CHAPTER- I

INTRODUCTION

1.1 Background of the Study

Floods causing loss of life and property are usual and annual phenomenon in the context of Nepal. A combination of highly concentrated monsoon precipitation, high relief, steep mountain topography, and deep and narrow river valleys with frequent mass wasting phenomena renders the country susceptible to flood hazards and disasters. Each year hundreds of people are killed and thousands are made homeless by floods in different parts of Nepal. Private and public properties and expensive and often vital infrastructure are being damaged. Consequently, the overall development of the country has been severely affected by flooding. Because of severity and frequent occurrence, floods have attracted attention and are documented to some extent however sociological research on disasters and even on floods is scant in Nepal.

In the context of recent global warming phenomena, a consequent increase in the intensity of extreme precipitation events and the high rate of melting of glaciers in high mountain areas, the probability of potentially damaging floods events is even likely to increase. On the other hand, encroachment of flood plains for growing crops and to establish human settlements has increased exposure of the communities to extreme floods. Unplanned or ill planned infrastructure of development in the steep mountain slopes has also increased potential threats of floods.

In the past, before the eradication of malaria in 1956, almost all the river valleys, including areas of the Dun or Inner Terai where the threat of floods was high, were prone to malaria. People used to settle between the mountain ridges during the summer monsoon and the lowland areas during winter in order to avoid mosquito bites. This also helped to avoid or reduce the impact of floods. After the eradication of malaria, investment in infrastructure development of human settlements, other

infrastructure, and agriculture in lowland areas increased tremendously and, consequently, so did exposure to flood hazards. Vulnerability to flood disasters is great at present. Nepal is a least-developed, landlocked, and mountainous country with limited access to socioeconomic infrastructure and service facilities. Inaccessibility, a low level of human development and mass poverty are prominent reasons for the poor capacity to anticipate, cope with, resist, and recover from and adapt to different types of hazards, floods being one among them. Additionally, a high population growth rate, among other factors, has led to increasing poverty. As a result, vulnerability to flood hazards is likely to increase unless effective flood mitigation and management initiatives are implemented. An understanding of the types, frequency, and magnitude of flood events causing harm to life and property; the extent of loss and damage from such events; and their spatial concentration is necessary in order to develop appropriate mitigation and management strategies to reduce risk and vulnerability to flood hazards, (Khanel *et. al.,* 2007).

Flood due to the breach of embankment at Koshi River on August 18, 2008 and the flood of the mid and far west of September 2008 remained major disastrous events of the year for Nepal that killed more than 41 people and displaced nearly 100 thousand families. Not only that but also it created other socio-economic problem to the country which is backwarded in all spheres of life.

Among the major hazards in Nepal, floods and landslides are the most recurrent, claiming at an average of 211 lives annually in the past ten years (MoHA 2005). In 2004, 68 out of the 75 districts of the country were affected, 310 people died and 11 went missing and 16,997 families were affected.

Similarly, the socio-economic factors such as levels of poverty, caste/ethnicity, gender, religions, etc. are also gradually being recognized as a central variable to analyzing the question of vulnerability in the country. Particularly in rural areas, where more than 80 percent of the population is living in extreme poverty, almost half (38%) of which is below the poverty line, (NPC, 2003), and heavily depending upon subsistence agriculture production are exposed to various hazards.

Besides the conditions inside the country, developmental activities taking place in Indian Territory just across the Nepalese boarder in the Terai have also created barrier to natural flow of water and increased vulnerability of the people of the region to floods and inundation.

Hence, for both in terms of geo-physical and socio-economic reasons, the country is facing a serious challenge in combating the adverse effects of natural hazards, and their consequences. According to Ministry of Home Affairs (MoHA), 18,014 people died in different disasters in the period of 1987-2007 and the estimated loss of the period is NRs. 2.21 Million. Besides these, direct cost have, an immense indirect, repercussive and social costs been involved in those phenomenon.

Kailali is one of the districts in the Western Terai that has suffered from various disasters in the past. DesInventar database of 1971-2007 shows 912 human deaths occurred due to different disasters in the period with epidemic as highest killer. In 2008 alone more than a dozen VDCs of the district were under water that claimed lives of several people, displaced thousands and damaged property worth millions. Bandarpur of Narayanpur VDC ward no. 6 and Payal Ramnagar of Dhansingpur VDC ward no. 6 of the district were also affected by the flood of this year. Hence, the two communities have been selected for assessment of the preparedness at the community level for flood risk reduction. Bandarpur is mostly a Tharu community and Payal Ramnagar has mixed community consisting of migrant population and Dalits.

The multi-disciplinary nature of natural disasters is recognised as not only a study of science but also as a field of social science, (Blong 1997; Bogard 1994; Chapman 1999; Dolan 1995; Kates 1994; Quarantelli 1994; Waugh 2000; and White 1994) This study is aimed to document preparedness measures adopted by the communities to respond the potential floods and recommend for the needed steps to reduce risks of floods in future.

1.2 Types, Magnitude and Frequency of Natural Disasters in Nepal

The most frequent hazards causing tremendous losses in lives and property are floods, landslides, avalanches, hailstorms, windstorms, lightning, earthquakes, fire, and epidemics. On average, natural disasters take a toll of 951 lives and damage property worth NRs 1,242 million every year, (Table 1.1). The actual figure is thought to be higher because the available statistics do not cover every disaster, particularly those in remote mountain areas, and do not include drought, frost, soil erosion, bank erosion, and so forth. Moreover the impact of these is not immediate but over time, they cost a great deal. In addition, most disaster reporting is biased towards human casualties.

Table 1.1: Average annual loss of life and property from natural disasters (1983-2005)

Types of Disaster	Loss of life		Families affected		Loss of property	
	No.	%	No.	%	million Rs	%
Floods, landslides and avalanches	309	32.5	27,654	69.7	749.58	60.3
Hailstorms, windstorms and thunderbolts	34	3.5	4,845	12.2	40.86	3.3
Earthquakes	32	3.3	2,979	7.5	228.54	18.4
Fire	52	5.5	3,192	8.0	223.45	18.0
Epidemics	524	55.2	982	2.5	0.00	0.0
Total	**951**	**100.0**	**39652**	**100**	**1242**	**100**

Source: compiled from *The Annual Disaster Review* (different issues), DWIDP

Of the different types of disasters, the overall impact caused by floods, landslides, and avalanches is the most severe. Between 1983 and 2005, an average of 309 people died annually, which is lower only than the deaths caused by epidemics, i.e., 524 lives per year, (Table 1.1). The loss of life from floods, landslides, and avalanches is about 32% of the total deaths.

Similarly, In Nepal devastating floods are triggered by different mechanisms which can be classified into five major types:

- continuous rainfall and cloudburst,
- glacial lake outburst floods (GLOFs),
- landslide dam outburst floods (LDOFs),
- floods triggered by the failure of infrastructure, and
- Sheet flooding or inundation in lowland areas due to an obstruction imposed against the flow (Dixit, 2003 and Khanal, 2005).

1.3 Statement of the Problem

To address the issues of disaster management from the policy level, Nepal for the first time in the South Asian region promulgated Natural Calamity Relief Act in 1982. The act provisioned Ministry of Home Affairs (MoHA) as focal ministry and the same ministry is coordinating the disaster management at the national level until present time. As per the act the Central Natural Disaster Relief Committee (CNDRC) and District Natural Disaster Relief Committee (DNDRC) at the central and district level are active respectively. The mechanism has played its role in the immediate aftermath of disasters for search and rescue of affected population, providing relief materials and shelter. However, there has been an inadequate effort towards risk reduction which in fact is less costly. Obvious example of importance of disaster mitigation and risk reduction can be taken from the Koshi floods caused due to negligence in maintenance of the embankments. Today both Nepal and India are paying the cost of the negligence the responsible authorities made in timely and proper maintenance of Koshi embankment that would hardly cost NRs a million for repair. The breach has displaced more than 50,000 in Nepal and millions in India in addition to loss of lives of people in both the countries. The single event has pushed the region far behind from the pace of development. Hence, organizations and experts working in the sector have emphasized the need of endorsement of policy and strategy that have been submitted to the government of Nepal so that the disaster risk reduction could take departure from the culture of relief and rescue to the risk reduction and mitigation.

Importance of pre-disaster preparedness and mitigation can be observed from number of examples: The Kashmir earthquake in 2005 killed more than 75,000 people including more than 25,000 students, whereas Japan's Great Hansin earthquake of similar magnitude killed only 6,000, (OXFAM, 2008). This was possible due to continuous attention and allocation of about one percent of its annual budget on disaster risk reduction. Similarly, negative impacts of floods on lives, properties and livelihoods of people can be reduced through effective mitigation measures, better early warning systems and well preparedness. There is an obvious example from Bangladesh, a cyclone in November 2007 killed about 4,000 people significantly low in comparison to the cyclone of similar strength in 1991 that killed 140,000 and up to 500,000 in 1970's cyclone, (OXFAM, 2008). The saving of the lives is due to the series of mitigation measures, effective early warning systems and preparedness at the local and provincial level for potential threats.

