Final Report
On

Application of Community Based Adaptation Measures to Weather and Climate related Disasters (WCD) in Western Nepal: Preparation for the Potential Climate Change Signal

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Contents

		Page
Acronyms		i
Chapter 1: Introduction		1
1.1	Background	1
1.2	Study Site: Putalibazaar Municipality and Community Based Disaster Preparedness Units	3
1.3	Project Team	7
Chapter 2: Methodology and Activities		8
2.1	Background	8
	2.1.1 Technical Approaches	8
	2.1.2 Participatory Approaches	8
2.2	Activities	10
	2.2.1 First participatory workshop	10
	2.2.2 Second Participatory Workshop	13
	2.2.3 Third Participatory Workshop	15
	2.2.4 Consultation Meetings	19
	2.2.5 Trainings	20
	2.2.5.1 Training workshop on application of weather forecasting	20
	2.2.5.2 Training on Insurance	21
	2.2.6 Socio-economic Survey	23
	2.2.7 Hydrological Survey	23
Chapter 3: Socio-economic Study		24
3.1	Background	24
3.2	Methodology	24
3.3	Socio-economic Condition	25
	3.3.1 Ethnicity, Family and Population	25
	3.3.2 Assets	28
	3.3.2.1 Housing building	28
	3.3.2.2 Land	30
	3.3.2.3 Livestock	31
	3.3.2.4 Other household items	32
	3.3.3 Income and Expenditure	32
3.4	Natural Disaster and Mitigation Efforts	34
	3.4.1 Events and Losses	34
	3.4.2 Mitigation Efforts	35
3.5	People's Perception	36
	3.5.1 Disaster	36

3.5.2 Climate Change 37
3.5.3 Insurance 38
3.5.4 Dissemination of Weather and Climate Information 39

Chapter 4: Climate Change and Community Awareness 41

4.1 Background 41
4.2 Climate change in Putalibazaar 41
4.2.1 Observed data Analysis 41
4.2.1.1 Rainfall Change 41
4.2.1.2 Temperature Change 43
4.2.2 Future Climate Change Analysis 44
4.2.2.1 Changes in Annual Cycle 45
4.2.2.2 Changes in Climate Extremes 47
4.2.3 Disaster Pattern and Climate Change 50
4.2.4 Community's experience on climate change 52
4.3 Climate change awareness program 52
4.3.1 Presentation, Documentary show and poster distribution 52
4.3.2 Climate change risk realization activity 52
4.3.3 Poster and Brochure 56

Chapter 5: Weather and Climate Information Dissemination (WCID) System 57

5.1 Background 57
5.2 People's perception on communication about climate information 57
5.3 General Climate 57
5.4 Flood Analysis 59
5.4.1 Flood Estimations 62
5.4.2 Floodplain Analysis 63
5.4.3 Floodplain Delineation 65
5.5 Rainfall monitoring and warning in monsoon for flood and landslide 69
5.5.1 Landslide warning 69
5.5.2 Rainfall-based Flood Warning 71
5.6 Weather and Climate Information Dissemination Schemes 73
5.6.1 DHM-NRCS communication 73
5.6.2 Community level communication 73
5.7 Trainings 73

Chapter 6: Insurance for Climate Change Related Disaster Risk Sharing 74

6.1 Historical Development 74
6.2 Insurance Market Overview 74
6.3 Insurance Legislation and Supervision 76
6.3.1 Compulsory Insurances 76
6.3.2 Statutory Tariffs 76

6.3.3 Insurance Supervisory Authority 76
6.3.4 Consumer Dispute Resolution 77
6.3.5 Non-Admitted and Related Issues 77
6.4 Types of Insurance Organisation 77
6.4.1 Foreign Ownership 77
6.4.2 Types of Licence 78
6.4.3 Capital Requirements 78
6.4.4 Reserve Requirements 78
6.5 Reinsurance 78
6.6 Distribution Channels 78
6.6.1 Direct Handling 78
6.6.2 Agencies 79
6.7 Micro-insurance status in Nepal 79
6.7.1 Categories of Micro-insurance Provider in Nepal 79
6.7.2 Challenges 80
6.7.2 Opportunities 80
6.8 Development of Community Based Disaster Micro-insurance for Putalibazaar 80
6.8.1 Disaster Perception in Insurance 81
6.8.2 Nature and extent of loss at vicinity (Syangja-Putalibazaar) 82
6.8.3 Relevant Insurance Policies 82
6.8.3.1 Human life 82
6.8.3.1.1 Group/Personal Accident Insurance 82
6.8.3.1.2 Life Insurance (Endowment Policy) 84
6.8.3.2 Insurance to property 85
6.8.3.2.1 Fire and Allied Perils Insurance 85
6.8.3.2.2 Household Insurance 86
6.8.4 Analysis of Probable Maximum Loss and Premium 87
6.8.5 Mode of Administration and Implementation-Community Based 87
6.8.5.1 Community Based Micro-insurance-The Concept 87
6.8.5.2 Claims Process 88
6.8.6 Estimated premium and mode of premium/Funding 88
6.8.7 Implementation Procedure 89
6.8.8 Report on the community workshops by the community motivators 90

Chapter 7: Outputs and Accomplishments 91

7.1 Outputs 91
7.1.1 Objective 1 91
7.1.2 Objective 2 96
7.1.3 Objective 3 98
7.2 Accomplishments 100

References

Annex

Acronyms

ACCCA	Advancing Capacity to Support Climate Change Adaptation
AIG	American Insurance Group
ALICO	American Life Insurance Corporation
AR4	Fourth Assessment Report
CBDP	Community Based Disaster Preparedness
CCE	Climate Change Explorer
CCMA	Canadian Centre for Climate Modeling
CGI	Corrugate Galvanized Iron
CIRA	Collective Initiative for Research and Action
CSR	Corporate Social Responsibility
DDRC	District Disaster Relief Committee
DEM	Digital Elevation Model
DHM	Department of Hydrology and Meteorology
EMI	Equated Monthly Install
GDP	Gross Domestic Product
GIS	Geographical Information System
GO	Government Organization
HCC	Himalayan Climate Center
IAs	Insurance Agencies
IB	Insurance Board
IAIS	International Association of Insurance Supervisors
IIASA	International Institute for Applied Systems Analysis
IPCC	Intergovernmental Panel on Climate Change
LIC	Life Insurance Corporation
LRMP	Land Resources Mapping Project
MFD	Meteorological Forecasting Division
MFI	Micro Finance Institutions
MoHA	Ministry of Home Affairs
NEFEJ	Nepal Forum for Environmental Journalist
NGO	Non Governmental Organization
NPR	Nepali Rupees
NRCS	Nepal Red Cross Society
PM	Putalibazaar Municipality
RBS	Rastriya Beema Sansthan
RCC	Reinforced Concrete Cement
RSMDST	Riot, Strike, Malicious Damage, Sabotage, Terrorism
SI	Sum Insured
SPSS	Statistical Package for the Social Sciences
SRC	Syangja Red Cross
START	SysTem Analysis Research and Technology
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research
USA	United States of America
VAT	Value Added Tax

WCD	Weather and Climate related Disasters
WCID	Weather and Climate Information Dissemination

Chapter 1: Introduction

1.1 Background

The Pilot Project on- ***Application of Community Based Adaptation Measures to Weather and Climate related Disasters (WCD) in Western Nepal: Preparation for the Potential Climate Change Signal*** was funded by the United Nations Institute for Training and Research (UNITAR). The letter of Agreement between UNITAR and Himalayan Climate Center, Kathmandu was signed on 30 April, 2007. This is the 18-month project commenced in May 2007. However the project is extended up to June 2009. The background of this project is based on the Vulnerability Assessment of Weather Disasters in Syangja District, Nepal: A Case Study in Putalibazaar Municipality [a part of the program - Advanced Institute on Vulnerability to Global Environmental Change, organized by SysTem Analysis Research and Technology (START) in Partnership with International Institute for Applied Systems Analysis (IIASA) by Shrestha (2005)]. The study by Shrestha recommends a number of potential adaptation mechanisms and the community based insurance scheme.

Climate change and its variability have become global concerns. The natural hazards of meteorological and hydrological origin, such as floods, droughts, and intense precipitation are increasing in their frequency in different parts of the world, confirming the projected climate scenarios and their impacts. Increase in WCD is a potential impact of climate change in the South Asian monsoon region (IPCC, 2001). Observations also support climate change trends as mentioned in the 3rd IPCC Report. For example, Shrestha (2005) indicates that the magnitude of the 2-year return period of daily rainfall in Putalibazaar (proposed pilot site) increased in 1990s compared to past decades. Nepal government spends a large amount of money every year in relief and reconstruction activities. On an average 12.9% of the development expenditure of Nepal and 5.39% of its real Gross Domestic Product (GDP) are spent on response and recovery activities to disasters every year (Li and Behrens, 2002). Recovery from disasters, with potential increase in WCDs related to climate change, is becoming one of the challenges for Nepal. It is, therefore, necessary to prepare for the adaptation to WCDs to achieve development goals. The main goal of this pilot project is to enhance the adaptive capacity of communities in Community-based Disaster Preparedness (CBDP) Units of Putalibazaar Municipality and Suburb, Syangja District, Nepal to reduce risk of increased weather and climate related disasters due to climate change and climate variability.

Dissemination of information on climate change and potential extreme events to the communities helps in preparedness measures to save lives and valuables, minimizing disaster losses (Hellmuth, et al. 2007). Similarly, Blanco (2006) emphasizes the need to produce information in user-friendly formats, understandable to the local communities of vulnerable areas. This may ultimately help these communities for better adaptation in future climatic conditions and during extreme events. Blanco emphasizes a need to bridge the gap between scientific and local knowledge to enhance the capacity of communities to cope with climate change and WCD.

No mechanism is available to disseminate such information (or alerts) to the vulnerable communities in Nepal. The pilot project aimed at developing a mechanism to disseminate.

such information to targeted communities in Nepal as an initiative in pre-disaster preparedness measure.

Disaster relief to the victims from the government is usually not sufficient and the government is not always capable to provide full compensation. Insurance can be helpful to alleviate the situation. There is a growing interest in implementing pro-active disaster risk financing mechanism in developing countries as an adaptation to Weather and Climate related Disasters WCDs (Linnerooth-Bayer, et al., 2006). The United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol also emphasize the implementation of insurance in developing countries as an adaptation measure to climate change (Linnerooth-Bayer et al., 2006). Disaster insurance is widely accepted in several developed countries but it is a new concept in Nepal. However, community based micro-insurance in livestock and cash crop sectors have been successful in a few villages. Moreover, a study by Shrestha (2005) in Nepal discusses the success of community based micro-insurance as a bundled insurance with micro-credit and micro-saving in PM. She suggests that collective or community-based disaster insurance could be one of the options for loss sharing measures among the government, insurance sectors and communities during post-disaster period. Therefore, there is a potential to develop a community-based insurance scheme in Nepal to share the disaster loss.

The Ministry of Home Affairs (MoHA) is the governmental body involved in disaster management in Nepal. Its activity is, however, limited to post disaster management, which is mostly delegated to Nepal Red Cross Society (NRCS). In the absence of effective governmental and non-governmental organizations, NRCS, generally leads organization in disaster management in Nepal. NRCS mobilises local bodies such as Community Based Disaster Preparedness (CBDP) Units. The main objective of CBDP is to develop and implement preparedness plans. Generally, a CBDP Unit covers 60 to 250 households of vulnerable communities. It has a working committee of 11 members from these households, including at least one female member. CBDP Units work in pre-, during and post disaster periods under the umbrella of Nepal Red Cross Society. CBDPs help building capacities in technical information dissemination and training; raising awareness of risk and vulnerability, accessing local knowledge and resources and mobilizing local people (Shrestha, 2005; Allen, 2006). CBDP initiatives have potential to support climate change adaptation measures. The project team worked closely with CBDP Units through NRCS to meet the following objectives:

1. To develop awareness of the communities of CBDP Units of PM about the increased disaster risks involved in living with climate change and climate variability;
2. To establish effective and interactive communication between the national meteorological service, Nepal Red Cross Society (NRCS), concerned insurance agencies (IAs) and communities in CBDP Units to disseminate information on extreme weather and climate events;
3. To develop and test the concept of community based disaster insurance in CBDP units through NRCS to reduce disaster risk.

In meeting the above objectives, communication gaps exist between the service providers (related government and insurance agencies) and the communities. Bridging these gaps helps in formulating mitigation and adaptation options. Since the adaptation measures are to be adopted by the vulnerable communities, the main purpose of this pilot project was to facilitate

in filling the gaps between service providers and users by implementing disaster loss reducing measures through existing CBDP Units.

1.2 Study Site: Putalibazaar Municipality and Community Based Disaster Preparedness Units

The project area, Putalibazaar Municipality is one of the two municipalities of Syangja District (Figure 1.1). The Syangja District is one of the most WCD affected districts of Nepal (Pradhan *et al.*, 2003). The total area of the municipality 70.14 km^2 is divided into 13 wards (Figure 1.1)[1]. Some of demographic indicators of compared to all municipalities (58 municipalities) of Nepal are presented in Table 1.1. The municipality shares about 10% of the total population of the Syangja District whereas it shares only 6% of the total area of the District.

Indicators	Rank (among 58 municipalities from the highest	Values
Total Population	32nd	29667
Total Household	28th	6675
Average Household Size	48th	4.44
Total Area (Km^2)	15th	70.14
Population Density	49th	422.97
Population Share with Urban Area	32nd	0.92
Sex Ratio (Male/Female)	58th	84.16

[1] *Ward boundary in Municipality Map of Topographical Survey Department (TSD) is different from that prepared by Putalibazaar Municipality.. The map is the modified version of TSD considering Municipality ward boundary.*

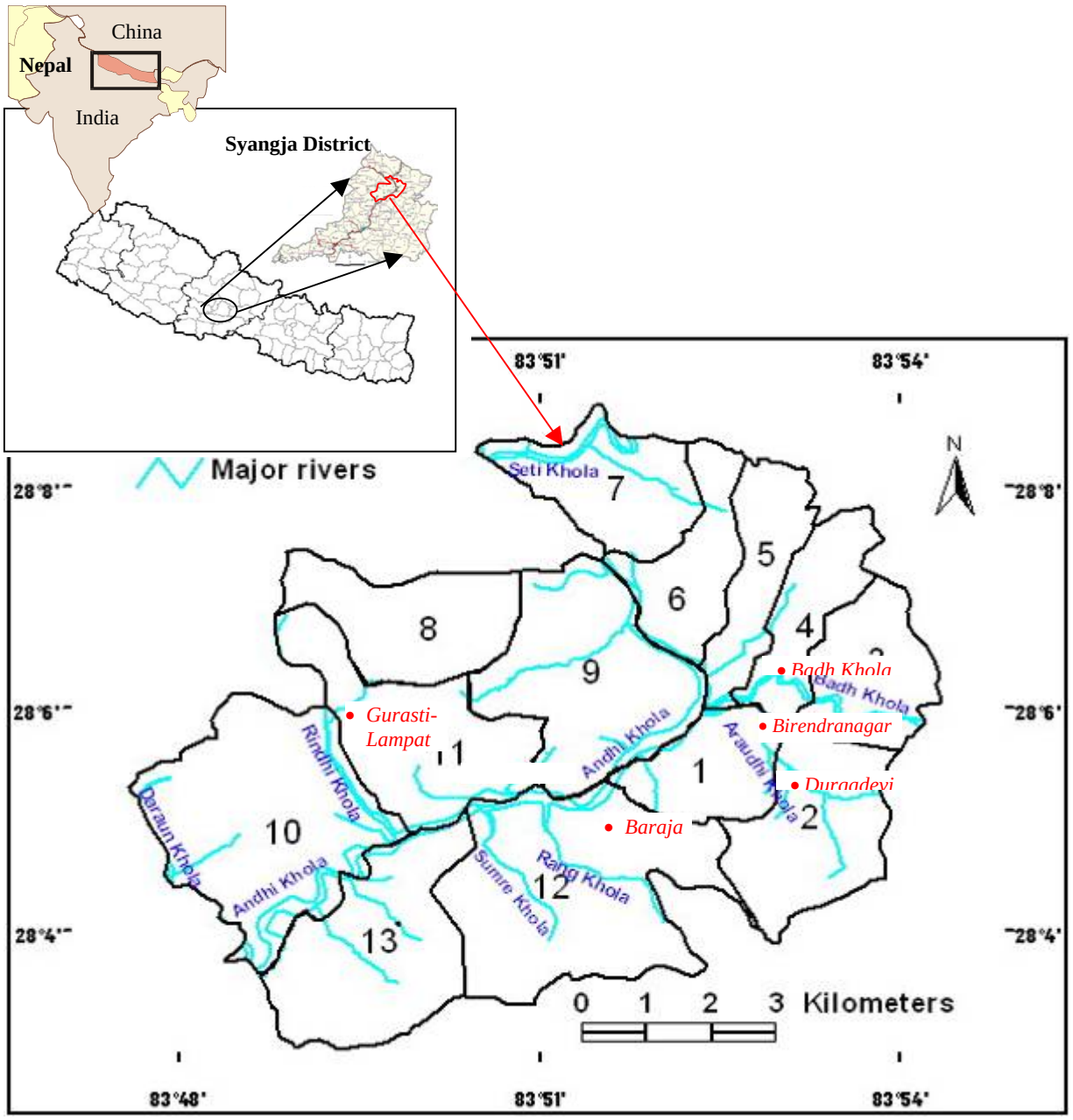

Figure 1.1: Location of Putalibazaar Municipality including wards, rivers (*Khola*) and Location of CBDP

Following the 1998 disaster, Nepal Red Cross Society established five Community-Based Disaster Preparedness (CBDP) Committees in the Putalibazaar Municipality with the motto **'First emergency help from community':** Birendranagar CBDP Unit in ward 1, Durgadevi CBDP Unit in ward 2, Gurasti-Lampat CBDP Unit in ward 11, Baraja CBDP Unit in ward 12 and Badh Khola CBDP Unit in ward 3 and ward 4 (Shrestha, 2005). During the first meeting with CBDP leaders, the project team noticed that the Badh Khola CBDP Unit is not as systematic and organized as other 4 CBDP Units. Therefore, we felt that it would be hard to implement the project activities in this Unit. Therefore, we decided to exclude this unit in our project. Therefore four CBDP units were considered as the study area for this pilot project.

The identification of vulnerable areas were carried out by the CBDP Units. Figure 1.2 and Figure 1.3 present the examples of such exercises carried out for the section of the Birendranagar and Gurasti CBDP Units respectively. The schematic diagrams consist of the vulnerable areas with vulnerable dilapidated houses, intact houses, temples, houses with first-aid facilities, houses with senior and disable citizens, roads, rivers, drainage, water supply, embankments etc.

Figure 1.2: Schematic diagram of the vulnerable areas for disaster preparedness at a section of Birendranagar (ward no. 1).

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Figure 1.3: Schematic diagram of the vulnerable areas for disaster preparedness at a section of Gurasti (Ward No. 11).

CBDPs have also installed hoarding boards at few locations providing guidelines for disaster preparedness. Figure 1.4 is an example of such hoarding board. Cartoons on first row from top to bottom illustrate severe wind, flood, and Earthquake. Similarly, cartoons on second row from top to bottom are landslide, fire and epidemic. Besides floods, it provides guidelines to deal with: storms, fires, landslides and epidemics. The guidelines regarding floods and landslides are:

- Identification of flood-prone and landslide-prone areas
- Afforestation of the flood-prone and landslide-prone areas
- Discourage deforestation
- Spare supplies of jute bags with or without sand for emergency flood protection measures
- Protection of river banks with gabion wall
- Improvement of drainage for unobstructed flows
- Relocation of highly vulnerable settlements

CBDP also runs training programs to explain the guidelines on first-aid, early warning systems, relief and rescue procedures. Additional strategies are also explained for damage mitigation. For instance, people are encouraged to construct houses by avoiding main entrance facing the river bank so that escape is possible when a flood approaches the building. The guidelines encourage structural (such as gabion) as well as non-structural measures, such as afforestation. Each Committee is facilitated with first-aid materials, warning system (mikes) and relief and rescue resources (ropes, torch lights, tents, stretchers, buckets, pipes, knives etc), for emergency measures during the time of disasters (Shrestha 2005).

Figure 1.4. A hoarding board displaying the guidelines for disaster preparedness.

Every Committee has revolving funds. The sources of revolving funds are membership charges, *Ghar-Dailo* (Door to door) programmes (food grain collection) and *cultural programmes*. The revolving fund is the main fund for the relief (financial) distribution to victims. CBDP puts certain amount of money as a fixed deposit in a bank to be utilized during disaster but not for other activities. The balance money is used for income generating activities (Shrestha, 2005).

Shrestha (2005) has explained the importance of CBDP programmes in a country like Nepal. During disasters, roads are usually blocked by landslides or floods and the places may have poor access creating difficulties and delays in government led relief and rescue processes. Furthermore, CBDP programmes help building capacities in technical information

dissemination, training, raising awareness of risk and vulnerability, accessing local knowledge, mobilizing local people and resources.

1.3 Project Team

The Himalayan Climate Center identified following institutions as the key stakeholders for the implementation of this project:

1. Department of Hydrology and Meteorology (DHM)
2. Insurance Board (IB)
3. Nepal Red Cross Society (NRCS) including its branch in Syangja
4. Community Based Disaster Preparedness CBDP Units of the Putalibazaar Municipality

In addition, the project involved various insurance agencies and the Disaster Management Section of Ministry of Home Affairs.

The technical part of the project team consisted of HCC and the representatives from two key stakeholder institutions: DHM and IB. At the field level, the team consisted of NRCS, Syangja branch and CBDP Units.

In addition, the project has supported two students in their MSc Thesis and three other students are worked as research associates. The students helped the project in literature survey, data collection and field surveys assisting the experts.

Chapter 2: Methodology and Activities

2.1 Background

This chapter deals with the methods used and activities performed during the project period. The methods used are technical as well as participatory approach. The technical approach deals with the preparation of technical reports on climate, hydrology, socioeconomic condition and insurance schemes using different tools and techniques. GIS tool was used to integrate spatial and attribute data. Both the technical and participatory approaches were used. The statistical and GIS tools, economical analysis tools and hydrological survey required to develop the climate change, hydrology, socioeconomic aspect and insurance schemes. The participatory approach includes the consultative meetings among experts and participatory workshops involving local community and the key stakeholders. The major activities and evaluation of each objective of the project are listed in Annex 1.

2.1.1 Technical Approaches

Different methodologies techniques and tools were used in the collection, compilations, processing and analysis of secondary as well as primary information. Following tools were used to for technical analysis and prepare technical reports.

- Socio Economic Survey — Household survey with structures questionnaire and checklists, SPSS statistical package for data analysis.
- Climate Change — Extreme and trend analysis using R-ClimDex and Excel, Climate Change Explorer
- Hydrology — Basin characteristics, channel characteristics flood estimates, flood plain mapping – using, GIS
- Insurance Schemes — Different scenario for pricing the premiums under different schemes.

2.1.2 Participatory Approaches

The participatory approaches include consultative meetings with stakeholders, participatory workshops in the community, surveys and group discussions. The main steps involved in participatory approach are shown in Figure 2.1.

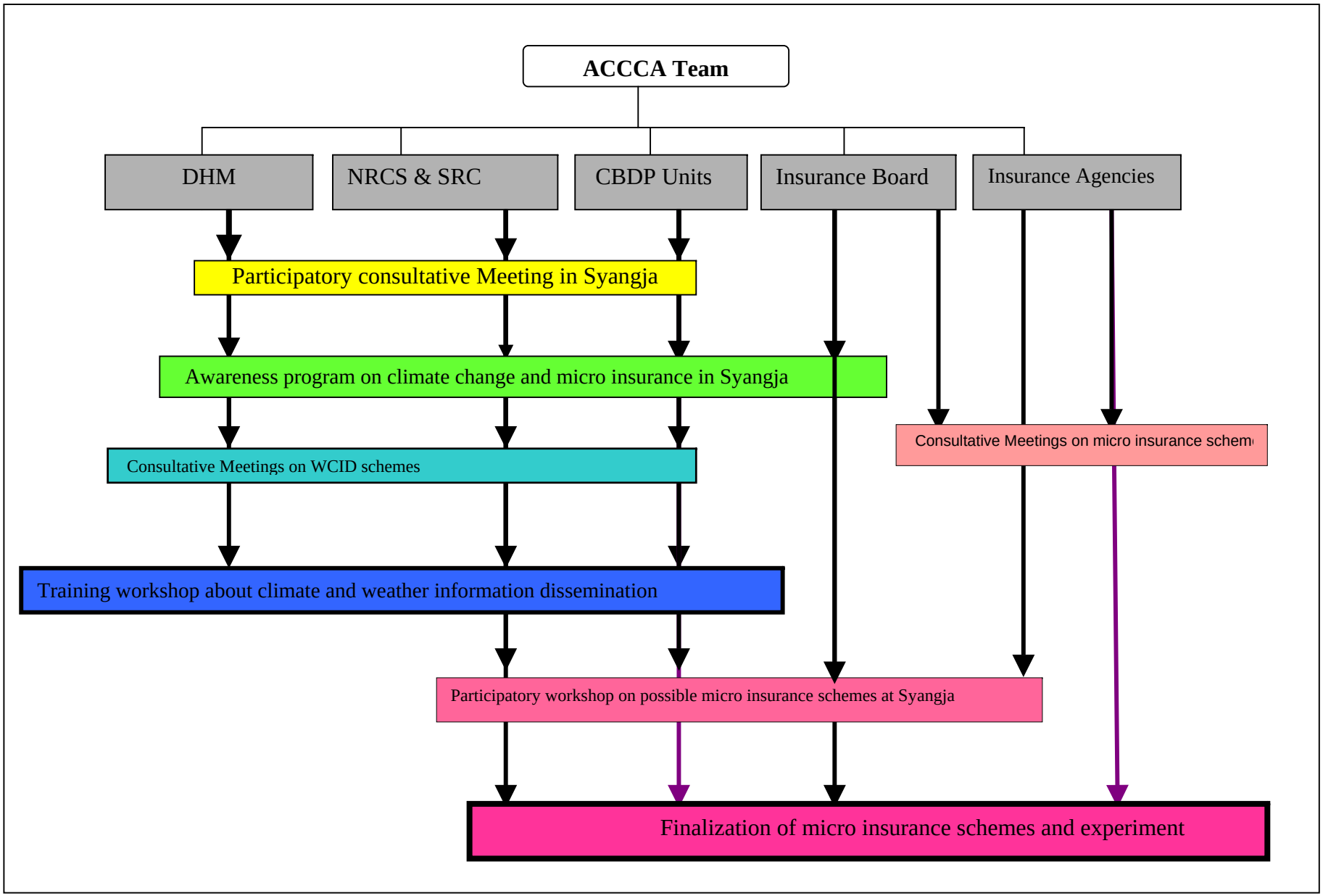


Figure 2.1: Steps involved in participatory approach.

Consultative Meetings: The main purpose of the consultative meetings was to consult experts and other key stakeholders to prepare climate change awareness materials, to design weather and climate information dissemination scheme (WCID) schemes and insurance schemes. The main stakeholders for the consultative meetings were DHM, NRCS, SRCS, CBDP Units, IB and IAs.

Participatory Workshops: The main purpose of the participatory workshop was to discuss and disseminate the designed products about climate change, WCID schemes and to the communities in the following manner.

a. Training workshops and discussions
b. Awareness program: Climate change and Insurance
c. Social learning: Climate Change risk realization.
d. Presentations and group discussions

Surveys: The main purpose of the socio-economic survey was the data collection required to design the insurance schemes and to understand the perception of the communities regarding climate change.

2.2. Activities

2.2.1 First participatory workshop:

The workshop was held from 10-12 August 2007 in five CBDP Units in coordination with NRCS, Syangja Branch. The main objectives were:

i. Introduction of project objectives to committee members of the CBDP Units
ii. Discussion on climate change awareness program and application of climate information
iii. Obtaining the general information about the CBDP Units

The three major objectives of the project and the project activities were discussed in five CBDP Units: Birendranagar, Gurasti, Baraja, Durgadevi and Badhkhola (Figure 2.2). In each gathering there were more than 20 participants in addition to 9 participants from Kathmandu (including hydrologists and meteorologists) and more than 12 participants from each community (except in Badh Khola).

Figure 2.2: Meetings being held in the five CBDP units of Putalibazaar. The project objectives and activities were discussed with the participants from each unit.

Outputs of the Workshop

- **Climate change awareness**
  Workshop suggested that visuals would be more attractive and effective, while posters would be useful to archive. One of the examples of the poster was the disaster calendar prepared by NRCS (Annex 2). Another suggestion by participants was that the presentation should be based on observed climate change in Syangja.

- **Climate and weather information**
  Communities' views on media-based weather information issued by the government were acquired and their expectations were discussed. Participants were quite aware of the uncertainty and difficulty in weather forecasting, though they wished they received good forecast. Regarding weather forecasting, one of the participants told that "*rains in Syangja are so sporadic that one horn of a buffalo may get wet and another horn dry."*

  During the discussions one of the major suggestions was to establish communication between raingauge stations in the headwater for real time rainfall information in downstream flood plains.

- **Information about CBDP Units**
  General information about the CBDP Units is presented in Table 2.1. The information was used to design socio-economic survey and prepare survey tools, prepare awareness materials for climate change, insurance schemes and floodplain maps. In addition, we obtained information about the Units through the vulnerability maps (Annex 3) prepared by the communities themselves.

  We noticed that the Badh Khola CBDP Unit was not as systematic and organized as other 4 CBDP Units. Therefore, Badh Khola CBDP was not considered in this study as we found that the Unit was diverse and incoherent. We decided to concentrate only in the remaining four CBDP Units.

Table 2.1: Information obtained during the field visit on 10-12 August 2007.

CBDP Units	Contact Person	No. of HH	Approximate Fund in the Trust (Rs)	Fund collection HH/month	Type of Hazards	Catchment
Birendranagar	Nara Bahadur Gurung	30	35000	10 (Rs)	Floods	Araudhi Khola
Durgadevi	Khem Narayan Sharma	278		Affordable amount	Landslides & floods	Araudhi Khola
Baraja	Dev Kumari Thapa	101		5 (Rs)	Landsides along the roadside	Andhi Khola & Rang Khola
Gurasti-Lampat	Satish Shrestha	128	19000	Crop collection	Landslides and floods	Gurasti Khola, Andhi Khola
Badh-Khola		Not recorded		5 (Rs)	Landslides and Flood	Badh Khola

2.2.2 Second Participatory Workshop

The second participatory workshop was organized during the second field visit from 7-11 December 2007. The main objective of the workshop was to create awareness about climate change at the community level and to provide basic information about the insurance. The workshop was organized in four CBDP Units. In addition to the members of the Committee of CBDP Units, one member each from 30 households was invited in each Unit. However, there were 35-45 participants. The agenda of the workshop were as follows

- Documentary show: Climate change our concern (30 min)
- Presentation and discussion on observed climate change in Syangja (30 min)
- Presentation on "Insurance an overview" (20 min)
- Discussion on Insurance (20 -30 min)
- Social learning: Climate change risk realization activity: 30-45 min
- Poster distribution

Outputs of the Second Workshop

Climate Change Awareness through:

- **Documentary show:** Documentaries on climate change and disaster were collected from various organizations and a new documentary was prepared. The documentary was in Nepali Language. The documentary was shown at each CBDP Unit (Figure 2.3), for NGOs, government organizations, teachers and students from higher secondary schools.

Figure 2.3: Local people attentively watching the documentary show.

- **Presentation:** Presentations on information of general climate, climate change (global and local scale in Syangja), impacts and adaptation measures were made to the local communities of the four CBDP units, government organizations, NGO's and schools in Nepali language (Figure 2.4) . The presenters then answered the queries of the locals.

Figure 2.4: Presentation on climate change (left) and discussion (right) with the people

- **Posters:** Poster on climate change was prepared in collaboration with CIRA (Annex 4). The posters were distributed (Figure 2.5) in the CBDP Units, NRCS Syangja and schools.

Figure 2.5: Explaining (left) and distribution (right) of the Posters on climate change

- **Climate Change Risk Realization Activity:** In this activity, each community was asked to visualize their village within the next 20-25 years in terms of development perspectives (Figure 2.6). They were asked to identify the areas/sectors that would be affected in the case of disastrous floods and landslide.

Figure 2.6: Climate change risk realization activity in one of the communities

Awareness on Insurance: The main purpose of the presentation on insurance (Figure 2.7) was to give the basic idea about insurance to the communities. During the first field visit and survey, the communities had expressed the need of information on insurance for deciding the insurance schemes. This presentation was effective with inter-active discussions. The major findings during the awareness activities are given in Table 2.2:

Figure 2.7: Presentation for insurance awareness in one of the CBDP units

Table 2.2: Major findings from the presentation of awareness on Insurance

CBDP Units	Risks	Insurance to be covered	Expenses to build a house (100 thousands Rupees)
Birendranagar	Flood	Life, House, Accident	5-15
Durgadevi	Landslide, Flood, Fire	House, Life, Accidents	2-10 lakh
Baraja	Landslide, Floods, Disease	Life, Accident, House, livestock	Average 3 lakh
Gurasti	Landslide, Flood	Life , House	2-15 lakh

2.2.3 Third Participatory Workshop

The third participatory workshops were held in Pokhara and Syangja on 2nd and 3rd August 2008 respectively. The main purpose of the workshop was to discuss with the representatives of the insurance agencies active in Pokhara, the city nearest to Syangja. The Pokhara workshop included CBDP units and NRCS leaders/ representatives. The forum was used to discuss identified insurance schemes and to get their feedback for finalizing a scheme. In

addition, climate change awareness programs were also carried out for the local government and non government organizations and for the students of some schools in Syangja.

Two raingauges were installed at two schools for disaster communication program and for creating awareness of the weather and climate observation for the students and the teachers. These activities were the implementation of the recommendations of the Syangja Red Cross (SRC) during the 2nd workshop (climate change awareness program). The main agenda of the program were as follows.

1. Detail discussion with insurance agency branch office representatives in Pokhara about the identified insurance scheme (1 day)
2. Interaction program with CBDP leaders, representatives, SRC on the identified insurance scheme (half day)
3. Climate change awareness program for the local government and non-government organizations
4. Climate change awareness program in schools (one hour each at two schools)
5. Installation of raingauges at schools

Discussion with insurance agency representatives

On 2nd August 2008, the ACCCA team held an interaction workshop with the representatives from the various insurance agencies of Pokhara (Figure 2.8), a city nearest to Syangja. The participants included representatives from five insurance agencies working in Pokhara and one from central insurance office in Kathmandu. Firstly, presentation on various insurance schemes was made. A very lively and interactive discussions followed. The local insurance agencies expressed their interest in this concept of community-based disaster insurance. They were also impressed by the socio-economic information of the communities collected by the project. They were satisfied with the vital information collected by the project which was essential for the insurance agencies, saving their time and resources. They were ready to go to the communities to support awareness programs. All insurance representatives participated in the interaction program with the community leaders, representatives and SRC start on the following day in Birendra Nagar.

Figure 2.8: Discussion with representatives of Insurance agencies in Pokhara.

An interaction program (meeting) was organized in Syangja on August 3rd 2008. Community leaders and representatives from four CBDP units, SRC staffs along with the representatives of the insurance agencies participated in the program (Figure 2.9). Community leaders and representatives were happy to see the local insurance representatives in the meeting. The meeting recommended training on insurance for one or two persons from each CBDP unit. The trainees would then act as local insurance agents providing support for collecting premium from the CBDP units to deposit at the insurance agency in Pokhara. They would facilitate during insurance claims in case of a disaster. They would also disseminate information on the importance and role of community-based disaster insurance, which would support the awareness raising objective of the project. The training would create jobs for some locals providing extra monitory benefit as insurance commission. Since disasters occur once in a while, the meeting recommended to include additional benefits in the disaster insurance such as health insurance, so that people get some amount of money back in short durations. This would increase the confidence of local people to realize that the insurance is really meant for them and they were not limited to the benefit of the insurance agencies.

Figure 2.9: Interaction with CBDP leaders, CBDP representatives, Insurance agencies representatives and SRC staffs.

Climate change awareness program for the local government and non-government organizations

Climate change awareness program was organized in Syangja On 4th of August 2008 for the local government and non-government organizations. Altogether 10 representatives from various organizations participated in the program. The participants were enthusiastic to get the information on climate change in different context: global, Nepal and Syangja. They also shared their experience on the change in climate they were witnessing in the Syangja district. The participants were also asked to fill a questionnaire to get their level of knowledge on climate change issue.

Figure 2.10: Presentation and discussion on Climate change as an awareness program for the local government and non-government organizations in Syangja

Climate change awareness program at schools

Climate change awareness programs were organized at two schools in Syangja (Figure 2.11) for students as well as the teachers. Presentations comprising of the global, national and local climate change, impacts and adaptation measures were made in Nepali. The packed class rooms demonstrated the high interest of students to get the knowledge on climate change. The documentary on climate change was also shown during the program. Some students were selected randomly to fill the questionnaires which helped to understand the level of knowledge of the students on climate change.

Figure 2.11: Climate change awareness programs at two schools

Installation of raingauges in schools

Two manual raingauges were installed at two schools at different locations: (Figures 2.12 and 2.13). Kauli near the source of the Araundhii Khola and Gurasti. According to local people, heavy rainfall occurs during monsoon at Kauli and the rainy months are slowly shifting. The data from this raingauge is useful for flood warning in Putalibazaar downstream. Gurasti, another selected is a landslide prone area. The rainfall information from Gurasti is useful for predicting landslide in the region. Apart from this, the installation of the raingauges at the schools will help to increase awareness of weather and climate among students, teachers and locals.

Figure 2.12: Installation of raingauge at Gurasti

Figure 2.13: Installation of raingauge at Kauli

2.2.4 Consultation Meetings

Brief descriptions of the several consultation meetings are presented in Table 2.3. The participants in the consultation meetings included hydrologists, meteorologists and socio-economists.

Table 2.3: Outcomes of Consultative Meetings held during June- December 2007

Purpose of Meeting	Description
Questionnaire preparation	Four meetings were held in Kathmandu to finalize the questionnaire(Annex 5). The project team discussed on questionnaires prepared by the socio-economist. Students were trained to collect the data during last two meetings.
Preparation for climate change awareness	Two consultative meetings were held to discuss and finalize climate change awareness materials (poster, presentation and documentary).
Insurance scheme	One consultation meeting was held to discuss insurance schemes and awareness programs for the communities Second meeting on insurance schemes was held with Insurance Agencies and the third meeting was held with NRCS
WCID schemes	Three consultative meetings were held to discuss WCID schemes. The first meeting held in Syangja including NRCS staff. Second with Staff of DHM and third with NRCS and DHM staff

In addition to consultative meetings described above, a meeting was held after the awareness program, among the ACCCA team and NRCS, Syangja to get feedback on the awareness programs and in preparation of disseminating climate and weather information to the communities. The main outputs of the meeting were:

- Provide fact sheet about climate and climate change in Syangja (brochure, leaflet)
- Provide daily rainfall and temperature to NRCS, Syangja
- Develop the communication between raingauge station upstream of Araundhi Khola and NRCS, Syangja for warning hazards in Birendranagar and DurgaDevi CBDP Units
- Documentary shows and presentations on climate change at schools and for NGOs in collaboration with NRCS, Syangja.

2.2.5 Trainings

2.2.5.1 Training workshop on application of weather forecasting

A presentation on "Weather Forecasting in Nepal: An overview" was held at NRCS for disaster risk reduction group of NRCS (Figure 2.14). Since NRCS is planning to use the weather forecasting from monsoon 2009, the training was provided for disaster risk reduction group of NRCS to introduce application of weather forecasting for disaster risk reduction. The main purpose of the presentation was to:

- Disseminate the information on the existing weather forecasting system and products in Nepal.
- Interpret the forecasts
- Accuracy of the forecasts
- Limitation of the forecasts
- Application of the forecasts
- Forecast applicable for the NRCS

Figure 2.14: Training workshop on application of weather forecasting held at NRCS.

The most challenging part was to explain the weather forecasting system, which is a scientific and technical subject in a simple way that can be understood by a layman. Therefore, the slides were prepared in such a simple way that everybody in the room were able to understand the basic of weather forecasting and how it could be used in the disaster risk reduction program of the NRCS. It was a very lively, interactive workshop. The participants asked different queries related to weather forecasting.

2.2.5.2 Training on Insurance

Training on agent for life and non life insurance was organized for the community members at Kathmandu. Life insurance training was organized by Insurance Board from 21 to 27 April 2009 (Figure 2.15). On 28 April 2009, non-life insurance training was given by an expert from non-life insurance company, as there was no non-life insurance training at Insurance Board during proper project period (Figure 2.16). In total nine candidates (two from each CBDP Unit and one from Red Cross at Syangja) participated the training.

During the training a role play on processing three non life insurance schemes was also conducted. Three groups, containing three participants in each, learned about insurance policies, and filling insurance proposals, premium calculations, and claim process based on their personal conditions.

The main purpose of the training was that the trainees motivate and provide information about insurance to the community and work as an agent in case of implementation of insurance at Putalibazaar. After the training the participants organized community workshops in their corresponding CBDP Units and prepared the report of these workshops. The report is included in chapter 6.

Figure 2.15: Life insurance training for representatives from CBDP units and SRC held in Insurance Board from 21 to 27 April 2009

(a)

(b)

(c)

(d)

Figure 2.16: Non-life insurance training held on 28 April 2009. (a) lecture (b) discussion (c) and (d) role play on insurance policies, and filling insurance proposals, premium calculations, and claim process.

2.2.6 Socio-economic Survey

Out of two planned surveys, one was completed in October 2007. The survey was done in four CBDP Units: Birendranagar, Durgadevi, Gurasti and Baraja.

Sampling process: In each CBDP Unit, except in Durgadevi, total number of household list was prepared with the help of the chairman of the Unit. Then 35 names of household owners were selected randomly for socio-economic survey.

The Durgadevi CBDP Unit is the largest of units considered by the project. Therefore the sampling process in Durgadevi, was different from other three units. It has seven sub-units viz. Randang, Hudikot, Pelakachaur, Newarekhola, Araudikhola-Kateri-Gyngdi, Thumkidanda and Devisthan-Lamdanda. For sampling, total household list was collected on the basis of name of family head obtained from coordinator of each sub-unit. Five households from each sub-unit were selected by random sampling. Thirty five samples from this CBDP unit were selected with such procedure.

Survey Processing: Selected individual households were visited and the household owner was interviewed. Another main person of the same home was interviewed when owner were not available. Neighbors were interviewed when no one was found in few households.
Depending upon the level of knowledge of respondents some clarifications were made and their responses were noted for some questions. It took more than half an hour (from 31 minutes to 51 minutes) for each respondent to complete a questionnaire.

2.2.7 Hydrological Survey

Hydrological survey was done to understand flood and river geomorphology (Figure 2.17). The detail of results and analysis of flood is explained in chapter 5.

Figure 2.17: Discharge measurement at the Andhi Khola upstream of the Badh Khola confluence on 9 December 2007.

Chapter 3: Socio-economic Study

3.1 Background

This project aimed at enhancing the adaptive capacity of communities to reduce the risk to increased hazards by utilizing existing institutions. Emphasis was the building on past capacity development work ensuring participation of all the stakeholders with a long term and a holistic approaches.

The project is under implementation in four. CBDP Units instituted by NRCS in Putalibazaar Municipality, Syangja District with the philosophy that first emergency help comes from within the community. In order to develop and implement locally affordable and acceptable community disaster insurance scheme and disseminate climate related information to the community, it was necessary to know the socio-economic condition as well as the level of awareness of the target communities considering the involvement of different solidarities. Such solidarity concept was also used and found effective in devising risk management schemes in other areas too (Thompson, 2003; Linnerooth-Bayer et al., 2003 and 2006). The solidarity concept emphasizes on participatory processes in designing management schemes including insurance which is very effective in building trust between concerned implementing agencies and local communities. Such participatory processes involve meetings and workshops ensuring participation of all the stakeholders. Baseline socio-economic survey is another important component of participatory processes which not only helps to provide basis for designing locally acceptable and affordable management scheme but also to monitor the processes and result indicators of the project. In this context, a household sample survey of four CBDP Units was carried out as a baseline socio-economic study of the Unit. This chapter discusses the results of the survey. The surveys provided valuable information which was necessary for designing effective disaster preparedness activities including micro-insurance schemes.

3.2 Methodology

Four CBDP Units located in Baraja, Birendranagar, Durgadevi and Gurasti within Putalibazaar Municipality were selected for project implementation. There were a total of 547 households participating in four CBDP Units. Quota sampling was adopted from each unit ensuring at least 30 households interviewed from each unit. According to the rule of thumb, at least 30 samples are required to meet the assumption of normal distribution. However, the size of sample from each unit ranged from 30 to 35 considering the time and resources required for the survey. Similarly, the percent of sampled households out of total household in each unit ranged from 13% in Durgadevi to 88% in Birendranagar with an average of 24% in total households of all the units (Table 3.11).

