

CHAPTER: I

INTRODUCTION

1.1 Background of the Study

Nepal has three distinct ecological regions, namely mountain, hill and Terai. Mountains lie between the altitude of 4,877 and 8,848 meters and hills between the altitude from 610 to 4876 meters covering 35 % and 42 % of the total land area respectively. The Terai region lies below the elevation of 610 meters and covers 23 per cent of the total land area. The hill region is located in between the mountain and Terai regions. This region has a fertile valley and basins such as Kathmandu, the capital city of the country. Terai is in the southern region of the country and has low flat land as well as dense forest. The mountain and hill regions have about 52 % of the total population and nearly 48 % are lived in Terai region (GoN, 2011)

The Ministry of Home Affairs (MoHA) has played key role as the focal agency in disaster management in Nepal. The main functions of Ministry are formulation of policies, their implementation, disaster preparedness and mitigation and lead role in emergency relief work, data collection and dissemination, and collection and distribution of funds and resources (GoN, 2011). There is the national framework in all seventy-seven districts of the country about disaster management under the chairmanship of Chief District Officer (CDO). Disaster Risk Reduction Committee (DDRC) has been formed for the immediate response at the local level in each district, there is the. The institutionalized Disaster Risk Reduction (DRR) in Nepal began in 1992 after the promulgation of Natural Calamity Relief Act (NCRA) by government of Nepal. There are the national, district and local-level networks in working to response and recovery phases of disaster. River flooding represents the most common global hazard causing phenomenal losses. Throughout human history, swelling rivers and floods have taken a heavy toll on properties and lives. It is the cause of more economic losses than any other Hazard River flooding represents the most common global hazard causing phenomenal losses.

More than 6,000 rivers and rivulets are located in Nepal. Floods and landslides, which are triggered by heavy precipitation, cause 29% of the total annual deaths and 43% of the total loss of properties in Nepal caused by flood (DWIDP 2017). However, river and river systems are very important to man because the entire civilization grew around or near the rivers. River and their adjacent floodplain corridors fulfill a variety of functions both as part of the natural ecosystem and for a variety of human uses. Although the rivers and river systems also have negative values; they often cause great damage and death due to flood. Flood hazard damaged event of a certain magnitude within a given time period and area (Brooks, 2003). The main cause of river flooding in the Himalayan Region is the occurrence of heavy rainfall during the monsoon, mostly southern slopes of Churia and Mahabharat receive more rainfall. Flooding, discharge of excessive water exceeding the channel capacity, and Flash floods, originating from thunderstorms are the most pervasive and costly natural hazards faced by the Nepalese people. The problem of flood hazard is particularly prominent in the southern plains of Nepal where the gradient of the river channel is very low. Apart from hydrological phenomenon, the presence of natural or man-made obstructions in the flood path such as bridge piers, floating debris, weirs, barrage, outburst of landslide dam, glacial lake, failure of different structures, etc. causes flooding. Some of the rivers are dry during the winter season, while in the monsoon they become active and cause immense damage (Dixit, 1999). Therefore, it is not uncommon to have floods in a country having such large rivers and monsoon.

From the academic point of view many aspects of these environmental issues of Nepali have remained understudied. In this view there are few studies on flood and its secondary effects of riverbank erosion displace from the livelihood perspective. We do not even know the reason for flood in the study area. The study focused on the situation of Mohana River that follows through Kailari rural municipality ward no. 5 of far western province. In every year Mohana river creates problems in Kailari area. Flood badly effects on livelihood pattern of the people living in river bank of the Kailari.

1.2 Statement of the Problem

Disaster Risk Reduction is the systematic development and application of policies, strategies and practices to minimize vulnerabilities and disaster risks throughout a society, to avoid or to limit the adverse impacts of hazards within the broad context of sustainable development. As indicated in the introduction, natural disasters and floods in particular have become frequent and are likely to occur in future due to climate variability. The problem which this study addressed is the impact of floods on the socio-economic livelihoods of people in Kailari rural municipality of far western province. The study area is in a low-lying, severely flood prone area (wetlands). Most of the communities targeted in the area are located along the Mohana River which flows into Chure region. The population along the river has grown over the years. Almost three quarters of the land is used for crop production, mainly, paddy maize and vegetable gardening. Owing to its geographical location, that is, along the river banks, the communities have a limited capacity to control the hydrological events ensuing from the river catchment.

Besides other, water related disaster is prominent in Nepal. It has been suffering from different types of water-induced disasters: soil erosion, landslides, debris flow, flood, riverbank erosion etc. Rugged topography, weak geological formations, active seismic conditions, occasional glacier lake outburst, concentrated monsoon rains and unscientific land utilization are some of the major reasons for water-induced disaster (DWIDP, 2013). These phenomena induce severe impacts on infrastructures of the nation such as roads, hydro power, irrigation and drinking water facilities causing loss of agricultural lands, properties and human lives posing a severe threat to the sustainable development of the country (Regmi, 2015, p, 5). The number of people at risk has been growing each year and the majorities are in developing countries with high poverty levels making them more vulnerable to disasters (ISDR, 2002, p.4). Local people have always developed their own ways and means to deal with floods. Flood of Mohana river impacts on live and livelihood of the people living in river side. River floods destroyed houses, shed, cultivated land that creates problems on livelihood pattern of the people. In this study it analyzes the perception of the respondents on the consequences river flood and impacts of the river flood.

1.3 Research Questions

The study focused on the consequences and impacts of live and livelihood of the flood of Mohana River. The study intended to focus on the following research questions;

-) What is the cause of flood of Mohan River?
-) What are the consequences of flood on life and livelihood of people?

1.4 Objectives

Overall objective of the study is to relate the changing impacts of live and livelihood of the respondents living in Kailari rural municipality ward no. 5, Kailali. Specific objectives are as follows;

-) To analyze the cause of flood of Mohana river.
-) To analyze consequences of flood on life and livelihood of people.

1.5 Significance of the Study

The study is important because it highlights changing livelihood effects of the floods in Kailari rural municipality, Kailali. The study also endeavors to establish the underlying causes of vulnerability of people in Tharu community. More importantly, it is envisaged that the outputs of the study will be key inputs in the designing of sustainable mitigation measures to minimize the impact of floods and the associated risks. The study is significance for those who want to study about the impacts of flood on livelihood. Flood is one of the main natural disasters of Nepal annually dozens of people lost their life and millions of properties lost due to flood. Government also invests large amount for reduction of flood disaster. The study also significance for the policy makers who are working the disaster risk reduction related activities.

1.6 Organization of the Study

The study has been organized into eight different chapters including references and questionnaires. The first chapter is about introduction that deals with the background of the study, statement of problem, objectives of the study, significance of the study, limitations of the study and organization of the study. The second chapter covers the literature review including both theoretical and empirical aspects. The third chapter is

about the research methodology which refers to research design, source of data, sampling procedure and data collection technique, data processing and analysis etc. Chapter four a brief introduction study area and respondents. Lastly, Summary and conclusion are included in the fifth chapter.

CHAPTER: II

REVIEW OF LITERATURE

Literature review is most important parts of thesis writing. It enables us to get information about existing previous studies. Literature review surveys books, scholarly articles, and any other sources relevant to a particular issue, area of research, or theory, and by so doing, provides a description, summary, and critical evaluation of these works in relation to the research problem being investigated.

2.1 Theoretical Review

Livelihood is defined as adequate stocks and flow of food and cash to meet basic needs. Security refers to secure ownership of, or access to, resources and income earning activities, including reserves and assets to offset risk, ease shocks and meet contingencies. (Twyman, 2001, p. 45). Sustainable refers to the maintenance or enhancement of resource productivity on a long-term basis. A household may be enabled to gain sustainable livelihood security in many ways through ownership of land, livestock or trees; rights to grazing, fishing, hunting or gathering; through stable employment with adequate remuneration; or through varied repertoires of activities.

The report envisaged it as an integrating concept, since sustainable livelihood security is a precondition for a stable human population, a prerequisite for good husbandry and sustainable management, and a means of reversing or restraining destabilizing processes, especially rural to urban migration. Sustainable livelihoods are seen as a means of serving the objectives of both equity and sustainability. However, Chambers and Conway (1991, p.41) visualized the concept from different angles. From their perspective, sustainable livelihoods also provide the resources and conditions for the enhancement and exercise of capabilities.

Sustainable Livelihood Approach (SLA): Livelihood framework is a tool to improve our understanding of livelihood, particularly livelihood of the poor. A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover.

Livelihood analysis seeks to explain how a person obtains a livelihood by drawing upon and combining five types of 'capital' i. e. human capital (skills, knowledge, health, and energy); social capital (networks, groups, institutions); physical capital (infrastructure, technology and equipment); financial capital (saving, credit); and natural capital (natural resources, land, water etc.).