In Nepal activities towards enhancing capacities of the local communities, district and central government has started but at limited scale and the same has not been mainstreamed in the government plan as well. As a result, community people are suffering from the effect of natural hazards. Table 1.2 shows the impact of hazards in the selected communities in the past 30 years.

Table 1.2: Loss due to disasters in Dhansingpur and Narayanpur VDCs in Kailali district (1971-2003)

VDC	Event	Date	Deaths	Injured	Houses		Families Affected
					Destroyed	Damaged	
Dhansingpur	Epidemic	2001/07/29	2	16	-	-	-
	Epidemic	2001/08/11	6	40	-	-	-
	Fire	1979/02/26	-	-	26	-	26
	Flood	1988/08/23	-	-	-	-	500
	Flood	1997/08/02	-	-	-	29	157
	Flood	1998/07/25	-	-	-	-	-
	Flood	1998/08/15	-	-	20	-	-
	Flood	1999/08/10	-	-	15	-	-
	Flood	2000/06/16	-	-	7	5	-
	Flood	2000/08/04	-	-	-	-	-
	Flood	2003/08/19	-	-	-	-	432
	Flood	2003/08/26	-	-	13	-	70
	Flood	2003/08/26	-	-	29	-	225
Narayanpur	Epidemic	1985/10/01	5	-	-	-	-
	Epidemic	2002/09/10	1	-	-	-	-
	Fire	1997/10/14	-	-	-	1	-
	Flood	1997/08/02	-	-	-	-	-
	Flood	2000/06/10	-	-	56	-	-
	Flood	2000/08/01	-	-	-	-	540
	Flood	2000/08/04	-	-	-	-	-
		Total	**14**	**56**	**166**	**35**	**1950**

Source: www.desinventar.net/Nepal

It is obvious that the local people are fighting against the flood at their own level but the disaster is so profound that local resources are always insufficient. Poor and socially backwarded people are there in such flood prone areas. Not only economically but also technically they are poor in managing such disastrous events. Upgrading local peoples' skill to mitigate the effect of such hazards is very important. So that field level research and studies are very essential for managing such events by using local resources.

1.4 Research Questions

This research will seek to answer to the questions below:

- what are the major past disaster events in the selected communities?
- what is the preparedness at the community and household level to potential future floods?
- what is the response of the communities on the relief distribution after past disasters?

1.5 Objectives of the Study

The main objective of this study is to assess the level of preparedness of the selected communities to respond the adverse effect of natural hazards in general and floods in particular.

Moreover, the specific objectives of the research are:

- to assess the preparedness practice on flood in Bandarpur and Payal Ramnagar communities in Kailali district to respond the future floods.
- to assess community (respondents) perception towards disaster relief program of the government of Nepal.
- to provide recommendation to different stakeholders at the local level

1.6 Scope of the Study

Disaster preparedness is one of the major issues in our country. It is one of the important tools for the protection and management of the sustainable development in Nepal. Many rivers flowing in our country are the bases of livelihood of many people. Extraction of construction materials (e.g. sand, gravel, etc.), irrigation of rain fed agricultural land, adventurous entertainment (such as rafting) play positive role in the enhancement of the socio-economic condition of the country. These all are possible only with the presence of rivers. Nevertheless, at the same time, these rivers bring calamity at times. Inundation, land cutting, sand filling are the major effects of these flooded rivers. Fire, draught, epidemics are other disastrous events that affect adversely to the livelihood of people. So disaster preparedness helps improve the livelihood of people and helps conserve the environment and their poverty reduction.

The present study on 'preparedness to flood disaster' basically, was carried out on the basis of focus group discussion, household survey, key informants interview with the help of structured questionnaire and using the checklist. There are some expected outcomes of this study. They can be as follows:

- hazards and risk of community.
- existing preparedness measures in the community
- existing and expected relief measures implemented in the community

congealed

1.7 Organization of the Study

This thesis is organized in seven main chapters. The introductory chapter contains the background of the study, which mainly discusses importance of disaster preparedness in Nepal. Likewise, the chapter also highlights research problems, research questions, objectives of the study and scope of the study. The chapter two includes the review of the literature. Various books reports, articles and selected theses were reviewed in this chapter. Third chapter highlights research methodology adopted during fieldwork to collect information and data analysis. This chapter also includes limitation of the study. Fourth chapter describes communities of Bandarpur and Payal Ramnagar VDCs, which were the study units of this research. This chapter discusses location,

socio-economic feature, and problems the communities are facing due to disaster. Chapter five and six illustrate discussion and interpretation of findings, which for the details institutional process, people's participation, changed attitude, knowledge and skill of preparedness methods. In chapter seven, summary, conclusion and recommendations are presented.

CHAPTER-II

LITERATURE REVIEW

A global report on reducing disaster risk by UNDP has revealed that the world's 75% population live in areas affected at least once by earthquake, tropical cyclone, flood or drought between 1980 and 2000. The report estimated average economic losses of US$ 75.5 billion in 1960s , US$ 138.4 billion in the 1970s and US$ 213.9 billion in the 1980s and US$ 659.9 billion in the 1990s. Majority of the losses are concentrated/ found in the developing world. This shows that the losses due to disasters are at the increase. However, the floods, droughts, earthquakes and cyclone are the natural events that become disaster when the adverse effects of these events deteriorate the social, economic and environmental functioning of the human society, (UNDP, 2004). The adverse effect of these disasters can only be reduced through appropriate mitigation measures, enforcement of appropriate policies, and implementation of early warning system and preparedness of effective mechanism at various levels for organized action at the onset of disasters that reduce adverse effect of these natural hazards. It is simple that earthquakes, of however magnitude may be, do not kill people but weaken buildings and structures that cannot withstand earthquake tremor take lives of people. Therefore, earthquake prone countries like Japan, USA have practiced safe construction practices, prepared and practiced evacuation plans and thus resulted in nominal impact. South Asian earthquake of 2005 killed more than 75,000 people in Pakistan including some 25,000 school children. Earthquake of similar magnitude in Japan killed some 6,000 people, (OXFAM, 2008). These and numerous other examples across the world have highlighted the need of focus in pre-disaster risk reduction measures and preparedness for response at the time of onset of disastrous events at central government to grass roots level.

A study conducted by UNDP/BCPR (UNDP, 2004) ranked Nepal 11^{th} and 30^{th} country at most risk with respect to relative vulnerability to earthquake and flood among 200 countries in the world. Another study conducted by World Bank classifies Nepal as one of the 'hot-spots' for natural disasters in the fragile global geo-climatic condition, (World Bank, 2005). The *DesInventar* disaster information system

(www.desinventar.net/Nepal) revealed that in the period of 1971 to 2003, there has been on an average, one disaster event (large or small) and two resultant deaths every day.

An ICIMOD study estimates that there was an annual loss of 20 percent of the total GDP in Nepal (during the period of 1983-2000) due to the water-induced disasters alone, (ICIMOD, 2002). The same study estimates 8,600 human deaths due to flood and landslides during the same period, which is fairly higher than the data provided by MoHA.

2.1 Continuous Rainfall and Cloudburst

Floods and landslides are annual events in Nepal in the latter stages of the summer monsoon when the land is saturated and surface runoff increases. Extremely high intensity precipitation causes landslides on mountain slopes and debris flows and floods along the river valleys and plains. The precipitation events between 1948 and 1955 caused landslides and debris flows in mountain areas and, consequently, destructive floods on many rivers in lowland areas. The highest flood recorded occurred on the Koshi River in 1954 and was the result of widespread rainfall in its mountain catchment area, (Dixit, 2003). Livelihood options for many families in mountain areas were threatened. As a response, the government began resettlement programmes in the Inner Terai and Terai regions in 1956 for severely affected families. At the same time, spontaneous large-scale migration from the mountains to the Terai and from ridge to river valleys took place immediately after these events and concomitant implementation of a malaria eradication programme in the lowland areas, (Khanal, 2004). In recent years, between 1981 and 1998, three events of extreme precipitation with extensive damage have been reported, (Chalise and Khanal, 2002).

2.2 Physical and Spatial Vulnerability

Different factors are responsible for physical and spatial vulnerability to flood hazards in Nepal. These factors are discussed below:

Extremely dynamic landscape

Nepal is situated in a high-energy environment because of its rugged relief, steep mountain slopes, active tectonic process, highly concentrated precipitation, and intense human activities in landscapes associated with high growth and density of human and livestock populations, along with a subsistence agricultural economy. As a result, the rate and magnitude of occurrence and operation of geomorphic processes are high. Landslides, erosion, debris torrents in the hills, and rises in bed level due to excessive sediment loads in the rivers and the shifting of river channels in the Terai are typical geomorphic processes during the summer rainy season. Both accumulation of snow as a result of the availability of moisture in the atmosphere, and melting due to high temperatures, take place simultaneously during summer. Snow avalanches, intense glacial erosion, and formation and outburst of glacial lakes are common phenomena in the High Himal area. In periglacial areas, freezing and thawing of ground surfaces are common processes resulting in increased physical weathering and rupturing and dislocating of rock blocks leading to rock fall. These processes are responsible for the production of huge amounts of transported hill-slope materials and increased sediment loads in rivers. The highest global rate of sediment production has been reported for Himalayan river basins such as the Kosi, Narayani, and Karnali (2,000-5,000 tonnes per square kilometre per year). Similarly, rivers originating in the Siwaliks adjacent to the Terai region, such as the Tinau, Rapti, and Lothar, carry disproportionately huge sediment loads. Immense fans formed by Himalayan Rivers in the foothills indicate a high degree of sediment production and transport in upstream areas due to intense mass-wasting. The frequent seismic events and excessive rainfall make the terrain susceptible to erosion, landslides, debris flows, channel shifting, and sedimentation, and these are responsible for excessive sediment loads in the rivers. This increases water levels in the rivers and risk and vulnerability to floods.