The list of all the household heads in each unit was prepared with the help of CBDP units. Households to administer questionnaire were selected randomly using random digit from a scientific calculator. A structured questionnaire was prepared covering different relevant parameters of socio-economic condition including the type of natural disasters and their impacts, perception regarding climate change, natural disasters, mitigation and adaptation measures, and community insurance scheme. A copy of structured questionnaire is given in Annex 5. Most of the information provided by the household heads are not recorded and measured ones. They are recalled and estimated by the household head himself. So, the accuracy/reliability of data/information so far collected depends upon the reporting by household head. However, series of meetings and discussions were held with the community to develop close rapport and trust

before conducting household survey in order to collect accurate information/data to the extent possible.

Table 3.1: Number of households in CBDP Unit and sample size

Villages	Total No of Households	No. of Sampled Households	% Sampled
Baraja	101	34	34
Gurasti	128	30	23
Birendranagar	40	35	88
Durgadevi	278	35	13
Total	547	134	24

3.3: Socio-economic Condition

3.3.1 Ethnicity, Family and Population

There are eight ethnic groups in these CBDP Units. These include Bahun, Chhetri, Gurung, Newar, Magar, Damai, Kami/Sunar and Sarki. Magar is a dominant group in terms of number of household in Baraja followed by Gurung in Birendranagar, Chhetri in Durgadevi, and Damai in Gurasti. Birendranagar has more ethnic diversity than in other units (Table 3.2).

Table 3.2: Number of household by ethnicity

		Baraja	**Birendranagar**	**Durgadevi**	**Gurasti**	**Total**
Bahun	Count	5	7	4	4	20
	%	14.70	20.00	11.40	13.30	14.90
Chetri	Count		7	13	10	30
	%		20.00	37.10	33.30	22.40
Gurung	Count		9	12		21
	%		25.70	34.30		15.70
Newar	Count		2	1	1	4
	%		5.70	2.90	3.30	3.00
Magar	Count	29	6	4	3	42
	%	85.30	17.10	11.40	10.00	31.30
Damai	Count		2	1	12	15
	%		5.70	2.90	40.00	11.20
Kami/Sunar	Count		1			1
	%		2.90			0.70
Sarki	Count		1			1
	%		2.90			0.70
Total	Count	34	35	35	30	134
	%	100.00	100.00	100.00	100.00	100.00

Source: Household Survey, 2008

The family size in these CBDP units raged from 1 to 16 with an average family members of 6.4, which is slightly higher than national average (5.4 persons). However, average family size ranged from 5.4 persons in Gurasti to 7.4 persons in Baraja (Table 3.3).

Table 3.3: Family size

Site	No. of HH	Population	Minimum	Maximum	Average
Baraja	34	253	2	14	7.4
Gurasti	30	163	1	14	5.4
Birendranagar	35	206	2	16	5.9
Durgadevi	35	229	1	13	6.5
Total	134	851	1	16	6.4

Table 3.4 shows the sex composition of the population in these units. The percentage of female population is slightly higher (50.30%) than the male (49.70%) in general. But the proportion of male population is higher than female in Birendranagar and Durgadevi.

Table 3.4: Number of people by sex

Site		Male	Female	Total
Baraja	Count	119	133	252
	%	47.20	52.80	100.00
Gurasti	Count	79	83	162
	%	48.80	51.20	100.00
Birendranagar	Count	100	99	199
	%	50.30	49.70	100.00
Durgadevi	Count	125	113	238
	%	52.50	47.50	100.00
Total	Count	423	428	851
	%	49.70	50.30	100.00

Table 3.5 shows the age structure of population. Population below five years represents nearly 5% of total population. However, this percent ranged from only 3.5% in Birendranagar to 6.8% in Gurasti. The percentage of economically active population between ages of 10 years to 59 years was 77.10% and with age more than 59 years was 8.3%.

Table 3.5: Number of people by age groups

		Age groups						Total
Site		<5	5-9	10-14	15-19	20-59	60 & above	
Baraja	Count	12	26	36	25	131	22	252
	%	4.80	10.30	14.30	9.90	52.00	8.70	100.00
Gurasti	Count	11	20	17	20	80	14	162
	%	6.80	12.30	10.50	12.30	49.40	8.60	100.00
Birendranagar	Count	7	17	22	21	123	9	199
	%	3.50	8.50	11.10	10.60	61.80	4.50	100.00
Durgadevi	Count	15	16	18	24	139	26	238
	%	6.30	6.70	7.60	10.10	58.40	10.90	100.00
Total	Count	45	79	93	90	473	71	851
	%	5.30	9.30	10.90	10.60	55.60	8.30	100.00

The literacy rate (5 years and above) was comparatively higher (80.9%) than the national average (54.1%). However, the literacy rate ranged from 73.5% in Durgadevi to 85.4% in Baraja (Table 3.6)

Table 3.6: Number of people by education

	Illiterate	Literate	Total	% literate	School Leaving	Intermediate	Bachelor	Master
Baraja	35	205	240	85.4	22	8	8	2
Gurasti	29	122	151	80.8	14	4	3	1
Birendranagar	31	161	192	83.9	21	20	13	7
Durgadevi	59	164	223	73.5	31	14	7	3
Total	154	652	806	80.9	88	46	31	13

Relatively large number of people (18%) worked outside the village. Nearly one percent in another Village Development Committee, 7% outside the district but within the country and about 10% people were outside the country (Table 3.7). However, the proportion of people working outside the village was higher (26%) in Durgadevi.

Table 3.7: Number of people in home and outside

Site		Home	Another VDC	Another district	Outside country	Total
Baraja	Count	218		12	22	252
	%	86.50		4.80	8.70	100.00
Gurasti	Count	136	2	15	9	162
	%	84.00	1.20	9.30	5.60	100.00
Birendranagar	Count	167	2	12	18	199
	%	83.90	1.00	6.00	9.00	100.00
Durgadevi	Count	176	3	24	35	238
	%	73.90	1.30	10.10	14.70	100.00
Total	Count	697	7	63	84	851
	%	81.90	0.80	7.40	9.90	100.00

Table 3.8 shows the main occupation of people. Nearly 58.1% people were engaged in agriculture while 31% are in study. The percentage of people engaged in teaching was 1.8% followed by civil service (3.9%), business (1.5%), army (1.3%) and others including wage (2.8%). However, the proportion of people engaged in agriculture ranged from 44.8% in Gurasti to 70.4% in Durgadevi.

Table 3.8: Number of people engaged in different occupation

		Agriculture	Study	Teaching	Civil Service	Business	Army	Other	Total
Baraja	Count	158	67	4	8	2	1	6	246
	%	64.2	27.2	1.6	3.3	0.8	0.4	2.4	100
Gurasti	Count	64	54		8	6	3	8	143
	%	44.8	37.8	0.0	5.6	4.2	2.1	5.6	100
Birendranagar	Count	84	70	6	10	4	5	6	185
	%	45.4	37.8	3.2	5.4	2.2	2.7	3.2	100
Durgadevi	Count	159	55	4	5		1	2	226
	%	70.4	24.3	1.8	2.2	0.0	0.4	0.9	100
Total	Count	465	246	14	31	12	10	22	800
	%	58.1	30.8	1.8	3.9	1.5	1.3	2.8	100

Nearly 37% households had at least one family member working as government servant, teacher, and business with permanent off-farm source of family income (Table 3.9). Still the main source

of large number of household was agriculture. However, large number of households was involved in wage labour for their income.

Table 3.9: Number of households with family members engaged in permanent off farm source of income

Family number	Baraja	Gurasti	Birendranagar	Durgadevi	Total	%
0	25	17	16	26	84	63
1	5	11	15	8	39	29
2	3	1	2	1	7	5
3			2		2	1
4	1	1			2	1
Total	34	30	35	35	134	100

3.3.2 Assets

3.3.2.1 Housing Buildings

Table 3.10 shows the number of house owned by family in the study area. Majority (72.4%) of building for housing are *Kaachi* (without masonry). About 25% were *Pakki* (with masonry) and remaining 2% were *Chhapro* (single story, thatched roof). However, the proportion of *Pakki* building was high in Birendranagar as compared to other areas.

Table 3.10: Number of building for housing by types

		Pakki	Kaachi	Chhapro	Total
Baraja	Count		34		34
	%		100.00		100.00
Birendranagar	Count	21	13	1	35
	%	60.00	37.10	2.90	100.00
Durgadevi	Count	3	32		35
	%	8.60	91.40		100.00
Gurasti	Count	10	18	2	30
	%	33.30	60.00	6.70	100.00
Total	Count	34	97	3	134
	%	25.40	72.40	2.20	100.00

Table 3.11 shows the types of roof of the building. About 72% houses were roofed with corrugated steel, 23% with concrete and 5% with thatch. The percent of house with concrete roof was comparatively high in Birendranagar.

Table 3.11: Number of house by roof type

		Concrete	Corrugated Steel	Thatch	Total
Baraja	Count	1	31	2	34
	%	2.90	91.20	5.90	100.00
Birendranagar	Count	20	13	2	35
	%	57.10	37.10	5.70	100.00
Durgadevi	Count		33	2	35
	%		94.30	5.70	100.00
Gurasti	Count	10	20		30
	%	33.30	66.70		100.00
Total	Count	31	97	6	134
	%	23.10	72.40	4.50	100.00

Earth, cement and stone were generally used for wall construction. The wall of more than 64% houses was made of earth, 33% cement and only 3% stone (Table 3.12)

Table 3.12: Number of house by wall type

		Earth	Cement	Stone	Total
Baraja	Count	32	1	1	34
	%	94.10	2.90	2.90	100.00
Birendranagar	Count	6	28	1	35
	%	17.10	80.00	2.90	100.00
Durgadevi	Count	28	6	1	35
	%	80.00	17.10	2.90	100.00
Gurasti	Count	20	9	1	30
	%	66.70	30.00	3.30	100.00
Total	Count	86	44	4	134
	%	64.20	32.80	3.00	100.00

Majority of houses (47.8%) were two story, 41% one story and only 11% three story. Majority of houses in Birendranagar were one story but two story in Gurasti and Durgadevi. Three story houses were relatively higher in Baraja (Table 3.13)

Table 3.13: Number of house by story

Site	No of story	1	2	3	Total
Baraja	Count	7	18	9	34
	%	20.60	52.90	26.50	100.00
Birendranagar	Count	26	7	2	35
	%	74.30	20.00	5.70	100.00
Durgadevi	Count	12	21	2	35
	%	34.30	60.00	5.70	100.00
Gurasti	Count	10	18	2	30
	%	33.30	60.00	6.70	100.00
Total	Count	55	64	15	134
	%	41.00	47.80	11.20	100.00

The number of rooms in these houses ranged from 1 to 12. Table 2.13 shows the number of house by number of rooms. Majority (62.7%) of houses had 2-4 rooms followed by 5-7 rooms (25.4%). Houses in Baraja and Birendranagar have relatively larger number of rooms (Table 3.14).

Table 3.14: Number of house by number of rooms

Site	No of rooms	1	2-4	5-7	8-10	>10	Total
Baraja	Count		19	13	2		34
	%		55.90	38.20	5.90		100.00
Birendranagar	Count		21	12	2		35
	%		60.00	34.30	5.70		100.00
Durgadevi	Count	3	23	5	3	1	35
	%	8.60	65.70	14.30	8.60	2.90%	100.00
Gurasti	Count	3	21	4	2		30
	%	10.00	70.00	13.30	6.70		100.00
Total	Count	6	84	34	9	1	134
	%	4.50	62.70	25.40	6.70	0.70	100.00

Majority of buildings were roofed with corrugated steel and wall built with stone and earth. Large number of household had means of communication such as radio, telephone and televisions with facilities such as electricity, piped drinking water etc.

3.3.2.2 Land

Many types of land were privately owned by the households including *Khet, Pakho, Kharbari*, grazing land and forests. *Khet* and *Pakho* were irrigated and unirrigated cultivated land used for growing agricultural crops whereas *Kharbari* was used to produce thatch/fodder and grazing land for animal grazing. The average size of landholding was 10.1 ropani, whereas the size of Khet was 3 ropani, *Pakho* 4.4 ropani, *Kharbari* 1.5 ropani, grazing 0.2 ropani and private forest was 0.9 ropani. The size of land holding was comparatively higher in Baraja and Durgadevi. The size of *Khet* land was comparatively higher in Baraja whereas the size of *Pakho* was higher in Durgadevi (Table 3.15).

Table 3.15: Average size of land holding by types of land in ropani (1 ropani = 0.0509 ha)

Village Name	Khet	Pakho	Kharbari	Grazing	Forest	Total
Baraja	5.8	7.1	3.0	0.6	0.5	17.0
Birendranagar	1.1	1.3	0.0	0.0	1.5	3.9
Durgadevi	2.1	7.0	2.3	0.3	1.5	13.2
Gurasti	3.4	1.7	0.7	0.0	0.1	5.8
Total	3.0	4.4	1.5	0.2	0.9	10.1

Table 3.16 further shows the distribution of household by size of landholding. Nearly 22% families were almost landless with landholding size less than 1 ropani, 24% families fell in marginal farmer group with landholding between one to four ropani, 29% were small farmers. Only 5% families had large landholding exceading 20 ropani. The proportion of families with small holding was comparatively higher in Birendranagar whereas Baraja had comparatively higher proportion of families with large landholding sizes.

Table 3.16: Number of household by size of landholding

		Almost Landless (< 1 ropani)	Marginal (1-4 ropani)	Small (5-10 ropani)	Medium (11-20 ropani)	Large (> 20 ropani)	Total
Baraja	Count		8	10	11	5	34
	%		23.50	29.40	32.40	14.70	100.00
Birendranagar	Count	23	4	6	2		35
	%	65.70	11.40	17.10	5.70		100.00
Durgadevi	Count	1	7	17	9	1	35
	%	2.90	20.00	48.60	25.70	2.90	100.00
Gurasti	Count	6	13	6	5		30
	%	20.00	43.30	20.00	16.70		100.00
	Count	30	32	39	27	6	134
	%	22.40	23.90	29.10	20.10	4.50	100.00

Source: Household Survey, 2008

Khet was used to grow crops such as paddy and wheat whereas pakho was used to grow maize, millet, barley, buckwheat etc. In few cases, maize was also grown in khet in winter season. Average area, production and yields of major agricultural crops grown by these household was

given in Table 3.17. Average productivity of the major food crops was very low. It was only 2 ani for paddy, 0.8 muri/ropani for maize, 0.7 muri/ropani for millet and 0.4 muri/ropani for wheat. (Note: 1 muri paddy = 52.2 kg; 1 muri wheat, maize and millet = 68.1 kg).

Table 3.17: Area, production and yield of major food crops (area in ropani and production in muri).

	Paddy			Maize			Millet			Wheat		
Village	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield
Baraja	4.4	11.1	2.5	7.3	4.9	0.7	5.4	3.7	0.7	0.1	0.1	1.5
Birendranagar	0.8	2.5	3.0	0.7	0.7	1.0	0.0	0.2	6.0	0.3	0.2	0.7
Durgadevi	1.9	3.6	1.9	6.0	4.9	0.8	5.4	3.8	0.7	0.3	0.1	0.4
Gurasti	3.8	4.6	1.2	2.5	3.6	1.4	3.1	2.8	0.9	0.7	0.1	0.1
Total	2.7	5.4	2.0	4.1	3.5	0.8	3.5	2.6	0.7	0.3	0.1	0.4

Source: Household Survey, 2008

The level of production of major food crops among the household was so low that their own production did not fulfill the food requirement. Table 3.18 shows the status of food situation. About 56% households fulfilled their food requirement only up to 3 months from their own production. Similarly, 20% households fulfilled their requirement for 3-6 months and 14% households for 6-9 months from their own production. Less than 10% households had enough production for 9-12 months. The shortage of food from owns production was comparatively high in Gurasti and Birendranagar where more than 85% households produced food crops for only up to 3 months. Majority of households had to import food items from outside the village.

Table 3.18: Number of household by state of food sufficiency from own production

		0 to 3 months	4 to 6 months	7 to 9 months	10 to12 months	Total
Baraja	Count	13	5	12	4	34
	%	38.20	14.70	35.30	11.80	100.00
Birendranagar	Count	30	1	1	3	35
	%	85.70	2.90	2.90	8.60	100.00
Durgadevi	Count	2	21	6	6	35
	%	5.70	60.00	17.10	17.20	100.00
Gurasti	Count	30				30
	%	100.00				100.00
Total	Count	75	27	19	13	134
	%	56.00	20.10	14.20	9.70	100.00

3.3.2.3 Livestock

Livestock was another source of family income. Buffalos, cows and goats were raised by many families. The mean herding size of buffalo was 0.9, cow 1.0, sheep/goat 1.4, pig 0.4 and chicken 2.4. The mean herding size of buffalo, cow and chicken was comparatively high in Baraja whereas it was sheep and goat in Durgadevi (Table 3.19).

Table 3.19: Per household average number of livestock by types

Name of Livestock	Average Number	Name of Livestock	Average Number
Buffalo	0.9	**Pig**	0.4
Cow	1.0	**Chicken**	2.4
Sheep/Goat	1.4		

Source: Household Survey, 2008

3.3.2.4 Other household items

Nearly 84% of the total surveyed household had radio, 81% household had television, and 85% household had torchlight. The proportion of household having radio and television was relatively low in Durgadevi (Table 3.20).

Table 3.20: Number of household having different items

		Radio	Television	Torchlight
Baraja	Count	30	28	29
	%	88.20	82.40	85.30
Birendranagar	Count	29	30	31
	%	82.90	85.70	88.60
Durgadevi	Count	27	25	30
	%	77.10	71.40	85.70
Gurasti	Count	27	26	25
	%	90.00	86.70	83.30
Total	Count	113	109	115
	%	84.30	81.30	85.80

Source: Household Survey, 2008

3.3.3 Income and Expenditure

The major sources of family income were agriculture, livestock, service, pension and remittances. Per household annual income was NRs 107870. Nearly 53% of the total family income was from pension and remittances followed by service and wage labor (Table 3.27. Agriculture including livestock contributes less than 5% of the total family income in the study area. The average annual family income was highest in Birendra Nagar and lowest in Gurasti. The amount of income from pension and remittance was less than half in Gurasti as compared to other sites.

Table 3.27: Per household annual income by sources (Nepali Rupees)

Sources of income	Baraja	Birendranagar	Durgadevi	Gurasti	Average	%
Agriculture	6312	3429	2586	1172	3375	3
Livestock	1938	1597	2583	3278	2349	2
Wage Labor	8144	12217	5697	25913	12993	12
Pension and Remittance	51233	68314	82829	26353	57182	53
Service	882	24881	17097	9087	12987	12
Others Sources	38111	15537	4857	17433	18984	18
Total	106620	125976	115649	83236	107870	100

Source: Household Survey, 2008

The amount of income among households was not uniform. Large number of households (36.6%) has annual income less than Rs 50000 (Table 3.28). Similarly, nearly 24% households have annual income between Rs. 50000-100000. Only 13% households have annual income more than Rs. 200000. The proportion of household having annual income less than Rs 50000 was comparatively high except in Birendranagar.

Table 3.28: Number of household by income class

Income (Rs)		Baraja	Birendranagar	Durgadevi	Gurasti	Total
<50000	Count	15	5	15	14	49
	%	44.10	14.30	42.90	46.70	36.60
50,000-100,000	Count	5	11	8	8	32
	%	14.70	31.40	22.90	26.70	23.90
100,000-150,000	Count	7	9	5	2	23
	%	20.60	25.70	14.30	6.70	17.20
150,000-200,000	Count	3	3	2	4	12
	%	8.80	8.60	5.70	13.30	9.00
>200,000	Count	4	7	5	2	18
	%	11.70	20.00	14.30	6.60	13.40
Total	Count	34	35	35	30	134
	%	100.00	100.00	100.00	100.00	100.00

Table 3.29 shows the reported annual household amount of expenditure in different items. Per household average annual expenditure was Rs 78,419 which was about 73% of the average annual income of the household. However, per household average annual expenditure ranged from Rs. 54,120 in Durgadevi to almost double Rs.113,977 in Birendranagar. Since the income was skewed in distribution and large proportion of household (37%) had annual income less than Rs. 50,000, indicated inadequate cash saving from their own earnings. The remaining (63%) households had annual saving from their earning. Nearly 26% of the total household expenditure was in education and health followed by food (22%), other household items such as sugar, cooking oil, vegetables etc. (20%), clothes (10%), livestock products including meat (10%) and festivals (7%).

Table 3.29: Average annual household expenditure

Village	Baraja	Birendranagar	Durgadevi	Gurasti	Average	%
Food	14332	29194	13349	13454	17582	22.4
Livestock products	9345	10114	5865	7355	8170	10.4
Cloths	9824	9400	6229	7200	8163	10.4
Other household items	18535	24971	8816	11693	16004	20.4
Education and Health	21227	32911	14069	13002	20302	25.9
Festival	4612	5743	4800	7069	5556	7.1
Land maintenance	1059	900	343	1376	919	1.2
Agricultural Inputs	394	57	221	381	264	0.3
House maintenance	58	571	29	4310	1242	1.6
Others Activities	353	114	400	0	217	0.3
Total	79739	113977	54120	65840	78419	100.0
Income	106620	125976	115649	83236	107870	
Surplus	26882	11999	61528	17396	29451	

As in other places of the country, this study area was inhabited by different ethnic groups with slightly larger family size than the national average. The area was accessible by road and the literacy rate was higher than the national average. Large number of population was small farm households. Majority of households were facing severe food shortage, inadequate to fulfill their food requirements from their production even for six months a year. However, significant number of people was engaged in off-farm employment particularly in service and wage labour outside their village sending significant amount in cash as remittance.

3.4 Natural Disaster and Mitigation Efforts

3.4.1 Events and Losses

Floods, landslides, earthquakes, storms, droughts, lightnings, fires and diseases were major natural disaster occurring in the study area. A total of 11 major events of flood disasters within 54 years (2011-2065 B.S.) were reported from the study area. It shows that flood disaster occured once in 5 years (Table 3.30). Similarly the reported events of disaster was seven for landslides, two for earthquakes, for storms, ten for drought, five for lightning, six for fire and three for diseases. Attempt was made to estimate the loss in the past from different types of disaster through household survey. The data provided by the household head were not the recorded data, it was rather recalled for such a long period giving rough idea. Total number of people killed from 134 sampled household within 54 years were 11 persons. Similarly, a total of 49 animals were killed, 148.5 ropani of cultivated land were destroyed within the 54 years period. The reported annual amount properties loss was Rs. 1807 per household in which Rs. 1617 was from floods, Rs. 119 from droughts, and Rs. 46 from landslides.

Table 3.30: Frequency of events and losses by types of disasters

	No of year	People killed	Livestock killed	Land lost (ropani)	Properties loss (amount in Rs.)	Per HH/year loss Rs.	%
Flood	11	6	22	148.5	11697000	1617	89.5
Landslide	7	4	12	42	330000	46	2.5
Earthquake	2	0	0	0	60000	8	0.4
Storm	6	0	0	1	10000	1	0.1
Drought	10	0	0	6	860000	119	6.5
Lightning	5	1	1	0	3500	<1	0
Fire	6	0	9	0	12000	2	0.1
Diseases	3	0	4	0	100000	14	0.7
Total		11	49	197.5	13072500	1807	100.0
Per HH		0.082	0.366	1.474	97556		
Per HH/ year		0.002	0.007	0.027	1807		

Table 3.31 shows the reported loss of life in different periods. Out of a total of six people killed by floods reported from 134 households, three were killed between 2011-2020 BS (1954-1963AD), two were between 2051-2060 and only one 2061 onward. All the people reported killed by landslide was between 2031-2040. (Note: BS is 57 years ahead of AD).

Table 3.31: Number of people killed in different periods by different hazards

Year	Flood	Landslide	Earthquake	Storm	Drought	Lightning	Fire	Diseases	Total
2011-2020	3	0	0	0	0	0	0	0	3
2021-2030	0	0	0	0	0	0	0	0	0
2031-2040	0	4	0	0	0	0	0	0	4
2041-2050	0	0	0	0	0	0	0	0	0
2051-2060	2	0	0	0	0	0	0	0	2
2061-2065	1	0	0	0	0	1	0	0	2
Total	6	4	0	0	0	1	0	0	11

Table 3.32 shows the reported amount of properties loss in different periods from different disasters. As mentioned earlier, this information was recalled by the household heads. Though there were losses in the earlier periods, none of the household had noteworthy memory of losses. The highest loss was reported during 2051-2060 which was about Rs 9000 per household per

year. It was only Rs. 618 in recent 5 years i.e 2061 onwards. The average for 2051-2065 (last 15 years) was estimated at Rs. 6344 per household per year.

Table 3.32: Amount of household properties lost in different periods (Rs.)

Year	Flood	Landslide	Earthquake	Storm	Drought	Lightning	Fire	Diseases	Total	Average (/hh/yr)
2031-2040	50000	220000	0	0	0	0	0	0	270000	201
2041-2050	0	0	50000	0	0	0	0	0	50000	37
2051-2060	11567000	40000	10000	10000	700000	3500	8000	0	12338500	9208
2061-2065	80000	70000	0	0	160000	0	4000	100000	414000	618
Total	11697000	330000	60000	10000	860000	3500	12000	100000	13072500	

People were asked to estimate the properties in the hazard prone areas. Table 3.33 shows per household amount by properties and shows that the total amount ranged from Rs. 145,200 in Durgadevi to Rs. 723,857 in Birendranagar.

Table 3.33: Per household properties at flood hazard area

Village Name	House	Land	Production	Other household items	Total
Baraja	8824	377647	7735	7941	402147
Birendranagar	524286	129857	0	69714	723857
Durgadevi	71429	72857	914	0	145200

Per household total amount of properties in landslide hazard zone ranged from Rs. 71286 in Durgadevi to 123714 in Birendranagar (Table 3.34).

Table 3.34: Per household properties at landslide hazard zone

Village Name	House	Land	Crop	Other household item	Total
Baraja	37353	29559	1265	8824	77000
Birendranagar	103143	3143	0	17429	123714
Durgadevi	49429	21571	286	0	71286

Different types of disaster:– flood, landslide, earthquake, storm, drought, lightning and fire occured frequently. Flood disaster occurred once in 5 years period. The estimated properties loss from these disasters was about Rs. 1807 per household per year for the long run (50 years) and Rs. 9000 in the medium and short term (5-10 years) in which 89.5% was from flood followed by drought (6.5%) and landslides (2.5%).

3.4.2 Mitigation Efforts

Before Disasters

A few households were involved in disaster preparedness activities. Table 3.35 shows the types of activities carried out by those households which include structural measures such as retaining wall using gabion and non structural measures such as plantations. Nearly 25% of the total households were involved in such activities. The percentage of household involved in such activities was comparatively higher (86%) in Birendranagar. NRCS was the main agency in providing assistance in carrying out disaster preparedness activities including training. With the help of NRCS, a system of savings which is known as *Muthi Dan* (handful contribution) collection has been introduced and institutionalized. Each member of CBDP unit contributes *Muthi* as rice, maize or millet every month so that it could be used during and after a disaster.

Table 3.35: Number of household involved in pre-disaster preparedness activities

		Structures	Plantation	Others	None	Total
Baraja	Count	1	1		32	34
	%	2.90	2.90		94.10	100.00
Birendranagar	Count	9	18	3	5	35
	%	25.70	51.40	8.60	14.30	100.00
Durgadevi	Count	1			34	35
	%	2.90			97.10	100.00
Gurasti	Count				30	30
	%				100.00	100.00
Total	Count	11	19	3	101	134
	%	8.20	14.20	2.20	75.40	100.00

During Disaster

Different activities - rescue of victims and provision of food and shelter were the main activities carried out during disaster. The District Disaster Relief Committee (DDRC) of the government, NRCS and the neighbors were instrumental to provide assistance during disasters.

After Disasters

The main activities carried out by surveyed household included construction of structures with assistance from line agencies. Again DDRC of the government, NRCS and the neighbors were the main agencies involved in providing assistance for mitigation activities mainly for structural measures, such as construction of gabion walls.

Structural measures such as retaining wall using gabion and plantation were adopted in order to mitigate flood and landslide disasters. NRCS was providing technical and material support for disaster preparedness activities.

3.5 People's Perception

3.5.1 Disaster

People generally think that flood and landslide hazards were associated with intense rainfalls and long-duration. Nearly 48% households reported that they estimated the anticipated magnitude of flood based on the nature of precipitation and storms (Table 3.36)

Table 3.36: Number of households reporting nature of weather that cause flood and landslide hazards

		Nothing	Intense rainfall	Long durational rainfall	Lighting	Strom	others	Total
Baraja	Count	18	7			2	7	34
	%	52.90	20.60			5.90	20.60	100.00
Birendranagar	Count	7	16	1	4		7	35
	%	20.00	45.70	2.90	11.40		20.00	100.00
Durgadevi	Count	15	17	1	2			35
	%	42.90	48.60	2.90	5.70			100.00
Gurasti	Count	30						30
	%	100.00						100.00
Total	Count	70	40	2	6	2	14	134
	%	52.20	29.90	1.50	4.50	1.50	10.40	100.00

Different mitigation activities were perceived as effective mitigation measures. These include construction of gabion wall, plantation and drainage. Large proportion of household reported that these activities should be carried out in combination (Table 3.37).

Table 3.37: Number of household suggesting different mitigation measures

		NA	Gabion (1)	Plantation (2)	Drainage (3)	Combination of 1 & 2	Combination of 1, 2 & 3	others	Total
Baraja	Count	13	7	1	2	9	2		34
	%	38.20	20.60	2.90	5.90	26.50	5.90		100.00
Birendranagar	Count	6	12	1		1		15	35
	%	17.10	34.30	2.90		2.90		42.90	100.00
Durgadevi	Count	8	4	9	1	7	6		35
	%	22.90	11.40	25.70	2.90	20.00	17.10		100.00
Gurasti	Count	30							30
	%	100.00							100.00
Total	Count	57	23	11	3	17	8	15	134
	%	42.50	17.20	8.20	2.20	12.70	6.00	11.20	100.00

Many people reported that intense rainfall is the main reason for flood and landslide hazards (Table 3.38). Deforestation was reported as another major reason behind increasing floods and landslides in the area. The proportion of household with knowledge about climate change and its association in increasing flood and landslide hazards is very low (2%) though many of them have been experiencing warming trends and increasing occurrence of unusual rainfall events in recent years.

Table 3.38: Number of households reporting reasons behind increasing flood and landslide hazards

		Do not know	**Instant intense rainfall**	**Deforestation**	**Climate change**	**others**	**Total**
Baraja	Count	2	29	3			34
	%	5.90	85.30	8.80			100.00
Birendranagar	Count	3	25	4	1	2	35
	%	8.60	71.40	11.40	2.90	5.70	100.00
Durgadevi	Count	3	26	4	2		35
	%	8.60	74.30	11.40	5.70		100.00
Gurasti	Count	30					30
	%	100.00					100.00
Total	Count	38	80	11	3	2	134
	%	28.40	59.70	8.20	2.20	1.50	100.00

Local people were found experiencing change in climate:– warming, increasing unusual rainfall events and early onset of monsoon. As a consequence, the frequency and magnitude of flood and landslide hazard were increasing. On the one hand and the availability of water during dry period was decreasing affecting drinking water supply and irrigation needs with impacts on agricultural productivity.

3.5.2 Climate Change

Majority of the total surveyed households reported that they have been experiencing change in climate. Only 20% households reported that they did not experience such changes (Table 3.39).

Table 3.39: Number of households reporting change in climate

		Yes	No	Do not know	Total
Baraja	Count	21	9	4	34
	%	61.80	26.50	11.80	100.00
Birendranagar	Count	15	12	8	35
	%	42.90	34.30	22.90	100.00
Durgadevi	Count	24	1	10	35
	%	68.60	2.90	28.60	100.00
Gurasti	Count	18	5	7	30
	%	60.00	16.70	23.30	100.00
Total	Count	78	27	29	134
	%	58.20	20.10	21.60	100.00

Table 1 to Table 19 in Annex 6 show the frequency and percentage of household reporting their perception about climate change and its impacts based on their personal experience. Majority of people have experienced the increase in temperature and unusual events of precipitation in recent years. Majority of people surveyed also reported that there was increase in summer temperature (60% respondent), unusual rainfall events including high intensity precipitation (78% respondent), and early shifting in the onset of summer monsoon (68%). As a consequence of increasing high intensity precipitation, there were increase floods and landslide events. The locals have experienced high variability in discharge and decrease in flow during dry period. Majority of people have also reported that weather events such as hail and lighting have also increased in recent years.

3.5.3 Insurance

Nearly 50% households of the Table 3.40 shows that study area have some knowledge about the existence of insurance.

Table 3.40: Number of household with/without knowledge about insurance

		Yes	No	Total
Baraja	Count	16	18	34
	%	47.10	52.90	100.00
Birendranagar	Count	12	23	35
	%	34.30	65.70	100.00
Durgadevi	Count	14	21	35
	%	40.00	60.00	100.00
Gurasti	Count	25	5	30
	%	83.30	16.70	100.00
Total	Count	67	67	134
	%	50.00	50.00	100.00

Nearly 82% households believed that insurance scheme could be useful reducing the sufferings caused by natural disasters and it could be developed and implemented at community level (Table 3.41)

Table 3.41: Number of household reporting the prospect of insurance scheme

		Yes	No	Total
Baraja	Count	28	6	34
	%	82.40	17.60	100.00
Birendranagar	Count	23	12	35
	%	65.70	34.30	100.00
Durgadevi	Count	32	3	35
	%	91.40	8.60	100.00
Gurasti	Count	27	3	30
	%	90.00	10.00	100.00
Total	Count	110	24	134
	%	82.10	17.90	100.00

Table 3.42 shows the range of amounts the households were willing to pay as insurance premium. Large numbers of households were willing to pay monthly premium amounting between Rs. 10-100. Only 9% households were willing to pay even more than Rs. 100 as premium for insurance if introduced in the area.

Table 3.42: Number of household willing to pay insurance premium by range of amount (Rs)

		<10	10-19	20-49	50-99	100	>100	Total
Baraja	Count	20	2	4	3	3	2	34
	%	58.80	5.90	11.80	8.80	8.80	5.90	100.00
Birendranagar	Count		14	8		5	8	35
	%		40.00	22.90		14.30	22.90	100.00
Durgadevi	Count		12	13	8		2	35
	%		34.30	37.10	22.90		5.70	100.00
Gurasti	Count	9	11	7	2	1		30
	%	30.00	36.70	23.30	6.70	3.30		100.00
Total	Count	29	39	32	13	9	12	134
	%	21.60	29.10	23.90	9.70	6.70	9.00	100.00

Though the people were aware of insurance as risk reducing mechanism, they have not yet practiced it. Many people were willing for insurance and were ready to pay monthly premium of Rs. 10 to Rs. 100.

3.5.4 Dissemination of Weather and Climate Information

Radio and TV generally broadcast daily weather information. Nearly 65% surveyed households reported that they regularly listened weather broadcasts (Table 3.43).

Table 3.43: Number of household listening weather broadcast.

		Yes	No	Total
Baraja	Count	22	12	34
	%	64.70	35.30	100.00
Birendranagar	Count	21	14	35
	%	60.00	40.00	100.00
Durgadevi	Count	24	11	35
	%	68.60	31.40	100.00
Gurasti	Count	20	10	30
	%	66.70	33.30	100.00
Total	Count	87	47	134
	%	64.90	35.10	100.00

Though fairly large number of households listened to the weather broadcasts from radio and TV, only a few households (43%) used the information in their activities (Table 3.44).

Table 3.44: Number of household applying weather information

		Yes	No	Total
Baraja	Count	16	18	34
	%	47.10	52.90	100.00
Birendranagar	Count	17	18	35
	%	48.60	51.40	100.00
Durgadevi	Count	18	17	35
	%	51.40	48.60	100.00
Gurasti	Count	7	23	30
	%	23.30	76.70	100.00
Total	Count	58	76	134
	%	43.30	56.70	100.00

Timely and reliable information is useful in arranging activities ahead and prepare for disaster. Nearly 26% households recommended for timely and reliable broadcast of weather information for its improvement. Similarly, 5% household recommended to enhance awareness about the usefulness of weather information (Table 3.45).

Table 3.45: Number of household suggesting ways of improving current broadcast of weather information

		Timely and reliable information	Awareness	Do not know	
Baraja	Count	11	3	20	34
	%	32.4	8.8	58.8	100.0
Birendranagar	Count	1	0	34	35
	%	2.9	0.0	97.1	100.0
Durgadevi	Count	17	3	15	35
	%	48.6	8.6	42.9	100.0
Gurasti	Count	6	0	24	30
	%	20.0	0.0	80.0	100.0
Total	Count	35	6	93	134
	%	26.1	4.5	69.4	100.0

Majority of households listened weather information broadcasted from radio. They further demanded for timely and reliable weather information in order to be prepared for flood and landslide disasters.

Chapter 4: Climate Change and Community Awareness

4.1 Background

In the early days, climate change was an issue only among the scientific communities. Because of the potential impacts and the urgency to act to mitigate the adverse impacts of climate change, this issue has become a top agenda at the government and political level. The establishment of IPCC and its activities were helpful to create awareness among the political level, though it took more than a decade for the protocol to enter into force. Since the early 21st century, climate change paradigm has shifted to the adaptation measures. The adaptation measures and policies require awareness at grassroot levels. However, the low literacy rate and poverty in developing countries and technicality of the subject, are the main hindrance in conveying climate change messages to grassroots communities making it a challenging job..

Climate change awareness program in Putalibazaar was focused on presentation of observed changes in climate of Putalibazaar, documentary show about global climate change and its impact in Nepal, dissemination of posters on global climate change and risk realization activities with communities' participation. Finally, the program was evaluated by surveying the perception using structured questionnaire.

4.2 Climate Change in Putalibazaar

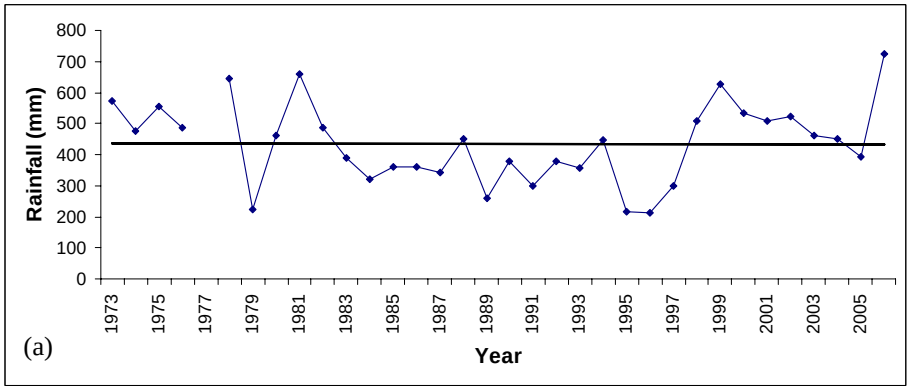
The study by Shrestha (2005) has shown that Putalibazaar has observed increasing trends in floods and landslides due to increase in heavy rainfall events. The study indicates that heavy precipitation may increase further in future. Therefore, the main climate change issue in Putalibazaar is the probable increase in the incidents of floods and landslides and the subsequent potential impacts on livelihoods of the people.

4.2.1 Observed Data Analysis

Rainfall and temperature data of the climate station at the Putalibazaar Municipality was analyzed for long-term climatology and trends.

4.2.1.1 Rainfall Change

Analyses of seasonal rainfall trends (Figure 4.1a - 4.1d) in Putalibazaar indicated that the rainfall in all non-monsoon seasons depicted decreasing tendency of trends, which were, however, statistically insignificant. The monsoon season showed increasing rainfall trend, indicating wet seasons getting wetter.



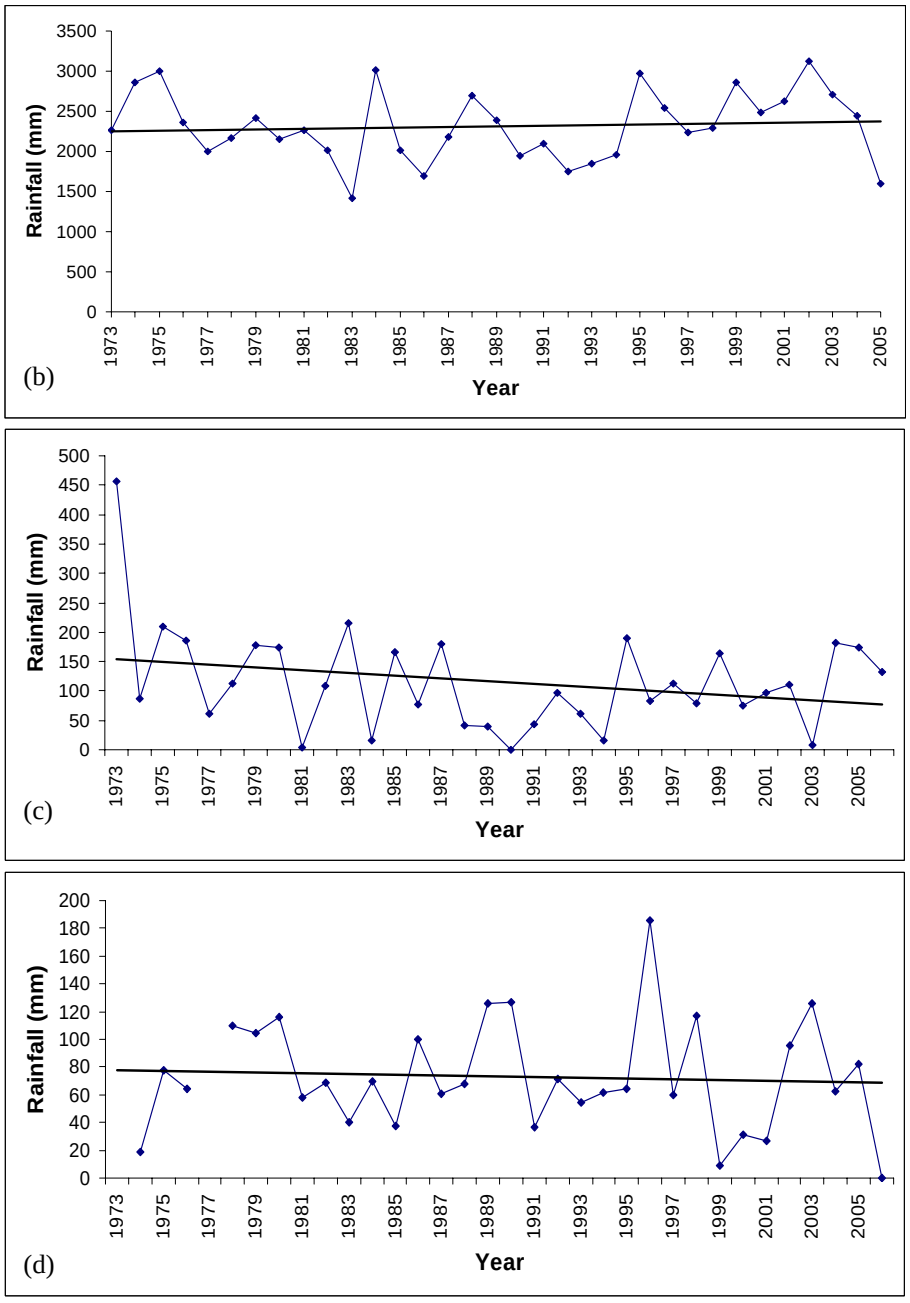


Figure 4.1: Seasonal rainfall trend in Putalibazaar during (a) Pre-monsoon (b) Monsoon (c) Post-monsoon and (d) Winter.

Usually heavy rainfall events are responsible for weather related disasters such as floods and landslides. Therefore, the increase/decrease in the frequency of heavy rainfall events is important in understanding such disaster pattern. Analysis of the frequency of heavy rainfall events from 1973 to 2006 in monsoon (Figure 4.2a and 4.2b) showed that the number days with rainfalls ≥ 50 mm were in increasing whereas rainfalls ≥ 100 mm were in decreasing trend.

The overall decreasing trend was due to the decrease in the number of heavy rainfall events during the 1970's. Trends computed from 1981 onwards (Figure 4.2a and 4.2b), showed increasing tendencies in both the cases of high precipitation.

