. While discussing on police station dealing with NRC,. SHO said,

*"The police station primarily deals with criminal nature of conflicts. Civil nature conflicts were also dealt by the institute but refer to local arbitration boards of the area. Mostly conflicts on land and water and orchards are occurring in the region of Hunza".*

##### **4.14.1 Natural Resource Conflict**

While discussing on registration of natural resource conflict cases, SHO said,

*"Till now, no any NRC has been registered with the police station but one case on illegal trade of granite without license had being registered with the police station"*

##### **4.14.2 Resolutions for Natural Resource Conflicts**

While discussion on resolutions on natural resource conflicts, SHO said that,

*"The resolutions are not in the jurisdiction of the police station. To resolve the conflicts at the initial level we used arbitration as a tool for*



*resolving conflicts. One other thing, I will tell you, we refer civil nature conflict to the local informal institution of the area which is active and successful in resolving civil conflicts".*

#### **4.15 Regional Conciliation and Arbitration Board of Hunza**

The interview was conducted on 10th Feb 2017 from Mr. Sher Ullah Baig chairmen His Highness Aga Khan Shia Imami Ismaili Regional Conciliation and Arbitration Board of Hunza (RCABH). Mr. Sher Ullah Baig said,

*"Yes, the board dealt with natural resource conflicts. 137 different type of conflict cases are being registered with RCABH office in 2016. Out of total 85 cases were successfully resolved, 34 cases were unsuccessful and 18 cases are in the resolution process. The percentage of successful cases resolution is 61 percent. The board dealt with the different type of conflicts related to personal conflicts (divorce, home conflicts) community conflicts, matrimonial conflicts, business conflicts and natural resource conflicts".*

##### **4.15.1 Natural Resource Conflicts**

While discussing on registration of natural resource conflicts chairmen said,

*"Conflict on land, water, forest and minerals, and gemstones are registered with our office. Inter family land disputes on ownership, division on the land right to way cases are registered with our office. Common land conflicts of land are also registered with our office. Extraction of minerals and gemstones are registered with our office".*

##### **4.15.2 Natural Resource Conflict Resolution**

While discussing conflict resolution process used as chairmen of RCAB, chairmen said,

*"I act as a mediator; I cannot give any decision. The board provides the platform for both opponents to resolve their conflict by themselves in order to reach win-win solutions. The board involves indigenous people of opponents' villages like lambariders, local union councils' chairmen in the resolution of conflicts".*

While discussing why people choose RCAB for conflicts resolutions, chairmen said,

*"The board works on honorary and voluntarily basis, no monetary reward is taken by any board members. The resolution which we pass is without any cost. The time frame which is fixed by the board is three to four months. In this given time frame we resolve the conflict. The first thing we can say for choosing our institution is due to religion, people have faith in the institution that's why people refer RCABH. The second thing as I mentioned which is due to time and money people resolve their conflicts through RCABH."*

#### **4.15.3 Successful resolutions**

On successful resolution, chairmen highlight some important land conflict resolution of Hunza district. Chairmen highlight 2016 successful resolutions as,

*"In 2016 we had resolve three important common land conflicts of Hunza district. First the conflict between Gulmit and Shiskat village conflict on common land, which was not solved for last 30 years from the court which was solved by RCAB. The second successful example was the conflict between Murtaza Abad and Nasir Abad on common land (chikas) on the extraction of granite. Which was resolved in four to five months by RCAB. Third Broung tribe of karim Abad village conflict on common land with Haider Abad village. During the*

*resolution process before conducting the negotiation talks process for the resolutions, we call individual opponents to board we listen to the causes of a case from the individual opponent than we call combine meeting of the opponents".*

#### **4.16 Altit Village Lumbardar**

The key informant interview was conducted on 21st Jan 2017 from 81 year old lumberdar from Altit village Mr. Ghulam Murtaza. While discussing on natural resource conflict resolutions and conflict by lumberdar of the of the Altit village he said,

*"Yes, we resolve the natural resource conflict of the people of the village. Hundreds of conflicts on natural resources are solved by myself. As I am eighty-one-year-old. I know demography of the Altit village. I know the boundaries of the land, how the land is distributed in the tribes of the village. The water distribution process which comes from our ancestors".*

##### **4.16.1 Natural Resource Conflicts**

While on natural resource conflicts of the area lumberdar said that,

*"The village has a common forest which is not near to the village the mountains are dry and rocky. But conflict occurred when someone grows/plant new trees near to his fields without considering customary laws. In Hunza, there is a customary rule for growing/planting trees in their fields. These rules are defined during Nazim Khan<sup>18</sup> (King) Tham era in Hunza. Let me give you an example, no one can plant a walnut*

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<sup>18</sup> Nazim Khan Tham: one of the king of Hunza

*tree until he keeps 24Kash<sup>19</sup> distance from their neighbor land boundary, for the apricot tree 24 Kash, mulberry tree 28 Kash and 12 Kash distance for an apple tree. Without considering these customary laws conflicts occur in the area".*

#### **4.16.2 Natural Resource Conflict Resolutions**

While on natural resource conflict resolutions Lumberdar shared how they resolved the natural resource conflicts,

*"We act as a Jirga, we call the tribal elders of the tribe who are facing natural resource conflict. We use negotiation as a tool for resolutions. If someone is unfairly creating dispute we charge hima Jarpa<sup>20</sup> (penalty) in order to avoid that dispute again. From this penalty, another inhabitant of the village also avoids similar types of disputes. I give you an example of (jarpa) penalty. If someone is giving water to his field. If someone cuts the water of the first person without finishing the water to his field, we fixed a penalty of one maltas (one kg butter) in order to avoid these disturbances".*