Household characteristics represent various forms of assets, which ensure entitlement, that will determine whether the household shall cope or varying degree when a household is confronted with a certain hazard, this can result in hunger. Livelihood's strategies are the key to understand the way the people cope with hazard. Livelihood assets, Physical, natural, social capital, human financial: these assets are dynamic and vary among households. Supporting the range of assets of poor people human, material, financial, and social can help them to manage the risk they face (Chambers, 1989, p, 7).

Farm household members are heavily dependent on natural capital, those farmers who have access to land of various qualities, land holding sizes, and common pool resources, these types of household farmers will improve their consumption and income both in the normal times as well as in the crisis period, as for e. g. flood that destroys agricultural land. Natural capital is very important to those who derive all or part of their livelihoods from resource-based activities like agricultural production, fishing, gathering of forest products etc. Those farmers who are natural resource poor have to face many challenges in sustaining their livelihood. (DFID, (2002, p. 5)

In the context of sustainable livelihood framework, social capital is the resources upon which people search their livelihood objective. The social capital includes network and connectedness, men which people draw in pursuit of livelihoods. As in the case of Nepal, political patronage, *Aphno Manche* (own man); existence of these trends in a community influences a great deal in building and using social capital. Households with higher amounts of social capital may be particularly important as a resource of last resort for the poor and vulnerable people. Social capital provides a buffer that helps them to cope with shocks, act as an informal safety net to ensure survival during the period of crisis, it also compensates for a lack of other types of capital. (Scoones, 1998, p. 33)

Financial capital tends to be quite versatile of all the other capital. The capital includes, cash, credit/debt, saving and other economic assets. These capitals can be converted to various things upon transforming structures and process into other types of irrigation etc. These infrastructure and producer goods needed to people. Within the livelihoods framework are the institutions, organizations, policies and laws that must determine the access (to various types of capital, to degrees of ease, depend capital (Scones, 1998). The financial capital which is available to people may be savings, livestock's, sale of food stuffs, remittance, pension, credit and other income generating activities, all this capital will provide them with different livelihoods options.

Transforming structure and process will influence and shape behavioral pattern of people affect rural households and help the livelihood strategies and decision making bodies and source of influence); the term of exchange between different types of capital and returns economic opportunities open to them thereby shaping livelihoods. Now there are lots effort put by INGO and NGO to help farmers organize and form cooperative, helping them sources outside markets. They are also giving credit to increase the wellbeing of the rural poor. (UNISDR, 2009, p. 56).

Livelihood Strategies: Livelihoods approach mainly consist of three broad clusters of livelihood strategies they are as follows: Intensification or more intensive use of land
Outcomes: Outputs of livelihood strategies. These are the objectives that a household seek to achieve by the end of the day. Sustainable livelihoods or, wages labor migration etc. Increased income also relates to the idea of the economic. a household will have ample food and opportunity of employment, this type of household will be in the stage of wellbeing. Livelihood strategies within natural resources; diversification or expanding of the share non farm income in the household income portfolio; migration, either temporarily or permanently, from village to town or other areas. Different livelihood activities have different requirements, but in general principle is that those who are more endowed with capital are in the better position than the one who does not. The combination of activities that are pursued can be seen as a 'livelihood portfolio' the degree of diversification may relate to the resource endowments available and the level of risk associated with alternatives options.

“Livelihood strategies are composed of activities that generate the means of household survival” (Ellis, 2000:40).

Livelihood resources may be accumulated so that reserves and buffers are created for times when stresses and shocks are felt. Capital accumulation would lead to transformation of assets, which would then influence the livelihood strategies to achieve livelihood outcomes which are sustainable in the long run. Livelihood outcomes are the achieved outcomes lead to sustainable utilization of resources at both household and village level. More income: the income derives from off farm on farm and through skills w sustainability of livelihoods. Increased wellbeing, when. Reduced vulnerability: resilience in the face of stress and shocks is both key coping and adaptation strategies. Improved food security: any household has to be food secure based on the earning from on farm or off farm activities and this is the core objectives of the household. More sustainable uses of the natural resources will provide security at the time of shocks and stresses. (Khanal, 2015, 77).

In any livelihood strategies, there will be trade-offs and possibly conflicts between different outcomes e. g. increase income for some groups damages the natural resources base, different Entitlement approach (1981). The major strength of livelihood approach is it does not perceive people as vulnerable victims; rather as ‘investigate how a person or community gains a sustainable livelihood using a range of resources within given people act within the limits of existing resources and range of expectations to achieve various ends. In general, this involves no more than ‘managing in to the labor force, or working more hours or by reducing expenditure, taking loans, leasing household members have different priorities. The livelihood approach extends over the dynamic actors; they adapt to trend and cope with shocks, based on external condition, their vulnerability context. (Thapa, 2015, p. 44).

Different livelihood activities have different requirements, but the general principle is that those livelihood choices, what combination of livelihood resources (different types of capital) result in the ability to follow what combination of livelihood strategies (agricultural intensification / intensification, livelihood diversification and migration with what outcome? (Scoones, 1998, 78).

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living, a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contribute net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers and Conway, 1991, p 34).

Livelihood approach is concerned first and foremost with people. So, accurate and realistic understanding of people's strength (assets or capital endowment) is crucial to analyze, how they endeavor to convert their assets into positive livelihood outcomes. Livelihood assets lie, therefore at the center of livelihood framework. People require range of assets to achieve positive livelihood outcome, no single capital on its own is sufficient to yield better livelihood outcomes that people seek. This is particularly true for poor people whose access to any given category of assets tends to be very limited. As a result, they have to seek ways of nurturing and combining what assets they do have in innovative ways to ensure survival. (DFIF, 2002 p, 3).

The pentagon shows different categories assets and their interrelationship. The shape of the pentagon can be used to show the composition of assets of social group or a community. The center is therefore seen as zero point, while the outer perimeter represents the full access to the respective assets. On the basis, different shaped pentagons can be drawn for different communities or social groups within communities.

The five capital letters represented in sustainable livelihood framework are human, social, natural, physical and financial. Human capital represents the skill, knowledge, ability to labour and good health whereas network, connectedness and membership in more formalized group and their system of rules, norms and sanction are social capital of human being. Similarly, natural stock, flow of resources such as land, water, forest air quality, erosion protection and biodiversity come under the natural capital. Basic in fracture and producer's goods such as affordable transport, secured shelter, adequate water supply, sanitation, affordable energy and access to information and available stock-cash, bank deposit, asset jeweler and regular inflow of money-labour

income, pension and remittances are the example of natural, physical and financial capital. (Carney, 1998).

Asset endowments are constantly changing; therefore, pentagons are constantly shifting. A three-dimensional framework, with the third dimension representing time, would enable this change to be visualized. But a two-dimensional framework does not. However, it is imperative to incorporate a time dimension into any analysis of assets. Information should be gathered on trends in overall asset availability (e.g., if societies fragment, the overall 'stock' of social capital might decline) as well as on which groups are accumulating assets, which are losing and why. Where processes of 'social exclusion' are at work, those who are already poorly endowed with assets may well be becoming gradually, but notably, more marginalized. (DFID, 2002, p. 3).

Transforming structure and process represents institution, organization, policies and legislation that shape the livelihood. They are of central importance as they operate all level and effectively determine access between different types of capital and returns to any livelihood strategy. Structure can be described as the hardware (private and public organization) that sets and implements policy and legislation deliver services, purchases trade and perform all manner of other function that affect livelihood. Structures exist both on private and public sector at various levels. This is most obvious in the case of governmental organizations. This operates in cascading levels with varying degrees of autonomy and scope of authority, depending upon the extent and nature of decentralizations. Private commercial organizations also operate at different levels from the multi-national to the very local. It's not only the local level that is relevant to livelihoods. Analysis should therefore be sensitive to the roles and responsibilities of the different levels of structures and seek to identify those that are of greatest importance to livelihoods. (DFID, 2002, p. 2.). Complementary to structure, processes constitute software determining the way in which structure and individual operates and interact. They include policies, legislation, institution, and culture and power relation. This structure and process occupies central position in the framework and directly feedback to vulnerability context.

Livelihood strategy comprises range of combination of activities and choices that people undertake in order to achieve their livelihood goals. It includes productive activities, investment strategies and reproductive choices. Livelihood strategies change over a time and there is enormous diversity of livelihood strategy geographically, across the sector and with household. The more choice and flexibility that people have in their livelihood strategies, the greater their ability to withstand or to adapt the shocks and stress of the context. (DFID, 2002, p, 5).

Livelihood outcomes are the achievements of livelihood strategies such as more income, increased well-being reduced vulnerability, improved food security and more sustainability. Outcomes help us to understand the output of current configuration of the factors within the livelihood framework. They demonstrate what motivates stakeholder to act as they do and what their priorities are. They might give an idea of how people are likely to respond to new opportunities and which performance indicator should be used to assess support activity. Livelihood outcomes directly influence the assets and dynamically their level- the form of the pentagon-offering new points for other strategies and outcomes. (DFID, 2002, p., 6).

