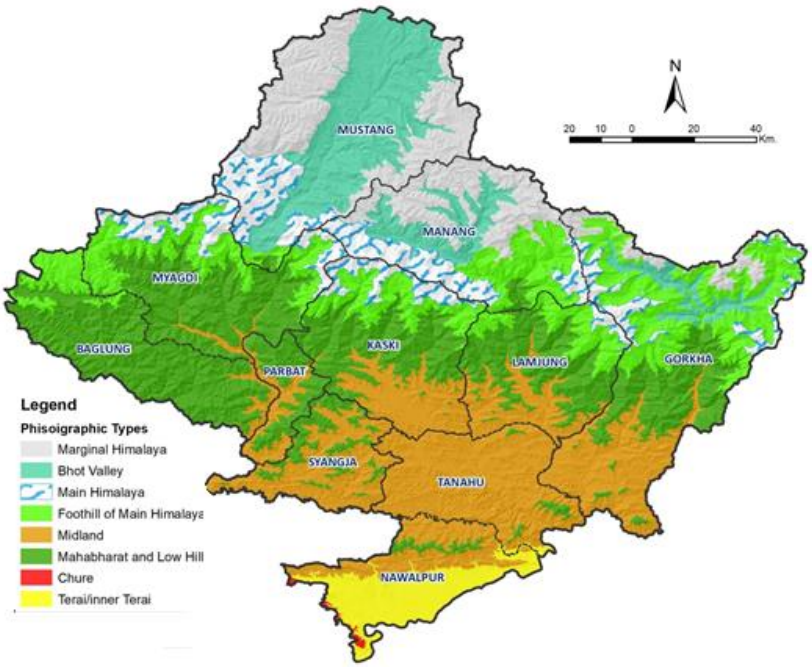
Feasibility Study of Disaster Risk Area Identification and Scientific Mapping (HAZARD) in Gandaki Province, Nepal



Submitted to:

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Gandaki Province, Nepal

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30 June, 2019

ABSTRACT

Nepal is a hazard risk country. Human casualties and property loss are major consequences of the disaster. Gandaki province is covered by Himalayas, Mountains and Hills therefore it has also high disaster risk. To identify and map the disaster risk zone, ministry of internal affair and law, Gandaki province conduct this study through province. The study identify Gorkha district as hazard risk district of the Gandaki province. Parbat district has low amount of risk land. It may be due to smallest district of the province. The study identified 6349 km^2 fire risk zone, 1443.33 km^2 flood risk zone and 3371.32 km^2 landslide risk zone in the Gandaki province. Land use land cover and precipitation are most important variables to model the fire risk. Shrub land, forests and areas having low precipitation are more susceptible to fire risk. Distances to water and slope are most important variables to model the flood risk. Lands near to the water and flat area are facing the flood risk. Slope and land use land cover are most important variables to model the landslide risk. Lands around the river sides and steep slopes are more risky area in terms of landslides. Similarly, road accidents, hailstones and lightning are also serious hazards in the province. Among all 11 districts of the province, Parbat district is more vulnerable to the hailstone and lightning.

ACKNOWLEDGEMENTS

We would like to express our gratitude to Ministry of Internal Affairs and Law, Gandaki Province Pokhara, Nepal for selecting our organization as qualified organization for conducting research entitled "Feasibility Study of Disaster Risk Area Identification and Scientific Mapping (HAZARD) in Gandaki Province, Nepal." We would also like to express our heartfelt thanks to Honorable Minister Hari Bahadur Chuman and secretary Manohar Prasad Khanal of the Ministry of Internal Affairs and Law for their cooperation in conducting research study. Aafter selecting our consultancy for study, we regularly got support from the related staffs of Ministry of Internal Affairs and Law, Gandaki Province Pokhara, Nepal. Especially we thank Prakash Dhungana, Basanta Koirala and Ganga Bahadur Thapa for their co-ordinations and co-operation.

We are grateful to staffs of district administration offices, district police offices of all 11 districts of the province for their valuable information and suggestions. Similarly, our thank goes to the related staffs and representatives of District Co-ordination Committee, Metropolitan city, Municipalities, and Rural Municipalities, and Red Cross Society of all 11 districts of the province for their valuable suggestions and information. This study was possible after sincere support from researchers and students. We want to thank all of them for their kind and valuable supports.

Thanks.

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June, 2019

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ABBREVIATION

ASCII	American Standard Code for Information Interchange
AUC	Area Under the Curve
DEM	Digital Elevation Model
DHM	Department of Hydrology and Meteorology
ESRI	Environment System Research Institute
EVI	Enhance Vegetation Index
GFC	Global Forest Change
GIS	Geographical Information System
GoN	Government of Nepal
GPS	Global Positionning System
ICIMOD	International Centre for Integrated Mountain Development
INGO	International Non-government Organization
Km.	Kilometer
Km2	Kilometer Square
LULC	Land Use Land Cover
mm	Millimetre
MODIS	Moderate Resolution Imaging Spectroradiometer
MoSTE	Ministry of Science Technology and Environment
NGO	Non-government Organization
RS	Remote Sensing
TSS	True Skill Statistics
USGS	United States Geological Survey

1. INTRODUCTION

1.1. Background

Disasters (interchangeably used with hazards), especially those that are connected in the minds of the public with natural hazards, are not the greatest threat to humanity. Despite the lethal reputation of earthquakes and epidemics many more of the world's population has their lives shortened by unnoticed events, illnesses, and hunger that pass for normal existence in many parts of the world. Occasionally earthquakes kill hundreds of thousands, and very occasionally floods kill millions at a time. But to focus on these is to ignore the many millions more who are not killed in such events. There is a daily and unexceptional tragedy of those whose deaths are through 'natural' causes. Under different economic and political circumstances they should have lived longer and enjoyed a better quality of life.