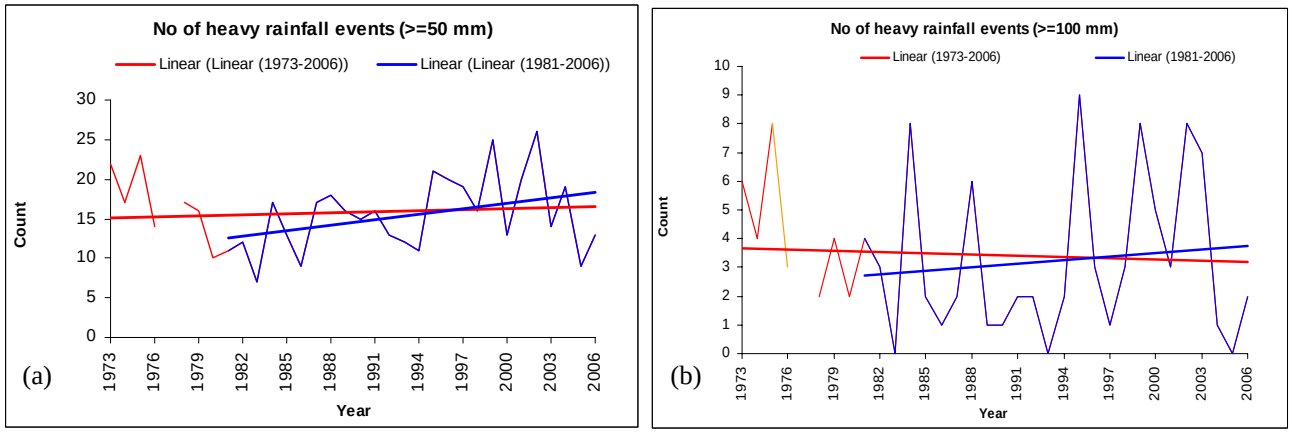


Figure 4.2: Frequency of heavy rainfall trend in Putalibazaar during 1973-2006 and 1981-2006 for rainfall (a) >= 50 mm (b) >=100 mm.

The consecutive wet days (maximum number of consecutive days with rainfall>=1mm) trend for 1973-2006 showed slightly negative trend (Figure 4.3a). However, the consecutive dry days (maximum number of consecutive days with rainfall<1mm), showed significant increasing trend (Figure 4.3b) indicating the persistence of dry days for a longer period of time ie. people were experiencing longer duration of dry days. Such trends can have negative impacts on agriculture, water resource and human health.

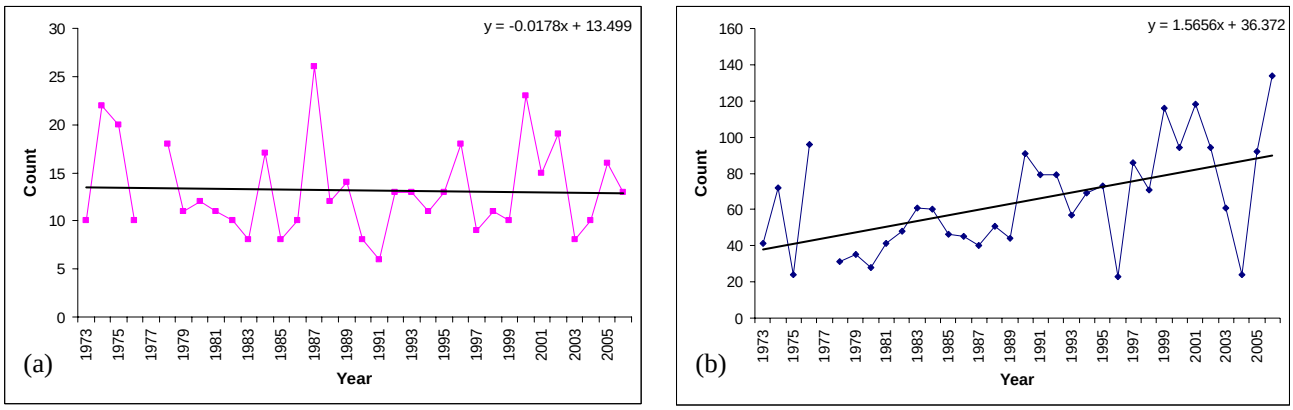


Figure 4.3: Frequency of (a) Consecutive Wet Days and (b) Consecutive Dry Days in Putalibazaar during 1973-2006.

4.2.1.2 Temperature Change

The IPCC Fourth Assessment Report (AR4) states that the global warming is unequivocal and that the linear warming trend over the last 50 years is 0.13°C per decade. Warming is also observed in Nepal. Based on the records from 1979, the mean Nepal temperature is increasing at 0.4°C per decade.

In Putalibazaar, both the maximum and minimum temperature were increasing (Figure 4.4a - Figure 4.4c). Minimum temperature was increasing (0.26 °C/decade) faster than the maximum temperature (0.11 °C/decade). The mean temperature was increasing at 0.18 °C per decade, which is less than the rate increase in Nepal as whole.

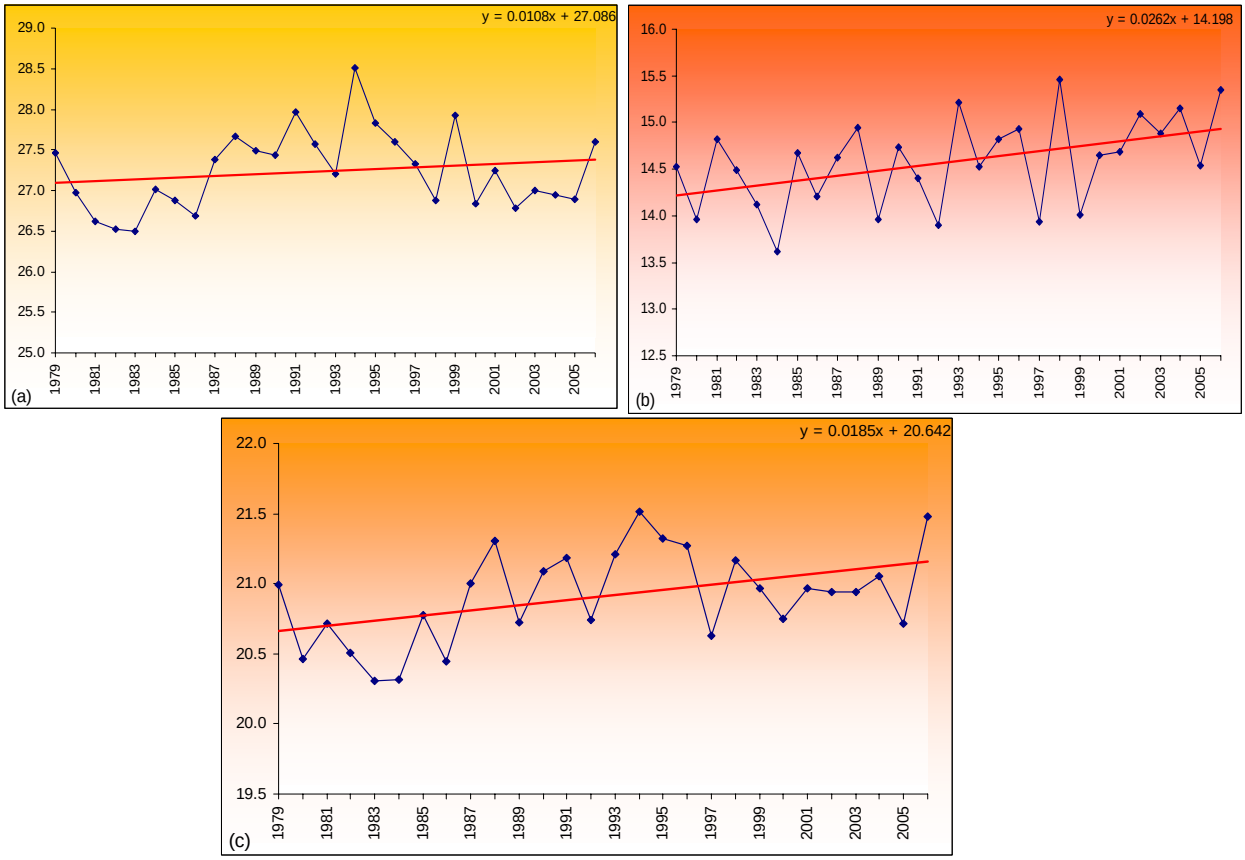


Figure 4.4: Temperature trend in Putalibazaar for (a) maximum (b) minimum and (c) mean temperature.

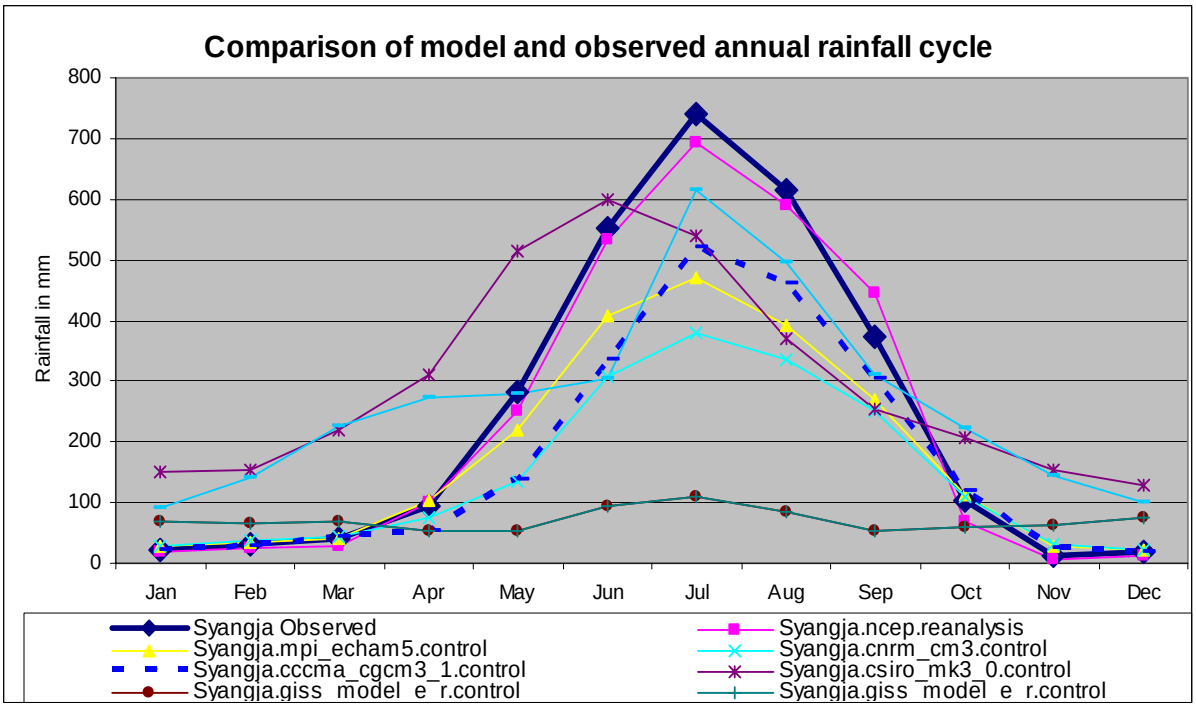
4.2.2 Future Climate Change Analysis

The Climate Change Explorer (CCE) tool was used for future climate change scenarious. In this tool, seven global climate models (Table 4.1) were downscaled for Putalibazaar Syangja station. The downscaled outputs were available for two time periods - control run and future run. Control run was for the reference period 1961-2000 and future run was for 2046-2065. The future projection was based on A2 socio-economic scenario.

The analysis of downscaled results of all the models for annual rainfall cycle showed that the Canadian Centre for Climate Modeling and Analysis, the third generation coupled global climate model (CHCM3.1 Model, T47) matched the best with the observed annual cycle from reanalysis and observed data (Figure 4.5). CHCM3.1 was hence used for future climate projection in this study.

Table 4.1: Different Global models used in CCE tool

Model	Description	Further Information
CCMA CGCM3.1	Canadian Centre for Climate Modeling and Analysis, the third generation coupled global climate model (CGCM3.1 Model, T47)	http://www.ccma.bc.ec.gc.ca/eng index.s html
MPI_ECHAM5	Max Planck Institute for Meteorology, Germany, ECHAM5 / MPI OM	http://www-pcmdi.llnl.gov/ipcc/model documentation/ECHAM5 MPI-OM.htm
CNRM_CM3	Meteo-France, Centre National de Recherches Meteorologiques, the third version of the ocean-atmosphere model (CM3 Model)	http://www.cnrm.meteo.fr/scenario2004/index english.html
CSIRO_MK3.9	CSIRO Atmospheric Research, Australia, MK3.0 Model	http://www-pcmdi.llnl.gov/ipcc/model documentation/CSIRO-Mk3.0.pdf
CSIRO_MK3.5	CSIRO Atmospheric Research, Australia, MK3.5 Model	http://www=pcmdi.llnl.gov/pipcc/model documentation/CSIRO-Mk3.0 .htm
SL_CM4V1	IPSL/LMD/LSCE, France, CM4V1Model	http://mc2.ipsl.jussieu.fr/simules.html
GFDL_CM2.0	NOAA Geophysial Fluid Dynamics Laboratory, CM2.0 coupled climate model	http://data1.gfdl.noaa.gov./nomads/forms/decc en/CM2.X/



4.2.2.1 Changes in Annual Cycle

The reference and future annual cycle for rainfall in Putalibazaar using CCMA CGCM3.1 Model is shown in Figure 4.6. The Figure showed that rainfall amount is projected to be higher than reference climate from April to July and September to November in future. This positive anomaly was maximum from May to July.

Similarly, both minimum and maximum monthly temperatures showed increase throughout the year in future than reference period. The increase varied from more than 2 ^{o}C to more than 3 ^{o}C in both maximum and minimum temperature. The minimum temperature increase was highest in May (3.3 ^{o}C) and lowest in September (2.1 ^{o}C) (Figure 4.7). The maximum

temperature increase was highest in March (3.08 ^{o}C) and lowest in September (2.22 ^{o}C) (Figure 4.8).

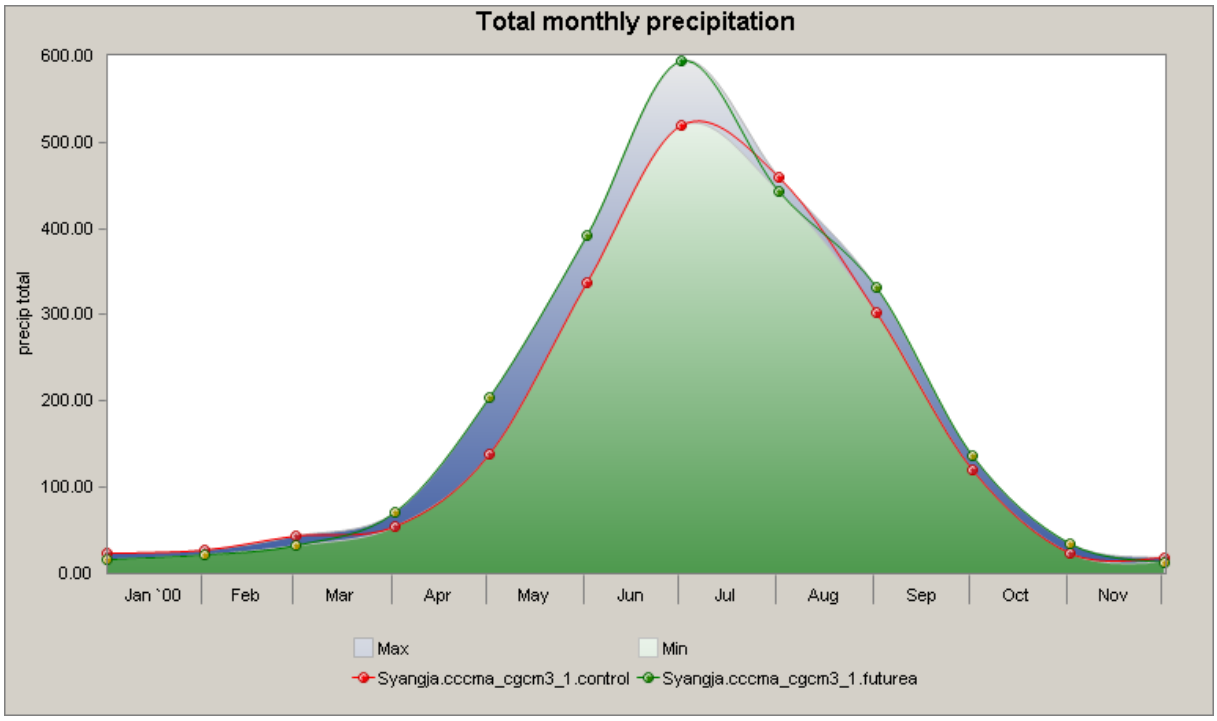


Figure 4.6: Reference and future annual cycle for rainfall in Putalibazaar

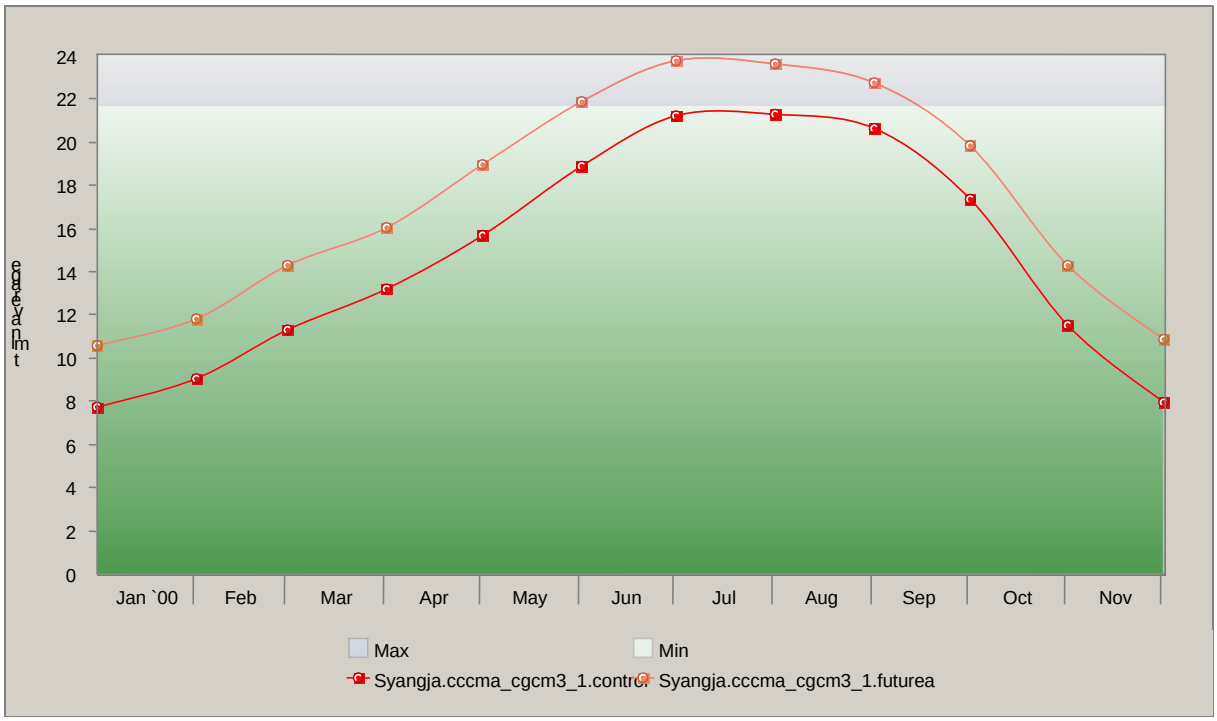


Figure 4.7: Reference and future average minimum temperature

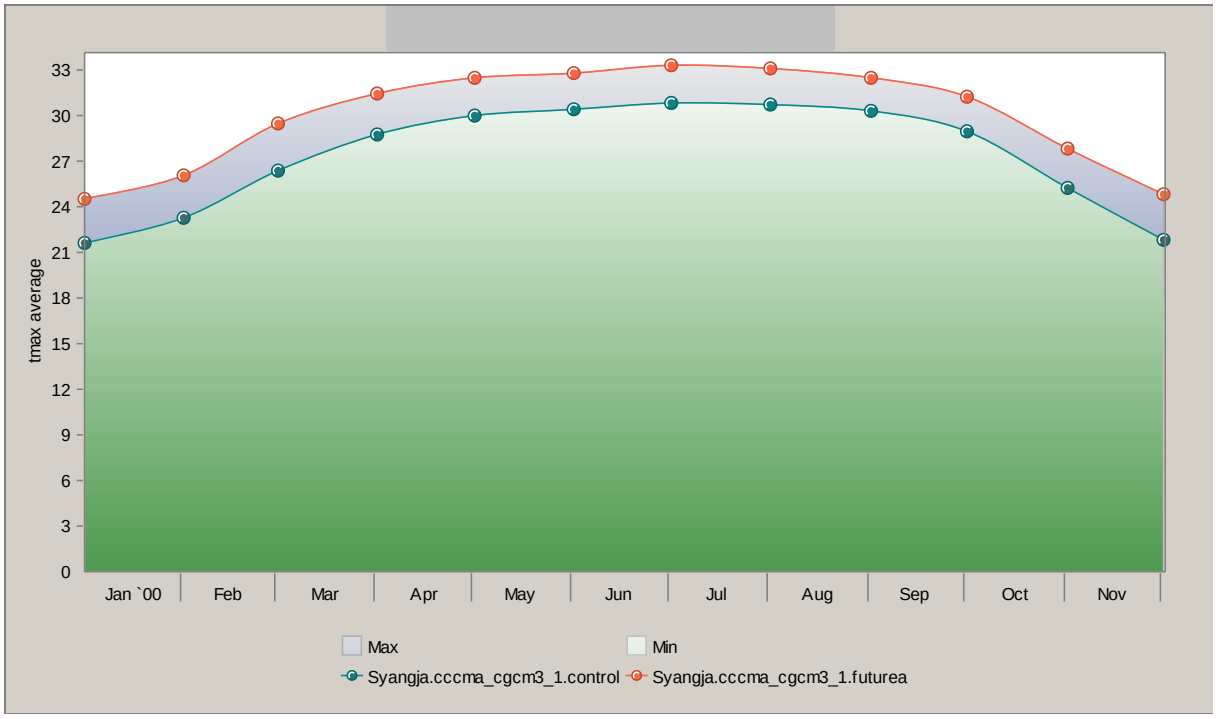


Figure 4.8: Reference and future average maximum temperature

4.2.2.2 Changes in Climate Extremes

Changes in climatic extremes play main role in disaster pattern in future. For climatic extremes, changes in daily rainfall amount were analyzed. These analyses were done for winter, pre-monsoon, monsoon and post-monsoon seasons.

Histogram analysis of daily rainfall for reference climate in monsoon showed that 48% of daily rainfall lied within 6 mm/day and 13 mm/day and 51% lied within 14 mm/day and 19 mm/day (Figure 4.9). In future scenario, 66% of daily rain lies within 14 and 19 mm/day (Figure 4.10). This showed that in future scenario daily rainfall amount was going to increase by a magnitude and frequency.

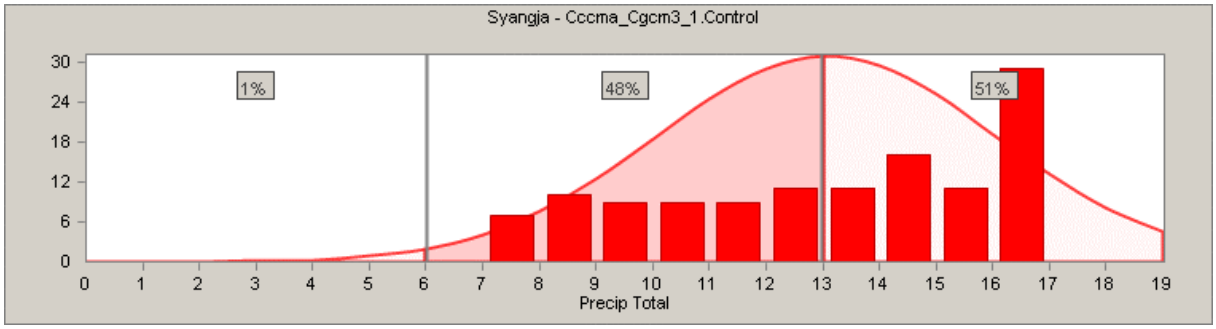


Figure 4.9: Histogram of daily monsoon rainfall for reference climate.

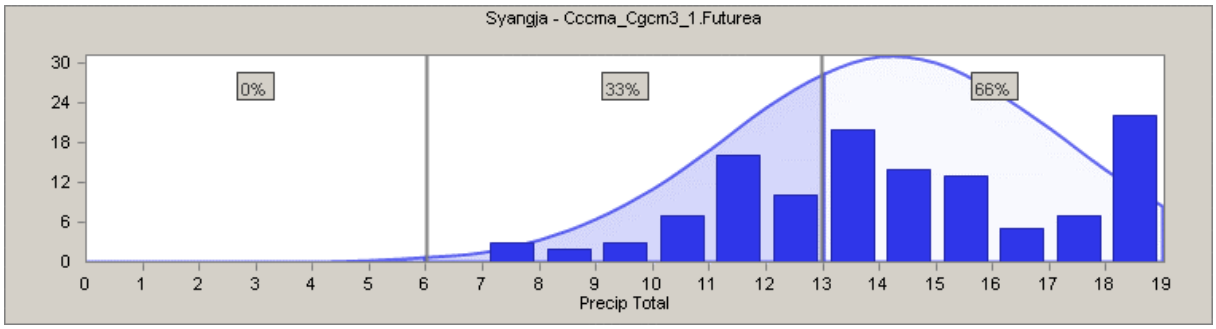


Figure 4.10: Histogram of daily monsoon rainfall for future climate.

Pre-monsoon daily rainfall

In pre-monsoon season, 77% of daily rainfall amount lied within 1 mm/day and 4 mm/day, and 22% between 5 mm/day and 7 mm/day in reference condition (Figure 4.11). In future scenario only 56% of the daily rainfall seemed to lie between 1 mm/day and 4 mm/day, while daily rainfall fell between 5 mm/day and 7 mm/day increased to 333 and even daily rainfall total between 8 and 11 seemed to occur 12% (Figure 4.12). There was only 1% occurrence of daily rainfall higher than 7 mm/day in reference condition.

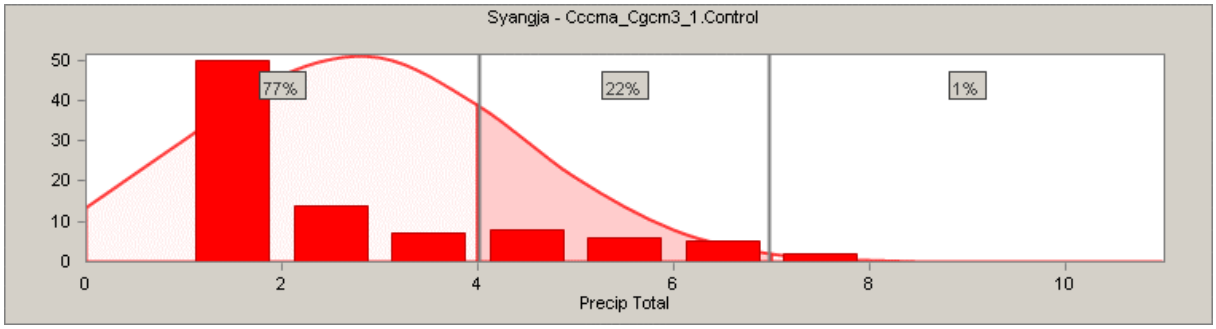


Figure 4.11: Histogram of daily Pre-monsoon rainfall for reference climate.

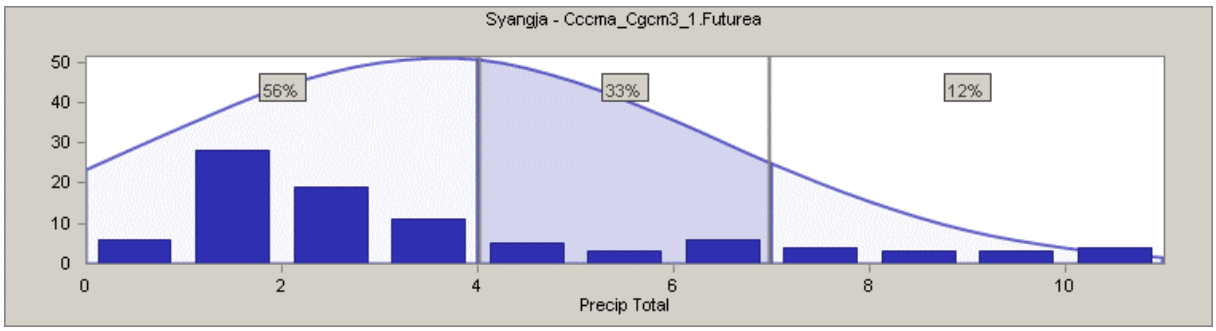


Figure 4.12: Histogram of daily Pre-monsoon rainfall for future climate.

Post-monsoon

Major portion (55%) of the daily rainfall amount lie between 1 mm/day and 3 mm/day while only 31% lied between 4 mm/day and 5 mm/day in existing condition (Figure 4.13). But in

future scenario only 49% of daily rainfall amount lied in lower amount (i. e. 1 mm/day to 6 mm/day) and the proportion in higher rainfall amount (6 mm/day to 8 mm/day) seemed to increase up to 19% from 14% (Figure 4.14).

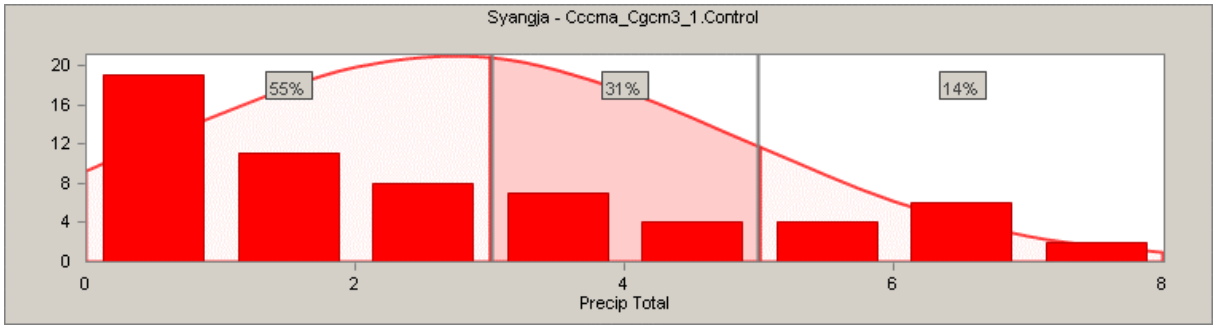


Figure 4.13: Histogram of daily post-monsoon rainfall for reference climate.

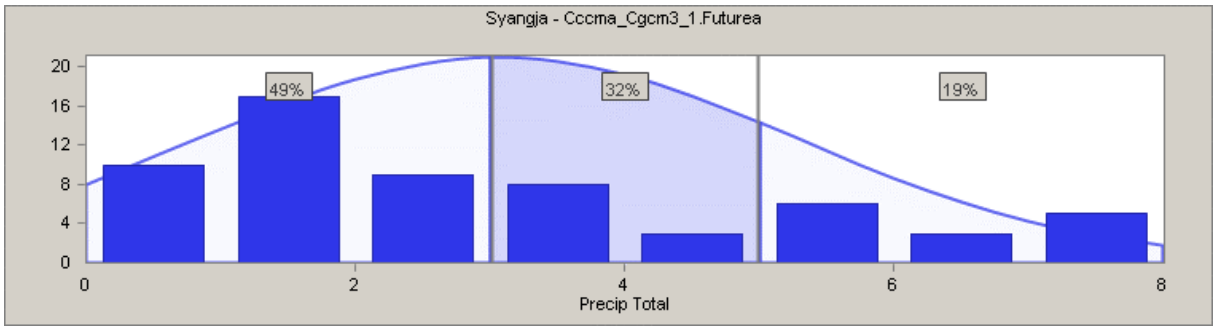


Figure 4.14: Histogram of daily Post-monsoon rainfall for future climate.

Winter

In winter, there was increase in low amount rainfall from 22% in existing condition (Figure 4.15) to 52% in future (Figure 4.16) and decreased in higher daily rainfall amount in future scenario from 78% to 48%. However, the rainfall amounts were very low.

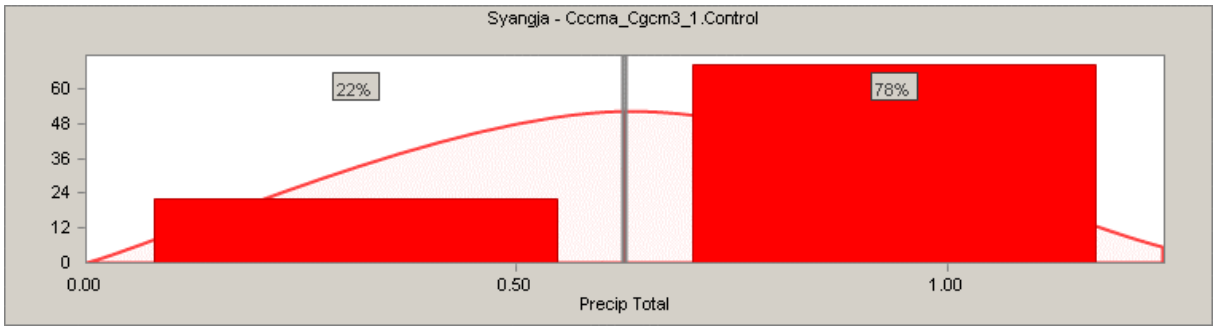


Figure 4.15: Histogram of daily winter rainfall for reference climate.

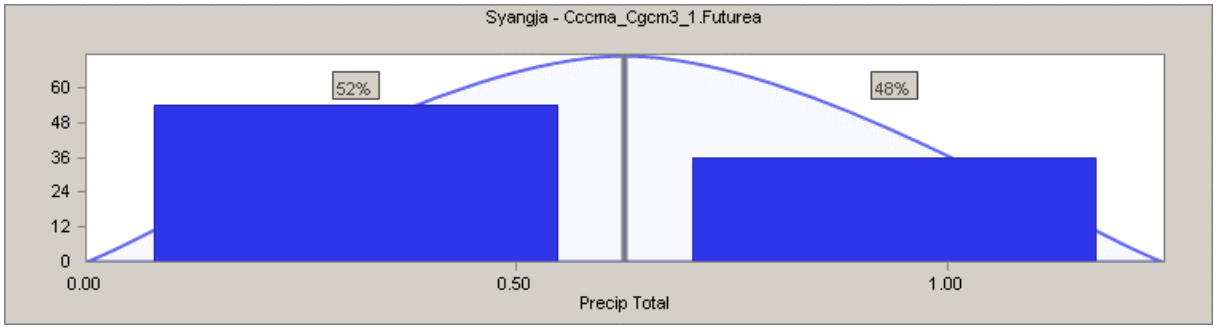


Figure 4.16: Histogram of daily Winter rainfall for future climate.

4.2.3 Disaster Pattern and Climate Change

Based on Des-Inventar Hazard accounts 1971-2000 (Figure 4.17), the Western Region of Nepal is the most susceptible to landslides compared to other regions. Putalibazaar lies in the Western Region and is prone to landslides as well as floods. The incidents of weather related hazards in Putalibazaar (Figure 4.18) clearly showed the increase in the number of such events in the recent decades, increasing the potentialities of damages. According to Shrestha (2005) catastrophe events (cloud burst) in Putalibazaar show approximately 20-year pattern. In other words, a cloud burst type of catastrophe in Putalibazaar occurs approximately in 20 years. However, future climate change results indicated that catastrophe events may occur frequently, shorting the return period (Figure 4.19)

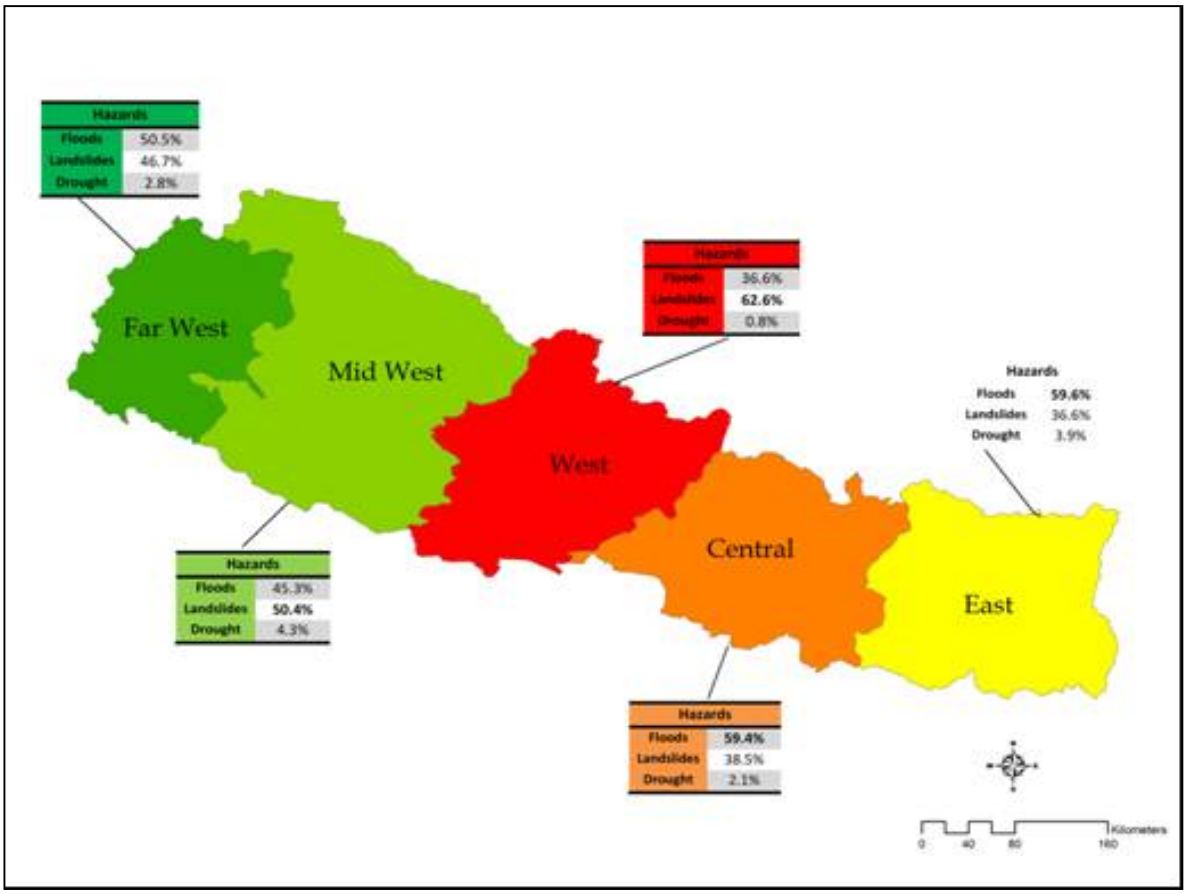


Figure 4.17: Regional Hazards based on Des-Inventar hazard accounts: 1971-2000 (with the help of Fernanda).

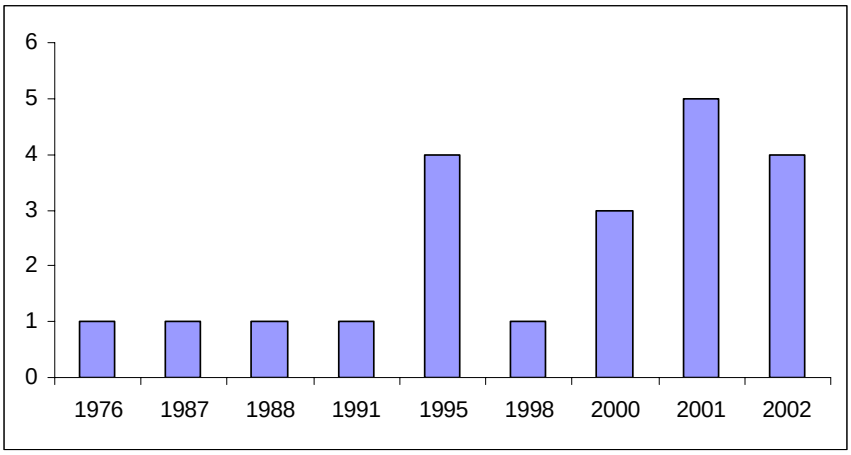


Figure 4.18: Number of weather related hazards (Landslides and floods) in Putalibazaar.

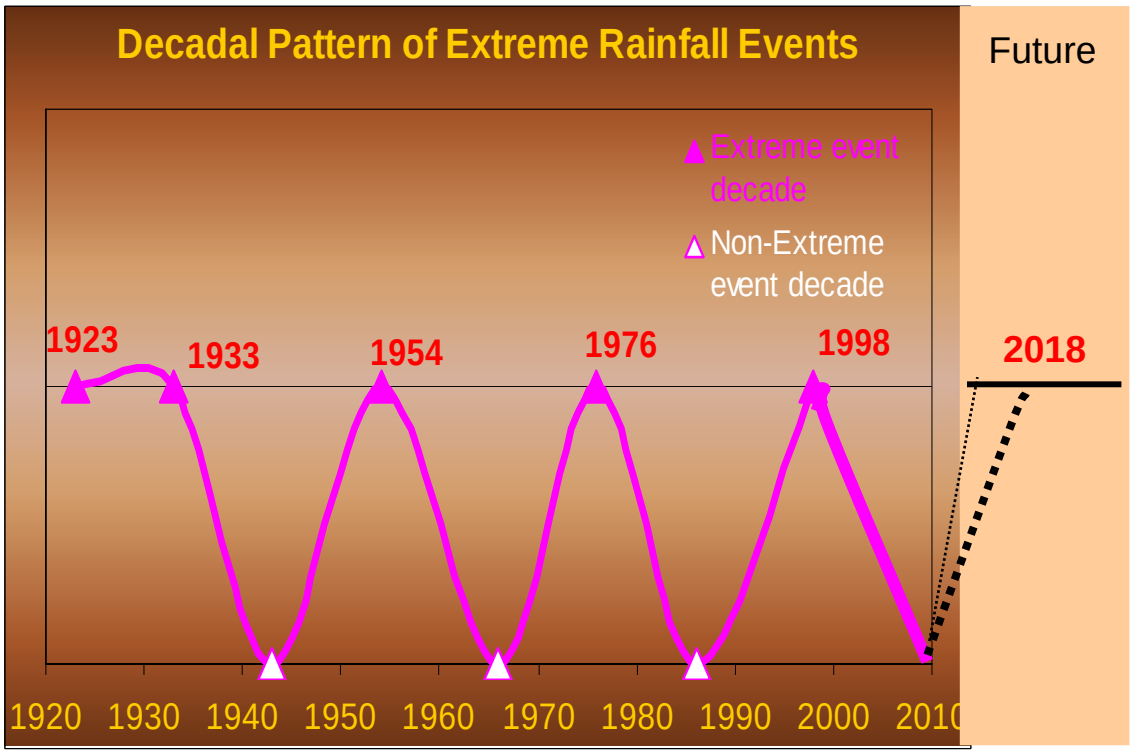


Figure 4.19: Schematic diagram showing catastrophe (cloudburst type) 20-year events. Thick dotted line if frequency do not change but magnitude may change, Thin dotted line indicates such event can occur in less than 20 years.

Household survey also showed perception and disaster pattern in Putalibazaar. The data obtained from household survey (Chapter 3) indicated that flood, landslide, earthquake, storm, drought, lighting, fire and epidemics were major natural disasters in the area. Damage per household per year was Rs. 1807 of which the hazards were 89.5% floods, 2.5% landslides,

6.5% drought and remaining other. Houses buildings, land and crops were the major elements exposed to flood and landslides (Chapter 3).

4.2.4 Community's experience on climate change

Local people have experienced the increase in temperature and unusual events of precipitation in recent years. Majority of people surveyed reported that there was increase in summer temperature (60% household), unusual rainfall events including high intensity precipitation (78% household), early onset of monsoon (68% household), increasing floods and landslide events, high variability in discharge and decrease in flow during dry period and increased hails and lightings (Chapter 3).

4.3 Climate change Awareness program

Climate change awareness programs were carried out in the communities through presentations, documentary shows and poster distribution.

4.3.1 Documentary:

The documentary *Climate Change Our Concern,* shown to the communities was well accepted with enthusiasm as it was the first encounter for several audience on climate change issue was in Nepali language prepared by DHM and NEFEJ (Nepal Forum for Environmental Journalist). Lively discussions followed the presentations on climate change awareness in each of the CBDP units. They shared their experiences on the observed changes in their community. Their experiences were:

- The climate is getting warmer.
- They used to cover the crops with plastic or umbrella during rice plantation, but now they don't have to use it during plantation, as there is not much rain during plantation since last few years.
- They get early rain (early onset) but long monsoon breaks.
- They get untimely and heavy rain.
- Increasing demands of river embankments and retaining walls.