2.2 Policy Review

Nepal is one of the most disasters prone countries affected by recurrent multiple hazards. Every year, the country suffers from great loss of human lives and damage to properties due to natural and non-natural disasters like flood, landslide, thunderbolt, fire, road accidents, and epidemics. The Government of Nepal has developed various legal and institutional arrangements to plan and manage the Disaster Risk Reduction and Management activities. In this context, Natural Calamity (relief) Act 1982; Local Self Governance Act 1998; Building Act 1998; National Building Code 2004; National Strategy for Disaster Risk Management 2009, Climate Change Policy 2011, Land Use Policy 2012, Water Induced Disaster Management. Policy 2015; National Reconstruction and Rehabilitation Policy 2015; National Disaster Response Framework 2013, Basic Guideline related to Settlement Development, Urban Planning and Building Construction 2016; National Urban Development Strategy 2016 are important legal and Policy framework. Similarly, Constitution of Nepal 2015, and recently approved and enacted Local Government Operation Act 2017 and

Disaster Risk Reduction and Management Act 2017, are the latest major legal arrangements. In addition, Natural Disaster Relief Committees established from the center to the local level as per the law, various agencies and institutes of the Government of Nepal can be taken as important institutional arrangements. The National Council, Executive Committee, National Disaster Risk Reduction and Management Authority and Disaster Management Committees at Province, District and Local levels are new institutional arrangements as per the Disaster Risk Reduction and Management Act 2017. (Sharma, 2019). Flood, inundation and draught resistant and climate change adaptive health service system will be developed with the support from Nepal Health Research Council and different health institutions including research centers.

2.3 Review of Past Study

Various writers and scholars have studied on the case and consequences of the flood. Dixit (2003, p. 156) stated that in Southern Nepal, flooding leads to large scale disruption of social and economic lives. The rivers bring large sediments whose deposition on agricultural lands harms productivity. The poor mostly live in these floodplains (vulnerable zones) because they have no opportunity to live in less hazardous areas. In Nepal, every year floods cause death, cultivated fields and irrigation, bridges and after rural infrastructure. He argues that policy makers, donors and relief and development agencies treat flood disaster as isolated events that break the continuity of the normal way of life. Most interventions to mitigate disasters are adhoc responses made under the assumption that an emergency support in the form of relief will help overcome the situation of hardship. Such support aims at restoring the situation to what it was before the disaster. Even when a flood disaster affects the same community every year, government, donors and Non-governmental organizations respond by providing the same relief and rehabilitation measures each time. This approach does not consider the situation of a society during normal times between the occurrences of two hazard events. Disasters are considered as a coincidence when a hazard interferes with society. According to Dixit (2003, p., 166), research shows that disasters are the outcome not only of natural hazards but also of socio-economic structures and political process that make individuals and families vulnerable

Know, Risk (2005, p. 74) observed that studies undertaken show that the economic impact of natural disasters shows a marked upward trend over the last several decades. The hazards tend to hit communities in developing countries especially the least developed countries, increasing their vulnerability and setting back their economic and social growth, sometimes by decades. The floods have led to loss of human life, destruction of social and economic infrastructure and degradation of already fragile ecosystems. The study indicates that social impacts include changes in people's way of life, their culture, community, political systems, environment, health and wellbeing, their personal and property rights and their fears and aspirations.

Nott (2006, p., 60) further stated that physical damage to property is one of the major causes for tangible loss in floods. This includes the cost of damage to goods and possessions, loss of income or services in the flood's aftermath and clean-up costs. Some impacts of floods are intangible and are hard to place a monetary figure on. Intangible losses also include increased levels of physical, emotional and psychological health problems suffered by flood-affected people.

Ariyabandu and Wickramasighe (2005, p., 26) suggest that although women are often more vulnerable to disasters than men (owing to conventional gender responsibilities and relations) they are not just helpless victims as often represented. Women have valuable knowledge and experience in coping with disasters. Yet these strengths and capabilities of women are often ignored in policy decisions and in mitigation, thereby, allowing these valuable resources to go to waste and sometimes creating dependency situations. Thus, ignorance of gender differences has led to insensitive and ineffective relief operations that largely bypass women's needs and their potential to assist in mitigation and relief work. The impact of disasters is usually measured in quantifiable ways, such as adding up the number of the dead and injured, and estimating the physical damage to housing, land, livestock, agriculture, stores and infrastructure. But attention is not necessarily paid to how disasters impact on different categories of people, men, women, children, aged people, etc. Disasters affect men and women differently because of the different roles they occupy and the different responsibilities given to them in life and because of the differences in their capacities, needs and vulnerabilities. Family size may change at household level due to disasters. For example, in Chitwan district, Nepal during the floods, the extended family system

collapsed, leaving the women and elderly without support (Ariyabandu and Wickramasighe, 2005, p. 3). The floods that occurred in Sarlahi district in Nepal left a lot of houses damaged washed away and uninhabitable. The type of construction influenced the extent of flood damaged thatched homes. (Kimbrough, 2007, p. 57).

Sinclair and Pegram (2003, p. 1) stated that floods cannot be prevented but their devastating effects can be minimized if advance warning of the event is available. With large increase in population and increasing urbanization (mainly driven by poverty) there are more people living in informal settlements, which are often on flood plains as this is the only undeveloped land available near cities. The people living in these settlements are those who are most at risk, not only due to their geographical location in the flood plain but also because they do not have the financial resources to recover from the damage caused by flooding. Early warning information can, therefore, allow the disaster managers to take steps which may significantly reduce loss of life and damage to property. Primarily losses can be high in rural areas where most of the damage is sustained by crops, livestock and the agriculture infrastructure, such as irrigation system, levees, walls and fences. In other words, primary losses relate mainly to the disruption of economic and social activities, especially in urban areas, immediately after a flood (Smith and Ward 1998, p. 8).

Flood risk possesses a significant threat to many communities and, whereas measures can be taken to reduce the likelihood and important of flooding, the risk can never be eliminated altogether (Crossman, et al. 2006, p. 41).

According to Lind, et al. (2008 p. 143), the loss in case of flooding has many dimensions. In addition to economic loss and loss of life and injury, there may be irreversible loss of land, of historical for cultural valuables and loss of nature or ecological valuables

Kundzewicz, et al. (2002:263) argues that floods are natural phenomenon for which the risks of occurrence are likely to continue to grow; increasing levels of exposure and insufficient capacity are among the factors responsible for the rising vulnerability. Water related events such as floods have been a major concern since the dawn of

human civilization. They continue to hit every generation of human beings, bringing suffering and death as well as immense and still growing, material losses

Nott (2006) correctly points out that a flood event is not considered to be a natural hazard unless there is a threat to human life and/or property. The most vulnerable landscapes for floods are low-lying parts of flood plains, low-lying coasts and deltas, small basins subject to flash floods. Rivers offer human populations transport links, a water source, recreational amenities, fertile plains and are an attractive place for settlements. Floods then become a major natural hazard because of the high human population densities that inhabit these lands. He indicated that the direct impacts of a flood are closely related to the depth of inundation of floods water. The extent of a flood has a direct relationship for the recovery times of crops, pastures and the social and economic dislocation impact to populations.

Crisis events occur from time to time in people lives, as well as in the lives of whole communities and societies, in which case they are often called disaster. Such events call for the mobilization of resources at various levels to cope with their impact. When people know an event may occur in the future because it has happened in the past, they often set up ways of coping with it. (Wisner, 2004).

Nott (2006:60) further stated that physical damage to property is one of the major causes for tangible loss in floods. This includes the cost of damage to goods and possessions, loss of income or services in the flood aftermath and clean-up costs. Some impacts of floods are intangible and are hard to place a monetary figure on. Intangible losses also include increased levels of physical, emotional and psychological health problems suffered by flood-affected people.

CHAPTER: III

RESEARCH METHODS

Research Methodology is a process of arriving to the solution of problem through planned and systematic dealing with the collection analysis and interpretation of data. It refers to the various sequential steps while conducting research work. It tries to make clear view of method and process adopted in the entire aspect of the study.

3.1 Selection of the Study Area

Kailari rural municipality ward no 5 was selected for this study. It is located in Kailali district Far western province. Kailali district is one of the main floods affected area of Nepal. Like that Kailari rural municipality is also flood affected area of the district. Live and livelihood is badly affected by the flood in this area. The study area has been selected due to two reasons, it is accessible for researcher and such types of study has not been conducted in the study area which urgent need to analyzes the causes and consequences of fold on livelihood of the local people.

3.2 Research Design

Mixed method (both qualitative and quantitative) research design was used for this study and it analyzed the objective of the research. It attempted to describe the impacts of flood on live and livelihood of the people living in study area.

3.3 Universe of Sampling Procedure

Total households of Kailari rural municipality ward no 5 were 400 (Rural Municipality Record 2020). Among them 100 HH have been selected as sample household by using lottery method. Each of the household one respondents including male and female were randomly selected for this study.