Inaccessibility

Access to infrastructural services such as transportation, communications, medical, marketing, and other extension services like education, skills development, and so on, play an important role in all stages of flood-hazard mitigation and management: pre-disaster preparedness, during disaster evacuation and relief activities, and post-

disaster rehabilitation and recovery. Nepal, being a landlocked country bordered by China in the north and India in the south, east, and west, does not have easy access to other countries via land and water transportation. This has created problems in the timely flow of goods and services, and the ability to take advantage of cheaper means of transportation. Moreover, Nepal's rugged topography has constrained the development of service infrastructure. Many areas are not yet connected by any modern means of transportation. The development of water and railway transportation in the country is insignificant. Even the road network is very poor and in deteriorating condition. As of 2003 there was a total road length of 16,835 km out of which 28% was black topped, 27% gravelled, and 45% earthen, (CBS 2005). The country's road density is only 11.4 km for an area of 100 sq. km and 7.2 km for every 1,000 people. However, its development is not uniform in all regions. Out of 75 administrative districts, 16 districts located in the mountain region are not connected by any type of road. The density of roads in terms of area in the Terai districts is higher relative to mountain district, a large proportion of roads are earthen and most of them are closed during the rainy season when flooding occurs. An improvement in accessibility through developing the road network is an essential prerequisite to reduce risk and vulnerability to different types of hazards. Uninterrupted access to the outer world plays major role in saving lives and properties during floods.

Declining access to physical assets

Agriculture is the main economic activity in Nepal. Access to physical assets, particularly land and land-based resources, have declined and continues to decline with population growth. The quality of resources has been deteriorating. The result has been being encroachment on marginal lands prone to soil erosion, landslides, and floods. The land capability survey, (LRMP, 1986) shows that about 67% of the land is unsuitable for cultivation and human settlement due to different biophysical conditions. Geographical information systems (GIS) overlay analysis of the land utilization and land capability map prepared by the Land Resources Mapping Project, (1986) and carried out by Kenting Earth Sciences and the Government of Nepal indicates that about 30% of all hill slope cultivation is carried out on unsuitable land. This has increased vulnerability to erosion, landslides, and debris flows that ultimately contribute towards high intensity of floods in the plains.

Widely Dispersed Human Settlements and Migration

Human settlements in mountain areas are generally scattered and small. In the past, security issues from the perspective of avoidance of wars and diseases, as well as access to food, water, and energy, were considered important factors in the development of human settlements. Hence, many permanent settlements, particularly in mountain areas, were developed on stable mountain slopes to avoid the malaria in lowland areas. The size of settlements was determined by the capacity of physical assets in the surrounding area to fulfil the needs of the encapsulated settlement and its population. However, the rapid growth in population and increasing pressure on available resources, in one hand, and eradication of malaria from lowland areas, on the other, led to the emergence and expansion of human settlements in lower river valleys in the mountains, the inner Terai, and the Terai. Both migration from outside the country and in-migration, Terai from the hills and mountains remained high since the 1950s in Nepal. Evidences of this can be seen from the increase in population in the Terai from 35.2% in 1952/54 to 36.4% in 1961, 37.6% in 1971, 43.6% in 1981, 46.7% in 1991, and 48.4% in 2001, (Pantha and Sharma, 2003). The rapid population growth has led establishment of settlements and cultivation even in marginal areas susceptible to flood hazards. Moreover, people who moved to new places with experience of different environmental conditions and processes in their place of origin are less experienced in the type, frequency, and magnitude of floods in their new destinations and thus, less capable of anticipating flood hazards and invest unknowingly in hazard-prone areas. Along with the emergence and expansion of settlements, other infrastructure also developed in nearby areas.

Socioeconomic Vulnerability

The scale and magnitude of impacts of natural hazards are not only determined by physical vulnerability, but also they are derived from a combination of both physical and socioeconomic vulnerability. Socioeconomic vulnerability is the extent to which an individual, community, subgroup, structure, or geographical area is likely to be damaged or disrupted by a disaster. In the words of Blaikie *et al.* (1994) vulnerability is the characteristics of a people or group in terms of its capacity to anticipate, cope with, resist, and recover from the impact of a natural disaster.

Poor Economic Growth

The economic growth has been less than 4% on an annual basis and is characterized by low agricultural growth, growth that is urban biased, and poor distributive capacity. In the FY 2002, the gross domestic product (GDP) per capita was only $231, making Nepal one of the poorest countries in the Asia. Government revenue and gross domestic savings have remained at only 8% and 11% on an average of the GDP during the last decade. Low levels of revenue and savings limit the allocation of resources to social priority sectors, and thereby limiting the capacity to cope with natural disasters and recovery after disaster will be slow.

Disparity in Productive Assets and Income

Out of the total households in the country, nearly 78% are based on agriculture; cultivating land of at least 0.013 hac and about 2% agricultural households are without land, (CBS, 2004). The average size of agricultural land held is 0.83 ha and land holding sizes have been decreasing. Small farmers operating less than 0.5 ha of land account for about 45% and they own only 13% of the agricultural land. Nearly 73% of households have less than one ha of land and own only 31% of the area. Similarly, the bottom 20% of households receive only 5.3% of the national income while the top 10% have nearly 54%. Such wide disparity and skewed distribution in productive assets and income result in a poor capacity to cope with disasters.

Heavy Dependence on Agriculture and its Poor Production Potential

Agriculture is the principal economic sector, but its production has remained stagnant or has only marginally increased: it is poorly diversified and largely dependent on variable monsoons. The value added per unit of agricultural land and agricultural worker is low compared to South Asian levels. Since most farmers are marginal and landless or have very small farms and have limited access to technology or the formal credit sector, roads and markets, the agricultural returns are very poor, (Chettri,1996). Only 44% of the total cultivable land (18% of the land area) is irrigated, and the current irrigation system contributes approximately 33% to the country's current agricultural production. Even if all irrigable lands were irrigated, the total production would increase by only 50% (due to water inputs only), (WECS, 2002).

Inadequate Service Provisions

Access to safe drinking water, health and sanitation is below South Asian standards. The health service delivery system is inadequate in terms of both quantity and quality. There is only one health centre including hospitals and health posts per 186 sq. km, and one health centre has to serve nearly 29,000 people. The ratio of doctors to population is 1:18,000, with a hospital bed ratio of 1:4,000, (CBS, 2005). According to the Nepal Living Standards Survey (2003/04), the percentage of households requiring travel times of more than 30 minutes is 33% for health posts, 38% for hospitals, 66% for market centres, 46% for telephone booths, and 66% for paved roads. In rural areas, the mean travel time to reach different facilities is one hour and 16 minutes for health posts/hospitals, 2 hours and 14 minutes for markets, 5 hours and 11 minutes for paved roads, 3 hours and 12 minutes for bus stops, and 2 hours and 13 minutes for telephone booths, (CBS, 2004). The adult illiteracy rate for both males and females is high and is higher in females, and overall the highest in South Asia, implying a low level of human resource development. The electricity use per capita is much lower than South Asian levels and in addition to alarming current power cut that has multiple impacts on human lives. This low level of social and physical infrastructure implies low coping/adaptive capacities in the event of disasters.

Increased Population Pressure

Under conditions of poor economic growth, the increase in the population growth rate has meant an increase in poverty level. The population has increased by 2.25% annually over the last decade, which means the population might get doubled in the next few decades, (CBS, 2004). Since 1976, the absolute number of people living below poverty level has doubled to the extent of nine million. Every year, about 200,000 people enter the labour force, and not a small fraction of this is absorbed into the non-agricultural sector. As a result, pressure on farmland and forests has been being increased. At times, this has led to deforestation, intensifying the use of marginal land, and ultimately this has affected the environment adversely. This, in turn, has had devastating effects on the poor people who rely on marginal land, (UNDP, 2001). Because of increasing poverty and its adverse effect on the

environment, the vulnerability to natural disasters is likely to be high in the context of a poor capacity.

Ineffective Implementation of Disaster Management Strategies, Policies, and Programmes

Government activities until 1982 were mainly directed towards post-disaster activities, viz., rescue, relief, and rehabilitation, only as voluntary social work, (Chettri and Bhattarai 2001; Dixit, 2003). The Natural Disaster Relief Act 1982 provided a legislative framework for disaster management in the country. The act has provisioned of formation of disaster management committees at the national, regional, district and local level in order to expedite relief measures in an effective and coordinated manner. Although, there was an increase in the logistic and institutional capability for emergency response, it still lacked a broad perspective of disaster mitigation and its management. In 1996, the National Action Plan on Disaster Management, (MoHA, 1996) was introduced to address the manifold issues of disaster such as disaster preparedness, early warning systems, disaster information systems, hazard and risk analysis, vulnerability and adaptation assessment, land-use planning, training, and simulation. But its implementation remained very weak.