#### **4.17 Conclusion**

We come to conclude from key informant interviews that natural resource conflicts are prevailing in Hunza and Nagar districts. Both formal institutions and informal institutions are active in the resolving natural resource conflicts. There is two type of formal institutions which are existing in the Hunza and Nagar districts. First, the institutions which directly deal civil nature conflicts like deputy commissioners and assistant commissioner offices. They directly dealt with natural resources conflicts like land conflict, water conflict, forest conflict and minerals and gemstones conflict

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<sup>19</sup> Kash: Kash is a Burushaski language word. A measuring unit used in earlier days in Hunza for measuring distance, for example, 1 Kash is equal to 16 inches.

<sup>20</sup> Jarpa: Jarpa is a Burushaski language word used for penalty.

which is the concern of the study. While on the other hand institutions like police is not involved in resolving conflicts. However, the police department involved in the natural resource conflicts when the natural resource conflicts become violent.

Informal institutions are also active in resolving natural resource conflicts in Hunza and Nagar districts. The informal mechanism is much more strong as compared to the formal institutional mechanism.

The reasons which the formal and informal institutions heads said about the land conflicts are income, land division, inheritance disputes of land, property rights, distribution of land and land ownership. In the same way causes of water, conflict is distribution system of water, water management, scarcity. Whereas forest conflicts are due to improper forest management, lack of boundaries of the forest. The reasons for minerals and gemstones are due to lack of boundaries and property rights.

The mechanisms used for natural resource conflict resolutions are the legal process, and arbitration by formal institutions. Whereas informal institution resolves conflict through negotiations, arbitration, and mediation.

#### 4.18 Econometrics Analysis

Four models are estimated with respect to the natural resource conflict.

**Table 4.10 Econometrics Results for Land Conflicts**

Variable	Coefficients	S.E	Sig	Odd Ratios
Household Size	.328	.144	.023**	1.389
Age	.031	.024	.207	1.031
Education	-.104	.081	.196	.901
Monthly Income	.000	.000	.526	1.000
Migration to area	1.684	.588	.004***	5.389
Land Ownership	1.339	.668	.045**	3.817
Land income	2.157	.734	.003***	8.648
Government Role	1.089	.606	.072*	2.971
Religious role	-4.534	1.133	.000***	.011

Role Media	-1.545	.675	.022**	.213
Environmental Degradation	1.400	.730	.055**	4.056
Constant	-4.517	2.183	.039**	.011
Dependent Variable: Land Conflict	Total Observations: 240			

\* Significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

The table no 4.10 shows the regressions results of the variables with the dependent variable Land conflicts. A binary logistic regression model was used to estimate the results. The results of the household size show a positive relationship with the land conflicts and it is statistically significant which means as the size of the household increases the chances of land conflicts also increases as the results show a positive relationship between the two variables. The same results were also seen in Wehrmann (2008) they showed that when the size of the family grows bigger the chances of conflicts are more on the basis of inheritance between the siblings and dispute arises over the piece of land. Age of the respondent is positively related to the Land conflict which means as the age of the respondents increases the land conflicts are more because as the person grows older in age they are less concerned about the resource use and its degradation and damage so the dispute arises. The results of the age of household heads show a positive relationship with the land conflicts and it is not statistically significant.

The coefficient of education shows a negative relationship with land conflicts and it is not statistically significant which means that higher the education level of a household head the chance of land conflict decreases, however, the results show the indirect relationship between the two variables. The results of monthly income show a positive relationship with land conflicts and it is not statistically significant. The results of Migration show a positive relationship with land conflict and it is

statistically significant which means as rural-rural migration increases the chance of land conflicts increases as the results show the direct relationship between two variables. When inter rural migration increases it creates pressure on the limited land resource either in form of property price or outputs. The change in these two factors leads to land conflicts. The results are similar to Mwesigye and Matsumoto (2013).

The results of land ownership show the positive relationship with land conflict and it is statistically significant which means that as the land ownership properly assigned to the users the land conflicts are less. The results of land income show the positive relationship with land conflicts and it is statistically significant which means with the increase in land income leads to land conflicts as the results show positive relationship with each other.

The results of a government role in land conflicts show a positive relationship with land conflicts and it is statistically significant which means that increase in the involvement of government in land related issues increase the chances of land conflicts in the study area.

The results of the religious role in land conflicts show a negative relationship with land conflicts which is statistically significant which means that increase in the participation by religious leaders in land conflict resolutions decrease the land conflicts as results show significant results. Nepotism, corruption, and bribery create the bad impression of government institutions in the study area so people prefer to resolve conflicts through religious leaders who make resolutions on social values and sharia, which are accepted by people. The results of media role show a negative relationship with land conflicts and it is statistically significant which means that increase in media role in communicating consequences of land conflicts decreases land conflicts. The results of environmental degradation show the positive

relationship with land conflicts and it is statistically significant which means with the increase in environmental degradation the chance of land conflicts also increases. The same results were also found in the study of Le Meur, Hochet, Shem, and Touré (2006) resource degradation like soil erosion, dryness and volatile in climate leads to pressure on irrigated land and created dry water seasons which leads to land and water conflicts. While the study of Wehrmann (2008) study also shows the scarcity of land due to population growth and environmental degradation leads to land conflicts.