3.4 Nature and Sources of Data

In nature both qualitative and quantitative data were used collected through both primary and secondary sources.

3.4.1 Primary data

Primary data were collected from the field (study area) by using various data collection tools and techniques. Like individual interview (household survey) case study.

3.4.2 Secondary data

Book, articles, reports which are related to my study and published by various writers were the secondary data for this study they had been already published. It has been used in review section of the study and collected through library research method

3.5 Technique of Data Collection

In order to gather the primary data different tools and techniques were employed. A brief description of each tools and techniques has been presented in the following sub-headings:

3.5.1 Observation Method

During the time of field survey, I have frequently observed the situation of respondents whose lives and livelihood are affected by flood.

3.5.2 Interview Schedule

A set of semi structure interview question was asked to the respondents about socio economic impacts of flood on live and livelihood. The questions were related to consequences of the flood and its impacts on the live and livelihood of the respondents.

3.6 Method of Data Analysis

The collected data were analyzed by using simple mathematical and statistical tools such as parentage and tables. It is categorized and tabulated according to the objectives of the study. Before analyzed the data, it had been categorized the information according to objectives and tabulate by plan way.

3.7 Limitation of the Study

The study was limited in the causes and consequences of flood on the livelihood of people in Kalari rural municipality ward no 5. Only 100 respondents were involved in this study. The study was only limited on Kailari rural municipality ward no 5 of far western province

CHAPTER: IV

A BRIEF INTRODUCTION STUDY AREA AND RESPONDENTS

In this section, it analyzes the description of study area, socio economic impacts of respondents that reflect the causes and consequences of flood and the livelihood situation of the respondents.

4.1 Description of the Study Area

The study was conducted on Kailari rural municipality of far western province. The area is surrounded by Bhajani rural municipality and Dhanghadi municipality. The south border of the area is connected by Uttar Pradesh of India. According to CBS report, 2011 total population of the area is 47, 987. The area is one of the risk zones of flood. Geographically the area is located in subtropical zone and more than 80% rainfall during the monsoon season. In the study area, 24 mm rainfall has done during the June to September. Mohana River is the largest river flow through the municipality wards no 5. Each of the year's Mohana River damage life and property of the local people. Bhanaji, Kailari, Shati rural municipalities are the mostly affected area of Mohana River. **(Map of Study Area See in Annexes)**

4.2 Socio Economic Status of the Respondents

Socio economic status of the respondents reflects the current livelihood situation of the respondents so in this sub section it analyzed the brief socio economic (demographic) characteristics of the respondents.

4.2.1 Age Composition of the Respondents

Age is one of the main social characteristics of the respondents that reflect the working or earning age of the respondent which effect on social structure. In this study only the people who are above 15 years old only participated. The following table indicates the age structure of the respondents.

Table: 1 Age Composition of the Respondents

S.N.	Age	No	%
1.	15 to 29	25	25
2.	30 to 44	40	40
3.	45 to 59	20	20
4.	Above 60	15	15
5.	Total	100	100

Source: Field Survey, 2020

Table 1 portrays the age structure of the respondents. Data shows that 25% respondents are between 15 to 29 years old age group and 40% are between 30 to 44 years age group. Like that 20% are 45 to 59 years age group and only 15 % are above 60 years old. It indicates that majority of the respondents are young between 15 to 44 years old.

4.2.2 Sex Composition of the Respondents

In this study both males and females are participated. Mainly males are affected by the flood than the women because male used to go outside. During rainy season males lost their life, however female also equally affected by the river flood. The following table shows the sex composition of the respondents.

Table: 2 Sex Compositions of the Respondents

S.N.	Sex	No	%
1.	Male	52	52
2.	Female	48	48
3.	Total	100	100

Source: Field Survey, 2020

Table 3 indicates the sex structure of the respondent. It is shows that 52% are male and 48 % are female. Majority of the respondents are male. During the time of interview, it is tried to take equal number from male and female, however, the number of males are a little bit high then the female.

4.2.3 Education Status of the Respondents

Education is the source of knowledge and information. Educated person has knowledge about flood and way to save from flood. Uneducated persons have no idea about food and its risk factors. So, that respondent's level of education play vital role to save from flood disaster. Most of the respondents are only literate and only few respondents have higher education qualification. The following table indicates the education status of the respondents.

Table: 3 Education status of the Respondents

S.N.	Education status	No	%
1.	Illiterate	10	10
2.	Only literate	40	40
3.	Secondary	25	25
4.	+2 level	15	15
5.	Above +2 level	10	10

Source: Field Survey, 2020

Table 3 indicates the education status of the respondents. Data shows that 10% are illiterate and 40% are only literate. Like that 25% are only passed secondary level and 15 % passed +level. In the same way, 10% passed above +2 levels. Education ministry report 2018 indicates 94% population are literate in Nepal, however, only 90% respondents of this study re found literate and other 10% are illiterate,

4.2.4 Caste/ Ethnicity Composition of the Respondents

Caste And ethnicity also play vital role to tackle with river flood. Majhi people hardly lose their life from flood but other caste people like Bramin and Chhetri loose more life than the Tharu and Maajhi. In my study area Tharu are in majority. The following table indicates the ethnicity/ caste composition of the respondents.

Table: 4 Castes/ Ethnicity Composition of the Respondents

S.N.	Caste/ ethnicity	No	%
1.	Brahmin	10	10
2.	Chhetri	20	20
3.	Tharu	60	60
4.	Other (Dalit and Madhesi	10	10
5.	Total	100	100

Source: Field Survey, 2020

Table 4 shows the caste and ethnic composition of the respondents. Data indicates that 10% are Brahmin and 20% are Chhetri/ Like that 60% are Tharus and 10% are Dalit and others ethnic community. In my study area Tharus are in majority so in this study number of Tharus seem high than the other caste. Number of Brahmin is very low in study area.

4.2.5 Marital Status of the respondents

Marital status is one of the main social features of the people. After get married women migrated from one to another place and adopt new culture. Marital status is one of the social statuses of the respondents. The following table shows marital status of the respondents.

Table: 5 Marital Status of the respondents

S.N.	Marital status	No	%
1.	Married	80	80
2.	Unmarried	10	10
3.	Widow / single	10	10
4.	Total	100	100

Source: Field Survey, 2020

Table 5 shows the marital status of the respondents. Data indicates that 80% respondents are married and 10% are unmarried. Like that 10% are single. In this study majority of the respondents are married because only above 15 years age people are taken as respondents for this study.

4.2.6 Occupations status of the respondents

Respondents' occupation shows the economic status of the respondents. Occupation is one of the main economic characteristics of the respondents. The following table indicates the occupation status of the respondents

Table: 6 Occupations status of the respondents

S.N.	Occupation	No	%
1.	Farming	75	75
2.	Service	5	5
3.	Business	7	7
4.	Labor	13	13
5.	Total	100	100

Source: Field Survey, 2020

Table 6 indicates the occupation status of the respondents. Data shows that 75% respondents involved in farming and 5% adopted service as main occupation. Like that 7% follow business as main occupation. Similarly, 13% involved in labor. In average 60 -67% population of the country are involved in agriculture (Rgmi, 2015, p, 7), however, in the study 75% population are involved in farming

4.2.7 Land Holding Size the Respondents

Land is one of the main sources of property. Land holding size indicates the economic status of the respondents. Land is one of the important household assets that play important role in livelihood. The following table indicates the land holding size of the respondents.

Table: 7 Land Holding Size the Respondents

S.N.	Land Holding Size	No	%
1.	up to 5 katha	20	20
2.	5 to 10 katha	30	30
3.	10 to 20 katha	25	25
4.	1 Bigha to 2 bigha	10	10
5.	More than 2 bigha	15	15
6.	Total	100	100

Source : Field Survey ,2020

Table 7 shows the land holding size of the respondents. Data indicates that 20% have up to 5 Katha land and 30% have 5 to 10 Katha land. Like that 25% have 10 to 20 Katha. Likewise, 10% have one to two bigha Land and 15% have more than two Bigha land. It shows that majority of the respondents have less than sufficient land because Mohana River collapse land and changed into river bank.

4.2.8 Annual Income of the Respondents

Annual income plays important role to identify the economic status of the respondents. In the study area income status of the respondents are not enough or equal to national per capita income. Annual income of the respondents is less than average per capita income. The following table shows the annual income of the respondents.

Table: 8 Annual Incomes of the Respondents

S.N.	Annual Income (000)	No	%
1.	Up to 50	30	30
2.	50 to 100	40	40
3.	More than 100	30	30
4.	Total	100	100

Source : Field Survey ,2020

Table 8 shows the annual income of the respondents. Data indicates that 30% earn only up to 50,000 which is less than national per- capita income and 40% earn 50 to 100 (000). Like that 30% earn more than one Lakha 40% population of the study area are below poverty line due to flood.