4.3.2 Climate change risk realization activity: The main purpose of the activity was to create awareness of the climate change risk in future and figure out the adaptation measures. In this activity, each community was asked to visualize their village within next 20-25 years in terms of development perspectives. They were asked to identify the areas/sectors that would be affected in case of increased floods and landslides (Figure 4.20-4.23). The major findings from community's perception during listed in Table 4.2:

Table 4.2: Findings of the climate change risk realization activity

CBDP Units	Vision	Future Impacts	Solutions
Birendranagar	• Urban development • Infrastructures: Road, Electric and Communication towers • Furniture Industry	• Impacts on urban population and Infrastructure • Impact of Lightning, thunder and landslides on towers • Hail problem in agriculture. Increased damage to agriculture by floods and hails.	• Retaining walls/embankments • Early warning on heavy rainfall, dry spells and floods • Drainage improvement on small rivers and along road sides • Aforestation to prevent landslides • Preparedness with generating funds
Durgadevi	• Extension of rural road • Development of communication system • Increase in cash crop and horticulture	• Increased loss of farming due to landslides • Damage to houses and lives	• Preparedness • Capacity building of the community • Increase funds • Forestation • Income generation activities • Community' participation in Maintenance
Baraja	• Improvement of rural road into pitch road • Development of a stadium	• Increased damage to houses by landslides along roads • Increased loss of paddy by floods in Andhi Khola	• Forestation • Embankment • Landslide insurance for houses
Gurasti	• Tourism • Industry • Improvement of roads	• Impacts on tourism due to landslides and floods • Damage to Industry paddy and other crops due to flood and other landslides • Damage to houses due to landslides and floods • Drought related damages to agriculture	• Awareness • Embankments along Andhi Khola • Aforestation • Check dams • Tourism in seasonal basis • Unity of the community

Figure 4.20: Risk Realization Chart prepared by Birendranagar CBDP community

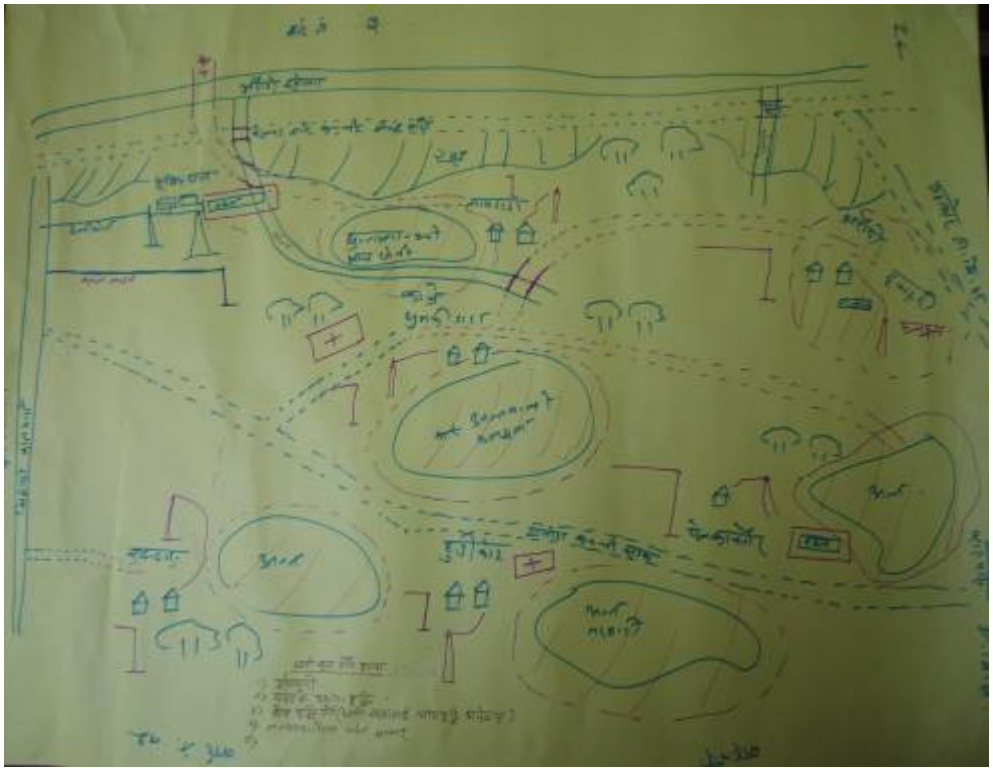


Figure 4.21: Risk Realization Chart prepared by Durgadevi CBDP community

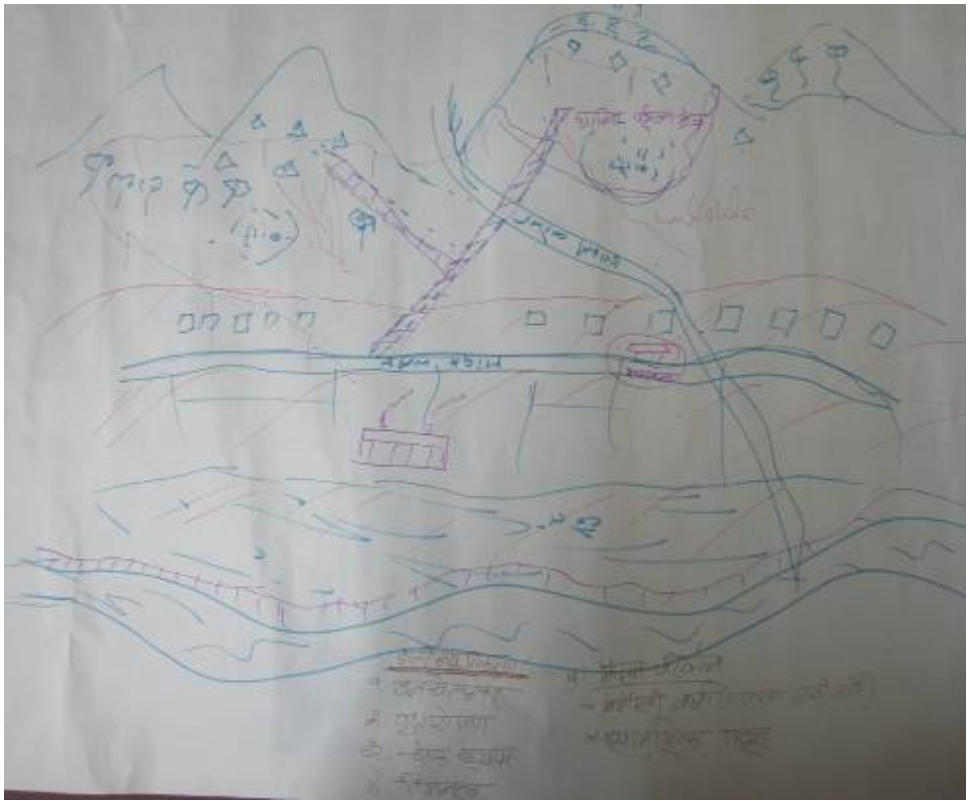


Figure 4.22: Risk Realization Chart prepared by Gurasti CBDP community

Figure 4.23: Risk Realization Chart prepared by Baraja CBDP community

4.3.3 Poster and Brochure

A poster on climate change (Annex 4a) with the theme "Sustainable and clean environment is our right and climate change is our common concern" was also prepared in collaboration with CIRA (Collective Initiative for Research and Action), a local NGO working on environment. The poster was distributed in each CBDP unit during climate change awareness program. The poster made in Nepali language and contained the materials depicting the main causes and the potential impacts of climate change.

After the awareness program, community and Red Cross staff gave feedback on the program. Based on suggestions, we prepared brochure and poster (Annex 4b and Annex 4c) on *Climate Change in Putalibazaar, Syangja.* Brochure and poster consisted of Climate change (observed change, projected change and communities experience) and climatic information for Putalibazaar. Poster is distributed to the four CBDP units and Red Cross at Syangja. Brochures were distributed to CBDP Units, GOs, NGOs, Schools and Media.

Chapter 5: Weather and Climate Information Dissemination (WCID) System

5.1 Background

In most of the developing countries, because of the low literacy rate, most of the population do not understand the technical terms of weather forecasts and climate information and do not have capacity to use the information. This is also the case in Nepal. Weather and climate related information issued by the Department of Hydrology and Meteorology (DHM) through media are general in nature. Blanco (2006) emphasizes the need to produce information in user-friendly formats, understandable to the local communities in vulnerable areas. This may ultimately help these communities for better adaptation in future climatic conditions and during extreme events. He also emphasizes a need to bridge the gap between scientific and local knowledge to enhance the capacity of communities to cope with climate change and WCDs. No mechanism has been developed yet to disseminate such information (or alerts) to the vulnerable communities in Nepal. Therefore, the development of a mechanism to disseminate such information to targeted communities will be the first of its kind in Nepal and would be a good initiative as a pre-disaster preparedness measure.

5.2 People's perception on Communication about Climate information

Household survey showed that majority of people (65%) used to listen weather broadcast from Radio. However, those weather information are rarely internalized in their daily activities. More than 85% household demanded for timely and reliable weather information so that it could be used in their daily activities.

5.3 General Climate:

Mean monthly rainfall (Figure 5.1) in Putalibazaar Municipality shows that November is the driest month and July is the wettest month. The four months of monsoon season from June to September (Figure 5.2) contribute 79% (2281 mm) of the annual total rainfall (2887 mm). Most of the weather related disasters occur in these four months. Pre-monsoon (March-May) season accounts for 14% (419 mm) of the annual total rainfall. Winter (December-February) is the driest season followed by post-monsoon (October-November) season contributing about 3% (73 mm) and 4% (115 mm) of the total annual rainfall respectively (Figure 5.2).

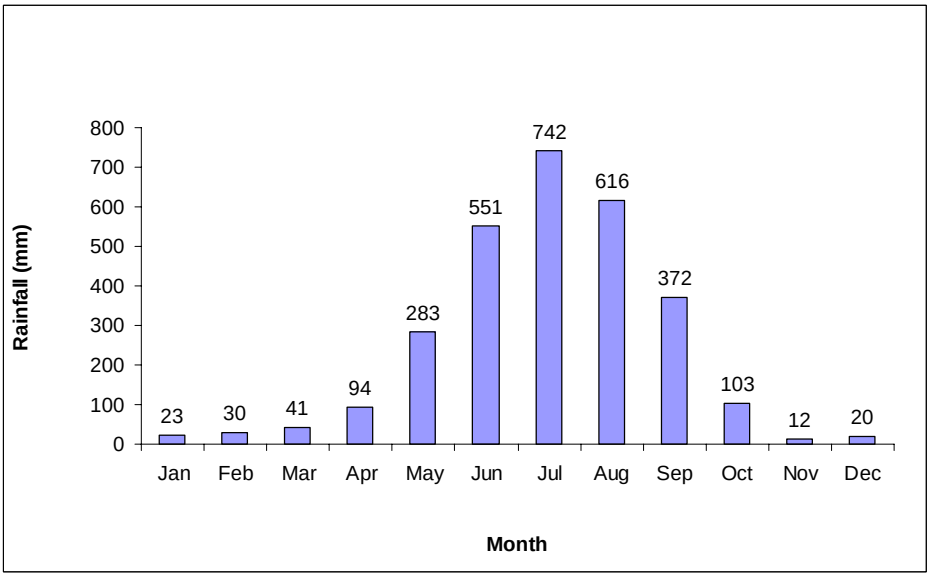


Figure 5.1: Mean monthly rainfall (mm) in Putalibazaar Municipality.

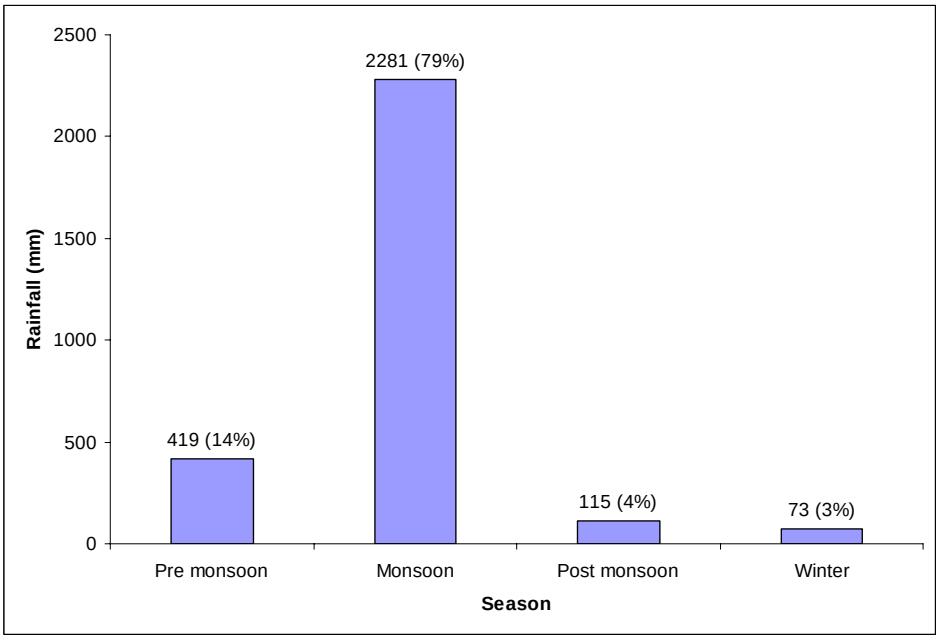


Figure 5.2: Seasonal rainfall (mm) in Putalibazaar Municipality.

The highest 24 hour rainfall in Putalibazaar (Figure 5.3) in the recorded history (till 2006) was 241.4 mm recorded on June 6, 1981. Because of high precipitation intensities and amounts, monsoon is the season when most of the disasters such as floods and landslides occur.

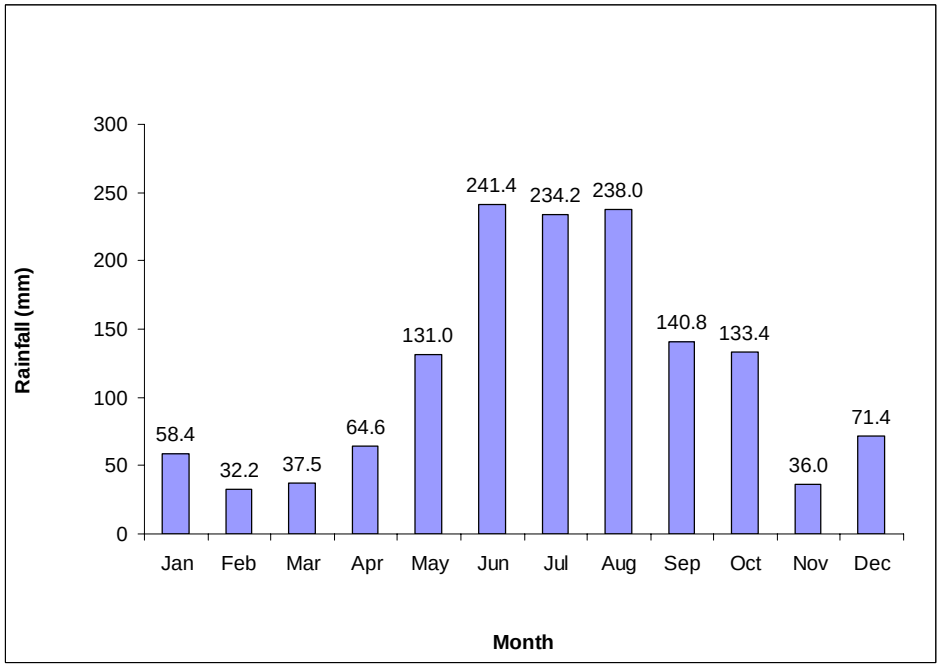


Figure 5.3: Highest 24 hour rainfall (mm) in Putalibazaar Municipality.

Analysis of temperature showed that maximum temperature reaches its peak value in June while the minimum temperature reaches its highest value in July (Figure 5.4). The lowest values for both maximum and minimum temperature are observed in December. The highest and lowest value of the mean temperature reaches in July and December respectively.

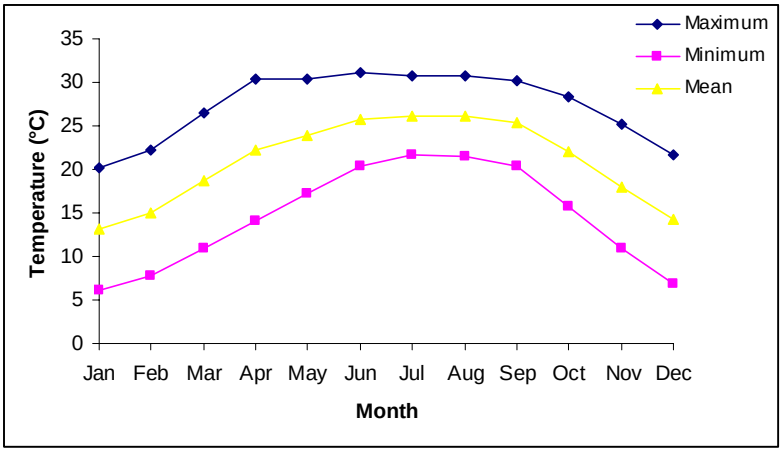


Figure 5.4: Mean monthly maximum, minimum and mean temperature in Putalibazaar.

Climate Information Products

Based on the various consultative meetings with meteorologists, hydrologists, NRCS, Syangja and CBDP leaders, following products were identified for WCID:

- Brochure (Annex 7b) with:
  - Normal maximum and minimum monthly temperature, normal total rainfall,
  - Monthly and yearly extremes of rainfall and temperature
  - Disaster history

- Brochures were given to NRCS, Syangja, and distributed to the communities, GOs, NGOs, Schools and Media

5.4 Flood Analysis

The core areas of the municipality lie close to the confluence of the Andhi Khola, Badh Khola, and the Araundi Khola. Floods on any one of these rivers or on all those rivers can have adverse impacts on the settlements and cultivated lands. The basic hydrological characteristics of the basin and all the major sub-basins were derived using hydrologically corrected DEM at 100 m resolution as depicted in Figure 5.5. The Figure shows that the Andhi Khola is the major river draining 143 km^2. The 72 km long Andhi Khola extends within the elevation range of 800 m to 2500 m. The Badh Khola and the Araundi Khola lying within the elevation of 1500 m drain 20.2 km^2 and 10.5 km^2. The tributaries of the Araundi in its headwater areas are called Sundare Khola and Chiruwa Khola. The Araundi flows almost parallel to the Badh Khola. Drainage areas of Badh Khola and the Araundi Khola were calculated at 20.2 km^2 and 10.5 km^2 respectively.

Among the four CBDP Units, Araundi Khola encompasses Durgadevi and Birendranagar CBDP Units and Andhi Khola affects Birendranagar, Gurasti and Barja CBDP Units.

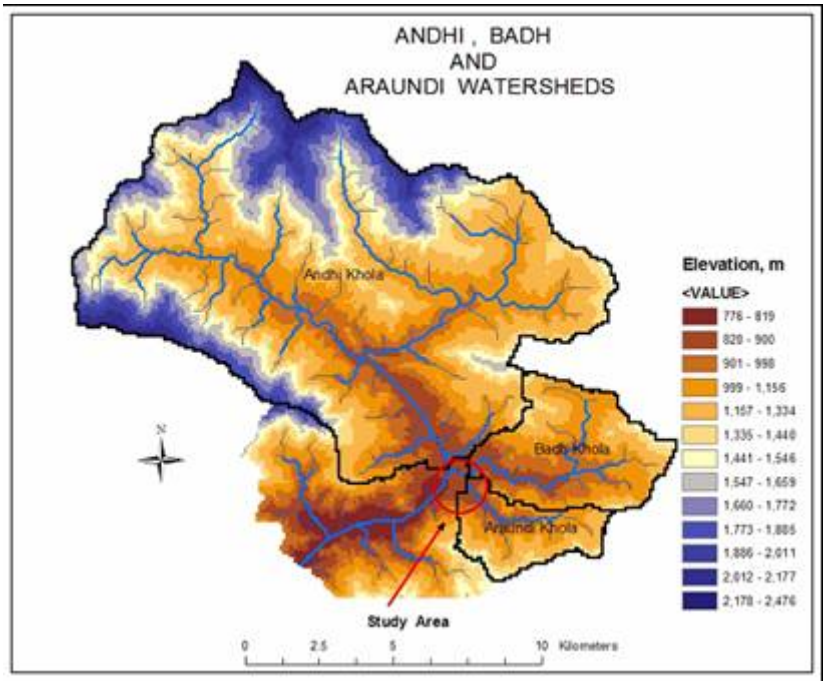


Figure 5.5: Watershed map of the Andhi Khola, the Badh Khola, and the Araundi Khola obtained from a 100 m resolution DEM.

Except occasional limited-area seasonal snowfall in the headwater area of the Andhi Khola, all these catchments can be considered as rainfed systems. Although Araundi Khola is the smallest river system among these three rivers, it can have the heaviest impacts due to its proximity to the core area of the municipality. Such devastating impact was already experienced during the historical flood of August 1998.

A survey of floodplains and the past floods (Figure 5.6 & 5.7) were carried out in the study area from December 7 to December 10, 2007. River cross section and river surface slopes were surveyed for the estimation of past floods using indirect slope area method. Equation 1 developed by Dingman and Sharma (1997) was used to compute streamflows based on the surveyed data.

$$Q = 1.564A^{1.173}R^{0.400}S^{-0.0543\log S} \quad (1)$$

where Q is discharge (m^3/s), A is cross-sectional area (m^2), R is hydraulic radius (m), and S is water-surface slope.

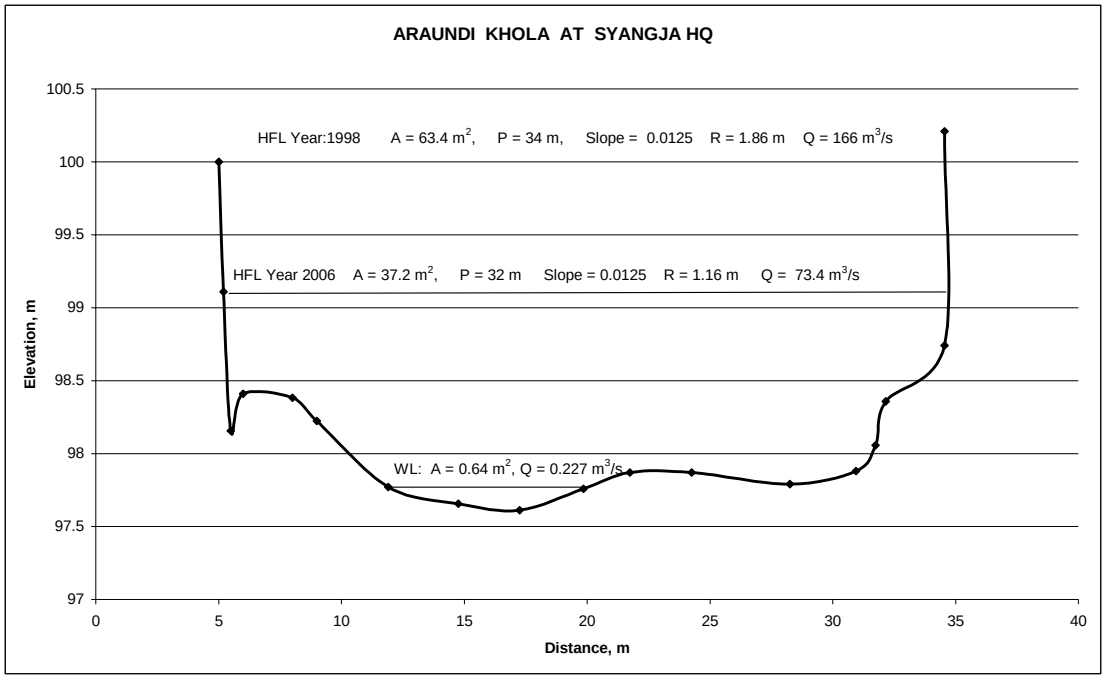


Figure 5.6. Hydraulics and estimated flows at observed flood levels on the Araundi Khola (8 December 2007).

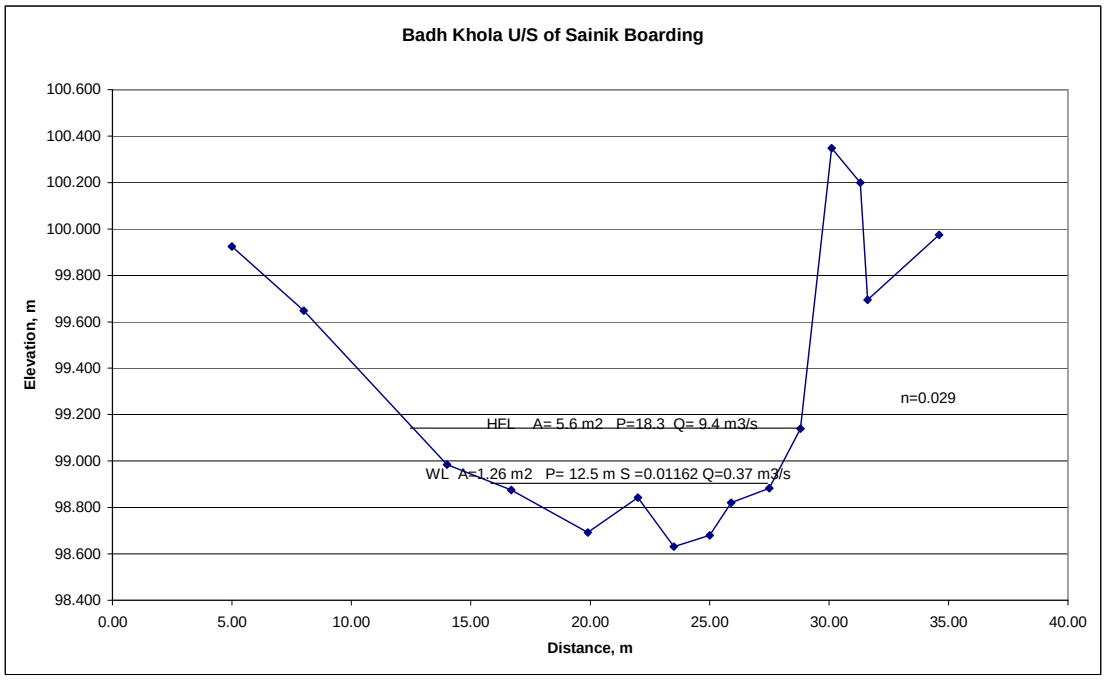


Figure 5.7. Hydraulics and estimated flows at observed flood levels on the Badh Khola (9 December 2007).

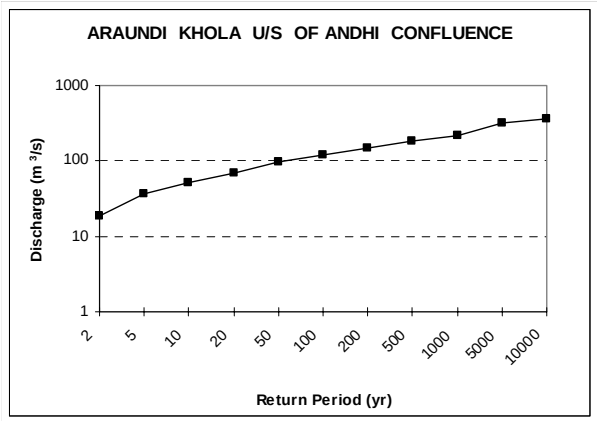
Flows on all the major tributaries were measured with a current meter with the following results (Table 5.1).

Table 5.1. Summary of the discharge measurements at the Andhi, Araundhi, and Badh Khola.

Date	River	X-Section Area (m^2)	Max. Depth (m)	Mean Vel. (m/s)	Discharge (m^3/s)
08 Dec 2007	Araundhi Khola	0.64	0.40	0.352	0.227
03 Aug 2008	” ”	1.40	0.25	0.403	0.565
09 Dec 2007	Andhi Khola	11.23	0.62	0.155	1.74
09 Dec 2007	Badh Khola	0.66	0.38	0.564	0.370

5.4.1 Flood Estimations

Since none of the rivers in the area is gauged, a regional approach (Sharma & Adhikary, 2004) was used to estimate the flood frequencies on Araundi Khola. In addition, floods were also estimated on Badh khola and Andhi Khola upstream of the confluence of Araundi. The frequency curve for the Araundi, the Badh, and the Andhi river are presented in Figure 5.8, Figure 5.9, and Figure 5.10 respectively.



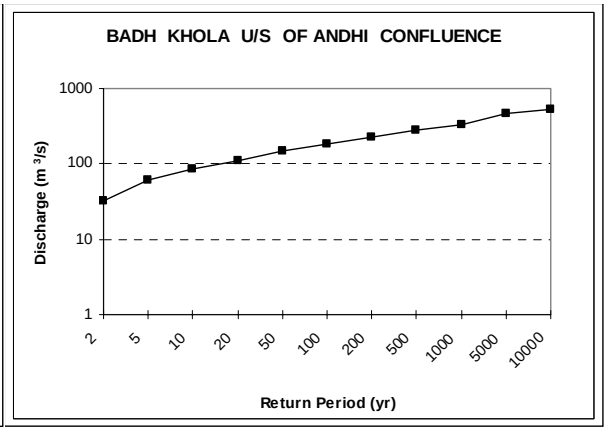


Figure 5.8. Estimated flood frequencies on the Araundi Khola. Figure 5.9. Estimated flood frequencies on the Badh Khola

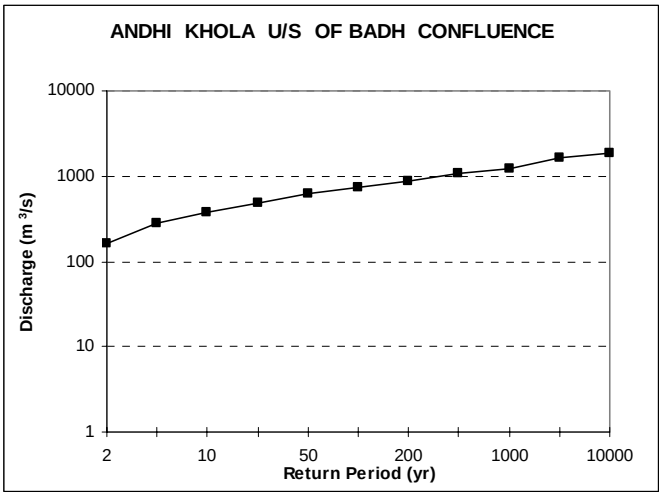


Figure 5.10. Estimated flood frequencies on the Andhi upstream of the Badh Confluence.

Table 5.2. Estimation of discharge frequencies on the three streams at Putalibazaar.

	Estimated Discharges in m^3/s		
Return Period (year)	**Araundi Khola**	**Badh Khola**	**Andhi Khola**
2	19	32	164
5	37	60	284
10	52	84	377
20	70	111	477
50	97	152	622
100	120	187	741
200	147	226	872
500	187	284	1060
1000	221	334	1216
5000	317	471	1627
10000	366	540	1827

5.4.2 Floodplain Analysis

The core area of the Putalibazaar lies at the confluence of Andhi Khola and Araundi Khola (Figure 5.11). As seen in Figure 5.11, the settlements have the least impacts of the Andhi but can have significant impacts of the Araundi Khola (Figure 5.5). Figure 5.11 show the nature of floodplain. Settlements on left bank and close to the bridge are the most vulnerable areas (Figure 5.15). Figure 5.16 illustrates the damage that occurred during the historical flood of 1998.

Figure 5.11. A view of the Putalibazar Municipality and the surrounding areas. Figure 5.12. Araundi Khola looking downstream.

One of the examples given in the Figure 5.13 illustrates the nature of vulnerability of the commercial areas of the Putalibazaar Municipality that lie on the left bank of the Araundi Khola. Similarly Figure 5.13 illustrates the sensitivity of Putalibazaar at the confluence of the Andhi Khola and the Badh Khola.


Figure 5.13: Putalibazaar: An old shopping location of the Syangja district. Figure 5.14: Commercial area of Syangja located on the bank of Araundi Khola.

Figure 5.13 illustrates the commercial area of the Syangja district in the Putalibazaar Municipality on the left bank of the Araundi Khola. It is one of the most vulnerable areas to flood hazards. The Araudi Khola that caused the major disaster on 19-20 July 1998 can be seen at the top left corner of the picture, which flows towards the highway bridge as seen on the left side of the photograph (Figure 5.13).

Figure 5.14 presents a photograph of the old market known as Putalibazaar in the Putalibazaar Municipality vulnerable to flood hazards. It is located at the confluence of the Andhi Khola and the Bad Khola. A house in the market area was washed away with extensive damage in the rice fields by the flood that occurred in 1998.

People are motivated to live close to the river because of easy access to water for drinking, irrigating, cleaning and washing. Although estimates of flood extension along the banks of the river are part of the settlements, the estimates are based on guesses. Settlements are, hence, highly vulnerable to floods.

Figure 5.15 presents a picture of one of the most vulnerable floodplain of the Araundi Khola. The left bank of the river starts the economically valuable area of the Syangja town. Despite significant damage during the 1998 flood at this location (Figure 5.16), new construction and re-settlements can be observed.

Figure 5.15. A vulnerable but economically valuable area: Putalibazaar Municipality.

Figure 5.16. A section of the left bank of Araundi that suffered huge losses during the 1998 floods.

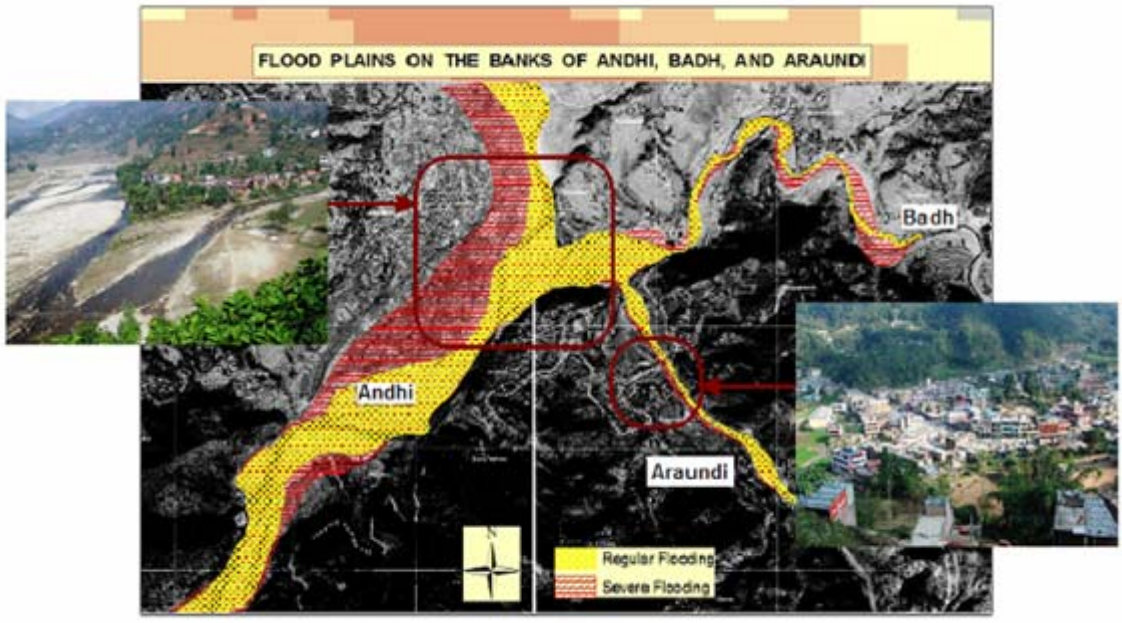
5.4.3 Floodplain Delineation

Based on the field visits of October and December 2007, floodplain was delineated along the banks of the streams in the study area. Figure 5.17 shows the floodplains that have suffered frequent inundation during the past severe flood conditions. The figure shows that the Andhi Khola had relatively extended flood plain whereas the flood plains of the Badh Khola and the Araundi Khola were relatively narrow. The wide floodplains were extensively used for cultivation for significantly long stretches of the river. On the other hand, the narrow flood plains of the other two tributaries were found to have intensively encroached particularly at the downstream ends of the rivers.

Figure 5.17 presents the delineated floodplains close to the Putalibazaar Municipality drawn on the basis of observed flood marks along the river banks and the information obtained from the local inhabitants. The delineated features were superimposed into the layers of orthophotos obtained from the Department of Survey. The orthophotos show the nature of settlements and the highway passing through the commercial areas.

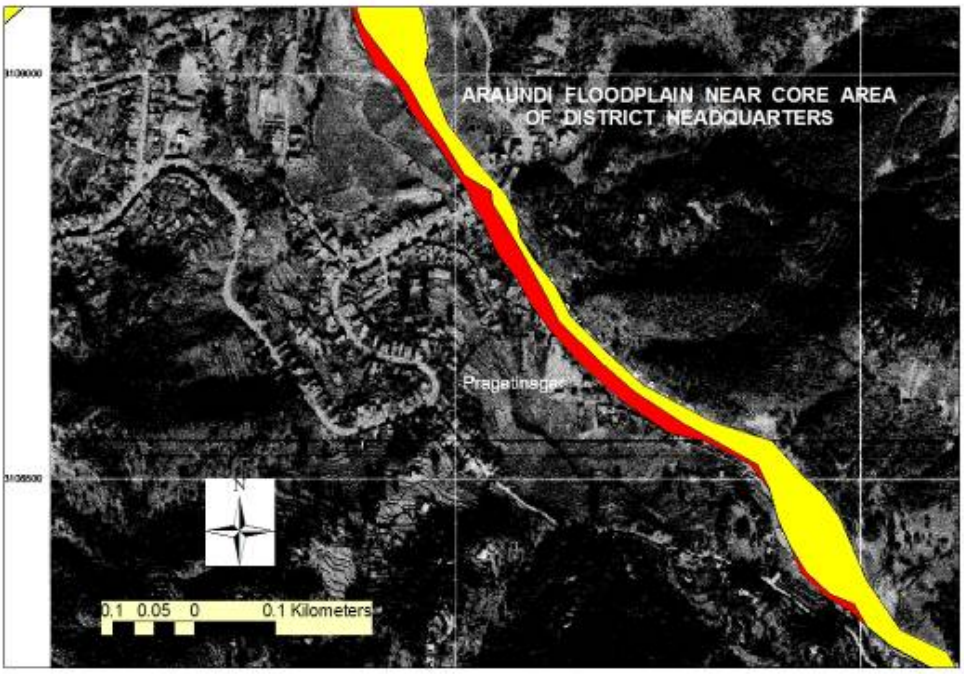
Yellow colour indicates the floodplain as observed during field inspection. Red colour indicates the floodplains on the basis of field observation and cross-section information that could be anticipated during severest conditions as a result of climatic changes or landslide

dam bursts. Figure 5.18 is the enlargement of Figure 5.19 in for the most vulnerable location of the municipality



Field observation-based Estimated for severe condition

Figure 5.17. Floodplains close to the Putalibazaar Municipality.



Field observation-based Estimated for severe condition

Figure 5.18. Floodplains close to the commercial areas of the Putalibazaar Municipality.

As illustrated in Figure 5.19, the Andhi Khola had relatively wide floodplains used extensively for agriculture. The wide floodplains of the Andhi Khola were a unique features rarely found in other river valleys in similar mountainous environment in Nepal. The damages of the Andhi Khola could be extensive in terms of damages to the fertile agriculture lands (Figure 5.20). Since the lands had sparsely occupied settlements, damage to lives and properties other than agriculture could be expected to be minimum in contrast to the situations observed in the cases of tributaries, such as the Araundi and the Badh. A highway bridge vulnerable to severe floods on the Andhi was illustrated in Figure 5.21. The bridge is only 4.5 m above water level.

Figure 5.19. A view of the Putalibazaar Municipality and the surrounding areas.

Figure 5.20. The Andhi Khola on the right hand side of the Putalibazaar Municipality. Figure 5.21. A bridge on the Andhi River upstream on the Badh confluence.

Hydraulic computations at the bridge site (Figure 5.21) showed that the bridge was capable to pass the peak stream flows not exceeding 2200 m^3/s. Since the flow was less than the possible highest flows (Table 5.2), it was considered relatively safe. The situation might not be favorable if sediment deposition causesd bed level rise exceeding one meter.

Flood Information Product

Flood risk maps of each CBDP Unit are shown in Figures 5.22- Figures 2.25. In Birendranagar houses and agricultural lands were under risk of the Andhi and the Arundhi Khola, In Durgadevi (Figure 5.23), In Gurasti (Figure 5.24) In Barja (Figure 25).