**Table 4.11 Econometrics Results for Water Conflicts Variables in the Equation**

<b>Variable</b>	<b>Coefficients</b>	<b>S.E</b>	<b>Sig</b>	<b>Odd ratios</b>
Household Size	.167	.086	.053**	1.182
Age	.007	.018	.698	1.007
Education	-.097	.060	.105	.907
Monthly Income	.000	.000	.527	1.000
Migration to area	.879	.518	.090*	2.409
Water Distribution	-1.370	.506	.007*	.254
Water Management	-2.314	.490	.000***	.099
Government Role	1.684	.491	.001***	5.385
Religious role	-2.448	.748	.001***	.086
Role Media	-1.156	.587	.049**	.315
Environmental Degradation	1.369	.560	.015***	3.933
Constant	.815	1.562	.602	2.260
Dependent Variable: Water Conflict		Total Observations: 231		

\* Significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

The table no 4.11 shows the regressions results of the variables with the dependent variable water conflicts. A binary logistic regression model was used to estimate the results. The results of the household size show a positive relationship with the water conflicts and it is statistically significant which means as the size of the household increases the chances of water conflicts also increases as the results show a positive relation between the two variables. As population increases water demand for



drinking and household use also increases, due to increase in population division of families in rural areas of the study area are divided into their new houses they need a new connection to water but the source of water is constant which creates burden on water sources and leads to water conflicts in the area. The results of the age show a positive relationship with the water conflicts and it is not statistically significant. The coefficient of education shows a negative relationship with water conflicts and it is not statistically significant. The results of monthly income show a positive relationship with water conflicts and it is not statistically significant. The results of Migration shows a positive relationship with water conflict and it is statistically significant which means as rural-rural migration increases the chance of water conflicts increases as the results show the direct relationship between two variables. When inter rural migration increases it creates pressure on the constant water source which creates the interruption in water distribution and leads to scarcity of water and water security. The results are similar to (Mwesigye and Matsumoto (2013)).

The results of water distribution show a negative relationship with water conflicts which is statistically significant which means as proper water distribution system exist water conflicts decreases as the results show the indirect relationship. The results of water management show a negative relationship with water conflicts which is statistically significant which means as better water management in the area the fewer water conflicts as the results show the indirect relationship.

The coefficient of a government role in water conflicts shows a positive relationship with water conflicts which is statistically significant which means as government intervenes in water related issues the water conflict increases as the results shows a direct relationship.

The results of religious role with water conflicts show a negative relationship with water conflicts which is statically significant which means the religious leader's involvement in water related disputes decreases the conflicts on water as results show the indirect relationship. The results of a media role show negative relationship with water conflicts which is statistically significant which means that media involvement discourage the water conflicts as results negative relationship. The coefficient of environmental degradation shows a positive relationship with water conflicts which is also statistically significant which means as environmental degradation escalate the water conflicts as results reveal the direct relationship. In Hunza and Nagar environmental degradation caused in such a way that during summer cropping season due to global warming excessive melting of glaciers creates floods and cuts the water channels which are the main source of water for the irrigation of rural households. The water conflicts arise when the upper stream uses excessive water as compare to down streams users of water during shortage season

**Table 4.12 Econometrics Results for Forest Conflicts**

<b>Variable</b>	<b>Coefficients</b>	<b>S.E</b>	<b>Sig</b>	<b>Odd ratios</b>
Household Size	.038	.060	.523	1.039
Age	.002	.020	.923	1.002
Education	-.089	.045	.050**	.915
Monthly Income	.000	.000	.263	1.000
Migration to area	5.041	1.261	.000***	154.614
Forest Management	-1.309	.654	.045**	.270
Fire Wood	1.054	.621	.090*	2.868
Government Role	1.652	.663	.013***	5.219
Religious role	-1.146	.563	.042**	.318
Role Media	-1.726	.647	.008***	.178
Environmental Degradation	1.084	.633	.087*	2.957
Constant	-2.386	1.839	.195	.092

Dependent Variable: Forest Conflict	Total Observations: 208
-------------------------------------	-------------------------

\* Significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

The table no 4.12 shows the regressions results of the variables with the dependent variable forest conflicts. A binary logistic regression model was used to estimate the results. The results of the household size show a positive relationship with the forest conflicts and it is statistically not significant. The results of the age of house hold heads show a positive relationship with the forest conflicts and it is not statistically significant. The coefficient of education shows a negative relationship with forest conflicts which is statistically significant which means that higher the education level of the household head the chance of forest conflict decreases, however, the results show the indirect relationship between the two variables. The reason is education creates awareness of negative consequences of deforestation in the area. The results of monthly income show a positive relationship with forest conflicts and it is not statistically significant.