The Local Self-Governance Act, (MoLD, 1999) came into existence in 1999. It provided a legislative framework to carry out disaster mitigation activities at the local level by mobilizing local communities. The 9th and 10th plan five year plans, (NPC, 2002; 1998) also emphasized prevention, mitigation, and reduction of natural disasters through advanced geological, hydrological, and meteorological technology. The National Water Plan, (2002-2027) prepared by the Water and Energy Commission Secretariat, (WECS, 2005) outlined several activities for the mitigation and management of water-induced disasters. These include formulation of policies and programmes for better management of water-induced disasters, implementation of risk and vulnerability mapping and hazard zonation, preparation and implementation of a floodplains' action plan, development of disaster networking and information systems such as early warning systems, formulation and implementation of community-level disaster preparedness plans, and implementation of relief and

rehabilitation activities. It discusses approaches to river basin planning and outlines some activities in this context, (WECS, 2005).

Many institutions are involved in disaster mitigation and management activities. The Ministry of Home Affairs (MoHA) is responsible for formulation and implementation of overall disaster management strategies, policies and plans. Relief and rehabilitation activities are coordinated by MoHA at the central level and District Natural Disaster Relief Committee (DNDRC) coordinates at the district level. Nepal Red Cross Society, Nepal Army, Nepal Police, local non-government organizations (NGOs) and various international non-governmental organizations including UN agencies are playing active role during and after disaster for rescue of the victims and relief operation.

The Department of Water Induced Disaster Prevention (DWIDP) is responsible for managing and mitigating water-induced disasters. Similarly, the Department of Hydrology and Meteorology (DHM), the Department of Soil Conservation and Watershed Management, the Ministry of Local Development, the Ministry of Population and Environment (MoPE), and NGOs, intergovernmental organizations, international non-government organizations (INGOs) and UN agencies are involved in disaster mitigation and management activities directly or indirectly. Besides these institutions, a special Inundation Committee has been formed under the jurisdiction of the Ministry of Water Resources to deal with the problems of inundation caused due to infrastructure constructed by India just downstream of Nepal. But this committee has yet to be effective in solving outstanding problems of inundation in border areas which are recurrent in the past few years. In spite of these strategies, policies, guidelines, programmes, legislation, and institutional provisions, only a few goals have been achieved. The government's disaster-mitigation efforts until now have been confined more to rescue operations and post-disaster activities than other activities. The reasons for this may be lack of resources, low technical and institutional capabilities, low level of public awareness, and less effective mechanisms. Less effective legislation and action plans clearly imply that the state's disaster management mechanisms have defects.

Natural Calamity (Relief) Act, 1982

It is the sectoral comprehensive legal instrument in response to disaster in Nepal. This Act focuses on the post- disaster activities of response and relief to victims. It authorizes government to give appropriate order to anyone concerned to undertake relief work. The Act has constituted the Central Disaster Relief Committee on the chairmanship of the Home Minister at the central level and provides for the constitution as required of regional has not been formulated yet. The central committee has major responsibilities of implementing the policy and programs related to natural disaster, relief work and to undertake other necessary measures thereof.

Disasters a social problem

"It takes years to build and fractions of seconds to destroy"..... Anonymous

Whenever disasters strike, they do not discriminate or differentiate amongst men and women, nations, poor or rich, young or old etc. They do not negotiate or listen and they do not wait, they simply come, kill and destroy causing irreparable losses. When these hazards strikes, it is the communities who are first to react, it is the communities irrespective of their profession, status, caste or culture who need to react. Hence, study of the disaster and society has linkages. Study of disasters in the past has mainly focussed on technical or economic aspect with regards to losses.

Disasters bring disruptions in the normal social life, create chaos, destroy social structure and contribute to replace social order, disaster research may be viewed as the study of 'social pathology', (Dynes, et al, 1978). However, Frtiz (1961) provided a sociological definition of disaster along with a rationale for which disaster should not be viewed as social pathology: "Disasters provide a realistic laboratory for testing the integration, stamina and recuperative powers of large scale social systems. They provide social scientists with advantages that can not be matched in the study of human behavior in more normal or stable conditions".

CHAPTER – III

RESEARCH METHODOLOGY

3.1 Rational of Selection of the Study Area

Bandarpur and Payal Ramnagar communities of Narayanpur and Dhansingpur VDCs respectively in Kailali district are the selected as the sites for field research for this dissertation. The communities have faced floods in different times in the past and almost every year since last few years: 2008, 2007, 2006. Bandarpur, a Tharu community and Payal Ramnagar, a mixed community migrated in from hills of western Nepal has been selected purposively out of several communities affected in the district. The communities are representative of the Terai that are facing floods and inundation at larger scale causing wider damage to lives and livelihoods thus the learning can be applicable to other areas with similar geophysical and societal conditions .

The subject is matter of interest of researches as very limited study on disaster risk reduction from the sociological perspective is prevalence. The findings of the study would be useful for other stakeholders working in the area of flood disaster risk reduction in Nepal. The recommendations may be applicable for forthcoming community level preparedness planning.

3.2 Research Design

This study is carried out on the basis of descriptive research design because the study focus on preparedness practices to respond floods, people's perception of hazard and risk reduction, reaction to past relief distribution after. Descriptive researcher design is concerned with the describing the preparedness measures adopted, response on past relief distribution and recommendation for better future.

3.3 The Universe and Sample

Out of several communities in 42 VDCs and two municipalities in the district, Bandarpur and Payal Ramnagar communities were selected as study unit. There are 67 households (HHs) in Bandarpur community of Narayanpur VDC and 62 HHs in Payal Ramnagar community of Dhansingpur VDC. According to the research design 33 HHs i.e. 25%

of total HHs (17 from Bandarpur and 16 from Payal Ramnagar) has been taken for questionnaire survey as sample of the study. Thus, 17 and 16 HHs from Bandarpur and Payal Ramnagar have been selected by using probability random sampling method for questionnaire schedule.

3.4 Nature and Source of Data and Information

The primary data was gathered by direct involvement of researcher by following different methods i.e. questionnaire schedule, key informants interview, observation and timeline. Quantitative data was gathered with sample households of both the communities. Similarly, qualitative data had been collected through focused group discussion with the affected people of the selected communities.

Relevant information was collected through secondary sources as well. The sources included were Desinventar database of the past disasters, reports and publications in disaster management, records of I/NGOs and journals and published and unpublished reports of CARE Nepal and its partner NGOs.

3.5 Data Collection Techniques

Following data collection techniques were applied in the study:

3.5.1Questioner Schedule

In order to assess the preparedness practices of the community to respond floods, their response on past relief activities and communities' opinion/recommendations for further actions on disaster management, questionnaire schedule (see annex: 1) was prepared in close consultation with the supervisor. The qualitative and quantitative information were collected by conducting interview with the house owner by using the schedule.

3.5.2Focus Group Discussion

To collect the qualitative as well as some quantitative data, a Focus Group Discussion (FGD) was conducted with the representative of the community people in both the selected communities separately. The FGD participants were 8 to 10 community

representatives comprising senior citizens, members of disaster management committee, female and youths. A checklist was prepared to guide the interaction of the FGD (See Annex: 2)

3.5.3Key Informants Interview

Interview with key informants was taken to validate and collect information on preparedness and relief operation. The interview was taken with the member of the local Community Based Organization (CBOs); CSSD partner NGO of CARE Nepal and *Digo Bikas Samaj*, partner of Lutheran World Federation (LWF) working on disaster management and a school teacher. A checklist was prepared for guidance during discussion (See Annex: 3). These discussion were helpful in order to cross-check the data obtained from interview schedule. Focus was given to collect qualitative data rather than quantitative data.

3.5.4 Observation

Observation is one of the most effective techniques used to collect relevant information directly from the study area. During the field visit the researcher observed the meeting, group works, risk reduction measures adopted by the community and key information on vulnerability and preparedness measures and mechanisms carried out by the community people.

3.6 Limitations of the Study

The present study is based on and limited to Bandarpur and Payal Ramnagar communities of Narayanpur and Dhansingpur VDCs respectively in Kailali district. The research is carried out for the partial fulfilment of the requirements for the award of the Degree of Masters of Arts in Sociology. Therefore, there are certain limitations of the study. They are as follows:

- this research report is conducted for partial fulfilment of the requirements for the award of the Degree of Masters of Arts in Sociology.
- this study focuses only on the two above-mentioned communities.

- this study may not be able to cover the entire need of the research covering all the dimensions and depth of the subject matter.
- this research assesses the preparedness measures adopted by the selected communities to respond potential floods and provide recommendations for improvement.

3.7 Data Processing and Analysis

After the completion of data collection and field work, those data were processed, evaluated and analysed. Primary data was processed through editing and tabulating. There were both qualitative and quantitative information. So the organized data was analysed by using simple statistical technique for quantitative information and descriptive method for qualitative information. The data has been presented in the form of tables, graphs and figures according to the relevancy of the study.