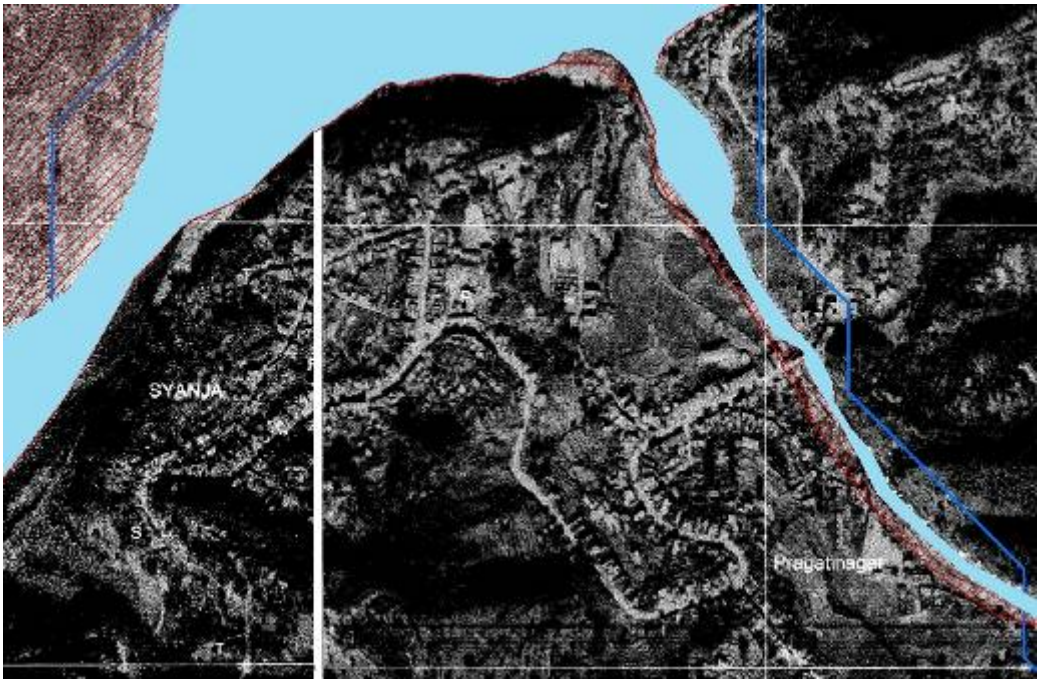


Figure 5.22: Birendranagar CBDP Unit Flood Risk Map

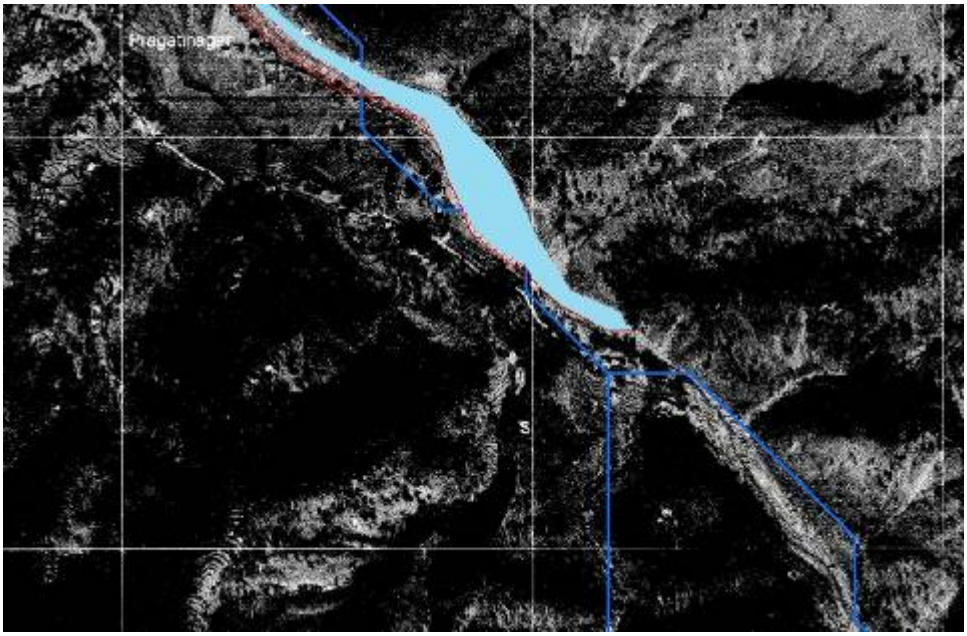


Figure 5.231: Durgadevi CBDP Unit Flood Risk Map

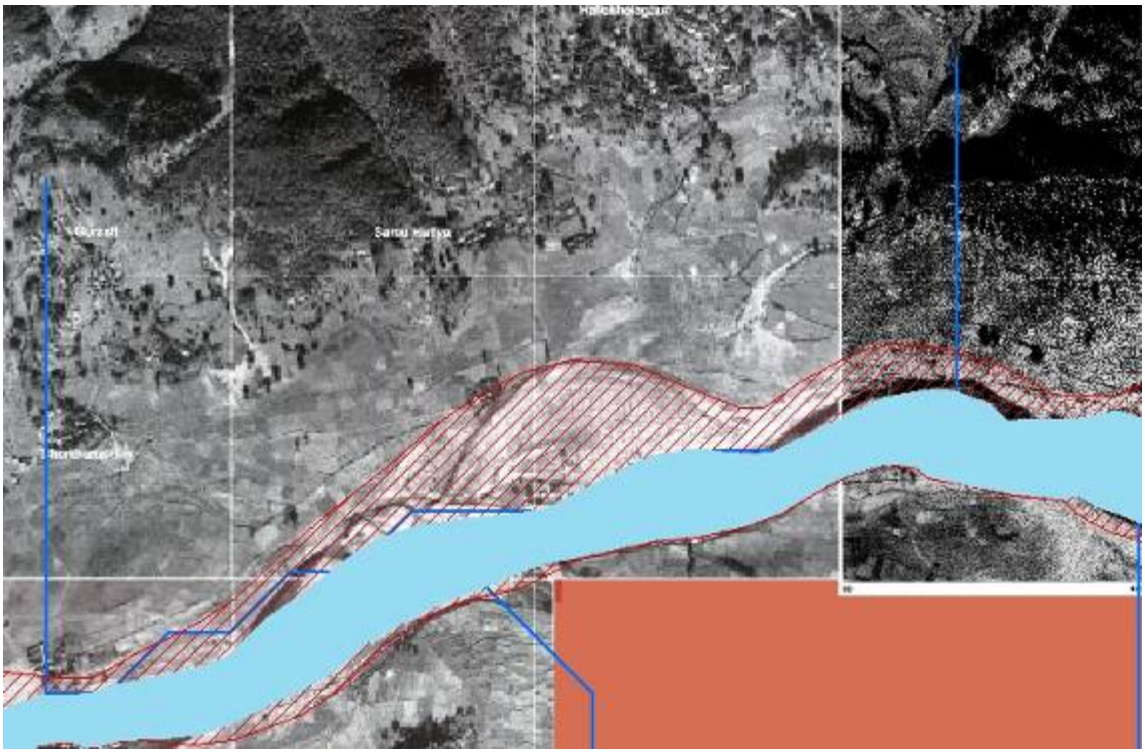


Figure 5.24: Gurasti CBDP Unit Flood Risk Map

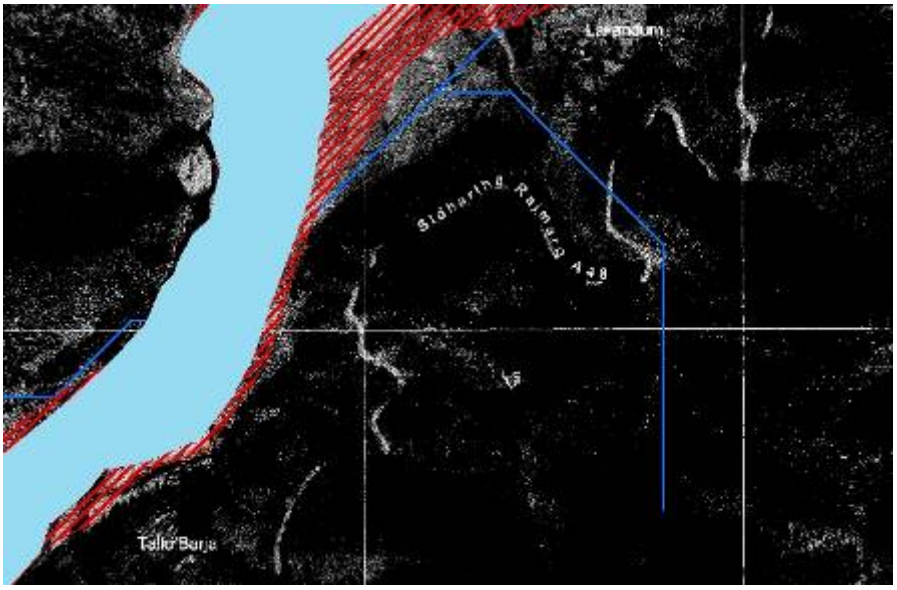


Figure 2.25: Baraja CBDP Unit Flood Risk Map

5.5 Rainfall monitoring and warning in monsoon for flood and landslide Warnings

5.5.1 Landslide Warning:

Shrestha (2005) studied threshold rainfall triggering landslide in Putalibazaar, which shows that there is a higher chance of landslide in Putalibzaar if accumulated rainfall from May as a percentage of normal annual rainfall (threshold Accumulated Rainfall in %) exceeds 40% and daily rainfall exceeds 100 mm during the condition of antecedent 3-day rainfall greater than 200 mm. This criteria was revised using 2007 data. Various levels of daily rainfall

amounts that trigger landslide at different level of antecedent rainfall condition and accumulated rainfall was identified as presented in Table 5.3.

Table 5.3: Criteria of threshold rainfall trigerring landslide in Putalibazaar.

	Threshold Accumulated Rainfall (%)	Threshold Antecedent 3-Day Rainfall (Condition 1)	Threshold Today's Rainfall (Condition 2)
Landslide less likely	**<40**		
High rainfall can triggers landslide	**40-60**	200	100
Medium rainfall can trigger landslide	**60-80**	150	100
Low rainfall can triggers landslide	**80-90**	100	80
Little rainfall can trigger landslide	**>90**	100	50
Cloudburst trigger landslides condition	**>40**		**>200**

Color Indicators

No Danger	**Danger starts Low Danger**	**High danger**	**Medium Danger**	**Highest Danger**

Four landslides occurred in Putalibazaar in 2007 monsoon. The occurrence of landslide satisfied the criteria explained in Table 5.3. The occurrence of landslide at identified threshold rainfall is presented in the figure 5.26.

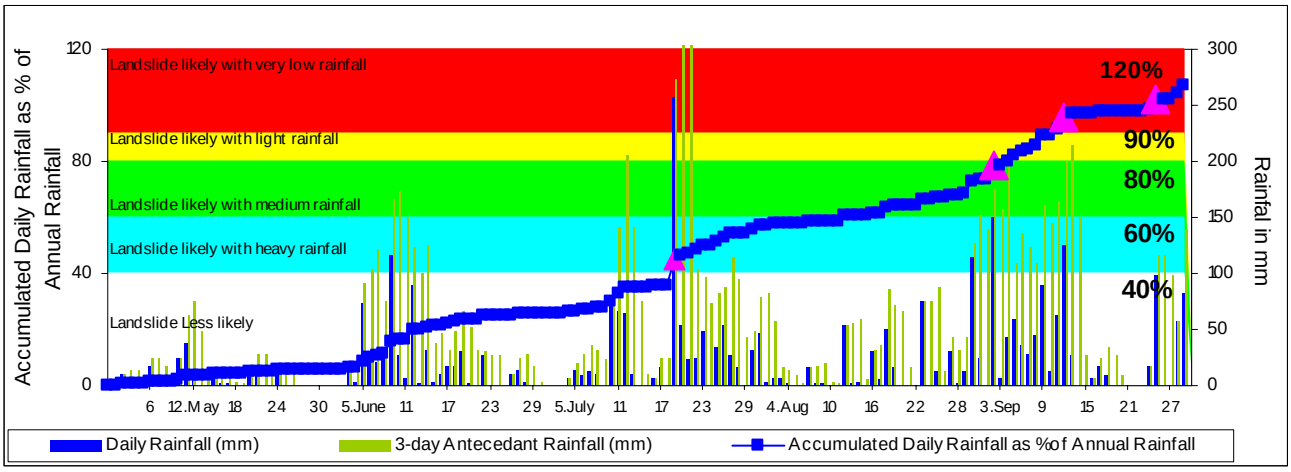


Figure 5.26: Rainfall Threshold Trigerring Landslide in 2007

Based on these analyses, landslide warning mechanism was developed as follows:

1. Obtain daily rainfall data of Putalibazaar from DHM
2. Monitor rainfall in the graph as presented in Figure 5.26 and 5.27 following the criteria of threshold rainfall triggering landslide in Putalibazaar (Table 5.3).
3. Communicate the information to Syangja Red Cross during a threshold situation.

4. Syangja Red Cross (SRC) communicate the information to CBDP units.

In 2008 monsoon, daily rainfall was obtained from Putalibazaar Station and the accumulated daily rainfall since May was monitored at DHM (Figure 5.27). The monsoon rainfall did not exceed the threshold values as mentioned in Table 5.3. No landslide was reported in the Putalibazaar area.

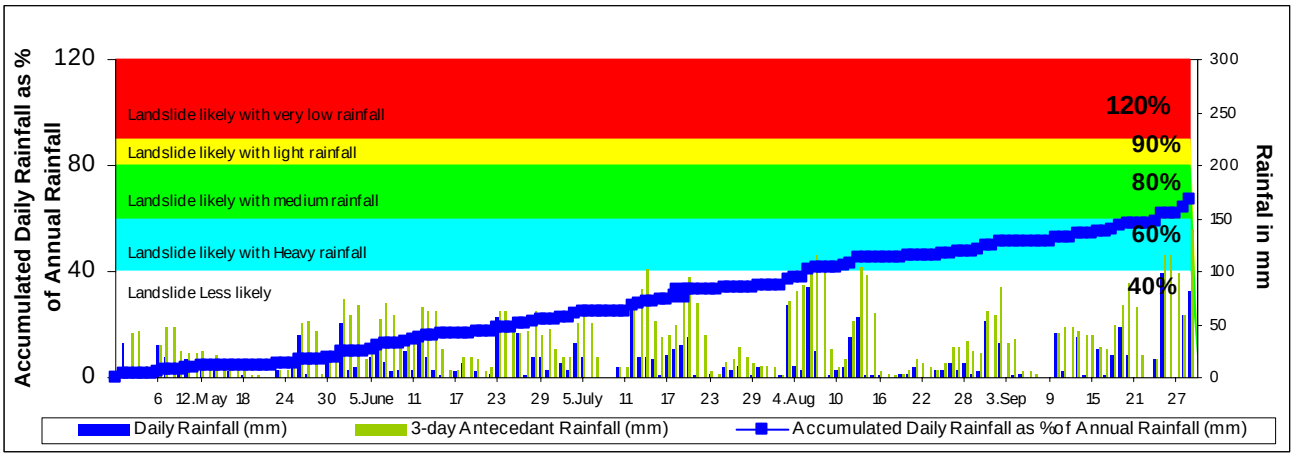


Figure 5.27: Rainfall Threshold Trigerring Landslide in 2008

5.5.2 Rainfall-based Flood Warning

Flood warning: various rainfall amounts of rainfall that may cause different levels of flood (Low, Medium and High) were identified. Two mechanisms were identified for warning floods and landslides community level communication and communication between DHM and SRC.

High floods are usually associated with intense rainfall over a catchment. Since monitoring rainfall is relatively easy, flood warning can be disseminated if a reliable rainfall-runoff relation is established for a catchment. Relatively long-term rainfall and runoff for a common period is required for establishing rainfall-runoff relation. However, stream flow records of the catchments, considered in this study, were not available. Rainfall data available at the Syangja station has limited value as it does not provide information for time intervals less than 24-hours.

Intensity-duration-frequency for a mountainous catchments in Nepal was available for a station in Kathmandu (Sharma, 1989). Although the catchments of interest are likely to have higher precipitation than the precipitation in Kathmandu, it can be used as approximation due to similarities in precipitation patterns. Since the annual rainfall amount recorded in Syangja Bazaar was almost double of the rainfall recorded at the Kathmandu Airport, rainfall intensity in Syangja was also doubled for the computation of flood at the locations of interest. The values thus obtained were found to be close to the values recommended for the mountainous areas of Nepal (LRMP, 1984). Based on these observations, a rainfall-based flood assessment was developed on the rational approach as below:

a) Time of concentration (t_c)

Time of concentration t_c can be computed using the California Culvers Practice (Chow, Maidment, and Mays, 1988) as:

$$t_c = 57(L^3/H)^{0.385} \quad (2)$$

Where t_c = Time of concentration (min)

L = Length of catchment (km)

H = Difference in elevation of the catchment (m)

Based on computations using Equation 2, the time of concentration was obtained as 80 min, 31 min, and 21 min for the Andhi, the Badh, and the Araundhi river respectively.

b) Rainfall intensity

The following relationship developed by Sharma (1989) for the computation of intensity-duration-frequency was used for the computation of rainfall intensity of a given duration.

$$I = \frac{1380T^{0.13}}{(t_c + 20)^{0.85}} \quad (3)$$

Where I = Rainfall intensity (mm/hr)

T = Return period (year)

t_c = Duration (min)

Discharge computations for the precipitation of different return periods using the runoff coefficients for different return periods as given in Chow (1988) are presented in Table 3.

Table 5.4. Estimation of floods based on rainfall intensities.

T (Year)	I (mm/hr)	C	Discharge (m^3/s)		
			Andhi	Badh	Araundhi
2	60	0.37	886	125	65
10	74	0.42	1240	175	91
20	81	0.45	1450	205	107
50	92	0.49	1780	252	131
100	100	0.53	2110	298	155

Assessment of the severe flood observed in the Araundhi in 1998 showed that the flood exceeded 100-year return period (Table 5.2). This observation was also close to the computation based on rainfall intensity (Table 5.4). Similarly, it was assessed that a flood resulting from a rainfall event exceeding 100-year return period could be a disaster for flooding in the Andhi Khola endangering the newly constructed concrete bridge (Figure 5.21). The rational method applied for the Andhi Khola has however, more limitations, as the method is not generally used for basins larger than 50 km^2.

Table 5.4 can be used as a guideline for warning communities. Rainfall intensity of 10-year return period (74 mm) can be considered as warning level and 50-year return period (92 mm) as danger level. Two rainguages were installed at upstream of Araundhi and at Gurasti.

5.6 Weather and Climate Information Dissemination Schemes

Two types of communication schemes were identified to disseminate extreme weather related information: DHM-SRC communication and the community level communication.

5.6.1 DHM – NRCS communication

a) Meteorological Forecasting Division (MFD) of DHM issues special weather bulletins (weather information issued during possibility of heavy rainfall), generally during monsoon. From 2009, monsoon, NRCS will assign a staff to monitor the special weather bulletin in the website of DHM and use the information to provide warnings at local units within the country. In case of more clarification on special weather bulletin, NRCS can call MFD. Also, NRCS will contact MFD during post-disaster relief and rescue program.

b) NRCS will incorporate weather forecasting topic in their regular trainings on disaster risk reduction for the community. DHM will provide expertise for these trainings.

c) DHM will monitor daily rainfall during monsoon 2009. In the condition of rainfall reaching or exceeding threshold values, DHM will inform NRCS and SRC, SRC subsequently has to inform community through local FM or Telephone. This will be experimented for 2009 monsoon.

5.6.2 Community level communication

This communication option will be used for flood warning. Rainfall station was installed at upstream of Araundhi Khola. The rainfall of 74 mm/hr and 92mm/hr was identified as warning level and danger level. When the rainfall amount exceeds the identified level the observer must call SRC and SRC will use Local FM Radio to inform CBDP Units (Figure 5.28).

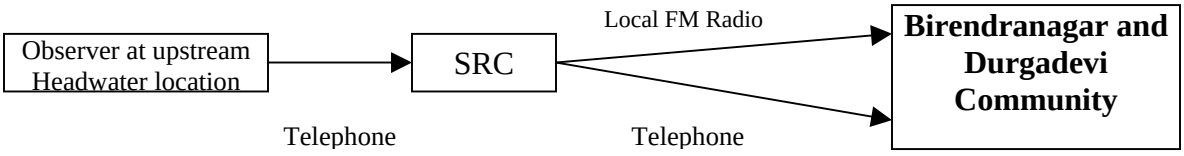


Figure 5.28: Flow chart of community level flood warning system.

It is recommended to establish automatic raingauges and display the rainfall at the Units for using the aforementioned community level flood warning system in addition to the already established ordinary raingauge.

5.7 Trainings

- Training was organized for NRCS Staff on weather forecasting and its application for early warning.
- Training for rainfall observers, staff of Red Cross at Syangja and for the leaders of CBDP Units were also organized on rainfall observation and rainfall warning.

Chapter 6: Insurance for Climate Change Related Disaster Risk Sharing

6.1 Historical Development

Before 1947 Nepalese's insurance need was fulfilled by Indian Insurance Companies. In 1947 an insurance company named **Mal Chalani** was set up to respond to the insurance needs of the Nepal Bank. It's business was chiefly marine, inland transit and fire. Mal Chalani was the first insurance office to be established in the country. In 1959, Mal Chalani's name was changed to the Nepal Insurance and Transport Co. Ltd and later to the Nepal Insurance Co. Ltd, which continues to operate today.

As the Nepal Insurance Company concentrated on the insurance requirements of the Nepal Bank, the needs of other businesses and individuals in Nepal were catered by the local operations of Indian insurers. The government established the state owned Rastriya Beema Sansthan (RBS) an insurance company, in 1967. This was done with the help of the British government. Initially, RBS was authorized only for non-life business. RBS started life insurance business in 1974. The *Insurance Act, 1967* set up an insurance market regulator Insurance Board (Beema Samiti) and provided a formal framework in which insurers could operate.

The first private company to be licensed after the formation of RBS was the National Life and General Insurance Company Limited in 1986. It began operations in 1988, with life and non-life business.

Since the new Insurance Act, 1992 came into force, the market has been opened further for private companies for both life and non-life insurance. Regulations were introduced to strengthen insurance consumer protection including the provision for the payment of interest in the case of delayed settlements related to disputed claims.

6.2 Insurance Market Overview

The insurance structure of insurance market till 2006/07 is presented in Table 6.1. There are 21 insurance companies in Nepal and 14 of them are from private sectors. Most of these companies (16 out of 21) provide general type of insurance.

Table 6.1: Market Structure at a Glance

Ownership	Nature of the Company			Total
	General	Life	Composite	
Government Owned	-	-	1	1
Private Sector	13	1	-	14
Foreign	2	1	-	3
Joint Venture	1	2		3
Total	**16**	**4**	**1**	**21**

Source: Insurance Board.

The premium income for last 13 years in Nepalese Insurance Market is shown in Table 6.2 and Figure 6.1. However, in terms of trends the premium collection rate is 3.6 times higher after the year 2000 than that prior to 2000. Average Growth rate of premium collection of Nepalese market for the last five year is about 20%. Little more than 2% of the population have bought life insurance products and about the same proportion have bought non-life insurance products. Hence insurance, whether life or non-life, is irrelevant for the majority of the population. The contribution of insurance business in the

national GDP has also been increasing for the last 6 years (Table 6.3). In 2006-2007, the insurance business accounted for Rs. 60367.26 million which was 1.19 % of the national GDP.

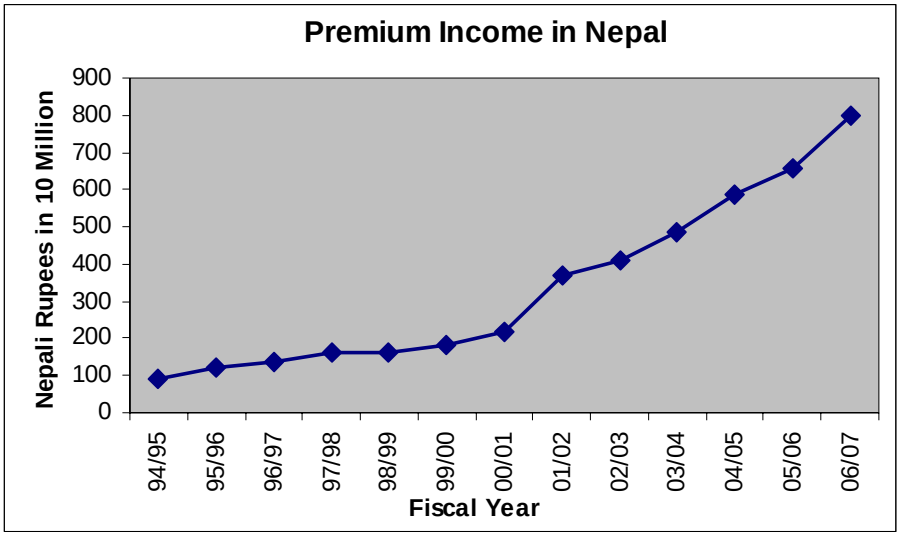


Figure 6.1: Premium income in the Nepalese insurance market. (Source: Insurance Board)

Table 6.2: Premium Income of Nepalese Insurance Market (In 10 million NRs)

Fiscal Year		Life	Non-Life						Non-Life Total	Grand Total
			fire	marine	Aviation	Motor	Contractor all risk & Eng	Misc		
051/52	94/95	26.01	16.18	5.66	18.88	11.41	2.35	11.73	66.21	92.22
052/53	95/96	35.99	23.01	8.29	25.15	14.90	2.59	13.68	87.62	123.61
053/54	96/97	47.14	24.60	7.71	24.50	15.29	5.32	12.66	90.08	137.22
054/55	97/98	53.98	24.95	11.13	27.19	18.54	9.93	15.53	107.27	161.25
055/56	98/99	44.94	29.62	10.66	25.32	21.73	10.83	18.47	116.63	161.57
056/57	99/00	49.43	31.96	14.57	29.80	24.95	10.01	22.43	133.72	183.15
057/58	00/01	65.46	38.60	16.13	34.20	30.91	8.69	25.26	153.79	219.25
058/59	01/02	153.11	47.13	17.23	72.51	39.08	13.54	25.83	215.33	368.44
059/60	02/03	182.23	47.58	18.99	68.99	46.10	11.40	33.62	226.67	408.90
060/61	03/04	249.09	56.77	21.13	49.69	59.78	9.78	36.91	234.05	483.14
061/62	04/05	313.95	67.42	27.16	47.07	72.29	18.60	39.02	271.57	585.52
062/63	05/06	373.02	74.73	27.29	46.02	83.41	9.50	44.36	285.33	658.35
063/64	06/07	459.00	88.00	31.00	55.00	103.00	13.00	50.00	340.00	799.00

Source: Insurance Board

Table 6.3: Contribution of insurance business in GDP (NRs. 10 million)

Fiscal Year		GDP (In Present Value)	Total Gross Insurance Premium	Percentage (b/a x 100%)
058/59	2001/02	43039.66	368.44	0.86
059/60	2002/03	46032.53	408.90	0.89
060/61	2003/04	50069.91	483.14	0.96
061/62	2004/05	54848.47	585.52	1.07
062/63	2005/06	60367.26	658.35	1.09
063/64	2006/07	67058.87	799.00	1.19

Source: Insurance Board

6.3 Insurance Legislation and Supervision

The core insurance legislation applicable both to non-life and life business is the *Insurance Act 1992*, as amended in January 1996, and the *Insurance Rules 1993*. In addition to these, there are few acts, such as Transportation Act and Labour Act with mandatory insurance schemes.

6.3.1 Compulsory Insurances

The *Transportation Act* requires compulsory third party insurance similar to road traffic acts in other countries. As no regulation has been introduced to bring the legislation into effect, there is no obligation for any form of vehicle insurance in Nepal. The Transportation Act, requires vehicles to get third party insurance before they are granted a licence to run on a scheduled route.

The *Labour Act* calls for compulsory insurance for employers in prescribed industries to cover the payment of occupational death benefits to drivers, conductors and cleaners. Similar regulations apply to the suppliers of manpower to overseas jobs and to trekking agencies for guides and porters.

6.3.2 Statutory Tariffs

Originally, the compulsory tariffs for fire accident and transportation (vehicle) business were based upon those used in India. The Insurance Board (Beema Samiti), established an Insurance Rates Advisory Committee to keep the tariffs under regular review and to make recommendations for amendments as appropriate. Fire rates were modified in effect from 1 January 2002 whereas transportation rates were modified in effect from 1 January 2006. A marine cargo tariff, in the form of guidance notes, was issued for the first time in 2001. The cargo tariff contains obligatory minimum premiums.

6.3.3 Insurance Supervisory Authority

The Insurance Board was established in accordance with the provisions of the *Insurance Act 1992*. The board consists of:

- A chairman appointed by the government,
- A representative of the ministry of law, justice and parliamentary affairs
- A representative of the ministry of finance
- An insurance industry representative
- A representative of the insurance consumers

The functions, duties and powers of the board are as follows:

- To formulate policies for systematising, regularising, developing and controlling insurance business
- To formulate policies and fix priority sectors for investing insurance proceeds
- To register and renew licences of insurers, agents, brokers and surveyors, and to cancel such arrangements as circumstances dictate
- To mediate in disputes between the insurer and the insured
- To take decisions on complaints filed by the insured against the insurer in regard to the insurer's liability under the terms of a policy
- To issue directives from time to time in regard to the insurance business
- To formulate criteria, as necessary, for protecting the interests of the insured
- To perform or make arrangements for performing other necessary functions related to the insurance business.

Insurance supervision and regulations are aimed at developing a set of rules that will maintain an appropriate balance between financial institutions and entrepreneurial efficiency. The board's efficiency is hampered as a result of limited resources as in other government departments and agencies. Nevertheless, the board operates fairly effectively.

6.3.4 Consumer Dispute Resolution

The Insurance Board acts as an ombudsman and arbitrator. Its functions include:

- Mediation in disputes between the insured and the insurer
- Decisions on complaints filed by the insured against the insurer, in regard to insurance liability and quantum. Insurance policies also include a standard arbitration clause.

Since 2001, the board's power for handling disputes between insured and insurers have been strengthened. The board finds proofs against an insurer in a disputed claim. The insurer pays interest on the amount of the claim for the period of the delay in the original settlement. Most complaints received at the board concern the mishandling of claims and to a lesser extent, the application of non-tariff rates.

6.3.5 Non-Admitted and Related Issues

The *Insurance Act 1992* stipulates that no one shall engage in or make arrangements for engaging in insurance business without obtaining a licence under the act. No individual or institution in Nepal shall conduct transactions relating to insurance business with any individual or institutions other than the insurers who have obtained registration certificates under the act.

The local insurance industry would not expect the Board to authorise any insurance outside Nepal, except in the case of very large projects. There is currently pressure to cover all types of risks insured in Nepal, even though around 95% may be reinsured overseas. In such cases, much depends on the Ministry of Finance. A priority is given to insurance that requires securing project finance. The Act prescribes penalties for non-compliance with any area of the Act, ranging from Rs. 3,000 to Rs. 30,000 and two years imprisonment at most.

6.4 Types of Insurance Organisation

The Insurance Board prefers licensed insurers to be limited liability companies although branches have been permitted in the case of a life insurer, American Life Insurance Company, which is a branch of its head office in the USA. Mutual and co-operatives are not permitted.

6.4.1 Foreign Ownership

There is no bar on foreign ownership of domestic companies or on foreign insurers setting up offices in Nepal. Of the 16 non-life offices and composites, two are the branches of the Indian state-owned insurers, the Oriental, with its headquarter in New Delhi, and the National in Kolkatta.

Of the five life insurance offices that are currently working in the local market, two have foreign interests. The Life Insurance Corporation of Nepal is a joint venture between Nepalese investors and the Life Insurance Corporation of India (LIC) from Mumbai (Bombay). The American Life Insurance Co (ALICO) is part of AIG from the United States.

6.4.2 Types of Licence

The *Insurance Act* stipulates that composite offices are no longer allowed and that insurers now need separate licences for life and non-life insurance business. There are no separate licences for healthcare business, which is written by the remaining composites and non-life insurers.

6.4.3 Capital Requirements

The *Insurance Act* stipulates that the paid up capital of a non-life insurer must amount to at least Rs. 100 million and those for life insurers to Rs. 250 million.

6.4.4 Reserve Requirements

Insurers are required to maintain a reserve fund as prescribed by the Insurance Board to meet the liabilities pertaining to its insurance business inside Nepal. It is unnecessary to hold reserves for each class of business. The reserve fund must contain:

- Amounts not less than 50% of the net non-life insurance premiums
- 50% of the profits earned, until the amount equals the insurer's paid up capital.
- Claims reserves are established in accordance with practices followed by the majority of insurance markets around the world.

6.5 Reinsurance

There are no local reinsurance facilities besides a little facultative business. Local retentions are small; all reinsurance is ceded to overseas markets. However, in October 2002, reinsurers withdrew cover for terrorism risks and as a consequence the *Emergency Insurance Pool Regulations* were introduced to establish a local pool to cover the risks.

There are no regulations which restrict local companies' freedom to reinsure at home or abroad such as voluntary or compulsory cessions, maximum or minimum retention levels etc. As domestic insurers have small retentions and that there is little or no reinsurance market, a large amount of the business is ceded overseas by way of quota share, surplus and excess of loss protections. Over half the gross property and miscellaneous premiums and around 45% of marine, are ceded abroad (European, Indian and Japanese markets). Any reinsurance that is required by the Kathmandu branches of the Indian companies, the Oriental and the National, is likely to be arranged by their head offices in New Delhi and Kolkatta respectively.

6.6 Distribution Channels

The *Insurance Act 1992* makes provision for the licensing of both agents and brokers. In practice, however, only agents operate as intermediaries in the Nepalese insurance market. Most business emanates from agency sources except major accounts related to aviation and construction. These are invariably written on a direct basis without any intermediary involvement. Other distribution channels such as direct marketing and bank assurance make little contribution to insurance production.

6.6.1 Direct Handling

Non-life offices employ development officers whose job is to encourage and monitor agency sales & become directly involved in sales themselves. Development personnel are paid a regular salary and receive increments that are geared to the amount of business produced by the panel of agents for whom they are responsible. In addition, they may receive certain other benefits.

6.6.2 Agencies

An agent can obtain a licence from the market regulator, the Insurance Board. The new application must be accompanied by a recommendation from the insurer for whom the agent will work. Separate licences are required for life and non-life insurance.

6.7 Micro-insurance Status in Nepal

Micro-insurance is the protection of low income households against specific perils in exchange for premium payments proportionate to the likelihood and cost of the risk involved (IAIS, 2007). Micro-insurance, in an informal form, is not a new phenomenon in Nepal. Variety of informal micro- insurance schemes exists in Nepal for example, mutual health care schemes or "guthi" (funeral associations) that have developed since many years. More recently, micro-insurance has expanded through community-based and other local initiatives as well as through commercial insurers. Commonly used micro-insurance products in Nepal are as follows:

1. Life Micro-insurance:
    a. Credit Life Insurance: These are products for which insurance partner of Microfinance Institution (MFI) absorbs the risk of default due to death of its clients.[1]
    b. Endowment: These are long-term saving products with death risk coverage. Insurance partner of MFI absorbs the risk of default due to death of its clients or the client gets sum insured along with bonus .[2]
    c. Health: Some hospitals and health organizations have tested community-based as well as individual based micro-health schemes. But the success rate is very low .[3]
2. Property Micro-insurance: Only a few micro-insurance providers offer property insurance, mostly because of the risks, fraud and moral hazard.
3. Crop Micro-insurance: Crop micro-insurance has a failure story in Nepal. It has been tested many time in many form but none of them succeeded.[4]
4. Cattle Micro-insurance: Cattle micro-insurance has been tested in many forms. Community-based cattle insurance is doing well till to date. [5]
5. Low grade house (jhupadi) insurance, bi-cycle insurance tri-cycle insurance etc are other example of micro-insurance products available in Nepal.

6.7.1 Categories of Micro- insurance Provider in Nepal:

1. **Insurance Companies:** These are Public Limited Companies licensed and supervised by the insurance supervisor under Insurance Act. Among them life insurance companies are providing life micro-insurance products and general insurance companies are providing insurance other than life insurance products in limited extent.
2. **Formal Unregulated Institutions:** Formal institutions operating under other laws, (other than insurance law) not specifically targeting insurance (e.g. co-operative law, NGO law), are providing micro-insurance products. They are not registered and are not subject to any type of supervision by the Insurance Board.
3. **Informal:** Informal groups (community-based) or group of persons are also providing micro-insurance products. These unregistered groups are also not subject to any type of supervision.

Intermediaries: In micro-insurance agents (individuals and institutions) sell insurance to low-income households for one or more insurance companies in commission basis. They earn between five and twenty-five percent of premiums as commission.

6.7.2 Challenges:

Some of the main challenges of Nepalese micro-insurance markets in study area were are as follows:

1. **Insurance coverage:** In Nepal just above two percent of the population used insurance services. The bulk of the population lacked access to insurance protection. The distribution frontier did not extend to the millions of economically active persons working in the informal economy.
2. **Information asymmetry:** 'Rationing' of insurance was related to information asymmetry. It was a severer problem for a mainstream insurer with little understanding of the demand and financial habits of low income groups.
3. **Transaction costs:** Transaction cost was not proportional to premium size so it tended to be relatively higher for smaller policies.
4. **Distribution system:** The distribution systems of insurers were not designed to serve the low income market.
5. **Consumer education and awareness:** One of the greatest challenges for micro-insurance was the target market's lack of insurance information and understanding.
6. **Consumer recourse and complaints:** To establish adequate, efficient and effective system for handling complaints of low income groups was one of the greatest challenges.
7. **Reinsurance:** Reinsurance is a powerful risk management tool that should be used by micro-insurance providers. It is generally used to stabilize the financial condition of an insurer. However, as many micro-insurance schemes were informal, they generally could not access reinsurance.

6.7.3 Opportunities:

The low income market had immense potential if above mentioned issues were addressed with efficient and affective innovations. Viable micro-insurance schemes proposal may include the following competing objectives:

- Expanding coverage to meet the needs of low income households,
- Minimizing operating costs for the insurer to minimize the price,
- Meeting the real risks that low income markets require, and
- Ensuring that sufficient financial education or advice was provided.

6.8 Development of Community-Based Disaster Micro-insurance for Putalibazaar.

In developing countries, post-disaster assistance for emergency relief and reconstruction, has failed to meet sufficient funds to governments and individuals for financing the recovery process (Linnerooth-Bayer, et al, 2005). Disasters continue to impose substantial human and economic losses on the developing world. There is a growing interest in the potential of risk transfer as a part of disaster risk management (Provention, 2005). Insurance allows disaster preparedness by transferring and sharing risk. The insurance industry has played a major role in assisting post-disaster recovery through claim payments (Berz, 1994). In addition, consideration of insurance as an adaptation to climate change has emerged on the climate agenda as an essential part of the response to climate

change risks (Linnerooth-Bayer and Mechler, 2006). However, in developing countries, households and businesses cannot easily afford commercial insurance to cover their disaster risks (Linnerooth-Bayer, et al, 2005). Also, an awareness raising by the insurance sector in developing countries is very limited (Hoff, et al, 2005). The cost of catastrophe insurance is usually substantially higher than the pure risk premium. Consequently, people can pay more for disaster insurance than their anticipated losses over a long term time scale. Instead of insurance, they rely on family and public support, which is not always forthcoming for catastrophes that affect whole regions or countries (Linnerooth-Bayer et al, 2005). In many developing countries, different kinds of disaster insurance schemes are being tested. For example such insurance schemes are being tested in Mexico, India, Ethiopia and Turkey introducing subsidy with the involvement of government or donor agencies.

The study on perception of the locals of CBDP units of Putalibazaar Municipality on potentiality of insurance shows that few people who are aware of insurance are keen to buy an insurance scheme, while majority of the community are either not aware of insurance or wrong concept about insurance (Shrestha, 2005). This study also showed that the communities were keen to learn about insurance and some were eager to buy the insurance. Insurance agencies were also interested to support community-based micro-insurance. Moreover, these Units already had a 'informal kind of insurance' in the form of revolving fund. Therefore, the community had been already experiencing the system contributing as a premium, though the collected fund was being used only for immediate relief. Introduction of community-based insurance could be beneficial for both the community and insurance agencies.

To develop the community based disaster insurance, an awareness program in each CBDP unit was organized in the leadership of Insurance Board, which provided various kinds of suggestions. Secondly, a consultative meeting was organized with various insurance agencies. Necessary socio-economic data were collected from each unit. Based on this data and suggestions of the community and insurance agencies, a number of insurance schemes were developed and discussed with the insurance agencies, communities and NRCS. The detail of these schemes is discussed in the following sections.

6.8.1 Disaster Perception in Insurance:

Disaster is a situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance. Various types of disasters that are covered by insurance is presented in Table 6.4. There are certain general criteria for event to be called a major disaster, which are:

- 10 or more people reported killed
- 100 or more people reported affected
- A call for international assistance
- Declaration of a state of emergency

Table 6.4: Type of Disaster Covered by Insurance

1. Natural		2. Non-natural	
Hydro-meteorological – Weather and Climate induced Disaster	Avalanches /landslides, droughts, floods, lightning, storms etc	**Industrial**	Chemical spill, collapse of industrial structures, explosion, fire, gas leak, poisoning, radiation, pollution
		Transport	Air, rail, road and water-borne accidents
Geophysical	Earthquake, volcanic eruption	**Political**	Riot strike, malicious act, terrorism & sabotage, war
		Miscellaneous	Collapse of domestic & non industrial structures, explosion, fire

Before insuring, risk management is necessary. The basic steps of Risk Management applied in this study were;

- Identify the perils (risks) that threatens property, earning capacity and life
- Ascertain the actual value of property and liability exposed to the risks
- Measure the impact – probability of loss occurring and its severity
- Collect information on past loss experience (own and from others)
- Retain the risk if the probable loss amount is within own financial capacity, if not,
- Identify an insurer who ensures that you suffer no financial burden as a result of sustaining or incurring loss, damage, injury or liability
- Finally, transfer risk through insurance.

6.8.2 Nature and extent of loss at vicinity (Syangja – Putalibazaar)

This study was mainly focused on weather and climate induced disasters. Floods and landslides were main disasters in Putalibazaar. These disasters threatened human life and property as follows:

- Human life –
  - death
  - bodily injuries or disabilities
- Property –
  - partial or total collapse of building
  - loss or damage to belongings

6.8.3 Relevant Insurance Policies

In this section, relevant insurance policies of human life and property are explained. In **i**nsurance to human life, **group / personal** aaccident insurance and life insurance have been identified. In insurance to property, fire and allied perils and household – for purely residence have been identified.

6.8.3.1 Human life

6.8.3.1.1 Group / Personal Accident Insurance

a) Scope of Cover

The group / personal accident insurance covers for the bodily injuries or death sustained to the insured person as a result of accident caused by violent, external and visible means. The accident shall mean any accident including natural disaster like flood and landslide except exclusions mentioned in the policy schedule. This policy provides cover for 24

hours within policy period throughout the world. The policy is presented in Annex 8. The Illustration of Proposal form is presented in Annex 9.

The Insurance Company indemnify the insured up to the amount specified in the Table of benefits (Table 6.5) contained in the Policy Schedule. The Company will indemnify 100% of sum insured amount in case of death and will indemnify as per the sliding scale of percentage mentioned in the table of benefit in case of Permanent Total Disablement. The Company also indemnify the cost of medical treatment incurred for injuries due to accident up to an agreed limit.

Table 6.5: Illustration of Table of Benefits under Group / Personal Accident Insurance

A	Death	100% of Sum Insured (SI)
B	Permanent Total Disablement Loss of ; Both hand, both feet or any two thereof Sight in both eyes One hand or foot and sight of one eye Total paralysis One arm or one hand One leg or one foot Sight in one eye Thumb Index finger Any other finger Big toe Any other toe Hearing in both ears Hearing in one ear	A sliding scale up to 100% of SI as follows 100% 100% 100% 100% 60% 50% 50% 25% 15% 6% 5% 3% 50% 15%
E	Medical Expenses	Percentage of the SI chosen

In the case of Putalibazaar, benefits under Group / Personal Accident Insurance for an assumption of SI = Rs. 100,000 is presented in the Table 6.6 below:

Table 6.6: Illustration of Table of Benefits under Group / Personal Accident Insurance (With an assumption of SI = Rs. 100,000.)

A	Death	100% of Sum Insured (SI)	Rs. 100,000.
B	Permanent Total Disablement Loss of ;	A sliding scale up to 100% of SI as follows	
	Both hand, both feet or any two thereof	100%	100,000.
	Sight in both eyes	100%	100,000.
	One hand or foot and sight of one eye	100%	100,000.
	Total paralysis	100%	100,000.
	One arm or one hand	60%	60,000.
	One leg or one foot	50%	50,000.
	Sight in one eye	50%	50,000.
	Thumb	25%	25,000.
	Index finger	15%	15,000.
	Any other finger	6%	6,000.
	Big toe	5%	5,000.

	Any other toe	3%	3,000.
	Hearing in both ears	50%	50,000.
	Hearing in one ear	15%	15,000.
E	Medical Expenses	10% Percentage of the SI	10,000.

b) Exclusions

Like all other Insurance Policies, this Insurance also has some exclusions. This Policy (Annex 8) does not cover death, disablement or injury happening through;

- War, invasion, civil war, riot strike, malicious act and Terrorism
- Self injury, suicide, sexual transmissible disease, alcoholism
- Flying other than in aircraft
- Hazardous sports
- Wilful exposure to danger, disappearance, breach of law

c) Premium

This is non tariff insurance and premium rate varies from one company to other company. However, the premium rate depends on the occupation of the insured person. The accident prone occupation attracts higher rate of premium. Premium amount for group/personal accident is presented in Table 6.7:

Table 6.7: Premium amount for group/personal accident.

S.NO.	Sum Insured Amount	Benefits	Annual Premium (subject to an addition of VAT 13%)
1	50,000/-	A, B & E(5%)	125/-
2	100,000/-	A, B & E(5%)	250/-
3	200,000/-	A, B & E(5%)	500/-

d) Others

Normally the policy does not cover for the persons above the age of 60 years, but may consider in case of insuring a group of large number.

e) Claims

In an event of incident that raises a claim, the insured or member of their family (in case of death) shall inform the company in writing and submit all relevant documents along with duly filled claim form (Annex 10).

6.8.3.1.2 Life Insurance (Endowment Policy)

a) Scope of Cover

Life Insurance is different from group / personal accident insurance under non life Insurance. Life insurance is more like compulsory deposit scheme and is a long term insurance in which the insured pays regular instalment of premium (monthly / quarterly / annually) for an agreed period of time and the company pays back insured sum with bonus in case of death or maturity of the policy period which ever occurs first. The policy covers for the death whether natural or accidental.

People are more interested in life insurance, because they will get back insured sum with bonus at maturity of the policy period, whereas, in case of group / personal accident insurance, the insured will get compensation only in an event of bodily injury or death.

But the premium amount is significantly higher in life insurance in compared to non life insurance. Approximate premium structure of life insurance is shown in Table 6.8 below. The premium for life insurance is based on period of policy, age of the insured, and type of cover. It also varies from Company to Company.

Table 6.8: Premium per 1,000/- of Sum Insured amount under Endowment Plan

Term / Year	10 yrs	15 yrs	20 yrs	25 yrs
Age				
15	108.41	70.69	53.47	43.59
20	108.63	70.99	53.85	44.07
25	109.01	71.48	54.47	44.89
30	109.61	72.13	55.41	46.08
35	110.46	73.37	56.96	48.19
40	112.19	75.73	60.12	52.32
45	115.26	79.90	65.65	59.45
50	120.85	87.51	75.57	71.43

6.8.3.2. Insurance to Property

6.8.3.2.1 Fire and Allied Perils Insurance

a) Scope of Cover

An ordinary Fire Insurance policy covers for the loss or damage to insured property due to fire, lightning and explosion of domestic pressure vessels and cooking gas cylinder. With payment of an additional premium, the policy could be extended to cover other extraneous perils such as earthquake, flood, inundation, landslides and rockslides, riot, strike, malicious act, sabotage, storm, impact damage etc. The policy is presented in Annex 11.

The insured sum will be the Insured's Estimated Value of the Property like building and its contents. It is always advised that the insured value of the building shall represent current market value (reinstatement value) of that building except the value of land. The policy does not cover loss or damage to cash and jewelleries.

b) Premium

The Fire and Allied Perils Insurance is tariff controlled by Insurance Board. The premium rate depends on occupancy and type of construction of building. Premium for fire and allied perils insurance is shown in Table 6.9 below:

Table 6.9: Premium for Fire and Allied Perils Insurance.

S.No.	Perils / Risk	Premium Rs. per thousand
1	Fire & lightning of building occupied as;	
	Residence	0.30
	Shop	1.05
	Restaurant	0.70
	Bank / office / school	0.30
2	Earthquake	1.25
3	Flood & inundation	0.40
4	Landslide / rockslide	0.40
5	Storm	0.05 to 0.50

c) Claims

The Company will indemnify the cost of rebuilding in case of total loss, and cost of repair in case of partial loss of the insured property but not exceeding insured sum amount of individual value of affected insured item.