The results of Migration show a positive relationship with forest conflict and it is statistically significant which means as rural-rural migration increases the chance of forest conflicts as the results show the direct relationship between two variables. When inter rural migration is increases without knowing customary laws of the area migrants grow the forest in their land for example in Hunza and Nagar planting an almond need 15 feet between the boundary of neighbor's land. Migrants without considering these rules plant a tree which causes forest related conflicts in the area. The results of forest management show a negative relationship with forest conflicts and it is statistically significant which means better forest management decreases forest conflicts as results show indirect conflicts. In some regions of Hunza and Nagar people of some villages conserve forest where nobody can cut trees which reduce forest conflicts. Before conservation people cut trees on the excessive level. The

results of a fire wood show positive relationship with forest conflicts which is statistically significant which mean increase fire wood collection lead to increase in forest conflicts as the results show a direct relationship between the variables. The same results were also shown by Chakartavy et al (2012) they showed that fire wood is not only caused of deforestation but it is the cause of degradation of forest. The other reason for fire wood leads to increase in forest conflicts is people used to cut fire wood for commercial purpose from common forests due to the limited area of forest, forest area starts to reduce which cause forest conflicts. The results of a government role in forest conflicts show a positive relationship with forest conflicts and it is statistically significant which means that increase in the involvement of government in forest related issues increase the chances of forest conflicts in the study area. The government has no proper role in forest issues, because of nepotism, the illicit behavior of concerned department employees regarding forest management so people believe that government role is improper which escalate forest conflicts.

The results of a religious role in forest conflicts show a negative relationship with land conflicts which is statistically significant which means that increase in the participation by religious people in forest conflicts resolutions due to the faith of people on religious leaders' forest conflicts are decreasing in the study area. The results of media role show a negative relationship with forest conflicts and it is statistically significant which means that increase in communicating consequences of forest issues like deforestation, loss of biodiversity, decreases in forest cover and soil erosion can decrease forest conflicts. For instance, in Hunza hunting of Markhor is prohibited if someone hunts the Markhor it is highlighted on media because of fear of penalty and highlighting on media people could not hunt which encourage the conservation of Markhor. The results of environmental degradation show the positive

relationship with forest conflicts and it is statistically significant which means an increase in environmental degradation increases the chance of increases in forest conflicts as the results show a direct relationship between the two variables. Excessive deforestation leads to environmental degradation and affects the vulnerability of poor people. The loss of forest affects biodiversity and force the migration of the birds and other wild animals.

**Table 4.13 Econometrics Results for Minerals & Gemstones Conflicts**

Variable	Coefficients	S.E	Sig	Odd ratios
Household Size	.221	.103	.032**	1.247
Age	.014	.021	.503	1.014
Education	-.089	.066	.173	.914
Monthly Income	.000	.000	.276	1.000
Migration to area	1.029	.608	.091*	2.799
Minerals & gemstones availability	1.757	.768	.022**	5.796
Areas specified for minerals and gemstone extraction	-2.805	.610	.000***	.061
Government Role	2.285	.606	.000***	9.830
Religious role	-2.577	.904	.004***	.076
Role Media	-1.455	.773	.060**	.233
Environmental Degradation	1.382	.617	.025**	3.981
Constant	-1.192	1.770	.501	.304
Dependent Variable: Minerals and Gemstones Conflict	Total Observations: 221			

\* Significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

The table no 4.13 shows the regressions results of the variables with the dependent variable minerals and gemstones conflicts. A binary logistic regression model was used to estimate the results. The results of the household size show a positive relationship with the minerals and gemstones conflicts and it is statistically significant. The results of the age of household heads show a positive relationship

with the minerals and gemstone conflicts and it is not statistically significant. The results of the education show a negative relationship with minerals and gemstones conflicts and it is not statistically significant. The results of monthly income show a positive relationship with minerals conflicts and it is not statistically significant which means that with an increase in the monthly income the chance of household heads are more involved in minerals and gemstones conflicts as results show a positive relationship between two variables.

The results of Migration show a positive relationship with minerals and gemstones conflict and it is statistically significant which means as rural-rural migration escalate the chance of minerals and gemstones conflict increases as the results shows the direct relationship between two variables. The results of minerals availability show the positive relation with minerals and gemstones conflicts which is statistically significant which means as minerals availability in the area is more the area is vulnerable to minerals and gemstones conflicts as the results show a direct relationship between the two variables. The results of area specification for minerals and gemstones shows a negative relationship with minerals and gemstones conflicts, which is statistically significant which means when areas are specified for extraction of minerals and gemstones, conflicts on minerals and gemstones become less. The reason is in Hunza and Nagar minerals and gemstones are available sometimes on privately owned lands, people sometimes extract minerals and gemstones resource without any consideration to the owner so if areas are specified for extraction that conflicts will low as the results show the indirect relationship.

The results of a government role in minerals and gemstones conflicts show a positive relationship with minerals and gemstones conflicts and it is statistically significant which means that increase in the involvement of government in minerals and

gemstones related issues increases the chances of minerals and gemstones conflicts in the study area. The results of a religious role in minerals and gemstones conflicts show a negative relationship with minerals and gemstones conflicts which is statistically significant which means that increase in the participation by religious people in minerals and gemstones conflict resolutions decrease the minerals and gemstones conflicts in the study area which is shown in the results as the indirect relationship. The results of media role show a negative relationship with minerals and gemstones conflicts and it is statistically significant which means that increase in media role in communicating minerals and gemstones conflicts decreases minerals and gemstones conflicts. The results of environmental degradation show the positive relationship with minerals and gemstones conflicts and it is statistically significant which means the increase in environmental degradation leads to minerals and gemstones conflicts

#### **4.19 Synthetic Conclusion**

The results show the prevalence of natural resources and conflicts related to land, water, forest and minerals and gemstones in Hunza and Nagar districts. The conflicts on each individual natural resource have existed on its own intensity and level as we found from the survey, Focus group discussions and key informant interviews.

As the descriptive results showed 93.5 percent respondents own Natural resources which are shown in table 4.3. The descriptive statistics also show the presence land conflict as 59.2 percent, 59.7 as water conflicts, 59.6 percent as forest conflicts and 57.9 percent as minerals and gemstones conflicts in the study area which is shown in table 4.5. Similarly, the FGDs and KII also highlight the consistency of NRC in the study area.