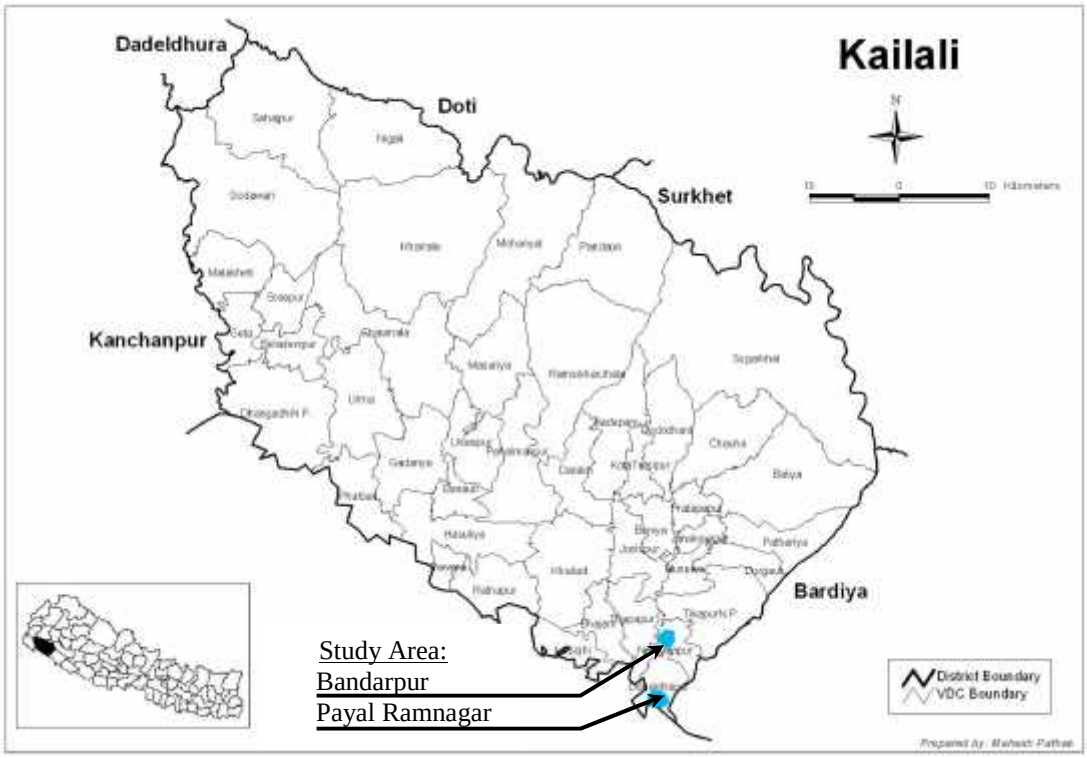
CHAPTER-IV

DESCRIPTION OF STUDY AREA

4.1 Bandarpur

4.1.1 Location and Accessibility

The Bandarpur community is located at Narayanpur VDC ward no. 6 of Kailali district. The community settled there from 1966 AD. The word 'Bandar' means monkey and 'Pur' refers to village. Monkeys used to destroy the crops of the community during early stages of settlement. So the village got its name Bandarpur. This community is about 3 km west from Narayanpur Chowk of Tikapur- Khakraula road**.** The Bandarpur community is surrounded by Beluwa village in the east and Pasreni village in North. The Patharaiya river is 500 m towards south of the community. Jamara Khola is 200m west of the village and the Sunsuniya nala lies north of the village. Every year, these rivers inundate the community, erode the land and fill sand due to which the villagers has to lose their property, crops of their field and their cattle. Agriculture and wages are the main sources of livelihood of the villagers. Loses of agricultural land and properties by the floods, the local people are forced to migrate towards India to earn for their living.



Geographic Location of the Study Area

4.1.2 Population

Total population of this community is 405 with 210 females and 195 males in 67 houses. The community exclusively consists of indigenous Tharu families and very few Dalits and backwarded families. The community is dominated by Tharu culture. As the community is frequently affected by floods, the numbers of swimmers are also abundant in the village. Due to lack of school in the community, literacy rate is very low. But now a days numbers of children attending school are increasing. Among the total population 7 persons have passed SLC examination and 2 of them have become teachers as well.

Table 4.1: Distribution of population by age and sex -Bandarpur

Household	**Population by Age Group**								
	Female			**Male**			**Total**		
	0-14	14-59	60+	0-14	14-59	60+	0-14	14-59	60+
67	85	112	13	68	118	9	154	230	21
Total	210			195			405		

Source: CSSD Kailali (2008)

4.1.3 Caste and Ethnicity

Majority of the household in this community is of Tharu (78%) followed by Chhetri (9%) and Dalits (9%). There are few families of Gurung (4%). Table 4.2 shows distribution household of different casts in the community.

Table 4.2: Distribution of Household by Caste

Caste	Households (HHs)	Percentage (%)
Tharu	52	78
Gurung	3	4
Chhetri	6	9
Dalit	6	9
Total	**67**	**100**

Source: Filed Survey (2009)

4.1.4 Health, Education and Employment Status

There are no health centres in the community. Primary School is located at another village nearby the community. For secondary School, students have to travel about 2 km to Shree Rastriya Secondary School located in the next village. Only 7 person of the community have passed SLC and 2 of them have become teacher, (CSSD Field report).

Main area of employment is subsistence agriculture as land holding is very nominal to most of the families. Seasonal migration to various cities in India is the secondary source of income to most of the families. Agricultural land distribution in the community is as follows:

Table 4.3: Distribution of Agricultural Land

Agricultural Land Distribution	No of HHs	Percentage (%)
House only	20	30
1 to 5 Kattha	22	33
6 to 10 Kattha	18	27
11 Kattha to 1 Bigha	5	7
1.1 – 2 Bigha	2	3
Total HHs	67	100

Source: CSSD Kailali

Hence the agriculture for majority of the community people is subsistence. They have to depend on secondary source of income to feed their families. There are no other alternative sources of income in the village.

Moreover, almost every year floods destroys crops and also land area is decreasing due to encroachment by the rivers. So in search of work to earn their living, they are forced to migrate towards India seasonally. This seasonal migration, on the other hand, has increased probability of HIV infection which is more prevalent in the migrant workers in the western Nepal.

4.1.5 Infrastructure Development

The village is accessible by gravel road. It can be operational in all season except during inundation. Drinking water is provided through 4 community hand pumps and few private hand pumps. The village has electricity facility. The land is highly fertile. Sanitation is poor as most of the HHs have no toilet facility. Since the village has rivers in the surrounding, these have served good source of water for various requirement of cattle rearing such as feeding and bathing.

4.1.6 Past Disaster and its Effects

All above mentioned three rivers have affected the community every year either in small scale or in big scale. Especially, the flood of 2040 B.S. and that of 2064 B.S. have affected badly. So many cattle and the crops of land had been swept away. Many villagers lost their properties as well. Though flood is the major cause of losses in the community, other disastrous events like fire, epidemics etc. have also significant effect. Effects of past disastrous events are shown in Table 4.4.

Table 4.4: Chronology of past disasters and their effect to the community -Bandarpur

Year (B.S.)	Disaster type	Effects of Disaster
2032	Flood	90 quintal of paddy, rice, mustard swept away
2036	Flood	Crops of about 22 hac land damaged and 50 quintal paddy swept away
2040	Flood	200 quintal crops damaged, crops of about 28 ha land and 12 goats swept away
2042	Fire	1 house totally destroyed
2057	Encephalitis	7 people affected
2062	Flood	20 houses drowned, 5 housed damaged
2064	Flood	35 houses drowned, 2 houses damaged and paddy of about 50 ha land swept away
2065	Flood	10 Houses damaged, crops damaged, grains stored in the first floor damaged and 4 goats swept away

Source: Field Survey (2009)

The community is facing disaster due to floods. The community has identified probability of disasters in future as well. Hence effective preparedness and mitigation is needed in the community.

4.2 Payal Ramnagar

4.2.1 Location and Accessibility

The Payal Ramnagar community is located at Dhansingpur VDC ward no. 6 of Kailali district. The community settled there from 1964 AD. This community is about 1 km east from Khakraula which is 31 km south from Lamki of Nepalgunj-Dhangadhi road. Every year, Mohana river inundates the community, cuts the land and fills sand due to which the villagers have to lose their property, crops of their field and their cattle. Labour is the foundation of their livelihood. Due to the loss of their crops because of flood, people are forced to migrate towards India to earn their living. Literacy rate is about 3%.

4.2.2 Population

Total population of this community is 539 with 270 females and 269 males in 62 houses. The community exclusively consists of indigenous Tharu families and very few Dalits and backwarded families. The community is dominated by Tharu culture. As the community is frequently affected by rivers, the number of swimmers are abundant in the village. Due to the lack of school in the community, the literacy rate is very low. But now a day more children are going to school so that literacy rate is being increasing.

Table 4.5: Distribution of population by age and sex -Payal Ramnagar

Households	**Population by Age Group**								
	Female			**Male**			**Total**		
	0-14	14-59	60+	0-14	14-59	60+	0-14	14-59	60+
62	115	124	31	102	145	22	217	269	53
Total	**270**			**269**			**539**		

Source: CSSD Kailali (2008)

4.2.3 Caste and Ethnicity

This community has only Chhetri (63%) and Dalits (37%) and not other caste and ethnic groups.