4.3 Livelihood Strategy of the Respondents

Livelihood strategy of the people living in my study area is depended on agriculture and animal husbandry because more than 75% population the area is depended on agriculture. Except that other household asset also play role to fix the livelihood strategy of the respondents. The following table indicates the livelihood strategy of the respondents.

Table: 9 Livelihood Strategies of the Respondents

Livelihood Strategy		%	No (Number	%
Crop production	80	80	20	20
Agriculture related activities	90	90	10	10
Trading	10	10	90	90
Livestock production	75	75	25	25
Fishing	15	15	85	85
Horticultural Production	5	5	95	95

Source: Field Survey, 2020

Table 9 indicates the livelihood strategy of respondents. Data shows that among 100, 80 % involve in crop production and use agriculture related activities as livelihood strategy. 90% respondents followed animal husbandry and agriculture related activities like cash crop farming, farm house running are used as source of livelihood. Likewise, 10% use trading as source of livelihood strategy and 75 %use livelihood productions as livelihood strategy. Similarity, 15% use fishing as livelihood strategy of the respondents and 5% use horticulture production as supporting livelihood strategy of the respondents. Data shows that 90% population engaged in agriculture and 80% involved in animal husbandry. So that agriculture and animal husbandry are the main sources of livelihood of the people.

4.4 Consequence of Flood in Mohana River

Mohana River is originated from Chure hill. The river is one of the main rivers that create problems in the lives and livelihood of the people through flood. In this sub section it is analyzed the consequence of flood that occurred in Mohana Rivers and its effects on the study area.

4.4.1 Time of coming last flood in Mohana River

Mohana River, generally level of water is increased during rainy season but in three years ago level of water increased in the highest point and many houses and cultivated

land were destroyed. The flood badly affected livelihood and life pattern of the people living in ward No 5 of Kailari rural municipality. According to the data of rural municipality around fifty million properties had been lost from the flood. Many cattle and five people are killed by the flood of Mohana River.

4.4.2 Situation of Collapsing of House Due to Floods During that time

In the time of rainy season great flood occurred in Mohana River. Mainly during the month of July September flood occurred in Mohana River. Flood destroyed house and shed of the respondents. The following table shows the situation of collapsing house due to flood.

Table: 10 Situation of Collapsing of House Due to Floods During that time

S.N.	Situation of collapsing of house	No	%
	Yes	25	25
	No	75	75
	Total	100	100

Source: Field Survey, 2020

Table 10 shows the situation of collapsing of house due to flood. It indicates 25% respondents' house destroyed by flood and 75% faces other problems due to flood. According to the data of rural municipality around 250 household were faced problems during the time of flood among 450 household in ward 5 of Kailari, however, all the household faces problem due to the flood.

4.4.3 Situation of the Relocate of Collapsing House

During the time of flood many houses and sheds were collapsed and they had been dislocated from their traditional homeland. According to the record of ward more than twelve houses and shed were sweep away. The following table shows the situation of relocation of the house that collapse by the flood.

Table: 11 Situation of the Relocate of Collapsing House

S.N.	Situation of relocate to a new area	No	%
	Yes	5	20
	No	20	80
	Total	25	100

Source: Field Survey, 2020

Table 11 shows the situation of relocation of the collapses house from the flood. Data indicates that 5 houses are relocated in safe area and 80% (20) house did not relocate in safe palace. Relocation process is not so well in the area; however, ward claimed that relocation process is going on.

4.4.4 Situation of Damaging Property with House Asset with the Collapsed House

During the flood time private and public property has been damaged. In ward no 5 many households lost their household assets like bicycle the following table shows the situation of damaging other assets.

Table: 12 Situation of Damaging Property with House Asset with the Collapsed House

S.N.	Situation of the loss of any property with house	No	%
	bed and clothes	10	40
	cattle and chicken	5	20
	bicycle and cart	4	16
	other asset (television/ radio	6	24
	Total	25	100

Source: Field Survey, 2020

Table 12 shows the situation of damaging property with house. Data indicates 40% respondents lose bed and clothes and 20% respondents lose their cattle and chicken. Likewise, 16% lose cart and bicycle with house and 24% lose other assets like radio television.

4.4.5 Situation of River flood effect on sweep house cattle and family Member

According to the data of annually around 824 people killed by natural disaster (Record of Home Ministry, 2076). Kailali district around 50 people are annually killed by the flood related disaster. Mohan River also killed people during the time of flood. The following table shows the situation

Table: 13 Situation of River Flood Effect on Sweep House Cattle and Family Member

S.N.	Effect on sweeping cattle and family member?	No	%
1.	Yes	5	5
2.	No	95	95
3.	Total	100	100

Source: Field Survey ,2020

Table 13 shows the damaging situation of life and cattle due to flood. Data indicates that 5% respondents' lost cattle and life of relative due to flood. Only few respondents lost life during flood, however, they have lost enough assets during the time of flood.

4.4.6 Number of Cattle Lost in Flood

During the time of flood respondents lost their cattle and family members, however, they followed the safety measure to save from the flood. Ten respondents lost cattle and their family members. The following table shows the situation of losing cattle and life.

Table: 14 Number of Cattle Lost in Flood

S.N.	Number of Cattle Lost in Flood	No	%
1.	up to five	7	70
2.	more than six	3	30
3.	Total	10	100

Source: Field Survey, 2020

Table 14 indicates the situation of losing cattle and life of the family member of the respondents. Data shows that 70% lost up to seven cattle and 30% lost more than three cattle due to flood of Mohana River. According to the data of rural municipality around hundred domestic animals were killed by the flood occurred Mohana before three years.

4.4.7 Situation of Household Experience any loss of Food Store During the Floods

In my study area people live in small mud made house. The house does not have stories. People store food in ground floor. Flood entered into the ground floor and damaged the stored food. The following table shows the effect of food storage due flood.

Table: 15 Situation of Household Experience any loss of Food Store during the Floods

S.N.	Household experience any loss of food stocks during the floods?	No	%
1.	Yes	50	50
2.	No	50	50
3.	Total	100	100

Source: Field Survey, 2020

Table 15 indicates the effect of food storage due to flood. Data shows that 50% respondents face difficulties on food storage due to flood. 50% do not face difficulties of food storage due to flood. According to the record of rural municipality water entered around 200 households and damaged the flood storage.

4.4.8 Situation of Spoiling Crops

Flood occurred during the time of July. In July all the plain land are covered by the paddy. Around 200 accord paddy field was damaged by the flood that occurred in Mohana river in 2017 (Ward Office Record, 2018). The following table shows the situation as:

Table: 16 Situation of Spoiling Crops

S.N.	Situation of spoiling crops	No	%
1.	Yes	80	80
2.	No	20	20
3.	Total	100	100

Source: Field Survey ,2020

Table 16 indicates the situation of spoiling crops of the respondents due to flood. Data shows that 80% respondents; crops have damaged due to flood and 20% respondents' crops did not affect due to flood. District disaster rescues data indicated that almost half of the paddy field was party affected by the flood and some of the cultivated fields were totally damaged.

4.4.9 Damage of the Area of Land and Crops

Flood destroys the crops cultivated in the field. Some of the respondents lost more than one bigha's crops. According the data around hundred Bigha's crops was damaged by the flood. The following table shows the lost quantity land due to flood.

Table: 17 If yes how Many Land' crops would be damaged?

S.N.	If yes how many land's crops would be damaged?	No	%
1.	up to 5 katha	20	20
2.	5 to ten katha	50	50
3.	more than 10 katha	10	10
4.	Total	80	80

Source: Field Survey ,2020

Table 16 indicates the quantity of land that lost crops by the flood. Data shows that 20% respondents lost up to five katha's crops and 50% lost five to ten katha's land. Likewise, 10% respondents' lost crops more than ten katha.

4.4.10 Amounts of Property Lost during the Time

Around fifty million lost during the time of flood. Each of the household lost their property from the flood. In the course of interview, I asked question about the loss of property from the flood. The following table shows the quantity of property lost from flood.

Table: 18 Amounts of Property have you / your Family Lost during the Time

S.N.	Amounts of property lost during the time?	No	%
1.	up to one Lakh	60	60
2.	one lakh to two lakh	25	25
3.	more than three lakh	15	15
4.	Total	100	100

Source: Field Survey ,2020

Table 18 indicates the amount of property that lost from the flood. Data 60% lost up to one Lakh and 25% lost one Lakh to two Lakh properties from the flood. In the same way, 15% lost more than three Lakh's properties due to cause of flood. Majority of the respondents lost up to one Lakh property from flood.

4.4.11 Situation of any Damage to School Infrastructure (classroom blocks, teacher's houses, toilets) due to the Floods.

During the time of flood various infrastructure of the development had closed. Mainly flood damaged on road, canal, school building, class room, pole of electricity and telecom, pipe of drinking water that effect on the live and livelihood of the respondents. The following table shows the damaging situation of infrastructure due to flood.