The econometric results of household size, migration to the area, government role and environmental degradation shows the positive relationship and significant results with each dependent variables land, water, forest and minerals and gemstones conflicts. Whereas the role of media and religious role in resolving NRC shows negative and significant results with all four natural resource conflicts. In the same way, age and monthly income shows insignificant results with each dependent variables land, water, forest and minerals and gemstones conflicts but shows expected relationships. . Along with demographic variables, land conflicts are existed because of lack of proper boundaries, property rights, and development. The empirical results showed that land ownership and land income shows the positive relationship with land conflicts. In a similar way, FGDs results also highlight the occurrence of land conflicts due to income, lack of boundaries and improper documentation of the boundaries.

Water conflicts exist in the study as the results showed. The descriptive statistics results show reasons for water conflicts as water scarcity, property rights of water sources and distribution system. Whereas the empirical results also show unavailability of water distribution system and water management shows the negative relationship with water conflicts. As the FGDs results show consistent results.

The results found that forest exists in the study area. The results of FGDs shows the forest conflicts are due to the cutting of natural forest for commercial purpose as the indigenous rule was fixed to not sale the wood at the commercial level. Whereas the empirical results also show the cutting of firewood shows positive relationship with forest conflicts. In the same way, improper management of forest also shows the negative relationship with forest conflicts as shown in econometric results table 4.11.



Minerals and gemstones like Quartz, Marble, Rubi, Granite and komorinre exist in the study area. The descriptive results show the minerals and gemstones conflicts are due to undefined property rights and lack of boundaries of the area. In the same way, the empirical results show that minerals and gemstones availability in the area has a positive relationship with minerals and gemstones conflicts. Whereas area specified for minerals and gemstones shows a negative relationship with minerals and gemstones conflicts. Whereas from the FGDs results we also found the similar reasons for minerals and gemstones conflicts in Hunza and Nagar.

To resolve the natural resource conflicts people use both formal and informal institution channels for natural resource conflict resolutions as shown in figure 4.5. The most common institutional mechanism which had been used by the people of both Hunza and Nagar are the informal institution like (*lumberdari system, LARBs, Imamia Supreme Councils, and Jirga systems*). These institution resolved conflicts through Negotiation and arbitration without any cost, short time period including indigenous people in resolution process as figure 4.7 and table 4.8 shows.

## CHAPTER 5

### CONCLUSION AND POLICY RECOMMENDATIONS

#### 5.1 Introduction:

This chapter is about the major findings of the study, conclusion, and policies recommended.

#### 5.2 Major Findings of the Study:-

The main motive of the study was to identify the Natural resources and their conflicts in the study area which is Hunza and Nagar. The study revealed that there were four types of resources available and much of the conflicts were relevant to them. The four resources which were considered for the study were Land, water, forest and Mineral & gems and conflicts were prevailing in the study area. The major findings of the study are explained below.

- I. Natural resources (Land, Water, Forest, Minerals & Gems) are available in abundance in Hunza and Nagar but findings show that there are a lot of conflicts which are linked to the mentioned resources. According to 59.2% of the respondents, the conflicts are present in the study area.
- II. The Land Resources Conflicts are positively related to the Household Size, Age, Monthly Income, Migration to the study area, Land ownership, Land Income, Government role and Environmental degradation of the resources and negatively related to the Education, Religious role and role of Media. However, the FGD's and KII evident to quantitative results.
- III. The Water Resources Conflicts are positively related to the Household Size, Age, Monthly Income, Migration to the study area, Government role and Environmental degradation of the resources and negatively related to the

Education, Water management, water distribution, Religious role and role of Media. However, the FGD's and KII evident to quantitative results.

- IV. The Forest Resources Conflicts are positively related to the Household Size, Age, Monthly Income, Migration to the study area, Fire for wood, Government role, Environmental degradation of the resources and negatively related to the Education, forest management, Religious role and role of Media. However, the FGD's and KII evident to quantitative results.
- V. The Minerals & Gems Resources Conflicts are positively related to the Household Size, Age, Monthly Income, Migration to the study area, minerals availability, Government role and Environmental degradation of the resources and negatively related to the Education, Area for minerals, Religious role, and the role of Media. However, the FGD's and KII evident to quantitative results.
- VI. Negotiation, arbitration, and legal processes are used for natural resource conflict resolutions by both formal and informal Institutions in the study area.
- VII. All three methods found Informal intuitional mechanism is strong is the study area for resolving natural resource conflicts.
- VIII. Lack of knowledge, bias decisions, lack of technology are found as barriers by the study in the study area.

### **5.3 Conclusion**

The study found the prevalence of natural resource bases in the study area which are land, water, forest and minerals, and gemstones. Land and water are considered as conflict prone resource in the study area however the conflicts on land, water, forest and minerals & gemstones have existed in the study area which is found from the survey, Focus Group Discussions and Key Informant Interviews. Both formal and informal institutions are existed in Hunza and Nagar districts to resolve the natural

resources conflicts. As the study found that informal mechanism is strong in the study area to resolve natural resource conflicts. Negotiation, arbitration, and mediation are used as tools for natural resource conflict resolutions by informal institutions. Whereas, formal institution use legal processes and arbitration on the minor level for natural resource conflict resolutions. Lack of knowledge, bias decisions on natural resource conflict resolutions, lack of technology and lack of proper documentation are the major barriers faced by the during natural resource conflict resolutions.