Table 4.6: Distribution of Household by caste

Caste	Households (HHs)	%
Chhetri	39	63%
Dalit	23	37%
Total HHs	62	100

Source: Filed Survey (2009)

4.2.4 Health, Education and Employment Status

There is one health centres in the community. There is no school in Payal Ramnagar community. Tribhuban Secondary School is about 3 km north of the community, Seti Maya Chaudhari Lower Secondary School is about 4 km north, Bhanubhakta Primary School is about 1 km west of the community and Kalika Primary School is about 1 km east of the community. Students have to travel to these distinctions for their study. Scarcity of health and education automatically avoids the opportunity of the employment. Labour is the foundation of their livelihood. They produce less crop from their small acre of land than they need to fulfil their appetite. Moreover, the rivers destroy their crops making their living condition more pitiful. So in search of work to earn their living, they are forced migrate towards India seasonally.

Main area of employment is subsistence agriculture as land holding is very nominal to most of the families. Seasonal migration to various cities in India is the secondary source of income to most of the families. Agricultural land distribution in the community is as follows:

Table 4.7: Distribution of Agricultural Land

Agricultural Land Distribution	No of HHs	Percentage (%)
House only	8	13
1 to 5 Kattha	13	21
6 to 10 Kattha	14	23
11 Kattha to 1 Bigha	12	19
1.1 – 4 Bigha	13	21
More than 4 Bigha	2	3
Total	**62**	**100**

Source: CSSD Kailali (2008)

In the study area 13% HHs have land only for house, 21% have small plot of land that do not have sufficient food production. Rest of the HHs have fairly large plot of land that is sufficient for production of food for feeding their families. About 3% HHs of this community have more than 2 Bigha of land that can grow food surplus to the need of their families. However during the field visit, the community people said that the productivity of the land is decreasing due to inundation during monsoon season and filling of sand in the cultivated land.

Moreover, the almost every year floods destroys crops and also land is decreasing due to encroachment by the rivers. So in search of work and to earn their living, they are forced migrate towards India seasonally. This seasonal migration, on the other hand, has increased probability of HIV infection which is more prevalent in the migrant workers in the western Nepal.

4.2.5 Infrastructure Development

The village is accessible by gravel road from Tikapur of Kailali district. The road is operational all seasons except during inundation. The road network within the community is limited. The village has drinking water through community and private hand pumps that get drowned during floods. This village has electricity facility and sanitation is poor as most of the HHs do not have toilet.

4.2.6 Past Disaster and its Effects

This community is located just upstream of the confluence of Karnali and Mohana River. This is mainly the migrant community settled since 1964 AD who have migrated from Pudu village of Achham district in the Far Western Nepal.

Table 4.8: Chronology of past disasters and effect to the community–Payal Ramnagar

Year (B.S.)	Disaster type	Effects of Disaster
2040	Flood	40 HHs damaged, one person was killed and about 10 quintal food grains swept away
2045	Flood	Inundation
2049	Flood	20 HHs affected and crops of the field damaged
2050	Flood	40 HHs drowned
2052	Flood	2 person died
2055	Fire	3 HHs destroyed
2056	Fire	One child died
2059	Flood	Crops damaged, 4 houses destroyed and 30 Bigha agricultural land washed away
2060	Flood	Inundation and damage of crops
2064	Flood	Agricultural land filled by sand and crops damaged
2065	Floods	One person died, cattle and food grains washed away

Source: Field Survey (2009)

For both the communities, flood remains major recurrent disaster. The flood has more impact on agriculture and cultivated land along with damages to settlement. The Payal community is affected by flash flood and Bandarpur is affected by inundation problem more due to the Kailashpuri dam constructed by India just downstream of the Nepal India boarder. According to the community people, the Indian authorities do not open the gates of the dam even during heavy rainfall in Nepal that created barrier to the natural flow of monsoon water and causes back flow of water and inundation in Nepal side.

CHAPTER-V

PREPAREDNESS PRACTICE TO RESPONSE THE FLOODS

5.1 Past Floods

Bandarpur Community is situated at the low land and surrounded by Patharaiya River in the south and Jamara Khola the west, the community has been affected several times in the past from floods, fire and epidemics. Especially, the flood of 1983 and that of 2008 have affected the community badly. Other disastrous events like fire, epidemics etc. have also significant effect to the community.

Payal Ramnagar Community is situated just upstream of the confluence of Karnali and Mohana River in the plain. This is mainly the migrant community settled since 1964 AD who are migrated from Pudu village of Achham district in the Far Western Nepal.

For both the communities, flood remains major recurrent disaster. The flood has more impact on agriculture and cultivated land along with damages to settlement. The Payal community is affected by flash flood and Bandarpur is affected by inundation problem more due to the Kailashpur dam. According to the community people, the Indian authorities do not open the gates of the dam even during heavy rainfall in Nepal. Hence the natural flow is checked thereby causing back flow of water and inundation in Nepal side in Bandarpur community.

5.2 Ranking of Disaster

The Bandarpur community has identified flood, fire and epidemics as the most recurrent disasters. They ranked flood as the most disastrous event that causes wider damages to lives and properties. Similarly, Payal Ramnagar has identified flood, HIV/AIDS, uterine prolapsed, contamination of drinking water as major disasters where flood is ranked first. Ranking of disasters by both the communities is shown in the table below:

Table: 5.1 Ranking of disasters by the communities

Bandarpur Community		Payal Ramnagar Community	
Disaster type	Rank	Disaster type	Rank
Flood	I	Flood	I
Fire	II	HIV/AIDS	II
Encephalitis	III	Uterine Prolapsed	III
Arsenic contamination in drinking water	IV	Arsenic contamination of drinking water	IV
Epidemics	V		

Source: Field Survey (2009)

The ranking of disasters from both the communities indicated, flood as main disaster followed by fire in Bandarpur and HIV/AIDS in Payal Ramnagar. The reason of highlighting HIV/AIDs by the community of Payal Ramnagar has linkages to the situation of seasonal migration to neighbouring cities in India for wage labour. Similarly, in the discussion women raised uterine prolapsed as major problem in women as most of them have severe problems and has no access to proper treatment. Epidemics and arsenic contamination has also been considered as major problem of the communities.

5.3 Causes of Flood

Geophysical setting of the community, intensive rainfall and obstruction of the natural drainage are the main causes of floods in the communities. During the interaction,

most of the community people indicated Kailashpuri dam made by India in its land just downstream of the boarder as major cause of floods. This is not only due to construction but the operational part of the dam that seems defective as the authorities close the gates during monsoon that prohibits natural drainage of the monsoon rainfall from the communities in Nepal side.

Other causes of floods according to the respondents can be summarized as follows:

- the community is surrounded by rivers
- the community is settled in low land area
- raising of river bed level due to heavy soil erosion and mass wasting in the catchment of the rivers

5.4 Life Saving Practices during Past Disasters

The community people have adopted different life saving measures based on their knowledge, past experience and availability of local resources. Most of the people expressed that they shifted to previously identified safe places immediately after perception of being under the threat of floods. Others used their upper floors and roof tops for safe as temporary shelters during disasters. The boats managed by the communities with the support from disaster risk reduction programmes were also used for emergency rescue operation of people and important belongings.

Table 5.2: Life saving measures during flood

Life saving measures	Percentage of Households
Shift to the safer place	33%
Living on the higher floor	24%
Used banana trunk to make boat	9%
Living on the ridge	6%
Used community boat	27%

Source: Field Survey (2009)

About 33% of the respondents mentioned that they shifted to previously identified safe places along with their family members, cattle and important documents. Percentage of this population is higher and the percentage of people who used roof top as temporary shelter is as low as 6%. This was basically due to the reason that most of the houses are single storey and these may not be safer in case for heavy floods. Those who had two storey houses locally called Thanti have used the upper story for safe shelter during the floods. 9% of the respondents mentioned that they used local materials like banana trunks, plastic bottles, etc. to make a floating platform and carried their family members and important belongings during floods. This was possible as the banana trunks are locally available and the community has local knowledge that these materials can be used for floating. Only 6% of the respondents mentioned that they went on the roof top during floods as they had no access to other options. Percentage of people using this option was very low as the roof top especially of single storey was found to be unsafe during heavy floods. Percentage of respondents that used community boats was as high as 27% as the boats were in good condition and this year's flood was very high.