In an event of incident that raises a claim, the insured shall inform the company in writing and submit all relevant documents along with duly filled claim form (Annex 12).

6.8.3.2.2 Household Insurance

a) Scope of Cover

Household Insurance is a comprehensive insurance policy that covers the perils of fire, lightning, earthquake, flood, inundation, landslides and rockslides, storm, impact damage. The scheme can be extended to cover riot strike, malicious act and sabotage. The household insurance policies are normally provided to the purely residential buildings of first class construction and contents therein. Since this is a comprehensive policy, it is convenient to the insured.

Like in the case of fire and allied perils insurance, the insured sum will be the insured's estimated value of the property like building and its contents. It is always advised that the insured value of the building shall represent current market value (reinstatement value) of that building except the value of land. The policy does not cover loss or damage to cash and jewelleries. This insurance policy is presented in Annex 13.

b) Premium

Being non tariff, the premium rate for the household insurance is very reasonable in the Nepalese market. Illustration of premium for this insurance is shown in Table 6.10 below:

Table 6.10: Premium for Household Insurance

S. No.	Sum Insured Amount (value of building only)	Basic	RSMDST	Total
1	100,000.	100.	50.	150.
2	500,000.	500.	250.	750.
3	1,000,000.	1,000.	500.	1,500.

c) Claims

The claims process is as same as in the fire and allied perils insurance. The Illustration of proposal form is presented in Annex 14 and required Claim form as Annex 15.

d) Classification of Construction of Buildings

- First Class
  - Building built of burnt brick wall, RCC / CGI sheet on iron truss roof, RCC floors
- Second Class
  - Building built of burnt brick wall, CGI sheet on wooden rafts roofs and wooden rafts floor
- Third Class
  - Other than above, like building built of wooden wall and grass / hay roof.

Summary Table of insurance schemes for Putalibazaar

	Household Insurance	Accident Insurance	Life Insurance
Coverage	House/ Household contents	Life and bodily injuries	Life
Risk covered	o Fire o Explosion of household equipments o Lightning, earthquake, flood, inundation, landslides and rockslides, storm, o Impact damage by vehicles, airplanes and animals	o Death due to accidents o Bodily injuries due to accident o Disabilities due to accidents o Hospitalization due to accidents	o Death due to accidents o Bodily injuries due to accident o Disabilities due to accidents o Hospitalization due to accidents
Exceptions	o Only first class and second class buildings o Riot strike, malicious act and sabotage will be covered with extra premium	o War, invasion, civil war, riot strike, malicious act and Terrorism o Self injury, suicide, sexual transmissible disease, alcoholism o Flying other than in aircraft o Hazardous sports o Willful exposure to danger, disappearance, breach of law	o Self injury, suicide, sexual transmissible disease, alcoholism o Person above age 60
Premium	o Rs 100/100000 in a year o Premium should be paid beginning of the year	o Rs 250/100,000 in a year or 125/50,000 per year o Premium should be paid beginning of the year	o Depends on age and of the person o Quarterly installment
Refunds	X	**X**	Premium back with interest

6.8.4 Analysis of Probable Maximum Loss and Premium

The analysis of Probable Maximum Loss and Premium for the CBDP units is presented in annex 16.

6.8.5 Mode of Administration and Implementation – Community Based Administration

6.8.5.1 Community-Based Micro-insurance – The Concept

As defined by the International Association of Insurance Supervisors "Micro Insurance is the insurance accessed by low income population, provided by a variety of different entities but run in accordance with generally accepted insurance practice, which means micro insurance policy is based on insurance principles and funded by premium". Recently the Micro Insurance has expanded the services through community based and other local initiatives like cooperatives as well as corporate insurers. The micro-insurance service providers can be divided into three categories;

a. Organizations regulated and licensed under insurance law – insurance companies
b. Organizations regulated and licensed under any other law other than insurance law – cooperatives
c. Informal schemes – entirely unregistered and under no legal settings – group of people, circle of friends or society member or family.

Alternate to corporate insurance, the community based micro insurance would be cost effective, efficient, reliable and sustainable, provided such insurance could obtain sufficient reinsurance support. In the absence of proper reinsurance support, such insurance could be harmful / tragic in an event of catastrophe.

In Nepal, institutional micro-insurance practice is yet to be established. There is no alternative to self insurance by community (retaining the risk by community, i.e, collection of premium from insured members of the community and pay out of the fund in an event of loss to the insured member) or to go for corporate insurance (whereby the households in Syangja – Putalibazaar shall insure with a non-life insurance Company(s) operating in Nepal).

Since no insurance company exists in the vicinity (Syangja – Putalibazaar), it is advised to have community-based administration for insuring property. A representative of community (CBDP Unit) shall liaise with a insurance company and in return the insurance company shall appoint them as an insurance agent paying agent's commission as per the insurance act of Nepal. This representative from community will administer as an insurance agent for the community and insurance company. This agent will collect premium and process the claim for the community and insurance company. The schematic diagram of insurance implementation process is presented in figure 6.2. Community-based administration will be more reliable and sustainable as villagers know them personally.

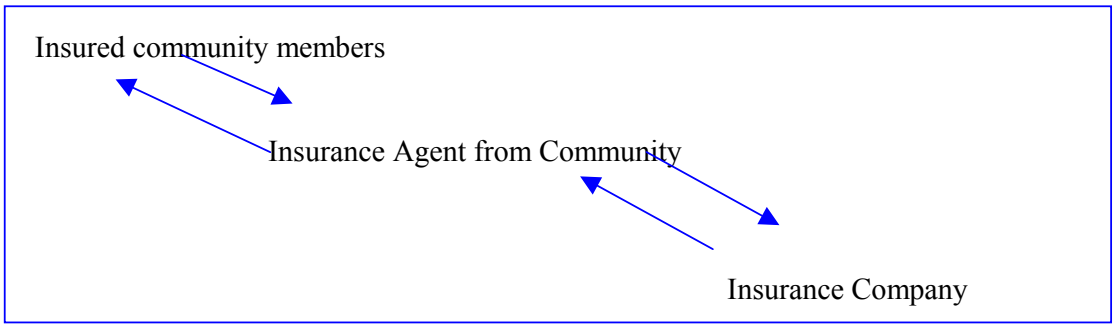


Figure 6.2: Schematic diagram of insurance implementation process

6.8.5.2 Claims Process

In the event of loss due to insured perils, following process shall be followed;

a. Safety first – the injured person shall be taken to nearest hospital for life saving treatment. Shall take steps to prevent ill-fated property from further damage.
b. Report to nearest police office about casualties and damages.
c. Inform the insurance company in writing
d. Do not repair or rebuild before an evaluation seeing by an insurer or a representative.
e. Gather the details and proof of loss.
f. Submit the cost estimate for damages.
g. Obtain consent from the insurance company.
h. Submit duly filled claim to the insurance company. Submit a doctor's report in case of bodily injury and post mortem report in case of death.

6.8.6 Estimated Premium and Mode of Premium Payment / Funding

Insurance is not a charity; it is a business and it is a kind of fund management through transferring financial risk from an individual to a pooled group. Thus, insurance companies charge a premium as consideration for their promise to indemnify.

In Nepal, a premium for insurance should be paid before the inception of policies. There is no provision for payments of a premium in instalments. In case, community of Syangja

– Putalibazaar opt for payment of a premium in instalments, a donor agency may support them by creating a revolving fund or subsidising the premium.

Proposed options are:

a. A donor agency may pay the entire premium to an insurance company at the inception of the policy and collect through community-based group in easy monthly instalments. A revolving fund should be created with the premium collected in EMI to pay in following years.
b. A donor agency may contribute or subsidise the premium in agreed proportion, say 50%–50% or 40%– 60%, whereby the insured pays their share of premium and donor agency contributes the balance amount.

6.8.7 Implementation Procedure

This model (Figure 6.3) could be implemented as a pilot project with tenure of at least five years in order to inculcate insuring habit to the people in the project area. All the partners shall work hand in hand to implement this project successfully.

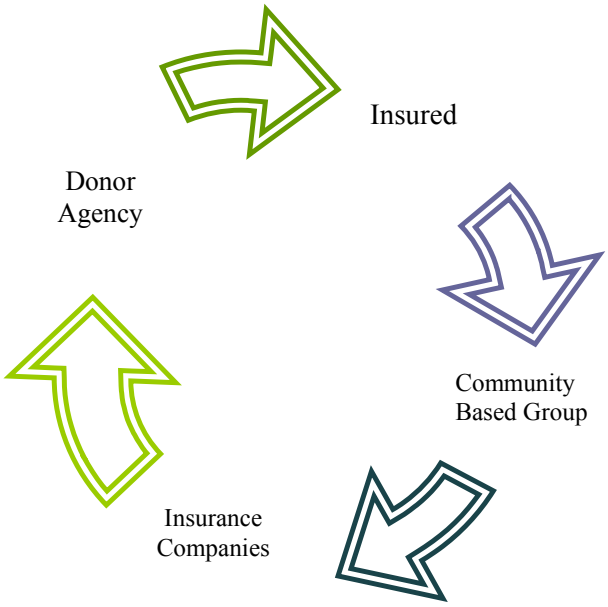


Figure 6.3: The model for the implementation of the insurance procedure

The insurance market in Nepal is emerging and is yet to grow. The main challenge in this sector is the lack of awareness in public about insurance. People do not feel necessary to insure their life, property, security and means of economic stability. They feel that insuring is wasting their money. They do not have culture/habit of insurance. Majority of insurance of property and business take place as a requirement for bank credit / loan.

The study area has very good scope for micro-insurance, but, due to small in size of business, this sector could not attract corporate insurance companies. Compared to probable premium income, it involves more cost to procure business. Usually, it is very hard to earn profit from micro insurance. However, insurance companies in the region are now realizing micro insurance as their corporate social responsibility.

6.8.8 Report on the community workshops by the community motivators.

Two representatives from each CBDP units (community motivators) after receiving the insurance training at Kathmandu, carried out the community workshops in their respective units. They informed the locals about the insurance schemes. The different views and the perception of the locals on insurance that came up during the discussion are summarized in bullets below.

- Local communities still need detail information/awareness on non-life insurance and the discount/subsidy/concession provisions of the insurance agencies.
- Locals seem to be slightly confused on the period of the non life insurance and what happens if nothing happens during the insured period.
- The premium should be less/reduced depending on the number of people/communities willing to do insurance.

The number of communities interested in doing non-life insurance are as follows.

CBDP unit	Total no of Households	Interested Households in non-life insurance	Percentage of Households interested
Birendranagar	40	27	67.5
Gurasti	128	32	25.0
Baraja	101	25	24.8
Durgadevi	278	Few	

Chapter 7: Outputs and Accomplishments

7.1 Outputs

The main aim of this pilot project is to create awareness about the potential climatic change signal, increasing WCD and to implement two pilot actions related to pre and post disaster adaptation measures. First is to establish communication between national meteorological service and vulnerable community of CBDP units to address mitigation and adaptation options for WCD events. Second is to introduce the concept of community disaster insurance through CBDP as a loss sharing measure for adaptation to climate change.These three objectives (creating awareness, establishing communication on weather and climate information and introducing disaster insurance) were accomplished with the application of various project outputs.

7.1.1 Objective 1

The first objective of the project is to develop awareness of the communities of CBDP Units of PM about the increased disaster risks involved in living with climate change and climate variability. To achieve the first objective following outputs were used:

1. **Brochure on Climate change (observed change, projected change and communities experience) and climatic information for Putalibazaar. This brochure was distributed to the community, NGOs, GOs, local Media and NRCS, Syangja to create awareness about climate change and related risk.**




2. **Posters in Nepali language on global (causes and impacts) and local (observed change, projected change and communities experience) climate change and climatic information of Putalibazaar. Posters were distributed to the community and CBDP Unit offices and SRC.**

3. **Hoarding Board on Climate change, flood risk map and awareness about early warning and insurance. The hoarding board is installed at the SRC office building.**

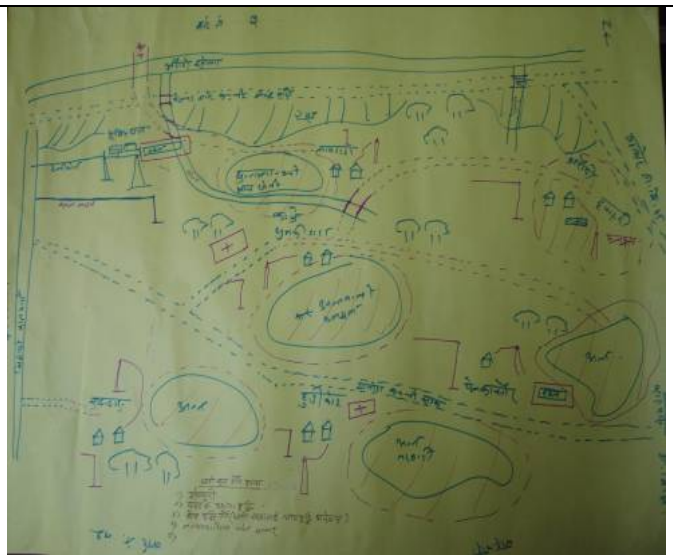
4. **Movie on climate change and disaster in a global and Nepalese context. This movie can be used in climate change awareness program in different locations. DHM is planning to use it in Far-western Nepal for awareness program in 2009.**

5. **Results of Risk Realization for climate change projection : The results of risk realization can be used as the adaptation strategy for Putalibazaar**

Findings of the climate change risk realization activity

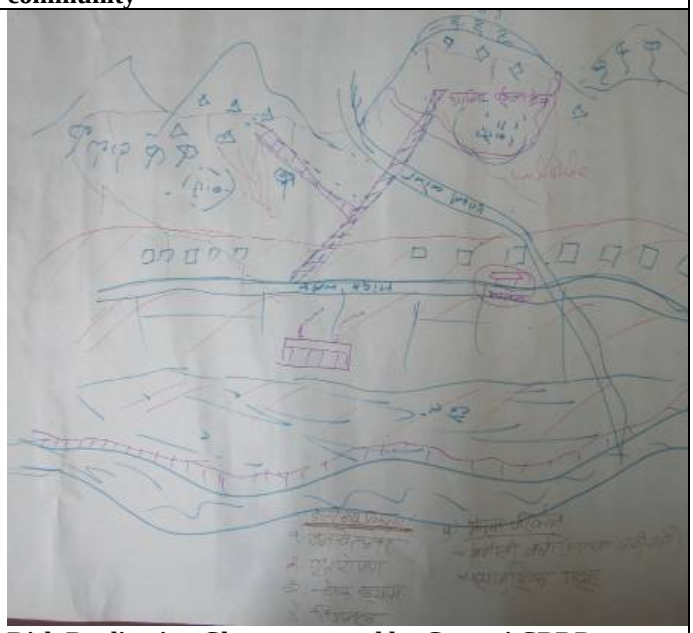
CBDP Units	Vision	Future Impacts	Solutions
Birendranagar	• Urban development • Infrastructures: Road, Electric and Communication towers • Furniture Industry	• Impacts on urban population and Infrastructure • Impact of Lightning, thunder and landslides on towers • Hail problem in agriculture. Increased damage to agriculture by floods and hails.	• Retaining walls/embankments • Early warning on heavy rainfall, dry spells and floods • Drainage improvement on small rivers and along road sides • Aforestation to prevent landslides • Preparedness with generating funds
Durgadevi	• Extension of rural road • Development of communication system • Increase in cash crop and horticulture	• Increased loss of farming due to landslides • Damage to houses and lives	• Preparedness • Capacity building of the community • Increase funds • Forestation • Income generation activities • Community' participation in Maintenance
Baraja	• Improvement of rural road into pitch road • Development of a stadium	• Increased damage to houses by landslides along roads • Increased loss of paddy by floods in Andhi Khola	• Forestation • Embankment • Landslide insurance for houses
Gurasti	• Tourism • Industry • Improvement of roads	• Impacts on tourism due to landslides and floods • Damage to Industry paddy and other crops due to flood and other landslides • Damage to houses due to landslides and floods • Drought related damages to agriculture	• Awareness • Embankments along Andhi Khola • Aforestation • Check dams • Tourism in seasonal basis • Unity of the community

Risk Realization Chart prepared by Birendranagar CBDP community



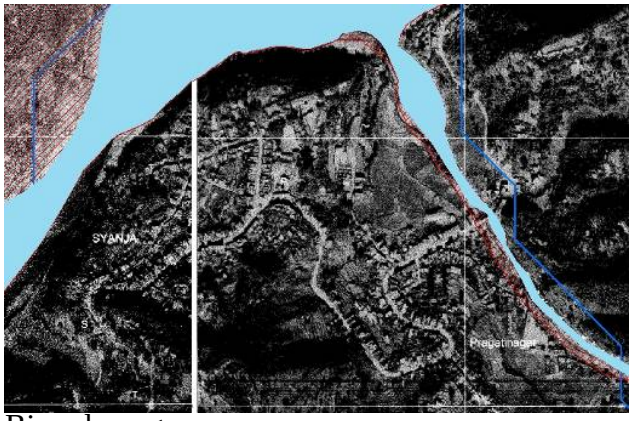
Risk Realization Chart prepared by Durgadevi CBDP community

Risk Realization Chart prepared by Baraja CBDP community

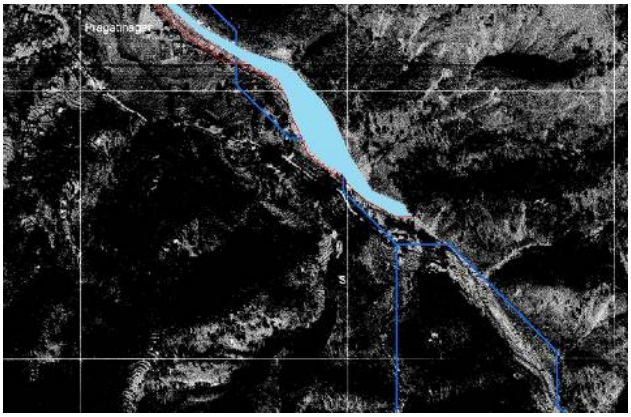


Risk Realization Chart prepared by Gurasti CBDP community

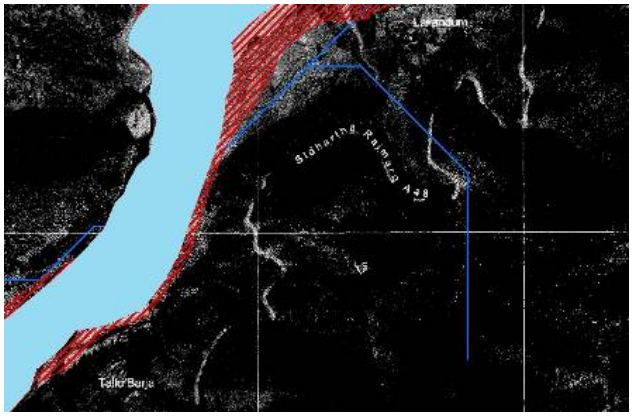
5. Flood Risk Maps: Flood risk maps (normal and severe conditions) of four CBDP for three major rivers (Andhi khola, Araundhi khola and Badh Khola). Flood risk map was used in Hoarding board for climate change related risk awareness.



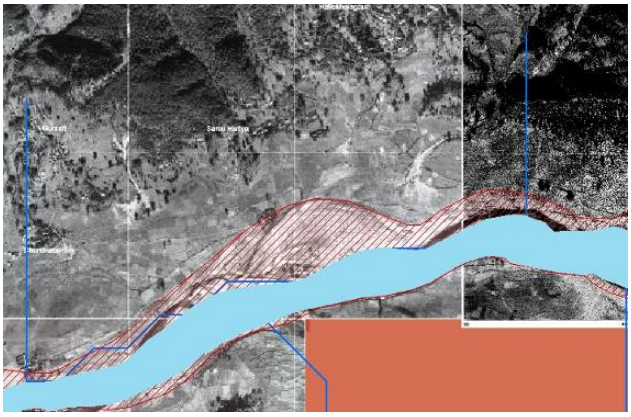
Birendranagar



Durgadevi



Baraja


Gurasti

7.1.2 Objective 2

The Second objective of the project is to establish effective and interactive communication between the national meteorological service, Nepal Red Cross Society (NRCS), concerned insurance agencies (IAs) and communities in CBDP Units to disseminate information on extreme weather and climate events. To accomplish this objective, following outputs were used.

1. **Climate and Weather Information Dissemination (WCID) schemes: Considering early warning as one of the adaptation measures to reduce increased disaster due to climate change, this project identified following three schemes to disseminate the extreme weather information for early warning:**
    a. Collaboration between DHM and NRCS to apply weather forecast for disaster risk reduction during pre and post disaster situations.
    b. Upstream (observer) and downstream (SRC) communication for flood alert
    c. Monitoring threshold rainfall triggering landslide in 2009 by DHM.

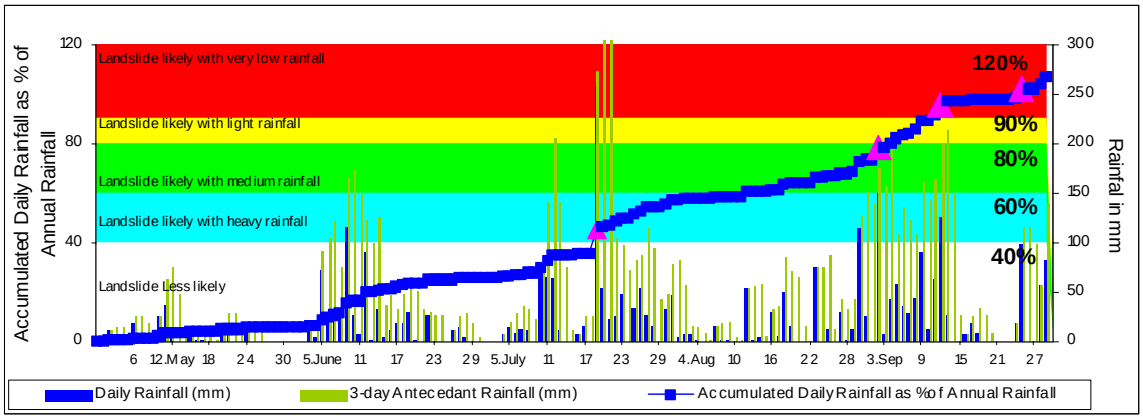
2. **Threshold rainfall triggering landslide in Putalibazaar. This threshold rainfall is used to monitor the chances of landslide in Putalibazaar.**

Criteria of threshold rainfall triggering landslide in Putalibazaar.

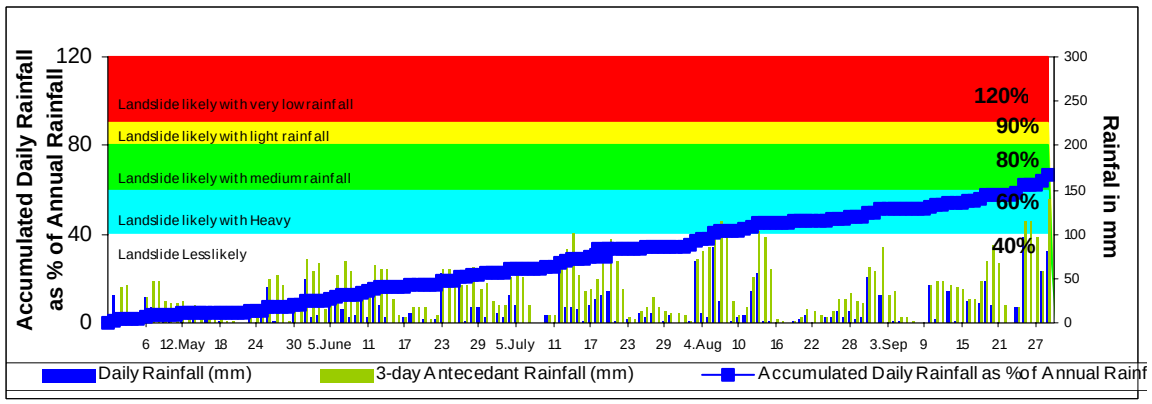
	Threshold Accumulated Rainfall (%)	**Threshold Antecedent 3-Day Rainfall (Condition 1)**	**Threshold Today's Rainfall (Condition 2)**
Landslide less likely	**<40**		
High rainfall can triggers landslide	**40-60**	200	100
Medium rainfall can trigger landslide	**60-80**	150	100
Low rainfall can triggers landslide	**80-90**	100	80
Little rainfall can trigger landslide	**>90**	100	50
Cloudburst trigger landslides condition	**>40**		**>200**

Color Indicators

No Danger	**Danger starts Low Danger**	**High danger**	**Medium Danger**	**Highest Danger**



Rainfall Threshold Triggering Landslide in 2007



Rainfall Threshold Triggering Landslide in 2008

Landslide warning mechanism will be experimented for 2009:

i. DHM will obtain daily rainfall data of Putalibazaar
ii. Monitor rainfall in the graph as presented in Figure 5.26 and 5.27 following the criteria of threshold rainfall triggering landslide in Putalibazaar (Table 5.3).
iii. Communicate the information to Red Cross at Syangja a threshold situation.
iv. Syangja Red Cross (SRC) communicates the information to CBDP units.

7.1.3 Objective 3

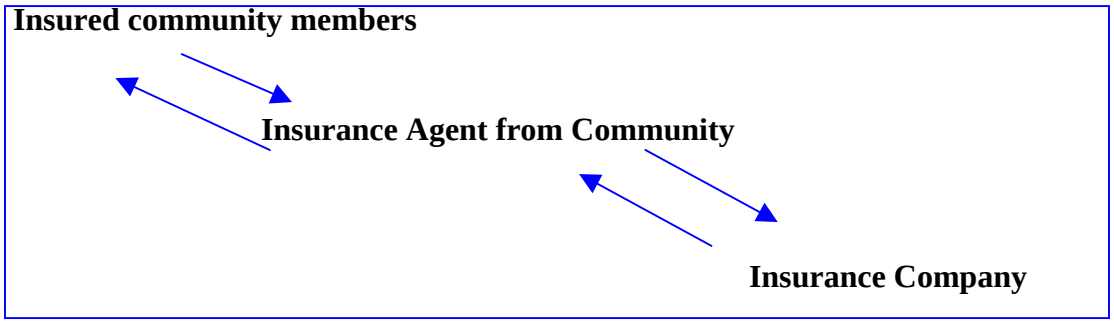
The third objective is to develop and test the concept of community based disaster insurance in CBDP units through NRCS to reduce disaster risk. Following outputs were used to accomplish this objective.

1. Community Based Disaster Insurance Schemes

	Household Insurance	**Accident Insurance**	**Life Insurance**
coverage	House/ Household contents	**Life and bodily injuries**	**Life**
Risk covered	o Fire o Explosion of household equipments o Lightning, earthquake, flood, inundation, landslides and rockslides, storm, o Impact damage by vehicles, airplanes and animals	o Death due to accidents o Bodily injuries due to accident o Disabilities due to accidents o Hospitalization due to accidents	o Death due to accidents o Bodily injuries due to accident o Disabilities due to accidents o Hospitalization due to accidents
Exceptions	o Only first class and second class buildings o Riot strike, malicious act and sabotage will be covered with extra premium	o War, invasion, civil war, riot strike, malicious act and Terrorism o Self injury, suicide, sexual transmissible disease, alcoholism o Flying other than in aircraft o Hazardous sports o Willful exposure to danger, disappearance, breach of law	o Self injury, suicide, sexual transmissible disease, alcoholism o Person above age 60
Premium	o Rs 100/100000 in a year o Premium should be paid beginning of the year	o Rs 250/100,000 in a year or 125/50,000 per year o Premium should be paid beginning of the year	o Depends on age and of the person o Quarterly installment
Refunds	**X**	**X**	Premium back with interest

2. Administration by CBDP Units and Agents from members of CBDP units

Since no insurance company exists in the vicinity (Syangja – Putalibazaar), it is advised to have community-based administration for insuring property. Representatives of CBDP Units shall liaise with insurance company and the company shall appoint them as an insurance agent paying commission as per the insurance act of Nepal. This representative from community will administer as an insurance agent for the community and insurance company. This agent will collect premium and process the claim for the community and insurance company. The schematic diagram of insurance implementation process is presented bellow:



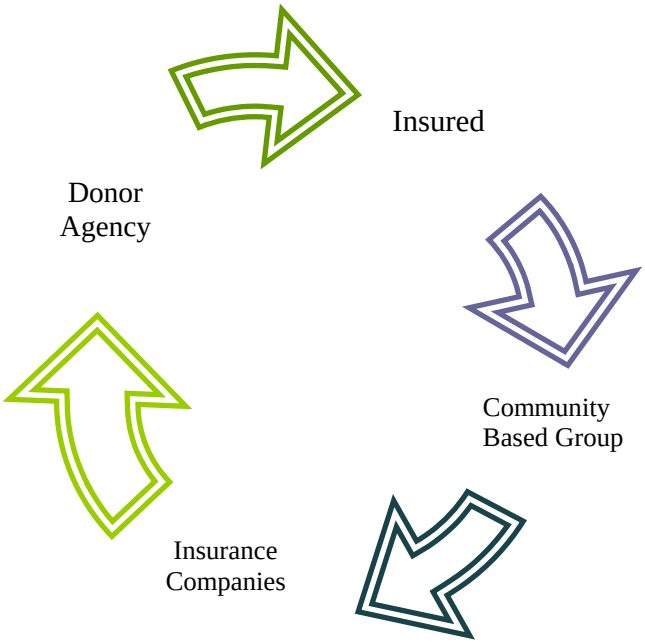
Schematic diagram of insurance implementation process

3. Mode of Premium Payment / Funding

In Nepal, a premium for insurance should be paid before the inception of policies. There is no provision for payments of a premium in installments. In case, community of Syangja – Putalibazaar opt for payment of a premium in installments, a donor agency may support them by creating a revolving fund or subsidizing the premium.Proposed options are:

a. A donor agency may pay the entire premium to an insurance company at the inception of the policy and collect through community-based group in easy monthly installments. A revolving fund should be created with the premium collected in EMI to pay in following years.
b. A donor agency may contribute or subsidies the premium in agreed proportion, say 50%–50% or 40%– 60%, whereby the insured pays their share of premium and donor agency contributes the balance amount.

This model (Figure 6.3) could be implemented as a pilot project with tenure of at least five years in order to inculcate insuring habit to the people in the project area. All the partners shall work hand in hand to implement this project successfully.



The model for the implementation of the insurance procedure

4. Report on the community workshops by the community motivators.

Two representatives from each CBDP units (community motivators) after receiving the insurance training at Kathmandu, carried out the community workshops in their respective units. They informed the locals about the insurance schemes. The different views and the perception of the locals on insurance that came up during the discussion are summarized in bullets below.

- Local communities still need detail information/awareness on non-life insurance and the discount/subsidy/concession provisions of the insurance agencies.
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- The premium should be less/reduced depending on the number of people/communities willing to do insurance.

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Durgadevi	278	Few	

7.2 Accomplishments

In addition to the achievement of the objectives of the project, major accomplishments of the project are:

- Able to bridge the gap between DHM and community through collaboration with NRCS for the application of weather forecast to reduce loss due to future climate hazards. This is the first time that DHM is involved for disaster risk reduction. This collaboration is not only limited to Putalibazaar but will be used for the whole country.

- Able to monitor heavy rainfall triggering landslide

- Application of outputs of global climate projection to generate information at local level for awareness program.

- The results of global climate projection through CCE will be used in the awareness program for other parts of Nepal

- Awareness on application of insurance as a measure for climate change adaptation and disaster loss transfer to Insurance Agencies, policymakers and communities

- Report on Insurance scheme and communities' perception on implementation of insurance for risk transferring measures. This will be disseminated to major stakeholders.

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Annex 1

Objective 1: To develop an awareness of the communities of CBDP Units, PM about the increased disaster risks involved in living with climate change and climate variability

Activities Planned	tatus of Activitie Planned	elf Evaluatio	Indicators	Challenges encountered	olution for the challenge
1.1 Information collection on Climate Change, Socio-economic status and disaster of PM	Complete	Successful	Report and Database on household survey and hydrological survey	Difficult to collect data from Durgadevi CBDP Unit, because of remoteness of the location	
1.2 Trend analysis of extreme events	Complete	Successful	• Understanding of past and future climate trends • Charts and Figures on trends and Scenarios,	• Unavailability of climate projection data for trend analysis. • Bug in CCE tool to analyse parameters of extreme events	• Instead of future trend we used histogram analysis. • Only used reliable parameters
1.3 Workshop with DHM and CBDP leaders to prepare brochures, posters and visuals	Complete	Successful	• Two consultative meetings held • Suggestions to prepare brochures, posters and visuals, presented in the workshop reports	Since this is new aspect for the experts and community the first poster was not very effective.	We collected feedback after poster distribution and prepared brochure, hoarding board and a new improved poster.
1.4 Preparation of brochures, posters and visuals and their distribution to the 5 CBDP communities	Complete. Slightly changed. Hoarding board was also prepared. Brochures were also distributed to other institutions	Successful	• Brochures, posters, visual and hoarding board • Effectiveness of materials as evaluated by the workshop participants – 97% participant reported that materials used in communicating message were very effective and 66% reported that documentaries/video was most effective. • Brochures were also distributed to NGOs, GOs, Schools and Media • Documentary and presentation were organized also for NGOs, GOs and, Schools	Difficult to prepare the outreach products in the understandable format for community and disseminate effectively	Preparation and dissemination was done as per the feedback
1.5 Social Learning for risk realization due to climate change	Complete	Successful among the participated group but could not disseminate over the entire community	• Awareness of climate change related risk in the community • Identification of risky areas • Number of local people informed about climate change risk - in average 38 persons including family members, neighbour and fiends were informed from each participant involved in the risk realization activities. • More than 82% household acquired knowledge of climate change processes, causes, impacts, risks and mitigation and adaptation options directly through workshop participation and indirectly through neighbour participated in the workshop. • Risk maps	Difficult to involve whole community in the risk realization activity	Planning to distribute output of risk realization activity to the community.
1.6 Participatory workshop for identification of adaptation measures and introduction of WCI and Insurance Scheme (IS)	Complete	Successful to inform about the WCI and Insurance but adaptation solution was limited to the participated members	• Adaptation solution identification by the community during risk realization • Awareness of WCI and IS • Nearly 91% households realized that micro-insurance scheme is one of the effective mechanism for spreading climate change risks	• Adaptation strategy was limited to participated group • Community have become informed about insurance but not still confident to implement	• Planning to distribute output of risk realization activity to the community. • Provided training to representatives on insurance as per communities' suggestion

Objective 2: To establish effective and interactive communication between national meteorological service, Nepal Red Cross Society (NRCS), concerned insurance agencies and communities in CBDP Units to disseminate information on extreme weather and climate events

Activities Planned	Status of Activities Planned	Self Evaluation	Indicators	Challenges encountered	Solution for the challenges
2.1 Collection of information on climate outreach for the community	Complete	Successful	• Understanding of outreach products for the community in other regions • Documented database		
2.2 Training for a representative from HCC Team on outreach methods	Complete (Training only on CCE and risk communication)	Enhanced understanding of future climate change in PM and risk = communications about climate change	Trained member		
2.3 Assessment of potential options (alternatives) on WCID scheme by experts	Complete	Successful	Provided climatic and disaster information to the community through poster and brochure Potential WCID communication schemes • DHM to Community • DHM to NRCS to Community • DHM to Regional Office of DHM to Community • Upstream to downstream Community • Monitoring rainfall triggering Landslide	Difficult to explain limitation and probability of accuracy of weather forecast to the community	DHM decided to go to the community through NRCS
2.4 Participatory Workshop between experts, NRCS and CBDP leaders	Complete	Successful in finalization of WCID scheme	• Three consultative meetings held • DHM to NRCS to Community Communication • Upstream Community to Downstream Community communication • Workshop report	Lack of advanced forecasting system restricts to meet the demand of community and NRCS	Use forecast as per the current technical capacity of DHM. e. g. use special weather bulletin for pre-disaster and weather information for post-disaster periods
2.5 Training for CBDP Communities and local Red Cross on WCID scheme	Complete (NRCS is planning to incorporate forecasting in their regular training for the community)	Training was given to observer in the upstream and Red Cross at Syangja and NRCS staffs rather than CBDP members	Enhanced capacity of raingauge observers, NRCS at Syangja and at Kathmandu	It was not possible to provide training to entire community as planned.	Provided training to NRCS staffs and weather observer
2.6 Provide extreme weather information by effective communication system (media, telephone etc.) to the community	In Progress	Successful in facilitating the collaboration between DHM and NRCS to use weather forecast for disaster impact reduction. But could not test the schemes as no disaster occurred during the project period	Enhanced capacity of early warning mechanism of CBDP units by installing raingauge station in the upstream	Could not examine the effectiveness of WCID schemes	Continued collaboration of DHM with NRCS to use extreme weather information

Objective 3: To develop and demonstrate the concept of community disaster insurance in CBDP units through NRCS to reduce disaster risk

Activities Planned	Status of Activities Planned	Self Evaluation	Indicators	Challenges encountered	Solution for the challenges
3.1 Information collection on community based ISs	Complete		Basic Understanding of community based IS		
3.2 Discussion with Insurance agencies (IA) & NRCS on insurance and climate change related disaster risk reduction	Complete	Successful to create awareness of the role of insurance in risk reduction posed by climate change			
3.3 Assessment of possible ISs for the community by the IA 3.4 Consultation with the ACCCA experts on ISs	Completed (initial assessment was done with the help of IB)	Successful to identify possible ISs and necessary climatic and socio-economic information for ISs. Consultation with ACCCA experts was helpful to review literature and understand reinsurance.	List of possible IS • Household insurance • Accident insurance • Fire insurance • Life insurance		
3.5 Workshop among IA and Community Leaders to discuss identified ISs	Complete (Instead of among community leaders awareness presentation on insurance was organized for the community)	Successful to aware community about insurance as a risk reduction measure and inform about possible ISs. Successful to identify possible administration of IS	Administration of IS by • CBDP members or • insurance agency branch office at near by city Nearly 37% households are willing to participate in IS however 63% households reported that they need further information about IS to confirm for their participation. And recommended technical training to community representatives on insurance to be capable for decision.	Though community obtained knowledge about insurance they are doubtful about insurance agencies	Decided to provide formal training to the community representatives
3.6 Participatory Workshop with communities and IAs finalize the ISs	Complete	Successfully developed possible ISs including administration mechanism	List of community based ISs • Household insurance • Accident insurance • Life insurance Administration by trained representatives and coordinate with branch office of insurance agency	As there was no regulations about micro-insurance in Nepal, IAs could not lower the premium as per the necessity of the poor community.	Informed about ISs which can be lowered in group insurance
3.7 Implementation of ISs in the community by role play method and record the role play in movie	Provided training to the representatives and role play during training	ऋयगमि लयत यचनबलष्शभ चयभि उबिथ ष्ल तजभ अक्गलष्तथ, ष्लकतभबम यचनबलष्कभम मगचष्लन तचबष्लष्लन। During role play the trainees learned to fill the proposal form, to calculate the premium, and to claim the loss and obtained the knowledge about various insurance clauses for proposed ISs.	Household and accident insurance is feasible as premium is low but since premium is non refundable it might be difficult to convince the community	Could not organize role play in the field due to delay in organizing training. Lack of experience of role play in the team.	Role play in the form of exercise during the training.
3.8 Community workshops by the community motivators	Complete	Awareness about the insurance in the community by trained members	68%in Birendranagar and 25%,in Gurasti and Baraja and few in Durgadevi interested in insurance (average 31%) Report	Community is less willing to buy insurance due to non-refundable premium	

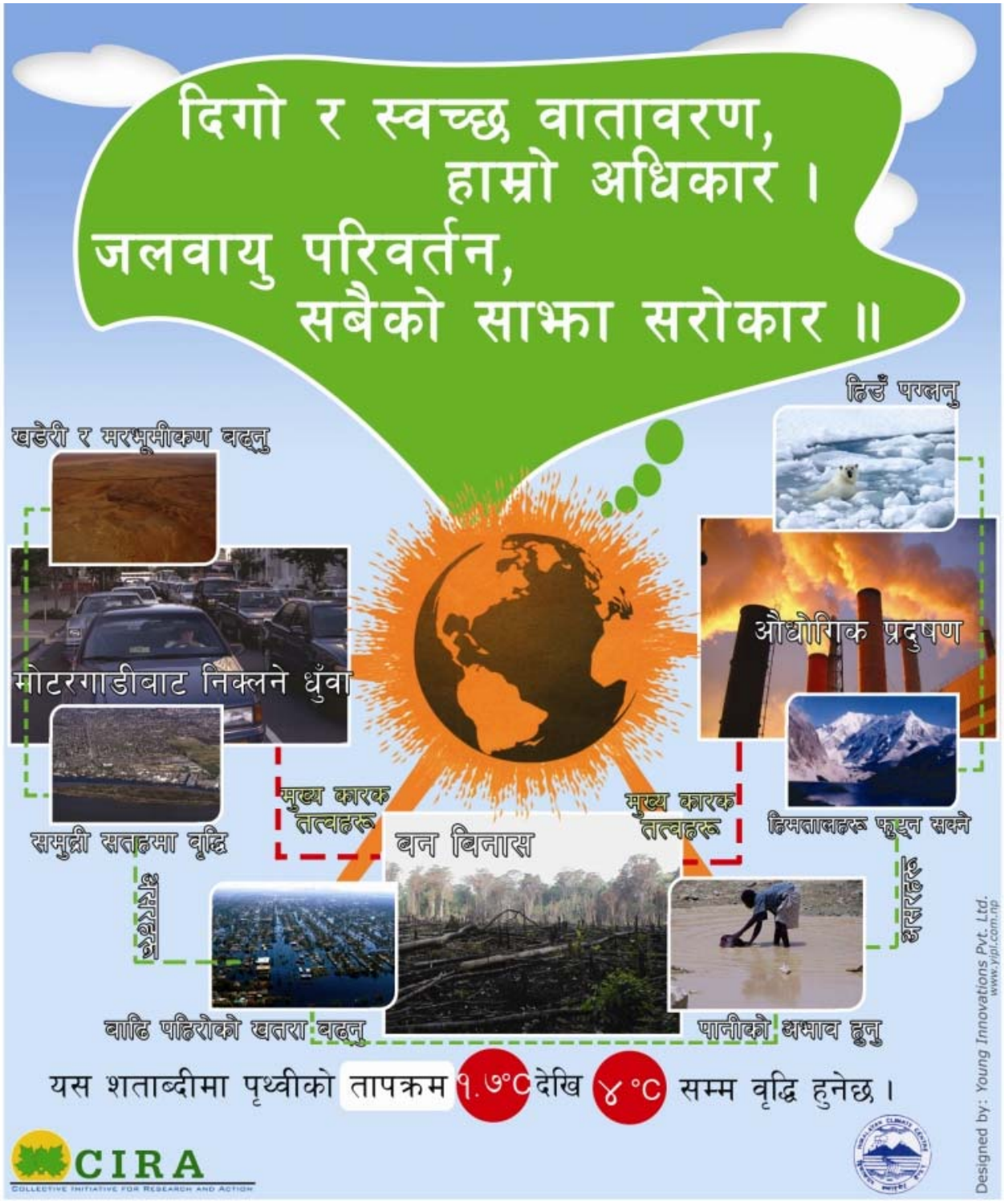
Annex 2

Disaster calendar prepared by NRCS.

Annex 3

Vulnerability map prepared by Birendranagar community.

Annex 4



Poster on climate change highlighting the causes and potential effects on various sectors was distributed to each CBDP units.

Annex 5

घरधुरी सर्वेक्षण (प्रश्नावली)

१. बस्तीको नाम: ..... न. प. .....वडा नं...

२. पारिवारीक विवरण: घरमुलीको नाम:.....
लिंग:..... उमेर:..... जाति:.....

३. घरको किसिम: (बनेको साल :.....)

घरको किसिम:	**गाह्रो**	**दलिन**	**छाना**	**तला र कोठा**	**जग गहिराइ**
पक्की	माटो	बास			
कच्चा	सिमेन्ट	काठ			
छाप्रा	ढुंगा	ढलान			

४. घर कस्तो स्थानमा बनेको छ ?