#### **5.4 Recommendations**

- In order to reduce land conflicts government should implement digital land registration or cadastral system.
- In order to reduce water conflicts, local communities should make local pressure groups in order to distribute water in an optimal way. As in some parts of study area prevails.
- The government should provide electricity as a source of energy in order to decrease the deforestation which was taking in form of cutting of forest for firewood in study area.
- To strengthen informal institutional mechanisms in Hunza and Nagar districts government should make joint ventures to resolve conflicts in short span of time. As in the study area, the informal mechanisms are strong as compared to formal institutional mechanisms.
- It was observed during the focus group discussions and survey there is a lack of technology and skill with the mediators who make natural resource conflict resolutions. The government should provide training other programs to strengthen the local mediators in order to resolve natural resource conflicts at grass root and local level.

- The government should implement proper local government acts in the study area in order to reduce local disputes over natural resources.
- To conserve natural resources and environmental degradation government should make policies to use the natural resources in an optimal way.

### **5.5 Limitation of the Study**

The study covers the presence of natural resources conflicts in Hunza and Nagar. The Natural resource conflicts like the state to the individual, revenue based common resource conflicts, conflicts on state properties, violent land acquisitions, the dispute over the value of land etc are not fully covered in this study.

Due to shortage of time and resource some villages are taken as a sample, few focus group discussions were conducted and some key informant interviews were arranged. The study becomes more significant if we include more sample size.

### **5.6 Future Research**

As the land border to China touches through the study area. The land route to China passes through the khunjrab top. Due to tourism flow and CPEC, the developmental activities start to increase on both government and private level in form of infrastructure and private construction like houses, markets, hotels etc in Hunza and Nagar. The developmental activities lead to pressure on limited privately owned land. The common land conflicts are starts to increase among villages, villages to the government. Many stake holders are influencing in owning the land and other natural resources which create inter-village and intra-village conflicts in Hunza and Nagar districts.

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## APPENDIXES (A)

### QUESTIONNAIRE

#### (A) Personal and demographic information

1. Name .....
2. Gender .....
3. District.....
4. Village.....
5. Household numbers .....
6. Age.....
7. Marital status.....
8. Language.....
9. Level of education in years.....
10. Tribe.....
11. Religion .....
12. Size of the Household.....
13. Number of children less than 10 year old.....

#### (B) Source of Income and Employment

14. What is your type of employment?
  - a. Public service fishery,
  - b. Private service livestock)
  - c. Agriculture d. Unemployed
  - (farming, e. Business
15. What is your average monthly income?.....
16. How much do you save monthly?.....
17. Where do you work?
  - a. Within village
  - b. Outside the village

#### (C) Natural Resources and Livelihood

18. What are the main natural resources found in your area?
  - a. Land d. Minerals gem
  - b. Forest stones
  - c. Water e. Any other
19. Which NRs are abundant in your area?
  - a. Land d. Minerals and
  - b. Water gemstones
  - c. Forest e. Any other
20. What is the main source of livelihood of the people of your area?
  - a. Agriculture e. Minerals gem
  - b. Mining stones
  - c. Livestock f. Business
  - d. Forest g. Govt jobs
  - h. Private jobs

21. What is the source of livelihood of your family?
- |                |                        |
|----------------|------------------------|
| a. Agriculture | e. Minerals gem stones |
| b. Mining      | f. Business            |
| c. Livestock   | g. Govt jobs           |
| d. Forest      | h. Private jobs        |
22. Do you own natural resources?
- |        |       |
|--------|-------|
| a. Yes | b. No |
|--------|-------|
- If yes which natural resource do you own?
- |            |                            |
|------------|----------------------------|
| a. Land    | e. Minerals and gem stones |
| b. Water   | f. Any other               |
| c. Forest  |                            |
| d. Fishery |                            |
23. How much do you earn monthly from NRs?.....
24. Do natural resources have open access or assigned propriety right on natural resources? .....

**(D) Nature of NRs**

25. What is the nature of ownership of natural resources assets?
- |                     |                          |
|---------------------|--------------------------|
| a. Publically owned | c. Common pool resources |
| b. Private owned    |                          |

**(E) Natural Resource Conflicts**

26. Do conflict over natural resources exist in your area?
- |        |       |
|--------|-------|
| a. Yes | b. No |
|--------|-------|
- If yes which natural resource is the cause of conflict in the area?
- |           |                            |
|-----------|----------------------------|
| a. Land   | d. Minerals and gem stones |
| b. Water  | e. Any other               |
| c. Forest |                            |
27. What were the causes of those natural conflicts?
- |  |                           |
|--|---------------------------|
| a. Scarcity of resource.                   | d. Land lord influences   |
| b. Un defined property rights of resources | e. Public agencies        |
| c. Political influence                     | f. Miss management of NRs |
|  | g. Others                 |
28. How long these disputes prevailed?
- |                     |                       |
|---------------------|-----------------------|
| a. Less than 1 year | d. More than 10 years |
| b. 1 to 5 years     |                       |
| c. 5 to 10 years    |                       |
29. Which resources are more prone to conflicts?
- |         |          |
|---------|----------|
| a. Land | b. Water |
|---------|----------|

- c. forest
  - d. Fishery
  - e. Minerals and gem stones
30. Did migration to the area is increased?
- a. Yes
  - b. No
- If yes why?.....