Table: 19 Situation of any Damage to School Infrastructure (classroom blocks, teacher's houses, toilets) due to the floods

S.N.	Situation of any damage to school infrastructure	No	%
1.	Yes	60	60
2.	No	40	40
3.	Total	100	100

Source: Field Survey, 2020

Table 19 shows the situation of damaging infrastructure due to flood. Data indicates that flood damage 60% infrastructure of the school and 40% infrastructure of the school did not damage. According to rural municipality record five schools and 45 class room were damaged by the flood.

4.4.12 Flood Disruption to Children to Schools

During the time of flood roads were swept away and children faced problem to go from home to schools. In some cases, river changed the wave and difficult to cross the river. The following table shows the experiences of the children that felt hindrance to go school due to flood.

Table 20 Flood Disruption to Children to Schools

S.N.	Flood Disruption to Children to Schools	No	%
1	Yes	90	90
2	No	10	10
3	Total	100	100

Source: Field Survey ,2020

Table: 20 shows the effects of flood on students' attendance in school. Data shows that 90% respondents' face difficulties to attend school and 10% did not face difficult to go school. Most of the children are faced difficulties during the flood time to go from home to school.

4.4.13 Situation of Damaging to Health Facilities due to the Floods

According to government record more than half dozen health institutions collapsed in Kailalai districts during flood time. Mainly flood damaged the infrastructure of health post and health center. The following table shows the situation of damage health related infrastructure due to flood.

Table: 21 Situation of Damaging to health facilities due to the floods

S.N.	Was there any damage to health facilities due to the floods?	No	%
1	Yes	90	90
2	No	10	10
3	Total	100	100

Source: Field Survey, 2020

Table 21 indicates the damage of health-related infrastructure due to flood in study area. Data portrays that 90% respondent's response that flood create problem in health-related service delivery in study area and 10 % have no such bitter experience and say ' no'

4.4.14 Situation of any of the Household Members get sick During the Floods

During the time of flood there has come problem in water and sanitation system and various waterborne disease effected to the people living in study area. The following tale indicates the situation as

Table: 22 Situation of any of the household members get sick during the floods

S.N.	Household members get sick during the floods	No	%
1.	Yes	70	70
2.	No	30	30
3.	Total	100	100

Source: Field Survey, 2020

Table 22 portrays the situation of sickness of respondents' and their family members during flood time. Data shows that 70% respondents' family members face disease after flood and 30% do not face any disease problems. It shows that majority of the responded face disease problem due to flood.

4.4.15 The diseases that Respondents Experienced Due to Flood

During the time of flood various waterborne diseases were inflicted to the people living in study area due to case of water. The following table shows the situation as;

Table: 23 the Diseases those Respondents Experienced Due to Flood

S.N.	Diseases experienced by the household members who got sick?	No	%
1.	Diarrhea.	25	36
2.	Cough/ ARI	15	21
3.	Malaria/ Fever	12	17
4.	Measles	10	14
5.	Others Specify	8	12
6.	Total	70	100

Source: Field Survey, 2020

Table 23 indicates the diseases that causes due to the flood and respondents face in their life. Data shows that 36% face diarrhea problem and 21% face cough problems. Like that 17% face fever problem and 14% face measles problem and 12% face other disease related to skin.

4.4.16 Common Source of Drinking Water used by Respondents

Generally, people used tub well and well water as main source of drinking water in Terai region because people are out of the reach of pure drinking water. In my study area half of the population is out reach of pure drinking water. The following tale indicates the common sources of water that people use in daily life.

Table: 24 Common Source of Drinking Water used by Respondents

S.N.	Common source of drinking water used by Respondents	No	%
1.	river	10	10
2.	Private / public tap	50	50
3.	tube well / well	40	40
4.	Total	100	100

Source: Field Survey, 2020

Table 24 indicates the source of water that respondents use in daily life. Data shows that 10% use river water and 50% use private/ public tap's water. Like that 40% use tube-well water as source of drinking water. It is shows that situation of pure drinking water supply has been poor in study area because majority of the people used private tap and tub well water rather than the public tap.

4.4.17 Drinking Water Source Affected by Flood

Generally flood swept many taps of drinking water and affected in the source. In my study area water sources also affected due to the flood. The following table shows the respondents' opinion about the matter.

Table: 25 Situation of the Effecting Source of water Affected by the Floods

S.N.	Situation of the Effecting source of water Affected by the Floods	No	%
1.	Yes	70	70
2.	No	30	30
3.	Total	100	100

Source: Field Survey, 2020

Table 25 shows the respondents' opinion about the effecting sources of water by flood. Data portrays that 70% respondents' faced problem and say ' yes' and other 30% did not face problems and say ' no'. Flood inflicted most of the sources of water and respondents feel problems of drinking water during the time of flood.

4.4.18 Vulnerability of Flood

During the time of flood, male headed household are more vulnerable than the female because male neglected the flood. The following table shows the situation as;

Table 26 Vulnerability of Flood

S.N.	Who are the most vulnerable households to floods?	No	%
1.	Male Headed	55	55
2.	Female Headed	45	45
3.	Total	100	100

Source: Field Survey, 2020

Table 26 indicates the vulnerable situation of household's members due to flood. Data reflects that male headed household are more vulnerable than the female, 55% male headed household are vulnerable and only 45% female headed households are vulnerable.

4.5 Changing Livelihood (Socio-economic status) Situation After Flood

After occurred flood in Mohana River, live and livelihood also shifted from agriculture to labor. Annually large size of cultivated land change into river bank due to flood. Flood effect on each of the sectors of life like occupation, income, land using situation, education, health and sanitation and another component of livelihood. In this sub section briefly highlights the issues.

4.5.1 Changes in Occupation before Flood

Before Mohana river cut off the cultivated land people involved in farming but now some Bigha cultivated land change into river bank. The number of farmers also reduces due to the damage of farming land. The following table indicates the situation.

Table: 27 Change in Occupation before Flood

Before Flood	No	%	After (now) Flood	No	%
Farming	75	75	Labor work	65	65

Source: Field Survey ,2020

Tables 27 compare the changing situation of occupation before and after. Data shows that before flood occurred in my study area 75% respondents followed farming before flood and after only 65% follow farming. Due to cut off the cultivated land 10% respondents became landless and follow other occupation.

4.5.2 Changes in Land Using Situation

Flood of Mohana River changes the wave of river and creates problems in land using system. Some of cultivated land changes into river and river changes into open space. Before flood maximum land was used by the respondents and after flood land is reduced. The following table shows the situation.

Table: 28 Change in Land Using Situation

Before Flood	No	%	After (now)	No	%
Use all the land	85	100	Use only remaining land	75	85

Source: Field Survey, 2020

Table 28 indicates the changing situation of land using by the respondents before and after the flood. Data shows that before flood 85% respondents used all the land for cultivation but after the flood only 75% land was used for cultivation because after flood respondents afraid to cultivate land in river bank

4.5.3 Change in Income

Various sources of income were damaged by the flood so after flood income status of the respondents has changed. The following table shows the respondents view on that issue.

Table: 28 Change in Income

Before flood in 000	No	%	After (now) in 000	No	%
Up to 1 Lakh	30	30	Up to 1 lakh	50	50
1 to 2 Lakh	40	40	1 to 2 Lakh	30	30
More than 2 Lakh	30	20	More than 2 Lakh	20	20
Total	100	100	Total	100	100

Source: Field Survey, 2020

Table 28 indicates the changing income status of the respondents after and before flood. Data shows that 30% earn up to 1 Lakh before flood and after flood 50% earn up to 1 Lakh. Like that 40% earn 1 to 2 Lakh before flood and after flood 30% earn 1

to 2 Lakh. Similarly, 30% earn more than two lakh before flood and after the flood only 20% earn more than 2 lakh.

4.5.4 Access on Education

Before flood respondents easy to send their children to school but after flood they face difficulties. The following table shows the before and after situation of the access of education.

Table: 29 Accesses on Education

Before Flood	No	%	After (now)	No	%
Easy to send children to school	60	40	Easy to send children to school	40	60

Source: Field Survey, 2020

Table 29 shows the before and after situation of the easy access of the respondents on education. Data indicates that before flood 60% respondents easily send their children to school and after flood only 40% respondents easily send their children to school after flood. It shows that before and after flood the percentage of getting access on education is changed with 20%.

4.5.5 Change in Health Situation

Due to flood health situation of the respondents also being problematic. After flood poverty level is increase and people face difficulty to collect money for treatment. The following table shows the situation as;

Table: 30 Change in Health Situation

Before flood	No	%	After (now)	No	%
Easy to collect money for treatment	70	70	Easy collect money for treatment	50	50

Source: Field Survey ,2020

Table 30 indicates the before and after situation of health in study area. 70% respondents easily collect money for treatment before flood but after the flood only 50% can have capacity to collect money for treatment. Majority of the respondents faced problem to collect money for treatment because flood damaged source of income.