१) पहाडको टुप्पोमा २) पहाडको माझमा ३) पहाडको फेदमा ४)मैदानमा ५) अन्य

५. परिवारको वनावट र विशेषता (घरमुलीबाट शुरु गर्ने)

क्र. स.	**नाम**	**नाता**	**लिंग**	**वैवाहिक स्थिति**	**उमेर**	**शिक्षा**	**वसोबासको स्थिति**	**शिप / तालिम**	**मुख्य व्यवसाय**	**अन्य पेशा**
१										
२										
३										
४										
५										
६										
७										
८										
९										
१०										
११										
१२										

नोट: **घरमुलीको नाता**: श्रीमती, छोरा, छोरी, बुहारी, नाती, नातिनी, नाता नखुलेको, **लिंग**: पूरुष, महिला **वैवाहिक स्थिति**: विवाहित, अविवाहीत, विधुवा, विदुर, सम्बन्ध विच्छेद **वसावासको अवस्था**: हालसाल घरमै बसेको, अर्को गा.वि.स. मा, अर्को जिल्लामा, देश बाहिर

६. साधन श्रोतको सन्दर्भमा घरको स्थिति

साधन /श्रोत	**दुरी**		**कैफियत**
	कि.मी.	समय	
खानेपानी			
दाउरा/ घास			
बजार			
विधालय			
स्वास्थ्य केन्द्र			
मोटर बाटो			
चरन क्षेत्र			
निर्माण सामाग्री			

१.६ कि.मी बराबर १ कोष

७. तपाईले वा तपाइको परिवारको नाममा रहेको र अरुले कमाएको भए सो समेतको जमिनको विवरण दिनुहुन्छ की ?

जमिनको प्रकार	क्षेत्रफल (रोपनीमा)		
	आफ्नो जग्गा आफैले कमाएको	आफ्नो जग्गा अरुलाई कमाउन दिएको	अरुको जग्गा आफुले कमाएको
खेत			
वारी			
खरवारी			
निजी चरण			
निजी जंगल			

८. कृषि वालीको क्षेत्रफल र उत्पादन

वाली	लगाएको क्षेत्रफल (रोपनी)	उत्पादन	विक्री	किनेको	भण्डारण विधि
क) खाद्यान्न/ नगदेवाली					
धान (मुरी)					
मकै (मुरी)					
कोदो (मुरी)					
गहु (मुरी)					
फापर(मुरी)					
आलु (किलो)					
तोरी(मुरी)					
ख) तरकारी (किलो)					
ग) फलफूल (किलो)					
केरा (किलो)					
सुन्तला (किलो)					
ऋन्य					

९. आफ्नो उत्पादनले परिवारलाई कति महिना खान पूरछ ?

क) १-३, ख) ३-६, ग) ६-९, घ) ९-१२ महिना, बढी

१०. तपाईको घरपालुवा वस्तुभाउ सम्बन्धि विवरण दिन सक्नुहुन्छ की ?

वस्तु भाउको किसिम	संख्या	गत वर्ष विक्री गरेको भए	
		संख्या	मुल्य
भैसी /रांगो			
गाई / गोरु			
सुंगुर			
हास / कुखुरा			
भेडा / वाखा			

११. परिवारको आम्दानीका मुख्य श्रोतहरु के के हुन् ? र त्यसबाट वार्षिक कति आम्दानी हन्छ ?

आम्दानीको श्रोत	रकम (वार्षिक)
कृषि	
गाइ बस्तु बेच विखन (घ्यू, दुध समेत)	
श्रम ज्यालादारी	
पेन्सन / रेमिटेन्सेस	
वन पैदावार	
गैर कृषि (मौरी पालन, रेशम आदि)	

व्यापार	
नोकरी	
ऋन्य	

१२. परिवारको खर्चको विवरण दिनु हुन्छ की ?

खर्चको शिर्षक	**खर्च रकम (वार्षिक)**
खाद्यान्न	
पशु जन्य उत्पादन (मासु, घ्यू)	
लत्ता कपडा	
खुद्रा सामान (नुन / चिनी / तेल, मटितेल, मसला, चिया, सावुन आदि	
सेवा (शिक्षा, स्वास्थ्य, विजुली, संचार)	
चाडपर्व	
खेतवारी कान्ला सुधार	
कृषि जन्य (मलखाध)	
घर गोठ सुधार	
ऋन्य	

१३. घरायसी सामग्री तथा सेवाको विवरण

सामग्री	**छ / छैन**
रेडियो	
टि. भी.	
टेलिफोन	
विधुत	
ट्वाइलेट	
टर्च / लाइट	
धारा (सार्वजनिक / प्राइभेट)	

१४. तपाईको परिवारको कोही सदस्य कुनै संघ संस्थाको सदस्य हुनु हुन्छ कि ?

संघ / संस्थाको नाम	**सदस्यताको किसिम**

<u>प्रकोप</u>

१५. विगतमा तपाईको परिवारलाई प्रभाव पारेका प्रकोपहरु कुन कुन हुन र कति नोक्सानी भएको थियो ?

१६.

प्राकृतिक प्रकोप	**घटना घटेको सालहरु**	**क्षतिको विवरण धनजन/ जग्गा जमिन् / पशु**	**खोला / ठांउ**
बाढी			
पहिरो			
भूकम्प			
हुरी बतास			
खडेरी			
चट्यांग			
आगोलागी			
रोगव्याधी (मानिस, वस्तु, फसल)			

त्यस्तो विनास/क्षतिबाट राहत पाउन के कस्ता उपाय अपनाउनु भएको थियो र को को संग सहयोग लिनु भएको थियो (आफ्नै परिवार, नातेदार, छिमेकी, सरकार, संस्था, अन्य)

गरेको काम	के	कसरी गरेको	कसले गरेको
क).....घटना घट्नु अगाडी			
ख).....घटना घटेको बेलामा			
ग).....घटना घटेपछि			

१७) बाढी पहिरोका कारण बा अरु कुनै मुख्य प्रकोप भए त्यस कारण क्षति हुन नदिन वा न्युनिकरणका लागि अपनाउनु भएको उपायहरु के के हुन?

जोखिमहरु	उपायहरु		
	बाढी पहिरो	अन्य.....	अन्य.....
जीउधनको क्षति हुन नदिन			
खेतबारी क्षति हुन नदिन			
बस्तु भाउको सुरक्षार्थ			
खाद्य सामग्री सुरक्षार्थ			
घरजग्गा सुरक्षार्थ			

१८. के कस्ता संकेतका आधारहरुमा तपाई बाढी पहिरो जस्ता प्रकोपमा सतर्कता अपनाउने गर्नु हुन्छ ?

१९. तपाईलाई बाढी आउनुको मुख्य कारण के होला जस्तो लाग्छ ?

क) अकस्मात पर्ने ठूलो पानी
ख) बन विनाश
ग) जलवायू प्रक्रियामा आएको परिवर्तन
घ) खेती किसानी प्रक्रिया (Agricultural Practice)
ङ) अन्य

२०. तपाईलाई प्रभाव पार्न सक्ने संभावित प्राकृतिक प्रकोपहरु के के हुन र त्यसबाट के कस्तो हानी नोक्सानी हुन सक्ने संभावना छ ?

सम्भावित प्रकोप	सम्भावित हानी नोक्सानीको विवरण (वार्षिक मुल्यमा)			
	घर	जग्गा जमिन(क्षेत्रफल)	उत्पादन	घरायसी सामग्री
बाढी				
पहिरो				
भूकम्प				
हुरी बतास				
खडेरी				
चट्यांग				
आगोलागी				
रोगव्याधी (मानिस, वस्तु, फसल)				

२१. बाढी पहिरोबाट सम्भावित हानी नोक्सानी कम गर्न कुन कुन समयमा के के गर्नु पर्ला र त्यसलाई कार्यान्वयन कसरी र कसले गर्ने ?

गर्नुपर्ने काम	**के**	**कसरी गर्ने**	**कसले गर्ने**
क) घटना घट्नु अगाडी			
ख)घटना घटेको बेलामा			
ग) घटना घटेपछि			

बिमा

२२. बिमा सम्बन्धमा तपाइलाई जानकारी छ ? छ □ छैन □

२३. प्राकृतिक प्रकोपको क्षति सन्दर्भमा बिमा प्रणालीको विकास गर्न सकिन्छ ? सकिन्छ □ सकिदैन □

२४. यदि यसको संभावना छ भने कुन कुन प्राकृतिक प्रकोपलाई समेट्नु पर्ला र के कस्तो नोक्सानीको क्षतिपूर्ति दिनु पर्ला ?

प्राकृतिक प्रकोप		**Ifltsf] k|ltzt**					
		जन	**घर**	**जमिन**	**बाली**	**घरायसी सामग्री**	**पशुधन**
क.	बाढी						
ख.	पहिरो						
ग.	**सुख्खा/ खडेरी**						
घ.	असिना						
ङ.	**हुरीबतास/ आंधी वेहरी**						
च.	आगलागी						
छ.	चट्यांग						

२५. त्यस्तो बिमा प्रणाली लागु गर्नको लागि आवश्यक रकम प्रति महिना कति सम्म तिर्न तयार हुनुहुन्छ ?

रु. १०, रु. २०, रु. ५०, रु. १०० रु. १०० भन्दा बढी

जलवायूमा परिवर्तन

२६. तपाईलाई ठूलो समस्या कुन हो जस्तो लाग्छ ? (Rank)

क) रोजगारी ख) खाद्यान्न ग) बाटोघाटो घ) प्रकोप
ङ) रोगव्याधी च) हावापानी परिवर्तन छ) अन्य

२७. जलवायू सम्बन्धि रेडियो / टि. भी. बाट प्रसारित पूर्वअनुमान सुन्ने गर्नुहुन्छ ? सुन्छु □ सुन्दिन □

२८. यदि हावापानीको पूर्वानुमान सुन्ने गर्नु भएको छ भने के त्यो जानकारी प्रयोगमा ल्याउने गर्नु भएको छ ? छ □ छैन □

२९. भविष्यमा यस्तो सुचना प्रयोगमा ल्याउन के गर्नु पर्ला ?

३०. के तपाईले आजकल हावापानीमा परिवर्तन भएको अनुभव गर्नु भएको छ ?
क) छ ख) छैन ग) थाहा छैन

यदि छ भने, कस्तो .....

३१. तपाईलाई तलका प्रकोप र जलस्रोतमा कस्तो परिवर्तन अनुभव गर्नु भएको छ ?

प्रकोप	बढेको	घटेको	कारण	प्रभाव
बाढी				
पहिरो				
खडेरी				
चट्यांग				
असिना				
आगलागी				
हुरीवतास				
जाडोको तापक्रम				
गर्मीको तापक्रम				
अतिवृष्टी (मात्रा)				
अनावृष्टी (मात्रा)				
जाडो यामको वर्षा				
वर्षा याममा लगातार पानी पर्ने (झरी) अवधि				
मुसलधारे पानी पर्ने क्रम				
बेमौसमी पानी पर्ने क्रम				
वर्षात चाडो वा ढिलो शुरु हुने क्रम				
मुलको पानी				
खोलानालामा पानीको मात्रा				

सामुहिक छलफलको लागि Checklist

१) यस क्षेत्रमा क्षति पुर्‍याउने प्राकृतिक प्रकोपहरु के के हुन् र ती कुन कुन वर्षमा घटे, त्यसबाट के कति हानी नोक्सानी भयो ?

२) हानी नोक्सानीबाट राहत पाउन के के काम भएका छन् ?

३) जलवायू परिवर्तन सम्बन्धि जानकारी छ / छैन, त्यसबाट के के कुरामा प्रभाव पर्न सक्छ ?

४) हानी नोक्सानी न्यूनिकरण गरी राहत दिनलाई के के उपाय गर्नु पर्ला
   क) घटना घट्न अगाडी
   ख) घटना घटेको बेलामा
   ग) घटना घटीसके पछि

५) हावापानी, वाढी पहिरो पूर्व अनुमान गर्ने स्थानिय स्तरमा केही तरिका छन् की ?

६) प्राकृतिक प्रकोप विशेष गरी बाढी, पहिरोको प्रतिकुल असर कम गरी राहत दिनको लागि इन्स्योरेन्स प्रणाली कत्तिको उपयोगी लाग्छ ?

७) इन्स्योरेन्स प्रणाली कसरी संचालन गर्न सकिन्छ ?

८) प्रिमियम कती र कसरी तिर्ने / कसले तिर्ने / सवैलाई बरावरी हिसावले तिर्ने वा बढी जोखिममा रहेकालाई बढि लगाउने ?

९) क्षतिपूर्तिको लागि कुन कुन आइटम (जनधन) समेट्नु पर्ला, क्षतिको कति भाग क्षतिपूर्ति दिने ?

१०) स्थानिय जन सहभागिता कसरी जुटाउने / कोषको संचालन कसरी गर्ने ?

११) पूर्व अनुमानको सूचना कसरी प्राप्त गर्ने सो सूचना प्राप्त भएपछि सरोकारवाला जनसमुह सम्म कसरी पुर्‍याउने ?

Annex 6

Table 1: Number of household reporting different types of change in climate

		Increased temperature only	Unusual rainfall	Increased intense rainfall	Increased rainfall and temperature	Others	Total
Barja	Count	11	4	1	3	15	34
	%	32.40	11.80	2.90	8.80	44.10	100.00
Birendranagar	Count	21	2	6	6		35
	%	60.00	5.70	17.10	17.10		100.00
Durgadevi	Count	14	16	3	1	1	35
	%	40.00	45.70	8.60	2.90	2.90	100.00
Gurasti	Count	6	1	1	4	18	30
	%	20.00	3.30	3.30	13.30	60.00	100.00
Total	Count	52	23	11	14	34	134
	%	38.80	17.20	8.20	10.40	25.30	100.00

Table 2: Number of household reporting change in flood events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	14	15	5		34
	%	41.20	44.10	14.70		100.00
Birendranagar	Count	21	11		3	35
	%	60.00	31.40		8.60	100.00
Durgadevi	Count	22	5	5	3	35
	%	62.90	14.30	14.30	8.60	100.00
Gurasti	Count	10	11	5	4	30
	%	33.30	36.70	16.70	13.30	100.00
Total	Count	67	42	15	10	134
	%	50.00	31.30	11.20	7.50	100.00

Table 3: Number of household reporting change in landslide events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	13	13	8		34
	%	38.20	38.20	23.50		100.00
Birendranagar	Count	12	9	1	13	35
	%	34.30	25.70	2.90	37.10	100.00
Durgadevi	Count	23	7	5		35
	%	65.70	20.00	14.30		100.00
Gurasti	Count	8	10	6	6	30
	%	26.70	33.30	20.00	20.00	100.00
Total	Count	56	39	20	19	134
	%	41.80	29.10	14.90	14.20	100.00

Table 4: Number of household reporting change in drought events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	12	15	7		34
	%	35.30	44.10	20.60		100.00
Birendranagar	Count	6	3		26	35
	%	17.10	8.60		74.30	100.00
Durgadevi	Count	6	9	17	3	35
	%	17.10	25.70	48.60	8.60	100.00
Gurasti	Count	7	13	5	5	30
	%	23.30	43.30	16.70	16.70	100.00

Total	Count	31	40	29	34	134
	%	23.10	29.90	21.60	25.40	100.00

Table 5: Number of household reporting change in lighting events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	23	7	4		34
	%	67.60	20.60	11.80		100.00
Birendranagar	Count	3	5		27	35
	%	8.60	14.30		77.10	100.00
Durgadevi	Count	22	3	8	2	35
	%	62.90	8.60	22.90	5.70	100.00
Gurasti	Count	8	13	3	6	30
	%	26.70	43.30	10.00	20.00	100.00
Total	Count	56	28	15	35	134
	%	41.80	20.90	11.20	26.10	100.00

Table 6: Number of household reporting change in hail events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	22	4	7	1	34
	%	64.70	11.80	20.60	2.90	100.00
Birendranagar	Count	6	4	1	24	35
	%	17.10	11.40	2.90	68.60	100.00
Durgadevi	Count	27	3	5		35
	%	77.10	8.60	14.30		100.00
Gurasti	Count	11	5	8	6	30
	%	36.70	16.70	26.70	20.00	100.00
Total	Count	66	16	21	31	134
	%	49.30	11.90	15.70	23.10	100.00

Table 7: Number of household reporting change in fire events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	6	23	5		34
	%	17.60	67.60	14.70		100.00
Birendranagar	Count	2	6	2	25	35
	%	5.70	17.10	5.70	71.40	100.00
Durgadevi	Count	3	7	18	7	35
	%	8.60	20.00	51.40	20.00	100.00
Gurasti	Count	20	6	3	1	30
	%	66.70	20.00	10.00	3.30	100.00
Total	Count	31	42	28	33	134
	%	23.10	31.30	20.90	24.60	100.00

Table 8: Number of household reporting change in storm events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	14	11	9		34
	%	41.20	32.40	26.50		100.00
Birendranagar	Count	2	3	2	28	35
	%	5.70	8.60	5.70	80.00	100.00
Durgadevi	Count	13	3	17	2	35
	%	37.10	8.60	48.60	5.70	100.00
Gurasti	Count	17	10	3		30
	%	56.70	33.30	10.00		100.00%
Total	Count	46	27	31	30	134

	%	34.30	20.10	23.10	22.40	100.00

Table 9: Number of household reporting change in winter temperature

		Increased	Decreased	Same	Don't know	Total
Barja	Count	21	9	4		34
	%	61.80	26.50	11.80		100.00
Birendranagar	Count	4	6	3	22	35
	%	11.40	17.10	8.60	62.90	100.00
Durgadevi	Count	12	13	8	2	35
	%	34.30	37.10	22.90	5.70	100.00
Gurasti	Count	13	10	4	3	30
	%	43.30	33.30	13.30	10.00	100.00
Total	Count	50	38	19	27	134
	%	37.30	28.40	14.20	20.10	100.00

Table 10: Number of household reporting change in summer temperature

		Increased	Decreased	Same	Don't know	Total
Barja	Count	24	6	4		34
	%	70.60	17.60	11.80		100.00
Birendranagar	Count	9	3	3	20	35
	%	25.70	8.60	8.60	57.10	100.00
Durgadevi	Count	19	4	10	2	35
	%	54.30	11.40	28.60	5.70	100.00
Gurasti	Count	10	10	2	8	30
	%	33.30	33.30	6.70	26.70	100.00
Total	Count	62	23	19	30	134
	%	46.30	17.20	14.20	22.40	100.00

Table 11: Number of household reporting change in heavy rainfall events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	15	5	10	4	34
	%	44.10	14.70	29.40	11.80	100.00
Birendranagar	Count	13	1		21	35
	%	37.10	2.90		60.00	100.00
Durgadevi	Count	15	1	15	4	35
	%	42.90	2.90	42.90	11.40	100.00
Gurasti	Count	16	9	4	1	30
	%	53.30	30.00	13.30	3.30	100.00
Total	Count	59	16	29	30	134
	%	44.00	11.90	21.60	22.40	100.00

Table 12: Number of household reporting change in low intensity rainfall events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	11	8	11	4	34
	%	32.40	23.50	32.40	11.80	100.00
Birendranagar	Count	2	3	2	28	35
	%	5.70	8.60	5.70	80.00	100.00
Durgadevi	Count	1		17	17	35
	%	2.90		48.60	48.60	100.00
Gurasti	Count	8	13	6	3	30
	%	26.70	43.30	20.00	10.00	100.00
Total	Count	22	24	36	52	134
	%	16.40	17.90	26.90	38.80	100.00

Table 13: Number of household reporting change in rainfall amount

		Increased	Decreased	Same	Don't know	Total
Barja	Count	10	20	1	3	34
	%	29.40	58.80	2.90	8.80	100.00
Birendranagar	Count	4	3	1	27	35
	%	11.40	8.60	2.90	77.10	100.00
Durgadevi	Count	12	6	13	4	35
	%	34.30	17.10	37.10	11.40	100.00
Gurasti	Count	11	16		3	30
	%	36.70	53.30		10.00	100.00
Total	Count	37	45	15	37	134
	%	27.60	33.60	11.20	27.60	100.00

Table 14: Number of household reporting change in the duration of monsoon

		Increased	Decreased	Same	Don't know	Total
Barja	Count	21	10	3		34
	%	61.80	29.40	8.80		100.00
Birendranagar	Count	13	1	3	18	35
	%	37.10	2.90	8.60	51.40	100.00
Durgadevi	Count	24	2	9		35
	%	68.60	5.70	25.70		100.00
Gurasti	Count	12	8		10	30
	%	40.00	26.70		33.30	100.00
Total	Count	70	21	15	28	134
	%	52.20	15.70	11.20	20.90	100.00

Table 15: Number of household reporting change in cloud burst events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	13	18	2	1	34
	%	38.20	52.90	5.90	2.90	100.00
Birendranagar	Count	11	2	1	21	35
	%	31.40	5.70	2.90	60.00	100.00
Durgadevi	Count	11	12	8	4	35
	%	31.40	34.30	22.90	11.40	100.00
Gurasti	Count	13	8		9	30
	%	43.30	26.70		30.00	100.00
Total	Count	48	40	11	35	134
	%	35.80	29.90	8.20	26.10	100.00

Table 16: Number of household reporting change in unusual rainfall events

		Increased	Decreased	Same	Don't know	Total
Barja	Count	24	8	1	1	34
	%	70.60	23.50	2.90	2.90	100.00
Birendranagar	Count	11		1	23	35
	%	31.40		2.90	65.70	100.00
Durgadevi	Count	30	1	3	1	35
	%	85.70	2.90	8.60	2.90	100.00
Gurasti	Count	16	9		5	30
	%	53.30	30.00		16.70	100.00
Total	Count	81	18	5	30	134
	%	60.40	13.40	3.70	22.40	100.00

Table 17 : Number of household reporting change in unset of monsoon

		Increased	Decreased	Same	Don't know	Total
Barja	Count	27	6		1	34
	%	79.40	17.60		2.90	100.00
Birendranagar	Count	7		2	26	35
	%	20.00		5.70	74.30	100.00
Durgadevi	Count	17	4	9	5	35
	%	48.60	11.40	25.70	14.30	100.00
Gurasti	Count	14	9		7	30
	%	46.70	30.00		23.30	100.00
Total	Count	65	19	11	39	134
	%	48.50	14.20	8.20	31.70	100.00

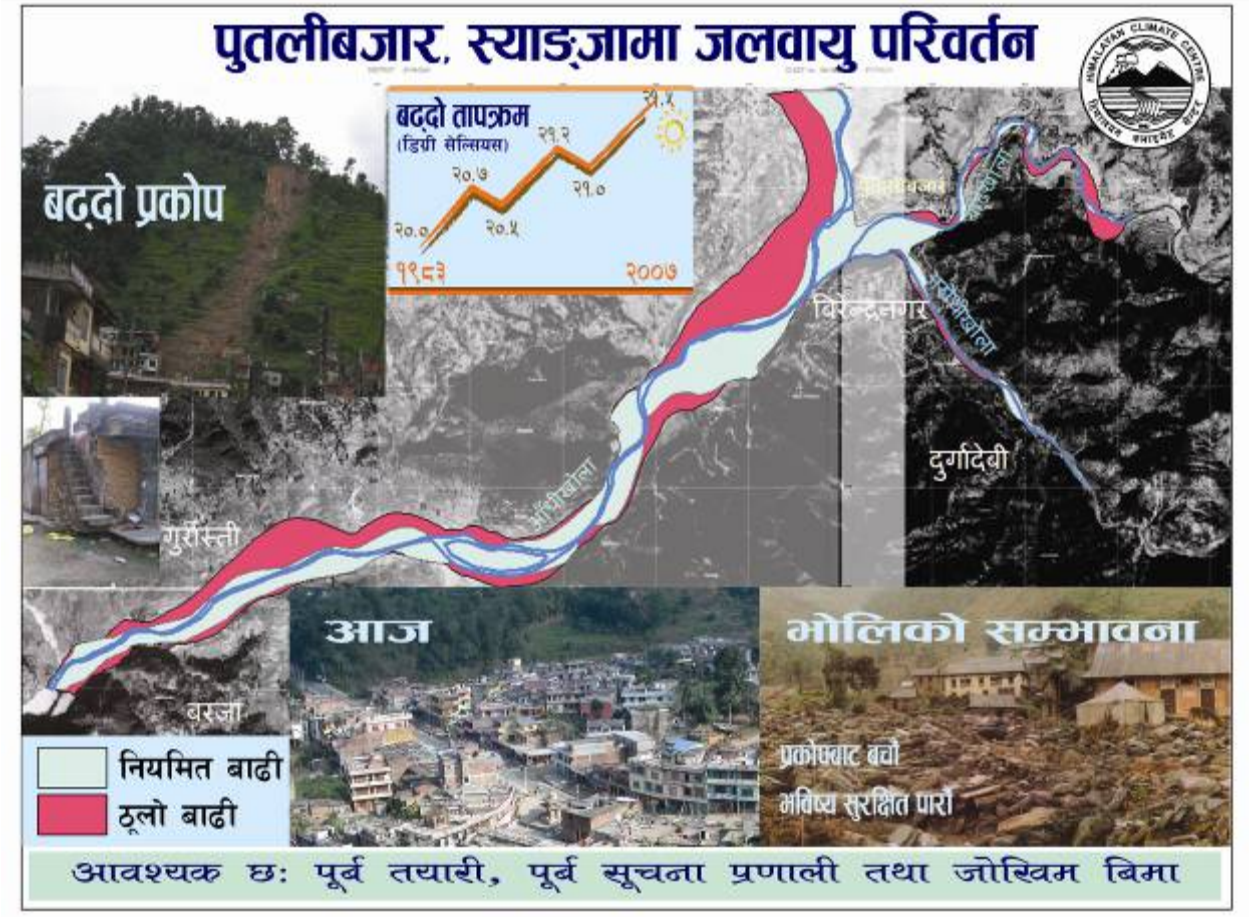
Table 18: Number of household reporting change in springs

		Increased	Decreased	Same	Don't know	Total
Barja	Count	7	19	7	1	34
	%	20.60	55.90	20.60	2.90	100.00
Birendranagar	Count	1	2	8	24	35
	%	2.90	5.70	22.90	68.60	100.00
Durgadevi	Count	9	13	13		35
	%	25.70	37.10	37.10		100.00
Gurasti	Count	13	7	1	9	30
	%	43.30	23.30	3.30	30.00	100.00
Total	Count	30	41	29	34	134
	%	22.40	30.60	21.60	25.40	100.00

Table 19: Number of household reporting change in quantity of streamflows

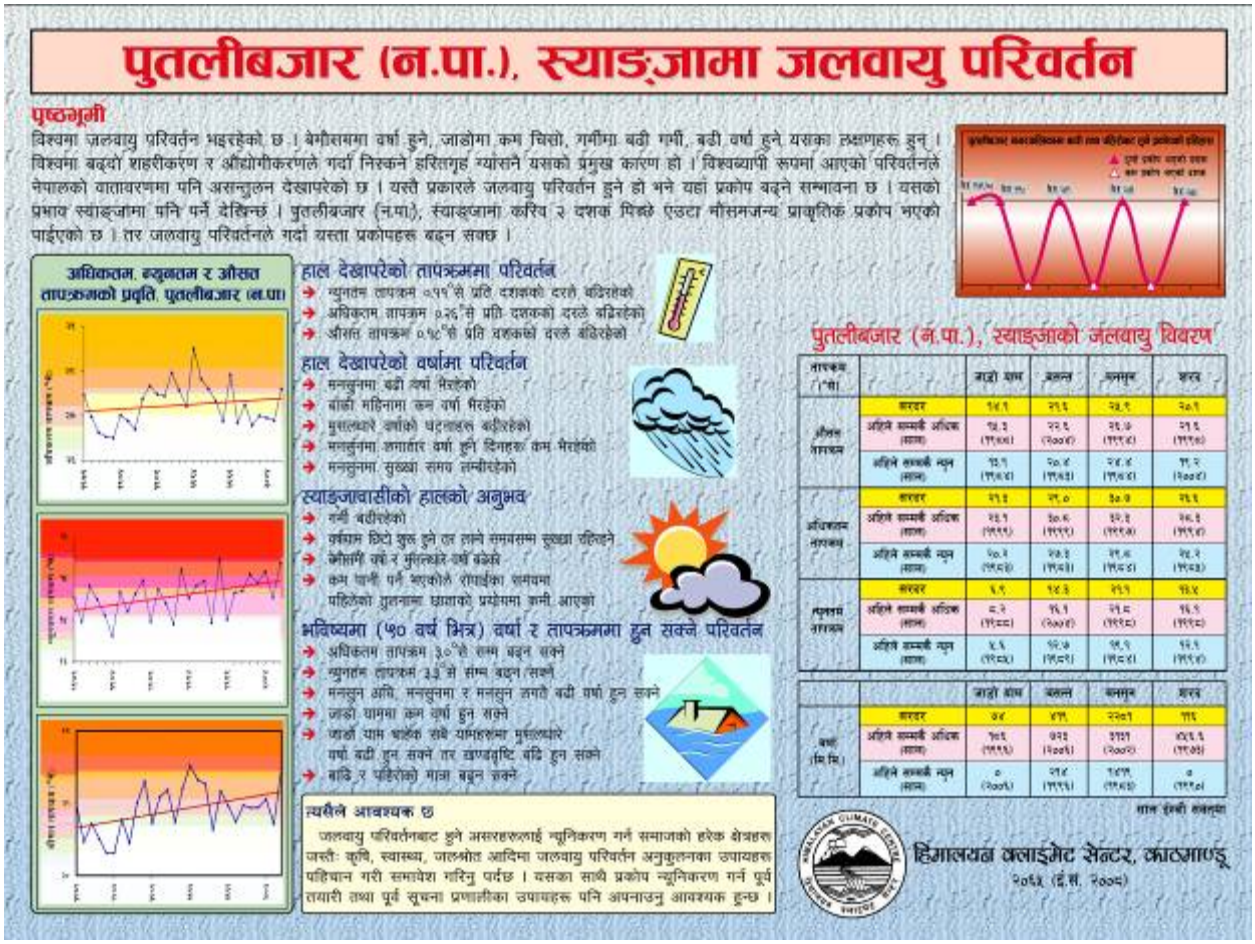
		Increased	Decreased	Same	Don't know	Total
Barja	Count	7	21	5	1	34
	%	20.60	61.80	14.70	2.90	100.00
Birendranagar	Count	7	5	2	21	35
	%	20.00	14.30	5.70	60.00	100.00
Durgadevi	Count	11	10	12	2	35
	%	31.40	28.60	34.30	5.70	100.00
Gurasti	Count	14	6	1	9	30
	%	46.70	20.00	3.30	30.00	100.00
Total	Count	39	42	20	33	134
	%	29.10	31.30	14.90	24.60	100.00

Annex 7a



Hoarding board on climate change.

Annex 7b



Poster/Brochure on climate change

Annex 8

GROUP PERSONAL ACCIDENT POLICY

WHEREAS the Insured by a proposal and declaration which shall be the basis of this contract and is deemed to be incorporated herein has applied to the Himalayan General Insurance Co. Ltd. (hereinafter called the Company) for the insurance hereinafter contained and has paid the premium to the Company for the period stated in the Schedule or for any further period for which the Company may accept payment for the renewal of this Policy

NOW THIS POLICY WITNESSETH that subject to the terms exceptions and conditions contained herein or endorsed hereon if during the period of insurance any person named in the Schedule of Employees shall sustain bodily injury resulting solely and directly from accident caused by violent external and visible means the Company shall pay to the Insured the amount specified in the table of Benefits.

TABLE OF BENEFITS (1)

A. If such injury shall within six calendar months of its occurrence be the sole and direct cause of the death of the Employee the sum insured stated in the Schedule attached hereto.
B. If such injury shall within six calendar months of its occurrence be the sole and direct cause of the total permanent disablement the percentage of the sum insured as stated in the Table of Benefits (2).
C. If such injury shall be the sole and direct cause of the temporary total disablement then so long as the Employee shall be totally disabled from following his usual employment and attending to business of any kind an amount of one percent (1.00%) of the sum insured for each complete week of disablement but not exceeding 100% of such Employees weekly salary up to a maximum of one hundred and four (104) weeks and payable only upon cessation of the period of disablement.
D. If such injury shall be the sole and direct cause of temporary partial disablement then so long as the Employee shall be partially disabled from following and attending to a substantial part of his usual employment an amount of half of one percent (0.50%) of the sum insured for each complete week of disablement but not exceeding 50% of such Employees weekly salary up to a maximum of one hundred and four (104) weeks and payable only upon cessation of the period of disablement
E. If such injury shall in addition necessitate medical treatment the expenses so incurred but not exceeding the sum specified in the schedule.

Provided that the Company shall not be liable to pay in respect of any one employee in any one period of insurance an amount in excess of the sum insured stated in the Schedule for that employee. Provided also that the Company shall not be liable to make payment under more than one of the aforementioned Clauses A, B and C in any one period of insurance.

TABLE OF BENEFITS (2)

Description of disablement	Percentage of sum insured payable in 'B' above
Loss of both hands	100
Loss of both feet	100
Loss of one hand and one foot	100
Loss of sight in both eyes	100
Loss of one hand or one foot and loss of sight in one eye	100
Total paralysis	100
Loss of one arm or one hand	60
Loss of one leg or one foot	50
Loss of sight in one eye	50
Loss of thumb	25
Loss of index finger	15
Loss of any other finger	6
Loss of big toe	5
Loss of any other toe	3
Loss of hearing in both ears	50
Loss of hearing in one ear	15

The complete and irrecoverable loss of use of any member or members specified above shall be deemed to be the loss of such member or members.

In the event of partial loss of any member or members specified above a proportionately lower percentage of compensation shall be payable.

Where the injury is not specified the Company will adopt a percentage of disablement under the above scale which in its opinion is not inconsistent with the scale.

The aggregate of all percentages payable in respect of any one person shall not exceed 100%.

Annex 8 Continued…….

EXCEPTIONS

Provided always that the Company shall not be liable under this Policy for death or disablement directly or indirectly occasioned by or happening through

a) war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection, mutiny, military or usurped power, riot, strike or civil commotion.
b) intentional self injury, suicide, attempted suicide, influence of alcohol or drugs, insanity, sexually transmitted diseases, pregnancy or childbirth.
c) flying other than as a passenger in a multi-engined aircraft operated by a regular airline or recognised charter company .
d) whilst racing on wheels or horseback, polo, hunting, pig sticking, big game shooting, paper chasing on horseback, mountaineering, winter sports, under water activities involving breathing apparatus, use of woodworking machinery driven by mechanical power .
e) disappearance, wilful exposure to unnecessary danger except to save human life, breach of law committed by an Employee.

CONDITIONS

This Policy and the Schedule shall be read together as one contract and any word or expression to which a specific meaning has been attached in any part of this Policy or the Schedule shall bear such meaning wherever it may appear.

1. If the Employee shall sustain any bodily injury in respect of which a claim is or may be made under this Policy prompt written notice thereof shall be given to the Company as soon as possible but in any event within fourteen days of the date of the injury.
2. All certificates information and evidence required by the Company shall be furnished at the expense of the Insured and shall be in such form and of such nature as the Company may prescribe. The Employee as often as required shall submit to medical examination on behalf of the Company at its own expense in respect of any alleged bodily injury. In case of death reasonable notice shall be given to the Company before internment or cremation and the Company may require and/or be represented at any post mortem examination of the body of the Employee. Immediate notice stating time and place of any inquest shall be given to the Company.
3. The Employee must immediately after the occurrence of an accident which may be the subject of a claim under this Policy obtain and follow the advice of a duly qualified and registered medical practitioner failing which the Company shall not be liable for any consequence arising from such failure.
4. The Insured shall give immediate notice to the Company of any change in the name or occupation of the Employee and shall also give notice before any renewal of this Policy of any injury disease physical defect or infirmity of the Employee of which he has become aware.
5. If the Employee shall change his occupation or engage in a more hazardous occupation than that stated in the Schedule the Insured shall give immediate notice to the Company and if the Company shall elect to accept and continue the Policy the Insured shall pay such additional premium as may be required by the Company.
6. The Company shall not be liable to make any payment under this Policy in respect of any claim if such claim shall be fraudulent in any manner or supported by any fraudulent statement or device whether by the Insured or Employee or by any person on behalf of the Insured or Employee nor if the insurance has been continued in consequence of any material misstatement or the non-disclosure of any material information by or on behalf of the Insured or Employee.
7. The Company may cancel this Policy at any time by giving seven days notice by registered letter to the Insured at his last known address and in such event the Company shall return a prorata proportion of the premium for the unexpired period of insurance.
8. The Company shall not be bound to accept any renewal and the Policy shall not be renewable after the year of insurance in which the Employee attains the age of sixty years.
9. If the premium is calculated on a declaration basis the Insured shall allow the Company to inspect the appropriate records to confirm such declaration.
10. All differences arising under this Policy shall be referred to the decision of an Arbitrator to be appointed in writing by the parties in difference or if they cannot agree upon a single Arbitrator to the decision of two Arbitrators one to be appointed by each of the parties within one calendar month after having been required in writing so to do by either of the parties or in case the Arbitrators do not agree of an Umpire appointed by the Arbitrators before entering upon the reference. The Umpire shall sit with the Arbitrators and preside at their meetings and the making of an award shall be a condition precedent to any right of action against the Company. If the Company shall disclaim liability to the Insured for any claim hereunder and such claim shall not within twelve calendar months from the date of such disclaimer have been referred to arbitration under the provisions herein contained then the claim shall for all purposes be deemed to have been abandoned and shall not thereafter be recoverable.
11. In case of any claim arising in respect of liability under this Policy the same shall be settled and paid in Kathmandu and the entire cause of action shall also be deemed to arise in Kathmandu and further that all legal proceedings in respect of any such claim shall be instituted in a competent Court on Nepal in the city of Kathmandu.
12. The due observance and fulfillment of the terms exceptions conditions and endorsements of this Policy by the Insured in so far as they relate to anything to be done or complied with by him and the truth of the statements in the said proposal form shall be conditions precedent to any liability of the Company to make any payment under this Policy.

Annex 9

GROUP PERSONAL ACCIDENT PROPOSAL FORM

QUESTIONS	ANSWERS
1. Proposers name in full	1.
2. Address in full	2. _____
3. Occupation	3.
4. Period of insurance	4. From ..... To .....
5. What benefits are required (see below) Tick as appropriate	5. A & B ( ) A, B, C & D ( ) E ( )% of C.S.I.
6. Do any of the employees to be insured suffer from any disabilities or infirmities. If so give full details.	6.
7. Are you now insured for Group Personal Accident?	7.
8. Has any company ever declined, cancelled, refused to renew, increased the premium or imposed special conditions for Group Personal Accident?	8.
9. Have you ever made a claim under a Group Personal Accident policy?	9.
10. Do you wish the policy to be in	ENGLISH ☐ NEPALI ☐ EITHER ☐
11. Please complete the schedule overleaf in respect of all employee to be covered by this insurance.	

DECLARATION

I/we hereby declare that the above statements are true and that I/we have withheld no information which might influence the acceptance of this proposal. I/we agree that this proposal shall be the basis of the contract between me/us and the Company and deemed to be incorporated in the Policy.

Date: _____ Signature: _____

BENEFITS AVAILABLE

BASIC BENEFIT	AMOUNT PAID
A. Death	The full sum
B. Permanent Total Disablement	A sliding scale up to 100% of the sum insured as follows
Loss of both hands, both feet or any two thereof	100%
Loss of sight in both eyes	100%
Loss of one hand or foot and sight of one eye	100%
Total paralysis	100%
Loss of one arm or one hand	60%
Loss of one leg or one foot	50%
Loss of sight in one eye	50%
Loss of thumb	25%
Loss of index finger	15%
Loss of any other finger	6%
Loss of big toe	5%
Loss of any other toe	3%
Loss of hearing in both ears	50%
Loss of hearing in one ear	15%
C. Temporary Total Disablement	1.00% of the sum insured for each week of disablement.
D. Temporary Partial Disablement	0.50% of the sum insured for each week of disablement.
E. Medical Expenses	Percentage of the sum insured chosen.

Annex 9 continued…..

SCHEDULE OF EMPLOYEES

S. No.	NAME	AGE	OCCUPATION/DESIGNATION	SUM INSURED

Rates vary depending upon the number of employees and their precise occupation.

The Policy does not cover war and similar risks, riot and strike, racing on wheels, mountaineering, use of electrically powered wood-working machinery and similar hazardous risks. However some exclusions can be included by payment of a nominal additional premium.

CLASSIFICATION OF RISKS

I. Accountants, Doctors, Lawyers, Businessmen, Architects, Teachers, Bankers, Administrator, Shop-keeper, Engineers engaged in superintending functions. Veterinary Doctors, Drivers of private cars & light vans. Cash carrying Employees.
II. Builders, Contractors, persons engaged in manual labour. Motor mechanies, Carpenters, Plumbers, Machine operators, Heavy Vehicle Drivers.
III. Wood working machinists and persons engaged in electrical installations.
IV. Persons engaged in trekking, rafting, and mountaineering.

Annex 10

PERSONAL ACCIDENT CLAIM FORM

1. *Insured's Name & Full Address* : _____

   with Telephone No. : _____

2. *Name of the Injured person* : _____

3. *His/her residence address* : _____ *Tel. No. :* _____

4. *Policy No. :* _____ *Period of Insurance : From :* _____*To :* _____

5. *Date of accident:*_____ *Time:* _____ *Place of accident :* _____

6. *Full details how accident occured* : _____

   _____

   _____

   _____

7. *Name & Address of the witness* : _____

8. *Name, Qualification & Address of* : _____

   attending doctor/surgeon _____

9. *Period of complete confinement to* ***bed/room/hospital*** : *From :* _____ *To :* _____

10. *Period of complete confinement to* ***house only.*** : *From :* _____ *To:* _____

11. *If any part of your business work is attended by the injured person in respect of (11) above. Give details* : _____

    _____

12. *Details of compensation, if any, paid to him/her during confinement period* : _____

    _____

13. *Please specify monthly salary of the injured person* : _____

    _____

14. *If you are insured elsewhere, please enclose policy copy.* : _____

    _____

15. *Do you wish to add any additional information? If so, Please give details.* : _____

I/We declare that the above statements are true to the best of my/our knowledge.

Date: .....

Signature of Insured with Official Seal / Stamp

Annex 10 continued ……

MEDICAL REPORT

(To be completed by the attending doctor)

1) *Name of the injured Person* : _____

Age: _____ *Sex:* _____

2) *Date of Accident* : _____

3) *Cause of accident* : _____

_____

4) *Extent of injuries sustained* : _____

_____

_____

_____

_____

5) *Date of your first attendance* : _____

6) *Are you his/her usual Medical Attendant?:* _____
Is the injury due to direct result of accident? If not, please give details _____

7) *Period required for complete recovery in respected of :-*

a) Complete confinement to ***Bed/Room/Hospital*** *: From:* _____ *To:* _____

b) Confinement to ***House*** *only* *: From:* _____ *To:* _____

8) *Details of Permanent Disability, if any, remains with the injured person as a result of the accident :* _____

_____

_____

_____

9) *Further remarks, if any* : _____

_____

_____

I hereby certify that the foregoing statements are true and correct to the best of my knowledge.

Annex 11

FIRE POLICY

WHEREAS the Insured by a proposal and declaration which shall be the basis of this contract and is deemed to be incorporated herein has applied to the Himalayan General Insurance Co. Ltd. (hereinafter called the Company) for the insurance hereinafter contained and has paid the premium to the Company for the period stated in the Schedule or for any further period for which the Company may accept payment for the renewal of the Policy.

NOW THIS POLICY WITNESSETH that subject to the terms conditions and exceptions herein or endorsed hereon if the property described in the Schedule or any part thereof be destroyed by fire or lightening or explosion of a boiler used for domestic purposes only at any time during the period of insurance the Company will indemnify the Insured against such loss or damage to an amount not exceeding the sum insured set against the appropriate item number on the Schedule.

CONDITIONS

1. If there be any material misdescription of any of the property hereby insured, or of any building or place in which such property is contained or any misrepresentation as to any fact material to be known for estimating the risk, or any omission to state such fact the Company shall not be liable upon this Policy so far as it relates to property affected by any such misdescription, misrepresentation or omission.

2. No payment in respect of any premium shall be deemed to be payment to the Company unless a printed form of receipt for the same signed by any official or duly appointed Agent of the Company shall have been given to the Insured.

3. The Insured shall give notice to the Company of anyinsurance or insurances already effected, or which may subsequently be effected covering any of the property hereby insured, and unless such notice be given and the particulars of such insurance or insurances be stated in or endorsed on this Policy by or on behalf of the Company before the occurrence of any loss or damage, all benefit under this Policy shall be forfeited.

4. All insurance under this Policy
   (1) on any building or part of any building,
   (2) on any property contained in any building,
   (3) on rent or other subject matter of insurance in respect of or in connection with any building or any property contained in any building, shall cease immediately upon any fall or displacement
      (a) of such building or of any part thereof
      (b) of the whole or any part of any range of buildings or of any structure of which such building forms part,

PROVIDED that such fall or displacement is of the whole or a substantial or important part of such building or impairs the usefulness of such building or any part thereof or leaves such building or any part thereof or any property contained therein subject to increased risk of fire or is otherwise material.

AND PROVIDED that such fall or displacement is not caused by fire, loss or damage which is covered by this Policy or would be covered if such building, range of buildings or structure were insured under this policy.