**(F) Land**

31. Do conflict over land exist in your area?
- c. Yes
  - d. No
32. What is the nature of ownership of land in your area?
- a. Publically owned
  - b. Private owned
33. What is the ownership of land?
- a. Own and cultivate this land
  - b. Own but don't cultivate this land
  - c. Rent this land from someone else
  - d. Rent out this land
  - e. Have a shareholder
  - f. Other
34. How much land do you acquired?.....
35. Do you depend on the income you earned from the land?
- a. Yes
  - b. No
  - c. Partially
36. Is the land is irrigated?
- a. Yes
  - b. No
37. Does people of the area own the land?
- a. Yes
  - b. No
38. What are the main cause of land conflicts?
- a. Land tenure system
  - b. Division of land
  - c. Property rights
  - d. Common land
  - e. Others
39. Does land conflicts are cause of improper land ownership?
- a. Yes
  - b. No
40. Do land income is a cause of land conflicts?
- a. Yes
  - b. No
41. Is there any mechanisms exist to resolve conflicts between the parties?
- a. Yes
  - b. No
42. What is the mechanism to resolve conflicts?
- a. Settled through formal institutions

- b. (IFI) Local arbitration through indigenous people
- c. Other

**(G) Water**

43. Is there any mechanism exist for distribution of water for your land?  
 a. Yes b. No
44. Who is managing water resources in your area?  
 a. Public authority c. Local pressure group  
 b. Local landlord
45. What mechanisms are being used for distribution of water?  
 .....
46. Is this distribution of water is legally documented?  
 a. Yes b. No
47. Which authority manages the execution of this process?  
 .....
48. Is distribution system being implemented fairly?  
 a. Yes b. No
49. Does water management is existed in your area?  
 a. Yes b. No
50. Is there a history of disputes between upstream and downstream users of natural resources?  
 a) Yes b) No
51. Do people have conflict over water?  
 c. Yes d. No
52. What are the main cause of water conflicts?  
 a) Distribution of water c) Scarcity of water  
 b) Property rights of water sources d) Others

**(H) Forest**

53. Is forest near to your area/village?  
 a. Yes b. No
54. Does forest management is existed in your area?  
 a. Yes b. No
55. Who is managing the forest?  
 a. Public authority c. Local land lords  
 b. Local pressure group
56. Do people are allowed to collect fire wood from forest?  
 a. Yes b. No
57. Do the people allowed to collect non timber products from forest?  
 a. Yes b. No
58. What kind of non wood product people utilized?  
 a. .... b. ....

59. What mechanism are being used for distribution of area of forest?
- a. Government regulatory
  - b. Private system
  - c. Any other
60. Does the people of area own their own forest?
- a. Yes
  - b. No
61. What is the ownership position of forest?
- a. Common forest
  - b. Government reserve forest
  - c. Own forest
  - d. Other
62. Does conflict over forest exist in your area?
- a. Yes
  - b. No
63. What are the reasons of forest conflicts?
- a. Non define property rights of forest area
  - b. Political influence
  - c. Timber mafia
  - d. Public agencies
  - e. Mismanagement of forest
  - f. Others

**(J)Minerals and gem stones**

64. Dose minerals and gem stones available in your area?
- a. Yes
  - b. No
- If yes what type of minerals and gem stones are found in your area?
65. Does conflict over minerals and gem stones occurred in your area?
- a. Yes
  - b. No
- If yes what are the causes of these conflicts?
- a. Undefined propriety rights
  - b. Political interference
  - c. Competition
66. Does areas are specified for minerals and gem stones extraction?
- a. Yes
  - b. No
67. What channels of mechanism are being used for conflicts on minerals and gemstones?
- a. Formal
  - b. Informal

**(K) Knowledge Attitude Regarding Natural Resources about Institutions and Managing Conflicts**

68. Does government informed about local disputes and conflicts about natural resources?
- a. Yes
  - b. No
69. Does government play its role in conflict resolution in your village?
- a. Yes
  - b. No
70. Which mechanism of Conflict resolution is approached for natural resource conflicts by the people in your area?
- a. Formal institutions (Courts, concern resource department)



- b. Informal institutions,(Nambardari or community based indigenous voluntary mechanism system ,or religious mechanisms)
- c. Both

71. Why you follow/prefer formal institutions?

- a. Cost
- b. Time
- c. Legal Binding
- d. Any other

72. Why you follow/prefer informal institutions?

- a. Cost
- b. Time
- c. Legal Binding
- d. Indigenous knowledge
- e. Culture/norms/v alues
- f. Any other

73. Which mechanisms/processes are used by informal institutions?

- a. Arbitration
- b. Negotiation
- c. Mediation
- d. Other

74. Which institutional mechanism will you prefer for conflict resolution if you face any NR conflict?

- a. Formal institution (Police, Courts, )
- b. Informal institution (Nambardari system)
- c. Third party specify ( tribel elders etc)

**(L) Religious leaders Information Regarding Natural Resource Conflicts**

75. Does religious leaders know about natural resources conflicts?

- a. Yes
- b. No

76. Does the taboos decisions make any important results?

- a. Yes
- b. No

77. What mechanism does religious leaders used?

- a. Arbitration
- b. Negotiations
- c. Mediation
- d. any other

78. Any successful decision about NRC by religious leaders?

- a. Yes
- b. No

If Yes, than specify

.....