4.6 Perception of Respondents about the Changing Livelihood after Flood

Due to Mohana river's flood people faces various problems related to live and livelihood. Annually river changes cultivated land into stony river bank and hundreds of the people lost their land from flood. Before two years great flood occurred in the study area and local people lost their land and property that create hinderance in live and livelihood of local people.

CHAPTER: V

SUMMARY AND CONCLUSION

5.1 Summary

The study entitled, "**Causes and Consequences of Flood on the Livelihood of People in Kailari Rural Municipality, Kailali District**" focuses on the consequences of the flood that impacts on lives and livelihood of the people living in Kailari municipality. socio-economic status of the respondents living in study area, to analyze the changing impacts of livelihood that occurred due the flood of Mohana river, Kailari rural municipality ward no 5 was selected for this study. It is located in Kailali district Far western province. Kailali district is one of the main floods affected area of Nepal. Like that Kailari rural municipality is also flood affected area of the district. Live and livelihoods are badly affected by the flood in this area. The study area has been selected due to two reasons, it is accessible for researcher and such types of study has not been conducted in the study area which urgent need to analyzes the overall socio-economic impacts of the flood in study area.

Qualitative research design was used for this study and it analyzed the objective of the research. Total households of Kailari rural municipality ward no 5 is 400 (Rural Municipality record 2020). Among them 100 HH have been selected as sample household. Each of the household one respondents including male and female were randomly selected for this study. The data was qualitative and quantitative in Nature. Both primary and secondary data was used to collect the information for this study. Book, articles, reports were the secondary data for this study they had been already published. It has been used in review section of the study. In order to gather the primary data different tools and techniques were employed. A set of semi structure interview questions were asked to the respondents about socio economic impacts of flood on live and livelihood. The questions were related to consequences of the flood and its impacts on the live and livelihood of the respondents. The collected data were analyzed by using simple mathematical and statistical tools such as parentage and tables. It is categorized and tabulated according to the objectives of the study. Before analyzed the

data, it had been categorized the information according to objectives and tabulate by plan way.

While analyzing the socio-economic status of the respondents, it is found 25% respondents are between 15 to 25 years old age group and 40% are between 30 to 45 years age group. Like that 20% are 45 to 60 years age group and only 15 are above 60 years old. It indicates that majority of the respondents are young between 15 to 45 years old. Like that 52% are male and 48 % are female. Majority of the respondents are male. In the same way, 10% are illiterate and 40% are only literate. Like that 25% are only passed secondary level and 15 % passed +level. In the same way, 10% passed above +2 level and 10% are brahmin and 20% are Chhetri/ Like that 60% are Tharus and 10% are Dalit and others ethnic community.

While analyzing the economic status of the respondents it is found 75% respondents involved in farming and 5% adopted service as main occupation. Like that 7% follow business as main occupation. Similarly, 13% involved in labor. It is found that 20% have up to 5 Katha land and 30% have 5 to 10 katha land. Like that 25% have 10 to 20 katha. Likewise, 10% have one to two bigha Land and 15% have more than two Bigha land. It shows that majority of the respondents have less than sufficient land because Mohana River collapse land and changed into river banks. Data indicates that 30% earn only up to 50,000 which is less than national per- capita income and 40% earn 50 to 100 (000). Like that 30% earn more than one lakh. &0% population of the study area is below poverty line due to flood.

The livelihood strategy of the respondent is based on agriculture. Data shows that crops production is the livelihood strategy of 80% respondents and (90% use agriculture related activities as livelihood strategy. Likewise, 10% use trading as source of livelihood strategy and 75 % use livelihood production as livelihood strategy. Similarity, 15% use fishing as livelihood strategy of the respondents and 5% use horticulture production as supporting livelihood strategy of the respondents.

It indicates 25% respondents' house destroyed by flood and 75% faces other problems due to flood. 2% (5) houses are relocated in safe area and 80% (20) house did not relocate in safe palace. Relocation process is not so well in the area. 40% respondents lose bed and clothes and 20% respondents lose their cattle and chicken. Likewise,

16% lose cart and bicycle with house and 24% lose other assets like radio television. 70% lost up to five cattle and 30% lost more than five cattle due to flood of Mohana River. 20% respondents lost up to five Katha's crops and 50% lost five to ten katha's land. Likewise, 10% respondents' lost crops more than ten Katha. 60% lost up to one lakh and 25% lost one Lakh to two Lakh property from the flood. In the same way, 15% lost more than three Lakhs property due to cause of flood. 90% respondent's response that flood create problem in health-related service delivery in study area and 10 % have no such bitter experience and say ' no'. 70% respondents' family members face disease after flood and 30% do not face any disease problems. It shows that majority of the responded face disease problem due to flood. Show that 36% face diarrhea problem and 21% face cough problems. Like that 17% face fever problem and 14% face measles problem and 12 % face other disease related to skin.

The flood effect on each of the sectors of life like occupation, income, land using situation, education, health and sanitation and another component of livelihood. In this sub section briefly highlights the issues. 75% respondents followed farming before flood and after only 65% follow farming. Due to cut off the cultivated land 10% respondents became landless and follow other occupation. 85% respondents used all the land for cultivation but after the flood only 75% land was used for cultivation because after flood respondents afraid to cultivate land in river bank. 30% earn up to 1 Lakh before flood and after flood 50% earn up to 1 Lakh. Like that 40% earn 1 to 2 Lakh before flood and after flood 23% earn 1 to 2 Lakh. Similarly, 30% earn more than two Lakh before flood and after the flood only 20% earn more than 2 Lakh.

5.2 Conclusion

On the basis of findings, the situation is vulnerable in the study area because flood of Mohana River create negative impact on lives and livelihood of the people living in Kailari rural municipality ward no 5. Annually in rainy season flood occurs in the river and destroys the cultivated land. Before some years situation is not so worse but now flood creates problems in daily life of the people living in study area. Due to climate change and deforestation risk of flood increasing in study area, however, local and federal government invest to control the flow of river. In some cases, local people

also invaded the river natural flow which create problems to flow river its' in its natural tune. For reduced the hard of flood local people should be conscious about flood and its effect. Possible area of coming flood should be open and made strong and sustainable dame to control over the river's flood.

To reduce the negative impacts of flood, the following ways should be follows. Climate change is one of the major cause floods so we should be conscious about climate change and deforestation. Local people should be preserved the natural flow of the water. Houses shed; schools and other infrastructure should not be made near the river. Government should relocate the damage house in safe place. Local government should make plan to reduce the risk from flood related disaster. Local people should be neglected about the risk of flood. Churiya hill is the origin beginning point of Mohana river so Churiya should be saved otherwise landslide increase the level of river and create problem in cultivated land.

References

- Ariyanbandu, M.M. and Wackramasinghe, W.M. 2005. Gender Dimension in Disaster Management: A guide for South Asia: Sri Lanka. Ariyabandu and Wickramasinghe, 2005, p. 26).
- Brooks, K. (2003) *The Management of Riverine Flood Risk*. New Delhi: Rupa Publication.
- Chambers, R. (1989) 'Vulnerability, Coping and Policy's IDS Bulletin, Vol. 20 (2), pp 1- 8.
- Chambers, R. and Conway, G. (1991). *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*. IDS Discussion Paper 296. University of Sussex: Institute for Development Studies.
- Carson, B. (1985), "Erosion and Sedimentation process in the Nepalese Himalaya", ICIMOD Occasional paper No 1, International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal.
- Carney, D. (1998). Sustainable rural livelihoods: What contributions can we make? London, UK: Department for International Development (DFID).
- Crossman, M., Richardson, D. and Milne, J.2006. Proceedings of the In Civil Engineers. A partnership approach to Managing Flood Risk. Civil Engineering. Journal,159 (2):41-45.
- Dixit, 1999). *Flood Disasters in Nepal*. Himal Book: Hemal south Asia
- Dixit, A. 2003. Floods and Vulnerability: Need to Rethink Flood Management. Journal, 28:155-179. (ISDR, 2002).
- DFID. (2002). *Sustainable Livelihood Guidance Sheet*. London: Department for International Development.
- DWIDP, (2013). *Annual Report*. Katmandu: Ministry of Information

- Ellis, F. (2000). The Determinants of Rural Livelihood Diversification in Developing Countries. *Journal of Agricultural Economics*, 51(2), 289–302.
- Islam, S., Solaiman, T. R. & Kabir, M. H. (2015). Impacts of flood on char livelihoods and its adaptation techniques by the local people. Department of Environmental Science and Resource Management, Mawlana Bhashani Science and Technology University, Tangail1902, Bangladesh. *J. Sci. Res*,28 (2), 123-135.
- ISDR, (2002). *Report*. Kathmandu: ISDS office
- Know, Risk (2005). United Nations, Geneva, Switzerland.
- Kundzewicz, Z.W., Budhakooncharoen, S., Bronstert, A., Hoff, H., Lettenmaier, D., Menzel, L. and Schulze, R. (2002). Natural Resources forum: Coping with Variability and change: Floods and Droughts. *Journal*, 26 (4): 57-74.
- Khanal, N. (2015). Community risk and vulnerability analysis, A Paper Presented in Water Inducted Disaster in the Hindu Kush Himalayan Region, Kathmandu.
- Lind, N.,Mahesh, P. and Nathwani, J.(2008). Structural Safety: Assessment and Affording the Control of Flood Risk. *Journal* 31 (2): 143-147.
- Nott, J. (2006). *Extreme Events: A Physical Reconstruction and Risk Assessment*. Cambridge University Press. New York. (Wisner, 2004).
- Regmi, C. (2015) Flood Effects in Nepal: A Study of Synga District. *Pranga Lok*. Kalika College
- Sharma, T. P. (2019). Landslide Hazard in Nepal. A Second Year Unpublished Seminar Paper.
- Scoones, I. (1998). *Sustainable Rural Livelihoods: A Framework for Analysis*. IDS, Brighton, UK: University of Sussex, Institute for Development studies
- Thapa, R. (2015). *Impacts of Flood Hazard and Coping Strategies: A Case Study of Jagatpur village development committee in Chitwan district, Nepal*.