5.5 Preparedness Activities to Save Lives and Property

Being affected by floods in different times in the past, the communities have planned and implemented risk reduction initiatives based on their learning from experience, availability of local materials, cultural practices and intervention from different organizations. Following table has compared the preparedness practices of the two communities:

Table 5.3: List of the preparedness practices adopted by communities

Payal Ramnagar (Migrant Community)	Bandarpur (Tharu Community)
⁾ Collected important documents at one place ⁾ Community saving of cash and grains ⁾ Check dam construction ⁾ Has made animal sheds two storey to store food grains ⁾ Identified safe places ⁾ Managed community boats ⁾ Placing of grains on Thanti (Upper storey) ⁾ Raise plinth level of house ⁾ Raised the level of hand pump ⁾ Raised the plinth level of toilet	⁾ Hanging the bed (Khatiya) on ridge of the roof and others important materials ⁾ Use of plastic bottles to make floats ⁾ Managed community boats ⁾ Placed important documents on highest place in the house ⁾ Placing of grains on bullock cart when rainfall starts ⁾ Prepared floating platform using local materials ⁾ Raised sheep instead of goats as the former is resistant to water ⁾ Raised the level of grain storage bins

Source: Field Survey (2009)

Table 5.3 shows similarities and differences in preparedness practices of the two communities. The preparedness is the result of past experience of local communities and external intervention form different government and non-government organizations and knowledge of the community, cultural practices geophysical condition. The community in Bandarpur is more affected by inundation. Hence, they have used floating means for life saving where as Payal Ramnagar is more affected by flash flood. Hence, they wished to flee faster to previously identified safe places. The community of Ramnagar have made Thanti Ghar (house with two storeys) similar to houses in the hills from where they have migrated. The community in Bandarpur is mainly of Tharu who have houses with single storey. They also use upper portion of their house for storage of important belongings, food grains and have hung bed on the

ridge of the roof. Also, the Tharu communities have raised sheep instead of goat due to resistance of the former to floods.

Similarly, the preparedness measures also include management of boats, rising of hand pumps, raising of plinth level of houses and toilet are due to the intervention of external organizations working in disaster management.

5.6 Losses due to Disasters in the Past

During every flood both the communities have been affected. Major losses were the damage of crops from the cultivated land, drowning of belongings in the houses including food grains, damages to houses, etc. Human casualties due to the floods were less because of occurrence of flood in the morning time and preparedness measures adopted by the community. Losses due to past floods in communities are as shown in the table below:

Table 5.4: Types of losses due to floods

Type of losses	Respondents	Percentage
Cattle	21	64%
Clothes and utensils	5	15%
Crops in the field	17	52%
Damage to Saw mill	3	9%
Food grains	21	64%
House damaged	5	15%
Important documents	19	58%
Loss of human life	3	9%

Source: Field Survey (2009)

The losses from the flood is multiple to most of the respondents i.e. same respondent has lost cattle, food grain and crops in the field hence the total percentage is more than hundred. Majority of the respondents (64%) mentioned about the loss of cattle that include goats, cows and sheep during the floods. Similarly percentage of respondents with loss of food grains, loss of crops in the field is 64% and 52%

respectively. This shows that the immediate need of the affected communities after the flood is food. Losses of important documents such as citizen certificate, land certificate, books of children, record of community based groups, etc. is very high, i.e. 58% of the respondents have this loss. Only 15% of the respondents have stated the loss of utensils and clothes. This also shows human casualties from the flood is less.

5.7 Resources of the Communities

Though the communities are affected by floods almost annually, they are reluctant to leave the area due to the resources available for their livelihood. The land of the area is highly fertile and they have good source of water for drinking and feeding their cattle as the villages are surrounded by rivers. Besides, the villages have all season gravel road for access to the nearby market and other business centres. As the villages are close to India, those families who have small or no land have options to work as labour in sugarcane farm in nearby city in India. In the interaction during field survey, the community people mentioned that the flood is temporary problem that affects from few weeks to three months in a year.

5.8 Organized Approach to Respond Floods

The communities have been facing floods for long time and developed their knowledge and skill to response floods for reducing losses to human lives and properties. The community has also been benefitted with the support from organizations like CARE Nepal, Lutheran World Federation, Nepal Red Cross Society and Government institutions. To respond the floods in organized manner and reduce risks through mitigation measures, Disaster Risk Reduction Committee (DRRC) has been formed in both the communities. The committee consisting of 11 members is representative of all the caste, ethnicity and settlements. The committee meets every month and discusses on the issues of disaster risk reduction and preparedness. Under the coordination of the DRRC, various activities towards risk reduction and preparedness have been implemented in the communities.

All the members of DRRC have been trained on community based disaster risk management and leadership development. The committee is responsible for mobilization of local resources for risk reduction and coordination for preparedness.

The committee is also responsible for mobilizing the task force, emergency equipment and emergency fund during disasters.

The community has task force for search and rescue, first aid and early warning trained on the subject matter and provided with required equipment consisting of life jacket, rope, hand mike, boat, etc.

The DRRC have started to raise emergency fund that can be mobilized immediately by themselves during floods and other disasters.

The community has also developed preparedness plan to implement in case of floods in the community. They have tested the plan with mock drill exercise.

5.9 Future Plan of the Community

Based on the experience of 2008 flood, the community and DRRC have planned for providing life jacket to each HHs that are vulnerable to floods in Bandarpur and Payal Ramnagar. For the same they have requested to various organizations to which they have access. They are in the process of updating of the plan based on the changed context flood scenario and past experience and drill exercise. After development of the preparedness plan, the DRRC will educate all the community people so as to make them known in advance on how to save life and properties during floods, how to follow the early warning information and support others who are in trouble.

CHAPTER-VI

COMMUNITY PERCEPTION ON RELIEF DISTRIBUTION

6.1 First Responder during Disaster

Disaster is a situation that demands external support for saving of lives and livelihoods of the affected population. Saving of lives is critical during the first 48 hours in which external support can hardly be mobilized due to different organizational bureaucratic process. Whether natural or man-made disaster, local community is the first responder by default, particularly during the first 48 hours, which is crucial for saving lives, caring for injured, providing shelter and food for victims. Respondents of the field survey have mentioned following responders during the past disasters in Table 6.1.

Table 6.1: List of responders during past disasters in the selected communities

Response Provider	**Respondents**	**Percentage**
Disaster Risk Reduction Committee (DRRC)	12	36%
Youths of the village	5	15%
Neighbours	2	6%
Local NGO	5	15%
Nepal Red Cross Society (NRCS)	7	21%
VDC	2	6%

Source: Field Survey (2009)

Here the first responder to the disaster is the disaster risk reduction committee of the community as 36% of the respondents have received their support. Support from NRCS and Local NGOs is significant as they are also part of the community and working with them in the area of disaster risk reduction. Support from neighbours is only to 6% of the respondents. This is due to almost of community was affected by floods.

6.2 Types of Relief Materials

After the onset of disaster government institutions and humanitarian organizations like Nepal Red Cross Society, NGOs and INGOs put their effort to provide relief materials consisting of food and non food items that are essential for human being on daily basis to the victims of disasters. The composition of relief materials depends on the actual need of the victims based on the damages caused by disasters. Distribution of relief materials to the communities of Bandarpur and Payal Ramnagar is shown in the Table 6.2.

Table 6.2: Distribution of Relief Materials

Description of Relief Materials	**Respondents**	**Percentage**
1. Food items, cooking utensils and tarpaulin	10	31%
2. Food items and cooking utensils	2	6%
3. Food items	7	21%
4. Food, clothes and tarpaulin	7	21%
5. Food, clothes and cooking utensils	7	21%

Source: Field Survey (2009)

Table 6.2 shows that the food item was common in all the types of relief packages and next common is the cooking utensils followed by clothes. Hence these can be considered as basic requirements for almost of the victims immediately after disaster. About 21% of respondents have received tarpaulin along with food and clothes.

6.3 Timing of Relief Materials Distribution after the Incident

Timely delivery of necessary food and non food relief items to the victims of disaster is the main task of the government and humanitarian organizations. However, due low level of preparedness, lack of stock piling of the relief items at strategic locations, obstacles to the transportation network along with other organizational and political barriers delay the timely delivery of relief materials. The Bandarpur and Payal Ramnagar communities have responded on the timing of delivery of the relief materials to the flood victims which is shown in the Table 6.3.

Table 6.3: Timing of relief distribution after the disaster

No. of week after the incident	Respondents Receiving Relief	Percentage
1	17	52%
2	7	21%
3	0	0%
4	7	21%
5 to 8 weeks	2	6%

Source: Field Survey (2009)

The table above shows that the relief materials were provided to 52% of the respondents within one week and next 21% within second week of disaster which shows effective response from the government and other humanitarian organization. However, 21% of respondents had to wait for more than 3 weeks to receive the support and 6% have received only after 5 weeks. During the interaction they mentioned that the food items were provided within one week of the incident and other tarpaulin, cooking utensils, clothes were distributed later.

6.4 Organizations Involved in Relief Distribution

According to the respondents the relief materials were distributed to the victims in a coordinated manner. Unlike organizations going and distributing what they had, the VDC played the role of coordinator for relief distribution, where other institutions like Disaster Risk Reduction Committee of the affected communities and NRCS provided their support. Thus the distribution was systematic to some extent. The preparedness plan of the community, various capacity building activities and awareness of the local people should have played role in less hurdles in the relief distribution.

6.5 Community Response on the Relief Distribution

In general, the victims of disaster have negative impression and huge dissatisfaction towards the relief distribution programme due to being unable to deliver the relief materials on time with adequate quantity and quality. Disaster survivors need food and non food items after few hours of disaster incident. However, the relief materials reach them hardly on weeks. Table 6.4 shows the response of the communities regarding relief distribution.