79. Does local people accepts taboos decisions?

- a. Yes
- b. No

**(M) Institutions**

80. Dose the institutions has role in solving conflicts?( ATTITUDE)

- a. Yes
- b. No

81. Which intuitions has active role in solving conflicts?

- a. Formal institutions (judiciary etc)
- b. Informal institutions
- c. Both

82. Does the institutions deal fairly?

a. Yes

b. No

83. Which institutions is effective ( rank 1 + 5most effective)

Police	
Judiciary	
Local arbitration ( nambardari)	
NGOs	
Other	

84. Do problem arises because of involvement of multiple intuitions ?( formal and informal)

a. Yes

b. No

**(N) Information on Decision Making Practices**

85. How much do you satisfy with formal institutions decisions?

a. Highly satisfy

d. Unsatisfied

b. Satisfy

e. Highly

c. Neutral

unsatisfied

86. How much do you satisfy with informal institutions decisions?

a. Highly satisfy

d. Unsatisfied

b. Satisfy

e. Highly

c. Neutral

unsatisfied

87. Which mechanism do you prefer for natural resource conflicts resolutions?

a. Arbitration

d. Courts processes

b. Negotiation

e. Any other

c. Mediation

**(O) Media**

88. Whether the disputes on natural resources are communicated on media?

a. Yes

b. No

89. Does the media act as a positive role in natural resource conflict resolutions?

a. Yes

b. No

**(P) Conflicts and environment**

90. Do you think natural resource conflicts leads to environmental degradation?

a. Yes

b. No

91. What kind of environmental degradation occurred ?

a. Soil erosion

c. Other

b. Deforestation

**(Q) Other questions**

92. Among which village's natural resource conflict is more?

93. What are the barriers faced by people in NRC resolutions?

**(R)Cost**

94. What is the average cost do you bear for conflicts on natural resources ?

95. How much time is spent on these conflict resolving process

## Appendix (A2)

### Focus Group Discussions FDGs

#### Questions

- 1) Name of participant.....
- 2) Age.....
- 3) Name of village.....
- 4) Gender .....
- 5) How long living in this village?
- 6) What type of natural resources exist in your area? What is the ownership position?
- 7) What are the NRC in your villages?
- 8) Which type of common natural resource conflict are existed in your village?
- 9) What are the reasons of these natural resource conflicts?
- 10) What are the first reactions of households when they face any NRC?
- 11) How these conflicts are solved or what are the conflicts mechanisms used for resolutions your area? (Formal /informal)
- 12) How conflicts is mediated by local intuitions?
- 13) How conflicts is mediated by formal institutions?
- 14) Why the specific type of resolutions are being used?
- 15) Which institutional mechanism is effective for conflict resolutions in your opinion?
- 16) Is there any successful example of conflict resolution which had done in your village

- 17) What is the most effective and sustainable mechanism in your opinion?
- 18) Is there any role of media in conflict mediation or management?
- 19) What are the barriers do people faced in natural resource conflict resolutions?
- 20) Did there any natural resource conflict occurred in your village in last 10 years?

### **Appendix (A3)**

#### **Key Informant Interviews**

##### **Questions**

- 1) Name of head of institution .....
- 2) Name of institution.....
- 3) District .....
- 4) Gender .....
- 5) Does the institution deal with NRC?
- 6) What type of natural resources conflicts occurred in your jurisdiction of area?
- 7) How many NRC cases have been registered in last five years?
- 8) On which natural resources most cases has been registered?
- 9) Any successful resolution that had being solved by your institution?
- 10) How people response the resolution that had being passed by your institution?
- 11) What are the methods mostly used to solve conflicts by your institution

## APPENDIXES (B)

**Table 6.1 Details of Focus Group Discussant of Village Murtaza Abad**

<b>Name</b>	<b>Gender</b>	<b>Age</b>	<b>Profession</b>	<b>Village</b>
Illham Uddin	Male	30	Business	Murtaza Abad
Imam Yar Baig	Male	52	Driver	Murtaza Abad
Iftikhar	Male	32	Government Employee	Murtaza Abad
Peyar Ali	Male	35	Technician	Murtaza Abad
Shafi	Male	55	Teacher	Murtaza Abad
Safza Ali	Male	27	Plumber	Murtaza Abad
Jahan Gir	Male	33	Government Employee	Murtaza Abad
Noor Uddin	Male	60	Private Job	Murtaza Abad

**Table 6.2 Details of Focus Group Discussant of Village Altit**

<b>Name</b>	<b>Gender</b>	<b>Age</b>	<b>Profession</b>	<b>Village</b>
Irfan karim	Male	36	Tour operator	Altit
Noor Uddin	Male	36	Tour guide	Altit
Naeem	Male	25	Painter	Altit
Bashir Hussain	Male	60	Hotelier	Altit
Shakir	Male	30	Businessmen	Altit
Shaheen Khan	Male	45	Businessmen	Altit
Samina	Female	38	Teacher	Altit

**Table 6. 3 Details of Focus Group Discussant of Village Minapin**

<b>Name</b>	<b>Gender</b>	<b>Age</b>	<b>Profession</b>	<b>Village</b>
Muhammad Hussain	Male	35	Public servant	Minapin
Bulbul Husasain	Male	65	Army	Minapin
Zahid Abbas	Male	30	Teacher	Minapin
Kalab Abbas	Male	32	Police	Minapin
Rizawan Ali	Male	26	Tailor	Minapin
Naibar Hussain	Male	35	Teacher	Minapin
Rizawan Ali	Male	55	Farmer	Minapin