Unpublished MPhil. Thesis. Submitted to the Department of Geography
University of Bergen Norway

Twyman, C. (2001). *Natural Resources Use and Livelihoods in Botswana's Wildlife Management Areas*. Applied Geography, Vol.21, 45-68

Twyman, D. (2001). *Climate Change and Increasing Floods in Asia: Implication for Asian Development Bank*.

UNISDR (2009). UNISDR Terminology on Disaster Risk Reduction. Geneva: United Nations International Strategy for Disaster Reduction.

Wisner, B., (2004). *At Risk: Natural Hazard, People's Vulnerability and Disasters*.
Routledge, London: second edition.

Law and Policy Related to Disaster Management and Flood

Natural Calamity (relief) Act 1982.

Local Self Governance Act 1998.

Building Act 1998.

National Building Code 2004.

National Strategy for Disaster Risk Management 2009.

Climate Change Policy 2011.

Land Use Policy 2012.

Water Induced Disaster Management. Policy 2015.

National Reconstruction and Rehabilitation Policy 2015.

National Disaster Response Framework 2013.

Questionnaires

Questionnaire

1. Socio economic Characteristics of the Respondents (Demographic Characteristics)

Name

1. age
2. sex
3. education
4. caste/ ethnicity
5. material status
6. land holding size
7. occupation
8. annual income
9. Annual Expenditure

2. Livelihood Strategies

Livelihood Strategy	Yes	No
Crop production		
Agriculture related activities		
Trading		
Livestock production		
Fishing		
Horticultural production		

3. Question Related to Consequence of the Flood

1. When did flood occurred Mohana river in last time?
 - a. a last years
2. Did your house collapse due to floods?
 - a. Yes
 - b. No
3. Did the collapsing of the house force you to relocate to a new area?
 - a. Yes
 - b. No
4. Did the house lose any of the following property or asset?
 - a. bed and clothes
 - b. Cattle and chicken
 - c. bicycle and cart
 - d. other asset (television/ radio/

5. Did the river changed its way during the time of flood?
 - a. Yes
 - b. No
6. Did river flood effect on sweep your house cattle and family member ?
 - a. Yes
 - b. N o
7. If yes what how many cattle did your family lost?
 - a. up to five
 - b. more than five
8. Did the household experience any loss of food stocks during the floods?
 - a. Yes
 - b. No
9. Did that flood spoilt your crops?
 - a. Yes
 - b. No
10. If yes how many land' crops would be damaged?
 - a. up to 5 kathha
 - b. 5 to ten katha
 - c. more than 10 katha
11. How many amounts of property have you / your family lost during the time?
 - a. up to one Lakha
 - b. one lakha to two lakha
 - c. more than three lakha
12. Are there any education facilities in your area?
 - a. Yes
 - b. No
13. Was there any damage to school infrastructure (classroom blocks, teacher's houses, toilets) due to the floods?
 - a. Yes
 - b. No
14. Did any of the school going children in your household experience any disruption in an attendance due to the floods?
 - a. Yes
 - b. No
15. Are there any health facilities in your area?
 - a. Yes
 - b. No
16. Was there any damage to health facilities due to the floods?
 - a. Yes
 - b. No
17. Was there any disruption in access to health services due to the floods?
 - a. Yes
 - b. No
18. Did any of the household members get sick during the floods?
 - a. Yes
 - b. No
19. Which of the following diseases were experienced by the household members who got sick?
 - a. Diarrhea.
 - b. Cough/ ARI

- c. Malaria/ Fever c. Measles d. Others Specify

20 What is your common source of drinking water?

- a. River b. Tab C. Tub well

21 Was the main source of water affected by the floods?

22. Who are the most vulnerable households to floods?

- a. Male Headed b. Female Headed

23 What are the underlying causes of vulnerability? Residing in a flood prone area.

- a. Poverty b. Lack of alternative livelihood

24. Changing Livelihood (socio economic status) situation after flood

1. Change in Occupation before Flood

Before	No	%	After (now)	No	%
Farming	60		Labor work		

2. Change in land Using Situation

Before	No	%	After (now)	No	%
Use all the land	60		Use only remaining land		

3. Change in Income

Before in 000	No	%	After (now) in 000	No	%
Up to 1 lakha			Up to 1 lakha		
1 to 2 Lakaha			1 to 2 Lakaha		
More than 2 Lakha			More than 2 Lakha		

4. Access on Education

Before	No	%	After (now)	No	%
Easy to send children school			Difficult send children to school		

5. Change in Health Situation

Before	No	%	After (now)	No	%
Easy to treatment			Difficult to go to hospital		

25. Do you feel any change in live and livelihood after flood in Mohana River? Write please

.....

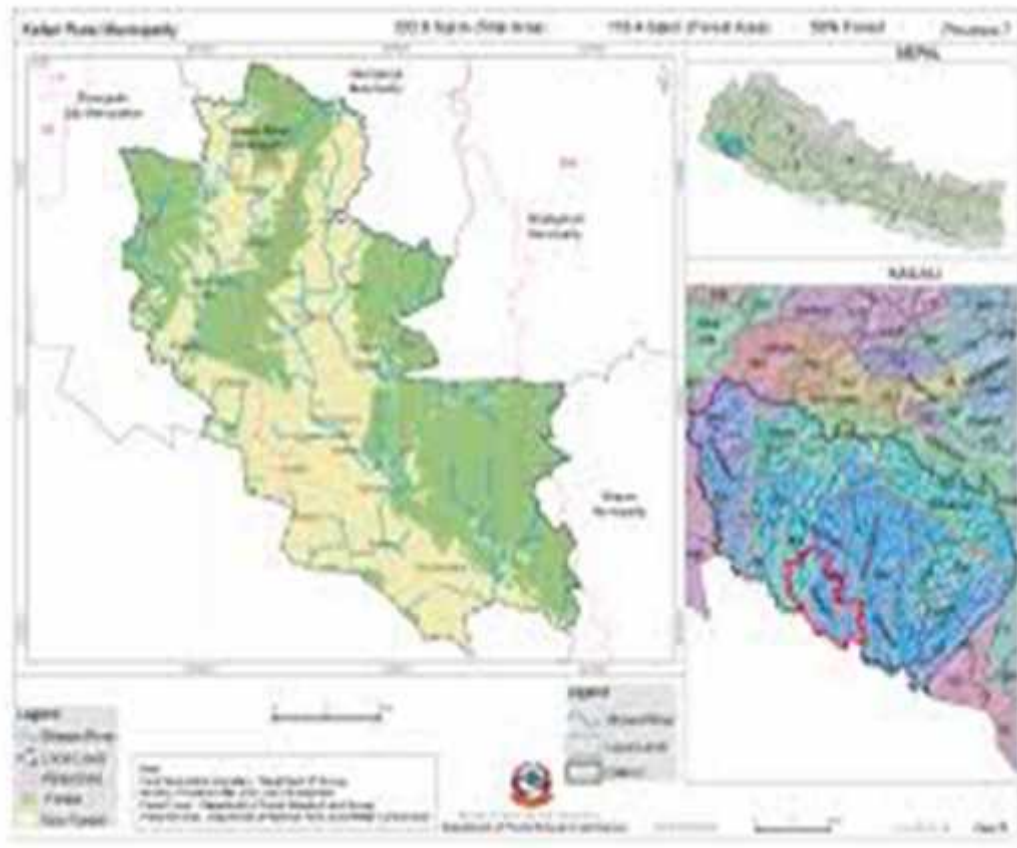
List of photos



River flood of Kailali (Mohana river)



Mohana river



Map of kailari rural municipality