In any action, suit or other proceeding, the burden of proving that any fall or displacement is caused by fire as aforesaid shall he upon the Insured.

5. (i) This Insurance does not cover
      (a) Loss by theft during or after the occurrence of a Fire.
      (b) Loss or damage to property occasioned by its own fermentation, natural or heating, spontaneous combustion (except as may be provided in accordance with Condition 7 (f), or by its undergoing any heating or drying process.
      (c) Loss or damage occasioned by or through or in consequence of
         (1) The burning of property by order of any public authority.
         (2) Subterranean Fire.
      (d) Loss or damage directly or indirectly caused by or arising from or in consequence of or contributed to nuclear weapons material.
   (ii) This insurance does not cover loss or damage directly or indirectly caused by or arising from or in consequence of or contributed to by ionising radiations or contamination by radioactivity form any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel. For the purposes of this Condition 5(ii) only combustion shall include any self-sustaining process of nuclear fission.

6. This insurance does not cover any loss or damage occasioned by or through or in consequence, directly or indirectly, of any of the following occurrences, namely:-

(a) Earthquake, volcanic eruption or other convulsion of nature.
(b) Typhoon, hurricane, tornado, cyclone or other atmospheric disturbance.
(c) War, invasion, act of foreign enemy, hostilities or warlike operations (whether war be declared or not), civil war.
(d) Mutiny, riot, military or popular rising, insurrection, rebellion, revolution, military or usurped power, martial law or state of siege or any of the events or causes which determine the proclamation or maintenance of martial law or state of siege.

Any loss or damage happening during the existence of abnormal conditions (whether physical or otherwise) which are occasioned by or through or in consequence, directly or indirectly, of any of the said occurrences shall be deemed to be loss or damage which is not covered by this insurance, except to the extent that the insured shall prove that such loss or damage happened independently of the existence of such abnormal conditions.

In any action, suit or other proceeding where the company alleges that by reason of the provisions of this conditions any loss or damage is not covered by this insurance, the burden of proving that such loss or damage is covered shall be upon the Insured.

7. Unless otherwise expressly stated in the Policy this insurance does not cover:-
   (a) Goods held in trust or on commission.
   (b) Bullion or unset precious stones.
   (c) Any curiosity or work of art for an amount exceeding Rs. 250/-.
   (d) Manuscripts, plans, drawings, or designs, patterns, models or moulds.
   (e) Securities, obligations, or documents of any kind, stamps, coined or paper money, cheques, books of account or other business books.
   (f) Coal against loss or damage occasioned by its own spontaneous combustion.
   (g) Explosives.
   (h) Any loss or damage occasioned by or through or in consequence of explosion; but loss or damage by explosion of gas used for illuminating or domestic purposes in a building in which gas is not generated and which does not form part of any gas works, will be deemed to be loss by fire within the meaning of this Policy.
   (i) Any loss or damage occasioned by or through or in consequence of the burning, whether accidental or otherwise, of forests, bush, prairie, pampas or jungle, and the clearing of lands by fire.

8. Under any of the following circumstances the insurance ceases to attach as regards the property affected unless the Insured, before the occurrence of any loss or damage, obtains the sanction of the Company signified by endorsement upon the Policy by or on behalf of the Company.
   (a) If the trade or manufacture carried on be altered, or if the nature of the occupation of or other circumstances affecting the building insured or containing the insured property be changed in such a way as to increase the risk of loss or damage by fire.
   (b) If the building insured or containing the insured property becomes unoccupied and so remains for a period of more than 30 days.
   (c) If property insured be removed to any building or place other than that in which it is herein stated to be insured.
   (d) If the interest in the property insured passes from the Insured otherwise than by will or operation of law.

9. This insurance does not cover any loss or damage to property which, at the time of the happening of such loss or damage, is insured by or would, but for the existence of this Policy be insured by any Marine Policy or Policies except in respect of any excess beyond the amount which would have been payable under the Marine Policy or Policies had this Insurance not been effected.

10. This insurance may be terminated at any time at the request of the Insured, in which case the Company will retain the customary short period rate for the time the policy has been in force. This insurance may also at any time be terminated at the option of the Company, on notice to that effect being given to the Insured in which case the company shall be liable to repay on demand a ratable proportion of the premium for the unexpired term from date of the cancelment

11. On the happening of any loss or damage the Insured shall forthwith give notice thereof to the Company and shall within 15 days after the loss or damage, or such further time as the Company may in writing allow in that behalf, deliver to the Company.
   (a) a claim in writing for the loss and damage containing as particular an account as may be reasonably practicable of all the several articles or items of property damaged or destroyed, and of the amount of the loss or damage thereto respectively, having regard to their value at the time of loss or damage, not including profit of any kind.
   (b) particulars of all other insurances, if any.

The Insured shall also at all times at his own expense produce, procure and give to the Company all such further particulars, plans, specifications, books, vouchers, invoices, duplicates, or copies thereof, documents, proofs and information with respect to the claim and the origin and cause of the fire and the circumstances under which the loss or

damage occurred, and any matter touching the liability or the amount of the liability of the Company as may be reasonable required by or on behalf of the Company together with a declaration on oath or in other legal form of the truth of the claim and of any matters connected therewith.

No claim under this Policy shall be payable unless the terms of this condition have been complied with.

12. On the happening of any loss or damage to any of the property insured by this Policy, the Company may
    (a) enter and take and keep possession of the building or premises where the loss or damage has happened.
    (b) take possession of or require to be delivered to it any property of the Insured in the building or on the premises at the time of the loss or damage.
    (c) Keep possession of any such property and examine, sort, arrange, remove, or otherwise deal with the same.
    (d) sell any such property or dispose of the same for account of whom it may concern.

The powers conferred by this Condition shall be exercisable by the Company at any time until notice in writing is given by the Insured that he intends to make no claim under the Policy or, if any claim is made, until such claim is finally determined or withdrawn, and the Company shall not by any act done in the exercise or purported exercise of its powers hereunder, incur any liability to the insured or diminish its right to rely upon any of the conditions of this Policy in answer to any claim.

If the Insured or any person on his behalf shall not comply with the requirements of the Company or shall hinder or obstruct the Company in the exercise of its powers hereunder, all benefit under this Policy shall be forfeited.

The Insured shall not in any case be entitled to abandon any property to the Company whether taken possession of by the Company or not.

13. If the claim be in any respect fraudulent, or if any false declaration be made or used in support thereof or if any fraudulent means or devices are used by the Insured or any one acting on his behalf to obtain any benefit under this Policy; or, if the loss or damage be occasioned by the willful act, or, with the connivance of the Insured; or, if the claim be made and rejected and an action or suit be not commenced within three months after such rejection, or (in case of an arbitration taking place in pursuance of the 18th condition of this Policy) within three months after the arbitrator or arbitrators or umpire shall have made their award, all benefit under this Policy shall be forfeited.

14. The Company may at its option reinstate or replace the property damaged or destroyed, or any part thereof, instead of paying the amount of the loss or damage, or may join with any other Company or Insurers in so doing, but the Company shall not be bound to reinstate exactly or completely, but only as circumstances permit and in reasonably sufficient manner, and in no case shall the Company be bound to expend more in reinstatement than it would have cost to reinstate such Property as it was at the time of the occurrence of such loss or damage nor more than the sum insured by the Company thereon.

If the Company so elect to reinstate or replace any property the Insured shall, at his own expense, furnish the Company with such plans, specifications, measurements, quantities, and such other particulars as the Company may require, an no acts done, or caused to be done by the Company with a view to reinstatement or replacement shall be deemed an election by the Company to reinstate or replace.

If in any case the Company shall be unable to reinstate or repair the property hereby insured, because of any municipal or other regulations in force affecting the alignment of streets, or the construction of buildings, or otherwise, the Company shall, in every case, only be liable to pay such sum as would be requisite to reinstate or repair such property if the same could lawfully be reinstated to its former condition.

15. The Insured shall, at the expense of the Company, do, and concur in doing, and permit to be done, all such acts and things as may be necessary or reasonably required by the Company for the purpose of enforcing any rights and remedies, or of obtaining relief of indemnity from other parties to which the Company shall be, or would become entitled or subrogated, Upon its paying for or making good any loss or damage under this Policy, whether such acts and things shall be or become necessary or required before or after his indemnification by the Company.

16. If at the time of any loss or damage happening to any property hereby insured, there be any other subsisting insurance or insurances, whether affected by the Insured or by any other person or persons covering the same property, this Company shall not be liable to pay or contribute more than its ratable proportion of such loss or damage.

17. If the property hereby insured shall, at the breaking out of any fire be collectively of greater value than the sum insured thereon, then the Insured shall be considered as being his own insurer for the difference, and shall bear a ratable proportion of the loss accordingly. Every item, if more than one, of the Policy shall be separately subject to this condition.

18. If any difference arises as to the amount of any loss or damage such difference shall independently of all other questions be referred to the decision of a arbitrator; to be appointed in writing by the parties in difference, or, if they

cannot agree upon a single arbitrator, to the decision of two disinterested persons as arbitrators, of whom one shall be appointed in writing by each of the parties within two calendar months, after having been required so to do in writing by the other party. In case either party shall refuse or fail to appoint an arbitrator within two calendar months after receipt of notice in writing requiring an appointment, the other party shall be at liberty of appoint a sole arbitrator, an in case of disagreement between the arbitrators, the difference shall be referred to the decision of an umpire who shall have been appointed by them in writing before entering on the reference and who shall sit with the arbitrators and preside at their meeting. The death of any party shall not revoke or affect the authority or powers of the arbitrator, arbitrators or umpire respectively; and in the event of the death of an arbitrator or umpire, another shall in each case be appointed in his stead by the party or arbitrators (as the case may be) by whom the arbitrator, or umpire so dying was appointed. The costs of the reference and of the award shall be at the discretion of the arbitrator or arbitrators or umpire making the award. And it is hereby expressly stipulated and declared that it shall be a condition precedent to any right of action or suit upon this Policy that the award by such arbitrator, arbitrators or umpire of the amount of the loss or damage if disputed shall be first obtained.

19. In no case whatever shall the Company be liable for any loss or damage after the expiration of twelve months from the happening of the loss or damage unless the claim is the subject of pending action or arbitration.

20. Every notice and other communication to the Company required by these conditions must be written or printed.

ENDORSEMENT
(only applicable if shown on the Policy Schedule)

F:04 Earthquake, Fire Clause

In consideration of the payment by the Insured to the Company of an additional premium it is by agreed and declared that notwithstanding anything stated in the printed condition of this policy to the contrary, this Insurance is extended to cover loss or damage by fire to any of the property insured by this policy occasioned by or through or in consequence of earthquake excluding flood or overflow of the sea, lakes, reservoirs and rivers caused by Earthquake.

F:05 Earthquake, Fire and Shock Clause

In consideration of the payment by the Insured to the Company of an additional premium it is hereby agreed and declared that notwithstanding anything stated in the printed conditions of this policy to the contrary, this Insurance is extended to cover loss or damage (including loss or damage by fire) to any of the property Insured by this policy occasioned by or through or in consequence of earthquake excluding flood or overflow of the sea lakes reservoirs and rivers caused by Earthquake.

PROVIDED always that all the conditions of this policy shall apply (except in so far as they may be hereby expressly varied) and that any reference therein to loss or damage by fire shall be deemed to apply also to loss or damage directly caused by any of the perils which this insurance extends to include by virtue of this endorsement.

F:06 Earthquake Shock Clause

In consideration of the payment by the Insured to the Company of an additional premium it is hereby agreed and declared that notwithstanding anything stated in the printed conditions of this policy to the contrary, this insurance is extended to cover loss or damage (other than loss or damage by fire) to any of the property insured by this policy occasioned by or through or in consequence of earthquake excluding flood or overflow of the sea, lakes reservoirs an rivers caused by earthquake.

PROVIDED always that all the conditions of this policy shall apply (except in so far as they may be hereby expresslyvaried) and that any reference therein to loss or damage by fire shall be deemed to apply also to loss or damage directly caused by any of the perils which this insurance extends to include by virtue of this endorsement.

F:07 Earthquake (Special Conditions) Clause

For the purpose of this endorsement but not otherwise the following special conditions shall apply and condition 10 of the policy shall be replaced by special condition 5 below:-

1. Average:
   If the property hereby insured shall at the time of the occurrence of any loss or damage be collectively of greater value than the sum insured thereon, then the insured shall be considered as being his own insurer for the difference and shall bear a ratable proportion of the loss accordingly. Every item, if more than one, of the policy, shall be separately subject to this condition.

2. Consequential Loss:

No consequential loss or damage of any kind or description nor any loss or damage caused by confiscation or willful
destruction by the Government or any Municipal or Local Authority is covered.

3. Excess Clause:
It is understood and agreed that the Company shall only be liable under this policy for loss or damage caused by earthquake (other than loss or damage by fire so caused) if the ascertained loss or damage sustained by the Insured in respect of property hereby insured exceeds as regards any individual building including its contents and rent, either
(a) 2.5 per cent of the total sum insured by all policies in the name of the Insured on such building, contents and rent

or

(b) Rs. 750 (Rupees seven hundred and fifty only), whichever shall be the less.

In no case shall the Company be liable in respect of such loss or damage for more than the excess of the amount defined in (a) or (b) whichever shall apply.

4. Onus of Proof Clause:
In the event of the Insured making any claim for loss or damage under this policy he must (if so required by the Company) prove that the loss or damage was occasioned by or through or in consequence of earthquake.

5. Cancellation Clause:
This insurance may be terminated at any time by the Company on notice to that effect being given to the Insured in which case the Company shall be liable to repay a rateable proportion of the premium for the unexpired term from the date of cancelment.

However, if the insurance included by virtue of this endorsement be terminated at the request of the Insured before
its expiry date the Company shall not repay the premium or any part thereof chargeable for such insurance except
(a) Where the said insurance applies to stocks only or
(b) Where the Insured ceased to have any insurable interest in the property insured or
(c) In either case the ordinary fire insurance is terminated simultaneously.

In which case the Company shall in respect of this insurance retain the customary short period premium for the time the said insurance has been in force.

F:08 Electrical Installation Clause A

This Company is expressly declared to be free from liability for loss of or damage to any electrical machine, apparatus, fixture or fitting (including electric fans, electric household or domestic appliances, wireless sets and radios) or to any portion of the electrical installation, arising from or occasioned by over running, excessive pressure, short circiuting, arching, self heating or leaking of electricity, from whatever cause (lightning included) : provided that this exemption shall apply only to the particular electrical machine, apparatus, fixtures, fittings or portion of the electrical installation so affected and not to other machines, apparatus, fixtures, fittings or portions of the electrical installation which may be destroyed or damaged by fire so set up.

F:09 Electrical Installation Clause B

Loss or damage by fire to the electrical appliances and installation insured by this policy arising from or occasioned by over running, excessive pressure, short circuiting, arcing, self-heating or leakage of electricity, from whatever cause (lightening included), is covered subject to the terms and conditions of this policy, but it is expressly understood that no liability exists under this policy for loss or damage to any electrical machine, apparatus, fixture or fitting, or to any portion of the electrical installation, unless caused by fire or lightening.

F:10 Explosion Clause A

In consideration of the payment of an additional premium it is hereby agreed and declared that the insurance under this Policy shall, subject to the Special Condition hereinafter contained, extend to include:

Loss of or damage to the property insured by fire or otherwise directly caused by explosion, but excluding loss of or damage to boilers, economizers, or other vessels, machinery or apparatus in which pressure is used or their contents resulting from their explosion.

PROVIDED always that all the conditions of the Policy (Except in so far as Condition No. 7(h) is hereby expressly varied shall apply as if they had been incorporated herein and for the purpose hereof any loss or damage by explosion as aforesaid shall be deemed to be loss or damage by fire within the meaning of this Policy.

SPECIAL CONDITIONS

(1) The Company shall not be liable, under this extension, for loss or damage occasioned by or through or in consequence, directly or indirectly, of any act of any person acting on behalf of, or in connection with , any organization with activities directed towards the overthrow by force of the Government "de jure" or "de facto" or to the influencing of it by terrorism or violence.

In any action, suit or other proceeding, where the Company alleges that by reason of the provisions of this Condition any loss or damage is not covered by this insurance, the burden of proving that such loss or damage is covered shall be upon the Insured.

(2) If there shall be any other fire insurance on the property insured under this Policy, the Company shall be liable only Pro rata with such other fire insurance for nay loss or damage by explosion whether or not such other fire insurance be extended to cover loss or damage by explosion.

(3) The Company shall not be liable under this extension for loss or damage which at the time of the happening of such loss or damage is insured by or would, but for the existence of this extension, be insured by any other existing policy or policies expect in respect of any excess beyond the amount which would have been payable under such other policy or policies had this insurance not been effected.

F:11 Explosion Clause B

In consideration of the payment of an additional premium it is hereby agreed and declared that the insurance under this policy shall, subject to the special conditions hereinafter contained, extend to include:

Loss of or damage by explosion to the property insured under this policy whether fire ensues or not, provided that the Company shall not be liable for loss or damage by explosion (other than destruction or damage by fire resulting from explosion) occasioned by the bursting of a boiler, economizer or other vessel, machine or apparatus in which internal pressure is due to steam only and belonging to or under the control of the insured; nor for the damage or destruction of vessels, machinery or apparatus or their contents resulting from the explosion thereof.

PROVIDED that all the conditions of this policy (except in so far as condition No. 7(h) is hereby expressly varied) shall apply as if they had been incorporated herein and for the proposes hereof any loss or damage as aforesaid shall be deemed to be loss or damage by fire within the meaning of this policy.

SPECIAL CONDITIONS

(1) The Company shall not be liable, under this extension, for loss or damage occasioned by or through or in consequence, directly or indirectly, of any act of any person acting on behalf of, or in connection with, any organisation with activities directed towards the overthrow by force of the Government "de jure" or " de facto" or to the influencing of it by terrorism or violence.

In any action, suit or other proceeding, where the Company alleges that by reason of the provisions of this Condition any loss or damage is not covered by this insurance, the burden of proving that such loss or damage is covered shall be upon the Insured.

(2) If there shall be any other fire insurance on the property insured under this Policy, the Company shall be liable only pro rata with such other fire insurance for any loss or damage by explosion whether or not such other fire insurance be extended to cover loss or damage by explosion.

(3) The Company shall not be liable under this extension for loss or damage which at the time of the happening of such loss or damage is insured by or would, but for the existence of his extension, be insured by any other existing policy or policies or policies expect in respect of any excess beyond the amount which would have been payable under such other policy or policies had this insurance not been effected.

F:12 Mortgagee Clause

It is hereby declared and agreed :

(1) That upon any moneis becoming payable under this policy the same shall be paid by the Company to the Bank or Finance Company named in the Schedule alongside this endorsement number and such part of any moneis so paid as may relate to the interests of other parties insured hereunder shall be received by the Bank or Finance Company as Agents for such other parties.

(2) That the receipts of the Bank or Finance Company shall be a complete discharge of the Company therefore and shall be binding on all parties insured hereunder.

(3) That if and whenever any notice shall be required to be given or other communication shall be required to be made by the Company to the Insured or any of them n any matter arising under or in connection with this policy,

such notice or other communication shall be deemed to have been sufficiently given or made if given or made to the Bank or Finance Company.

(4) That any adjustment, settlement, compromise or reference to arbitration in connection with any dispute between the Company and the Insured or any of them arising under or in connection with this policy if made by the Bank or Finance Company shall be valid and binding on all parties insured hereunder, but not so as to impair the right of the Bank or Finance Company to recover the full amount of any claim it may have on other parties insured hereunder, and

(5) That this insurance so far only as it relates to the interest of the Bank or Finance Company therein shall not cease to attach to any of the insured property by reason of the operation of Clause 8 of the conditions endorsed on the policy except where a breach of such clause has been committed by the Bank or Finance Company or its duly authorised agents or servants and this insurance shall not be invalidated by any act or omission on the part of any other party insured hereunder whereby the risk is increased or by anything being done to upon or in any building hereby insured or any building in which goods insured under the policy are stored without the knowledge of the Bank or Finance Company provided always that the Bank or Finance Company shall notify the Company of any change of ownership or alteration or increase of hazard not permitted by this insurance as soon as the same shall come to its knowledge and shall on demand pay to the Company the necessary additional premium from the time when such increase of risk first took place. And it is further agreed that whenever the Company shall pay the Bank or Finance Company any sum in respect of loss or damage under this policy and shall claim that as to the Mortgagor or owner no liability therefore existed, the Company shall become legally subrogated to all the rights of the Bank or Finance Company to the extend of such payment but not so as to impair the right of Bank or Finance Company to recover the full amount of any claim it may have on such Mortgagor or Owner or any other party or parties hereunder or from any securities or funds available.

F:13 Reinstatement Value Clause

It is hereby declared and agreed that in the event of the property insured under (Items Nos. of) the within policy being destroyed or damaged, the basis upon which the amount payable under (each of the said items of) the policy is to be calculated, shall be the cost of replacing or reinstating on the same site property of the same kind or type but not superior to or more extensive than the insured property when new subject to the following Special Provisions and subject also to the terms and conditions of the policy except insofar as the same may be varied hereby.

Special Provisions.

1. The work of replacement or reinstatement (which may be carried out upon another site and in any manner suitable to the requirements of the Insured subject to the liability of the Company not being thereby increased) must be commenced and carried out with reasonable dispatch and in any case must be completed within 12 months after the destruction or damage, or within such further time as the company may (during the said 12 months) in writing allow: otherwise no payment beyond the amount which would have been payable under the policy if this memorandum had not been incorporated therein shall be made.

2. Until expenditure has been incurred by the Insured in replacing or reinstating the property destroyed or damaged the Company shall not be liable for any payment in excess of the amount which would have been payable under the policy if this memorandum had not been incorporated therein.

3. If at the time of replacement or reinstatement the sum representing the cost which would have been incurred in replacement or reinstatement if the whole of the property covered had been destroyed, exceeds the sum insured thereon at the breaking out of any fire or at the commencement of any destruction of or damage to such property by any other peril insured against by this policy, then the Insured shall be considered as being his own insurer for the excess and shall bear a ratable proportion of the loss accordingly. Each item of the policy (if more than one) to which this Memorandum applies shall be separately subject to the foregoing provision.

4. This Memorandum shall be without force or effect if
   (a) the Insured fails to intimate to the Company within 6 months from the date of destruction of damage or such further time as the Company may in writing allow, his intention to replace reinstate the property destroyed or damaged.
   (b) the Insured is unable or unwilling to replace or reinstate the property destroyed or damaged on the same or another site.

F:14 Storm and Tempest Clause

Notwithstanding anything stated in the printed Conditions of this policy to the contrary this insurance is extended to cover loss or damage directly caused by storm, typhoon, hurricane, tempest, flood and inundation.

PROVIDED always that all the conditions of this policy shall apply (except in so far as they may be hereby expressly varied and that any reference therein to loss or damage by fire shall be deemed to apply also to loss or damage directly caused by any of the perils which this insurance extends to include by virtue of the above mentioned clause.

No consequential loss or damage of any kind of description, nor any loss or damage caused by confiscation or willful destruction by Government or any Municipal or Local Authority is covered under this Policy.

In the event of the Insured making any claim for loss or damage under this policy in respect of the above mentioned perils he must (if so required by the Company) prove that the loss or damage was occasioned by or through or in consequence of the said perils.

It is understood and agreed that in respect of all the above-mentioned perils the Company shall only be liable under this policy for loss or damage if the ascertained loss or damage sustained by the Insured in respect of the Property hereby insured exceeds as regards any individual building, including its contents, either

(a) 2.5% of the total sum insured by all policies in the name of the Insured on such building and contents:

or

(b) Rs. 750/- whichever shall be less.

In no case shall the Company be liable in respect of such loss or damage for more than the excess of the amount defined in (a) or (b) whichever shall apply.

F:15 RIOT & STRIKE CLAUSE

In consideration of the payment of an additional premium it is hereby agreed and declared that notwithstanding anything in the within written Policy contained to the contrary the Insurance under this policy shall extend to cover Riot and Strike damage which for the purpose of this endorsement shall mean (subject always to the Special Conditions hereinafter contained).

Loss of or damage to the property insured directly caused by:-

1. The act of any person taking part together with other in any disturbance of the public peace (whether in connection with a strike or lock-out or not) not being an occurrence mentioned in condition 6 of the Special Conditions hereof.
2. The action of any lawfully constituted authority in suppressing or attempting to suppress any such disturbance or in minimising the consequences of any such disturbance.
3. The wilful act of any striker or locked-out worker done in furtherance of a strike or in resistance to a lock-out.
4. The action of any lawfully constituted authority in preventing or attempting to prevent any such act or in minimising the consequence of any such act.

SPECIAL CONDITIONS

For the purposes of this Endorsement but not otherwise there shall be substituted for the respectively numbered Conditions of the Policy the following:-

CONDITION 5.

(i) This insurance does not cover:-
   (a) Loss or earning, loss by delay, loss of market or other consequential or indirect loss of damage of any kind or description whatsoever.
   (b) Loss or damage resulting from total or partial cessation of work or the retarding or interruption or cessation of any process or operation.
   (c) Loss or damage occasioned by permanent or temporary dispossession resulting from confiscation, commandeering or requisition by any lawfully constituted authority.
   (d) Loss or Damage occassioned by permanent or temporary despossession of the building resulting from the unlawful occupation by any person of such building.
   (e) Loss or damage directly or indirectly caused by or arising from or in consequence of or contributed to by nuclear weapons material.

   PROVIDED nevertheless that the Company is not relieved under (c) or (d) above o any liability to the Insured in respect of physical damage to the property insured occurring before dispossession or during temporary dispossession.

(ii) This insurance does not cover loss or damage directly or indirectly caused by or arising from or in consequence of or contributed to by ionising radiations or contamination by radio activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel. For the purposes of this Condition 5(ii) combustion shall include any self-sustaining process of nuclear fission.

CONDITION 6

This insurance does not cover any loss or damage occasioned by or through or in consequence, directly or indirectly of any of the following occurrences, namely:-

(a) War, invasion, act of foreign enemy, hostilities or warlike operations (whether war be declared or not) civil war.
(b) Mutiny, civil commotion assuming the proportion of or amounting to a popular rising, military rising insurrection, rebellion, revolution, military or usurped power, or any act of any person acting on behalf of or in connection with any organisation with activities directed towards the overthrow by force of the Govt. de jure or de facto or to the influencing of it by terrorism or violence.

In any action, suit or other proceeding, where the Company alleges that by reason of the provisions of this Condition any loss or damage is not covered by this insurance, the burden of proving that such loss or damage is covered shall be upon the Insured.

CONDITION 7.

Unless otherwise expressly stated in the Policy this insurance does not cover:-
(a) Goods held in trust or on commission,
(b) Bullion or unset precious stones,
(c) Any curiosity or work of art for an amount exceeding Rs. 250/-
(d) Manuscripts plans, drawings or designs, patterns, models or moulds,
(e) Securities, obligations or documents of any kind, stamps, coined or paper money, cheques, books of account or other business books.
(f) Explosives.

CONDITION 10.

This insurance may at any time be terminated by the Company on notice to that effect being given to the Insured in which case the Company shall be liable to repay a ratable proportion of the premium for the unexpired term from the date of the cancelment.

However, if the insurance included by virtue of this endorsement be terminated at the request of the Insured before its expiry date, the Company shall not repay the premium or any part thereof chargeable for such insurance except
(a) Where the said insurance applies to stocks only; or
(b) Where the insured ceased to have any insurable interest in the property insured: and
(c) In either case the ordinary fire insurance is terminated simultaneously.

In which case the Company shall in respect of this Insurance retain the customary short period premium for the time the said insurance has been in force.

CONDITION 11.

If the property hereby insured shall at the breaking out of any fire or at the commencement of any destruction of or damage to such property by any other peril insured against by this Endorsement be collectively of greater value than the sum insured hereon, then the Insured shall be considered as being his own insurer for the difference and shall bear a rateable share of the amount of the loss accordingly. Every item if more than one, of the Policy shall be separately subject to this condition.

PROVIDED that it is hereby further expressly agreed and declared that:-

1. All the conditions of this Policy shall apply in all respects to the insurance granted by this extension save in so far as the same are expressly varied by the above Special Conditions and any reference to fire in the Conditions of the policy shall be deemed to include the perils hereby insured against.

2. The Special Conditions herein shall apply only to the insurance granted by this extension and the conditions of the Policy shall apply in all respects to the insurance granted by the Policy as if this Endorsement had not been made thereon.

F:16 <u>Malicious Damage Extension</u>

It is hereby declared and agreed that the insurance provided under this Policy by Endorsement No F:15 hereon shall extended to cover the risk of Malicious Damage which for the purpose of this extension shall mean:-

Loss of or damage to the property insured directly caused by the malicious act of any person (whether or not such act is committed in the course of a disturbance of the public peace) not being an act amounting to or committed in connection with an occurrence mentioned in Special Condition 6 of Endorsement F:15 but the Company shall not be

liable under this extension for any loss or damage by fire or explosion nor for any loss damage arising out of or in the course of burglary, house breaking, theft or larceny or any attempt there at or caused by any person taking part therein.

F:17 Terrorism Extension

It is hereby declared and agreed that the insurance provided under this Policy by Endorsement No F:15 hereon shall extend to cover the risk of terrorism and the words 'or any act of any person acting on behalf of or in connection with any organisation with activities directed towards the overthrow by force of the Govt. de jure or de facto or to the influencing of it by terrorism or violence' in Condition 6 of Endorsement F:15 are hereby deleted.

For the purposes of this Endorsement terrorism shall mean the use of violence for political ends and includes any use of violence for the purpose of putting the public or any section of the public in fear.

F:18 Impact Damage Including Insured's Own Vehicles

It is hereby agreed and declared that the insurance under this policy shall extend to include loss or damage to the property described in the Schedule and/or to walls, gates, and fences around and pertaining thereto directly resulting from impact by any road vehicles, horses or cattle including any road vehicles, horses or cattle belonging to or under the control of the Insured or any member of his family or any person in and upon the Insured's service.
Provided always that all the conditions of the Policy shall apply as if they had been incorporated herein and for the purpose hereof any loss or damage as aforesaid shall be deemed to be loss or damage by fire.

Subject otherwise to the terms and conditions of the Policy

F:19 Subsidence and Landslip

It is hereby agreed and declared that the insurance under this policy shall extend to cover loss or damage to the property insured caused by subsidence and/or heave of the site on which the building stand or land belonging thereto or landslip excluding;-

a) loss or damage to swimming pools terraces patios drives footpaths walls gates or fences unless the dwelling, its domestic outbuilding or garages are damaged by the same cause and at the same time.
b) loss or damage to or resulting from movement of solid floor slabs unless the foundation beneath the external walls of the buildings are damaged by the same cause and at the same time.
c) loss or damage occasioned by happening thorough or in consequence of:
    i) coastal or river erosion.
    ii) demolition structural alteration or structural repair.
    iii) defective design or inadequate construction of foundations.
d) in respect of each and every loss 5% of the total sum insured or. Rs. 20,000 whichever is the lower.

Provided that the total liability of the Company shall not exceed the sum insured by each item on buildings less the amount excluded under d) above.

Provided always that all the conditions of the Policy (except in so far as they may be hereby expressly varied) shall apply as if they had been incorporated herein and for the purpose hereof any loss or damage as aforesaid shall be deemed to be loss or damage by fire.

Subject otherwise to the terms and conditions of the Policy.

Annex 12

FIRE CLAIM FORM

1. Claim No. : _____ Policy No. : _____ Period of Insurance:_____

2. Insured :

_____

3. Address :

_____

Sum insured under

4. Total Sum insured : _____ affected items _____

5. Date of Loss & Time :

_____

6. Cause of fire/damage:

_____

7. Estimate :

_____

8. Details of incident :

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

9. Property affected under Item No. of Policy :

Annex 13

HOUSEHOLD INSURANCE

WHEREAS the Insured by a proposal and declaration which shall be the basis of this contract and is deemed to be incorporated herein has applied to the Himalayan General Insurance Co. Ltd. (hereinafter called the Company) for the insurance hereinafter contained and has paid the premium to the Company for the period stated in the Schedule or for any further period for which the Company may accept payment for the renewal of this Policy

NOW THIS POLICY WITNESSETH that subject to the terms exceptions and conditions contained herein or endorsed hereon

SECTION 1 - BUILDINGS

The Company will indemnify the Insured against loss of or damage to the Buildings caused by an Insured Peril but not exceeding the sum insured stated in the Schedule against this Section.

SECTION 11 - CONTENTS

The Company will indemnify the Insured against loss of or damage to the Contents whilst contained in the Buildings caused by an Insured Peril but not exceeding the sum insured stated in the Schedule against this Section. The liability of the Company in respect of any one article (other than furniture household appliances electrical apparatus pianos and organs) shall not exceed 5% of the total sum insured on the Contents and in respect of jewellery gold and silver articles shall not exceed one-third of the total sum insured on the Contents unless specially agreed and specified in the Schedule.

The indemnity granted by this Section shall also extend to include Contents whilst temporarily removed from the Buildings provided that this extension shall not apply to

a) property otherwise insured
b) property removed for sale or exhibition or to a depository
c) property removed outside of Nepal
d) property exceeding 15% of the total sum insured on the Contents.

SECTION 111 - LOSS OF RENT

In the event of the Buildings being rendered uninhabitable by an insured peril the Company will indemnify the Insured against

a) reasonable additional expense for alternative accommodation
b) loss of rent payable to the Insured

actually incurred by the Insured during the period necessary for the reinstatement of the Buildings.

The liability of the Company under this Section shall not exceed 10% of the total sum insured on Buildings and Contents.

SECTION 1V - LIABILITY TO THE PUBLIC

The Company will indemnify the Insured against all sums for which he may be legally liable

a) as owner of the Buildings
b) as a private householder occupying the Buildings in respect of
    1) accidental death or bodily injury
    2) accidental damage to property

occurring in or about the buildings during the period of insurance

Provided that the Company shall not be liable in respect of

i) bodily injury to any person being a member of the Insured's family or household or engaged in or upon the service of the Insured

ii) damage to property belonging to or in the custody or control of the Insured a member of his family or household or in the service of the Insured

iii) liability arising out of the Insured's profession or the use of any motor vehicle

iv) liability which attaches by virtue of an agreement which would otherwise not have attached

The liability of the Company under this Section shall not exceed NRs 100,000.

For the purposes of this Section "the Insured" shall include the Insured's spouse.

SECTION V - PERSONAL ACCIDENT

If the Insured whilst at the Buildings shall sustain bodily injury as a result of an Insured Peril and such injury shall within three calendar months result in the death of the Insured the Company shall pay compensation to the Insured's legal personal representative a sum of NRs 50,000.

THE INSURED PERILS

1. Fire lightning thunderbolt or subterranean fire
2. Explosion
3. Aircraft and other aerial devices or articles dropped therefrom
4. Bursting or overflowing of a domestic water tank apparatus or pipes but excluding
   a) loss or damage to the tank apparatus or pipes
   b) loss or damage if the building is unoccupied for a period exceeding fifteen days
   c) the first NRs 1,000 of each and every loss
5. Storm flood and tempest
6. Earthquake or volcanic eruption
7. Riot and strike
8. Impact by any vehicle or animal not belonging to the Insured a member of his family or household or under his custody or control
9. Theft or any attempt thereat accompanied by forcible and violent entry or exit to or from the Building but excluding loss or damage after the Building has been unoccupied for more than thirty consecutive days
10. Malicious damage but excluding loss or damage after the Building has been unoccupied for more than thirty consecutive days

Annex 13 Continued…….

EXCEPTIONS

This Policy does not cover loss damage liability or injury

a) directly or indirectly occasioned by or through or in consequence of war invasion act of foreign enemies hostilities (whether war be declared or nor) civil war rebellion revolution insurrection military or usurped power

b) directly or indirectly caused by or contributed to by or arising from ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel. For the purpose of this exclusion combustion shall include any self sustaining process of nuclear fission

c) directly or indirectly caused by or contributed to by or arising from nuclear weapons material

d) by theft or any attempt thereat in which there is concerned or privy any member of the Insured's household

e) arising from confiscation commandeering requisition or destruction of or damage to the Buildings or Contents by order of the Government or any other official body

CONDITIONS

This Policy and the Schedule shall be read together as one contract and any word or expression to which a specific meaning has been attached in any part of this Policy or of the Schedule shall bear such meaning wherever it may appear.

1. The Insured shall take all reasonable precautions for the safety of the property insured and to avoid accidents or injury and immediately upon the happening of any event giving rise to or likely to give rise to a claim under this Policy shall
   a) in the event of theft give notice to the police and render all reasonable assistance in causing the discovery and punishment of any guilty person and in tracing and recovering the property
   b) in all cases give notice to the Company in writing and within fourteen days thereof or such further time as the Company may allow a claim in writing and supply such detailed proof and particulars as the Company may reasonably require
   c) in the event of a claim under Section IV of this Policy forward all letters writs or legal documents to the Company immediately upon receipt
2. The Company may in the name of the Insured and at its own expense use all legal means to recover any property lost or seek indemnity from any third party and the Insured shall give all reasonable assistance for that purpose.
3. If any loss damage or liability or any part therof be covered by any other insurance the Company shall not be liable to pay more than its rateable proportion thereof .
4. The Company shall not be liable to make any payment under this Policy in respect of any claim if such claim shall be fraudulent in any manner or supported by any fraudulent statement or device whether by the Insured or by any person on behalf of the Insured nor if the insurance has been continued in consequence of any material misstatement or the non-disclosure of any material information by or on behalf of the Insured.
5. The Company may at its option repair reinstate or replace any property lost or damaged or may pay in cash the amount of the loss or damage. In the event of any claim under Section IV of this Policy the Company may pay to the Insured the limit of liability or any lesser amount for which any claim can be settled and in such case shall be under no further liability or obligation in respect of any such claim.
6. If the property covered by this Policy shall at the time of any loss or damage be collectively of greater value than the sum insured thereon then the Insured shall be considered as being his own insurer for the difference and shall bear a rateable share of the loss or damage accordingly. Every item of the property insured shall be separately subject to this condition.
7. The Company may cancel this Policy at any time by giving seven days notice by registered letter to the Insured at his last known address and in such event the Company shall return a prorata proportion of the premium for the unexpired period of insurance.
8. All differences arising out of this Policy shall be referred to the decision of an Arbitrator to be appointed in writing by the parties in difference or if they cannot agree upon a single Arbitrator to the decision of two Arbitrators one to be appointed by each of the parties within one calendar month after having been required in writing so to do by either of the parties or in case the Arbitrators do not agree of an Umpire appointed in writing by the Arbitrators before entering upon the reference. The Umpire shall sit with the Arbitrators and preside at their meetings and the making of an award shall be a condition precedent to any right of action against the Company. If the Company shall disclaim liability to the Insured for any claim hereunder and such claim shall not within twelve calendar months from the date of such disclaimer have been referred to arbitration under the provisions herein contained then the claim shall for all purposes be deemed to have been abandoned and shall not thereafter be recoverable
9. In the case of any claim arising in respect of liability under this Policy the same shall be settled and paid in Kathmandu and the entire cause of action shall also be deemed to arise in Kathmandu and further that all legal proceedings in respect of any such claim shall be instituted in a competent court of Nepal in the city of Kathmandu.
10. The due observance of the terms exceptions conditions and endorsements of this Policy by the Insured in so far as they relate to anything to be done or complied with by him and the truth of the statements and answers in the said proposal shall be conditions precedent to any liability of the Company to make any payment under this Policy.

Annex 14

HOUSEHOLD PROPOSAL FORM

QUESTIONS		ANSWERS
1.	Proposers :	
	A) Name	A)
	B) Address	B)
	C) Occupation	C)
	D) State the name of Bank/ Finance Co. interest	D)
2.	Subject matter of Insurance	
Section 1	Of what the building is constructed :	
	Walls	
	Roof	
	Nos. of Floors	
	Address of premises at which this insurance is required	
	Is the Building attached/ detached?	
	Building Occupied as : (Residence/ on Rent/ Commercial/ Others)	
	Value of Buildings	NRs.
Section 2	Details of Household contents :	
	A) Furniture, Fixtures & Fittings	A) NRs.
	B) Household Items	B) NRs.
	C) Any other items (Specify)	C) NRs.
3.	A) Has any company refused to insure or renew this or other property	A)
	B) Is the property now or has it been insured ? If yes, state the name of Insurer	B)
	C) Have you ever had a loss during past 5 years ?	C)
4.	Personal Accident:	
	Name of beneficiary	
	Relationship between Insured Person & Beneficiary	
5.	Period of Insurance	From.....am/pm. ..... To.....

Please enclosed a detail list of household contents worth above NRs. 2,000/- per items.

DECLARATION

I/we hereby declare that the above statements are true and that I/we have withheld no information which might influence the acceptance of this proposal. I/we further declare that the sums insured represent and will be maintained at no less than the full value of the property. I/we agree that this proposal shall be the basis of the contract between me/us and the Himalayan General Insurance Co. Ltd. and deemed to be incorporated in the Policy.

Date : …….. Signature : ……

SS / 25.04.08

Annex 15

HOUSE HOLD CLAIM FORM

1. **Claim No. : _____ Policy No. : _____ Date of issue/proposal : _____**

2. **Insured's Name & Full address** **:**_____

_____

3. **Properties covered** **:**_____

4. **Total sum insured** **:**_____**Sum insured under affected items :**_____

5. **Date & Time of loss/accident** **: _____ Date of intimation : _____**

6. **Where loss occurred? : _____**

7. **Full details of loss** **: _____**

_____

_____

_____

8. **Estimated loss** **: _____**

9. **In case of theft, was forcible entry made? Give full details.** **: _____**

_____

_____

_____

10. **When & in which Police Station the matter has been reported?** **: _____**

11. **Did Police apprehend the culprits & recover the lost items? If so, please give details & their value.** **: _____**

_____

12. **What is the outcome of the Police investigation?** **: _____**

13. **Any other details you want to add** **: _____**

_____

_____

I/we hereby declare that the above statements are true to the best of my/our knowledge.

Date: _____ Station _____

_____
Signature of the insured
(with official seal, if any)

A burglary Policy being a contract of INDEMNITY, all claims must be based upon the actual value of the articles at the time of Theft.

Annex 15 Continued……

Sr. No.	Full description of articles stolen or property damaged	Name & address of the shop from where the lost items were purchased	Date of purchase	Purchase cost	Depreciation for wear & tear	Actual amount claimed
				Total		
				Depreciation for wear/tear		
				Net amount claimed		

Annex 16

Probable Maximum Loss (PML) and Premium

Fire and Allied Perils Insurance / Household Insurance

Village	No.of Households	Average cost of house	Average value of contents	Total Average value	Total value	Average loss per HH	Total loss due to disaster	% of loss on total value	Required rate of premium	Probable gross premium
Barja	140	100,000	50,000	150,000	21,000,000	1,807	252,980	1.20%	0.30%	
Gurasti	160	600,000	50,000	650,000	104,000,000	1,807	289,120	0.28%	0.30%	
Birendra Nagar	160	300,000	50,000	350,000	56,000,000	1,807	289,120	0.52%	0.30%	
Durgadevi	278	900,000	50,000	950,000	264,100,000	1,807	502,346	0.19%	0.30%	
	738				**445,100,000**	**1,807**	**1,333,566**	**0.30%**	**0.30%**	**1,335,300.00**

Personal Accident Insurance

Village	No.of Households	Average No. of prs per house	Total Population	Sum per person	Total Sum	Agerage annual death due to disaster	Total loss due to disaster	% of loss on total value	Required rate of premium	
Barja	140	7	980	100,000	98,000,000					
Gurasti	160	6	960	100,000	96,000,000					
Birendra Nagar	160	6	960	100,000	96,000,000					
Durgadevi	278	7	1,946	100,000	194,600,000					
	738		4,846		484,600,000	1	100,000	0.021%	0.075%	**363,450.000**

Life Insurance

Village	No.of Households	Average No. of prs per house	Total Population	Sum per person	Total Sum	Agerage annual death due to disaster
Barja	140	7	980	100,000	98,000,000	
Gurasti	160	6	960	100,000	96,000,000	
Birendra Nagar	160	6	960	100,000	96,000,000	
Durgadevi	278	7	1,946	100,000	194,600,000	
	738		4,846		484,600,000	1

Cattle - Live Stock Insurance

Village	No.of Households	Buffalo	Cow	Sheep / go	Pig	Chicken	Average Value		Average loss	loss value	% of loss on Value	Required rate	
Barja	140	2	2	2	1	5	140,500	19,670,000					
Gurasti	160	1	1	1	1	1	75,800	12,128,000					
Birendra Nagar	160	1	1	3	1	3	83,400	13,344,000					
Durgadevi	278	-	-	-	-	-	-	-					
	738	1	1	1	1	3	76,400	56,383,200	5.166	129,150.0	0.229%	0.50%	**281,916.00**

1,980,666.0

Average/HH **2,683.83**