Table 6.4: Response of the communities to relief distribution

Response	Respondents	Percentage
Satisfied	19	58%
Unsatisfied	14	42%
Total	33	100%

Source: Field Survey (2009)

Table 6.4 shows majority of the respondents were satisfied and have no comment on the relief distribution whereas 42% of them were unhappy. The reason for being unhappy is that the relief package they have received is nominal in comparison to the loss of their properties and source of livelihoods. Another reason for dissatisfaction is

the delay in distribution of the relief package. In addition, irrational distribution of relief materials regardless of evaluation of damage and the needs have also created negative impression to the relief distribution among the disaster victims.

During the field survey, the respondents have suggested the government and other organizations to be proactive to disaster. While doing so, irrecoverable losses to lives and property from disasters can be minimized.

CHAPTER-VII

SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1 Summary

Nepal is exposed to several types of hazards such as droughts, wind storms, avalanches, debris flow, GLOF, cloudburst, hailstorms, fires, lightning (thunderbolts) and ecological hazards. A wide range of physiological, geological, ecological, meteorological and demographic factors contribute to the disaster vulnerability of the country. Other major factors are rapid population growth, high degree of environmental degradation, fragility of the land mass and steep slopes. Similarly, the socio-economic factors, such as levels of poverty, caste/ethnicity, gender, religions, etc. are gradually being recognised also as a central to analysing the question of vulnerability in the country.

The most frequent hazards causing tremendous losses in lives and property are floods and landslides in Nepal. On an average, natural disasters take a toll of 951 lives and damage property worth NRs 1,242 million every year (Table 1.1). The disaster is affecting societies in regular functioning and hence it has gradually been interest of study for students of social science.

Past experiences of Nepal and other countries in the region have shown tremendous reduction in loess from disaster through implementation of risk reduction measures and better preparedness to respond the potential threats due to natural hazards. Hence, two communities from Kailali district in far western Nepal have been selected for assessment community’s response to the past relief distribution their preparedness to potential future floods.

The main objective of this study is assess the level of preparedness of the selected communities to respond the adverse effect of natural hazards in general and floods in particular. Specific objectives of the study are to assess the preparedness practice to respond floods and to assess the community's perception towards disaster relief program of the government of Nepal.

Considering occurrence of frequent floods during last few years, two communities: Bandarpur in Narayanpur VDC and Payal Ramnagar in Dhansingpur VDC in Kailali district were selected as a study unit for this research.

A descriptive research design appropriate for collection of quantities and qualitative information relevant to the objective was prepared. Tools such as questionnaire schedule, focus group discussion, interview with key informant, field visit and observation were used for relevant data collection.

Qualitative and quantitative data were collected from primary and secondary sources. The collected data were analyzed based on the descriptive design. Quantitative data were also tabulated and analyzed. Simple statistical tools and percentage methods were used for quantitative data analysis.

Major disasters in Bandarpur and Payal Ramnagar communities are floods, fire, epidemics, etc. that have impacted lives, properties and agricultural land directly. The communities have faced floods several times in the past.

Taking account of the local resources, past experiences of floods and interventions from national and international organizations working on disaster risk reduction, the communities have organized mechanism to respond the floods. They have formed Disaster Risk Reduction Committee (DRRC), trained the members on disaster management, formed and trained first aid team, search and rescue team, managed emergency equipments and initiated establishment of emergency fund. They have developed DRRC as focal body for disaster management and coordination during disasters. The DRRC has performed its role effectively during the flood of 2008 that resulted better management of relief operation.

Communities have mixed reaction to the relief distribution as they were also part of the mechanism. Most of them showed satisfaction to the relief distribution as they were getting at least some support when they had nothing for their survival immediately after disaster. But other members of the community expressed their dissatisfaction towards relief distribution for the time lag between disaster and distribution. Another reason of unhappiness among the community people was the rampant distribution of support to the disaster victims irrespective of losses.

The community have also suggested the government and other stakeholders to be proactive to disasters to minimise losses to lives and properties through implementation of risk reduction measures.

7.2 Conclusion

Flood is the main hazard that has affected the selected communities on a recurrent basis. Rise of river bed due to sediment load on the rivers and obstruction to the natural flow by Kailashpuri dam in the Indian land is major underlying factors for the recurrent floods in the study areas.

There are similarities and differences in preparedness practices of the two communities based on the past experience and external intervention form different government and non-government organizations, knowledge of the community, cultural practices and geophysical condition.

Capacity enhancement of the local communities is essential to reduce the adverse impact of floods in particular and disasters in general. Local communities are the first responder to every disaster so the local level mechanism and capacity can be activated immediately after such disasters for search and rescue, first aid, management of temporary shelters and relief operation. The best practices of the communities of Bandarpur and Payal Ramnagar such as formation and training of Disaster Risk Reduction Committees, formation of task forces and training them on search and rescue, first aid etc. and formulation of preparedness plan and discussion among the community people and organization of drill exercise need to be disseminated to other communities vulnerable to floods and other natural hazards.

The preparedness measures and community capacity has played positive support in relief distribution and coordination among the relevant stakeholders such as VDC, NRCS, other NGOs and the local community. The coordinated approach of the relief distribution with active involvement of the local government bodies and community based organizations needs to be emphasized in future for timely delivery of the support to the victims.

The government and developmental organizations need to act proactively for long term solution of hazards and disaster risk reduction. National government should formulate and implement plan for risk reduction along with continuation of best practices of the communities.

7.3 Recommendations

First and foremost challenge in disaster risk reduction is still to identify appropriate policies, strategies and practices based on local experiences and knowledge systems that can be instrumental in minimising losses due to disaster in particular societies but within a broad context of sustainable development of these communities. Preparedness practices and response mechanism developed by the communities of this study may be taken as important step towards disaster risk reduction. However, this study may not be sufficient to highlight the issue at the national context. Following recommendations are made to take necessary actions for learning from the Kailali for betterment and effective community based disaster preparedness measures in Nepal.

The Natural Calamity Relief Act has been realized to be inadequate to cover the risk reduction and overall disaster management thus the disaster management in Nepal as guided by the act is focussed to relief and rescue after occurrence of disaster. Hence, formulation of comprehensive act, policies and strategies for overall disaster management and sustainable development is essential. Following recommendations are made based on the study:

- Community based institutions like DRRC should be strengthened for better preparedness, search and rescue and relief operation.
- During the floods, crops in the agricultural field are damaged in most of the cases. Research should be conducted to change the cropping pattern so as to avoid crops in the field during potential flood duration.
- Relief operation should be coordinated by local government with the support from local community based organizations like DRRC in the study area.
- Emergency disaster response capacity of the local community should be enhanced as they are the first responder by default to every disaster.

- There is an apparent need for integrated and coordinated approach among the development and humanitarian organizations for risk reduction and disaster mitigation to minimize occurrence of disasters.
- Vulnerability of various communities in the Terai, like Bandarpur and Payal Ramnagar in the study area is increasing due to development in the Indian Territory such as construction of dams for irrigation, expansion of road and railway network, etc. that create barrier to the natural flow of the rain water. Thus Government of Nepal should work with the Government of India to solve such issues to minimize risks of disasters in the days to come.
- Government of Nepal should focus on conservation of highly fragile Churiya hills for the control of floods in the Terai region. Special programmes should be launched for such conservation.

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ANNEXE 1: Questionnaire schedule for detailed interview

1. How long have you been settling in this village?
2. What are the disasters incidents that occur frequently?
3. In which years there was flood in your community?
4. How did you protect yourself and your family during the flood?
5. What important things were damaged by the floods?
6. What did you tried to protect from being loss or damaged?
7. Since there is probability of floods in this area what is your preparedness to response the floods?
8. What are the reasons of recurrent disasters in this area?
9. What are the preparedness measures adopted by your neighbours to respond the recurrent disasters?
10. Have you been affected from the disasters?
11. If you were victim, what relief support did you receive?
12. Who provided the relief and how it was distributed in your community?
13. What did you receive?
14. How many days after the incident you received the relief support?
15. Is your family satisfied with the support?
16. Who provided first support during disasters?
17. What should be done to reduce losses of lives and properties from disasters?
18. What organizations have you formed to respond the floods
19. What is your suggestion to the government and other agencies working in disaster management

ANNEXE 2: Checklist for focus group discussion

Address:

Place:

Participants of group discussion

Name	Age	Sex	Remarks

1. How long have you been settling in the village?
2. How many households are there in the community?
3. Caste/ethnicity/ Religion
4. Source of income and employment
5. Facilities such as school, health post etc.
6. Major hazards of the community
7. Past history/time line of disasters
8. Available resources to response floods
9. Major and frequent disasters and causes
10. Traditional practices and coping mechanism
11. Vulnerable group
12. Responders during disasters
13. Organizations working on disaster management
14. Preparedness measures to respond future floods
15. Committees and task forces, training, emergency equipment
16. Past relief distribution and communities impression
17. Suggestions

ANNEXE 3: Checklist for key informant interview

Name:

Organization:

Designation:

Main responsibility:

1. How you were involved during disaster in the communities?
2. What are the frequent disasters of this area?
3. How do you find the support from government and other organization during disaster?
4. How was the relief distribution? Was it adequate to meet the needs of affected people?
5. Were you involved in the relief distribution?
6. Process of relief distribution?
7. How do you find affected people's feeling after disaster?
8. What preparedness measures the communities have adopted to reduce disasters?
9. What are the reasons on frequent occurrence of such disasters