The crucial point about understanding why disasters occur is that it is not only natural events that cause them. They are also the product of the social, political, economic and environment because of the way it structures the lives of different groups of people. There is a danger in treating disasters as something peculiar, as events which deserve their own special focus. By being separated from the social frameworks that influence how hazards affect people, too much emphasis in doing something about disasters is put on the natural hazards themselves, and not nearly enough on the social environment and its processes. Many aspects of the social environment are easily recognized: people live in adverse economic situations that lead them to inhabit parts of the world that are affected by natural hazards, be they flood plains of rivers, slopes of volcanoes, or earthquake zones. But there are many other less obvious political and economic factors that underlie the impact of hazards. It is these that link our analysis of disasters that are supposedly caused mainly by natural hazards to broader patterns of society. These two aspects cannot be separated from each other: to do so risks the failure to understand the additional burden of natural hazards, and is unhelpful in both understanding disasters and doing something to prevent or mitigate them.

Many disasters are usually a complex mix of natural hazards and human action. For example, in many regions wars are inextricably linked with famine. But the wars often either coincide with drought, or make it difficult for people to deal with drought in ways that without war they might have coped satisfactorily. All over the world, but especially in poorer countries, vulnerable people often suffer repeated, multiple, mutually reinforcing shocks to their lives, their settlements, and their livelihoods. As often as not, the pattern of such frequent stresses, brought on by a wide variety of 'natural' trigger mechanisms, has been complicated by human action (Blaikie et al., 1994).

It is impossible to live in a totally risk-free environment. We all face some degree of risk each day, whether it is to life and limb in a road accident, to our possessions from theft or to our personal space from noise or other types of pollution. Some of these threats are chronic or 'routine' and do not create large-scale deaths and damages (Smith, 2004).

Common natural hazards are landslide, flood, lightning, hail stone, frost, heavy snow fall, windstorm, hurricane, tornado, erosion, avalanche, earthquake, tsunami, volcano eruption and drought. On the other hand common human induced hazards are road accident, airplane accident, firing, electrification, damage of big buildings etc.

Nepal is situated in the central part of the Himalaya ($26^0$22' - $30^0$27' N, $80^0$04' - $88^0$12' E), covering an area of 147,181 km^2 and an elevation ranges from 58 m to 8848 m. above sea level. Nepal has diverse climates due to the large variation in elevation. The climate varies from humid tropical type in the tropical lowlands in the south to alpine cold semi-desert type in the trans-Himalayan zone (Ohsawa et al., 1986). The average annual rainfall is around 1000 – 2000 mm, but sometimes it exceeds to 3000 mm in some lower parts of the country (Ichiyanagi et al., 2007). Nepal has diverse geography that ranges from permanently snow and ice covered very rugged Himalayan Mountains in the north to the tropical alluvial plains in the south. Due to variation in climate and topography, Nepal is classified into five physiographic zones (i.e., Terai, Siwalik, middle Mountain, high Mountain and Himalaya) (Barnekow Lillesø et al., 2005; Shrestha et al., 2010). This country boasts seven of the world's eight highest peaks, including Mount Everest. About 75% of the total land area of 147,181 km^2 is made up of mountains and hills. It is a landlocked country with its nearest

point to the sea being 960 km array. The Terai plain, a low and flat land (100-300 m asl), stretches along the southern part of the country.

1.2 Problem statement

Nepal is exposed to most disaster types including earthquakes, floods, landslides, droughts, storms, avalanches, hailstorms, fires, lightning, road accident, epidemics and ecological hazards. A wide range of physiological, geological, ecological, meteorological and demographic factors contribute to the vulnerability of the country to disasters. Major factors contributing to disasters are rapid population growth, slow economic development, a high degree of environmental degradation, fragility of the land mass and high elevation of the mounting slopes. Nepal is facing the fury of natural and human induced disasters with greater frequency and intensity. People in Nepal live with hazards, accepting them as the way of life. Disasters are so penetrative in every Nepalese geographic and societal framework that the people are constantly under the threat of a multitude of natural disasters. The earthquake of 1934, 1980, 1988, 2015 and the flood of July, 1993, 2008, 2013, 2014 and 2017 are the most devastating disasters which not only caused heavy losses to human lives and physical properties but also adversely affected the development process of the country as a whole. The lessons of the 1988 earthquake and 2015 Gorkha Earthquake, 1993 flood and landslide, 2008 Koshi floods and 2013 floods and landslide in Far Western Region, 2014 flood and landslide in Mid-Western Region and 2017 floods and landslides in Eastern and Central Region have brought about a shift of attitude on the part of planners, government, donor agencies, NGOs and INGOs towards the need for a coordinated disaster preparedness and response mechanism. Fire is another disaster which occurs on a regular basis and wild fires are damaging to already severely depleted forests and biodiversity of Nepal which results on economic loss, land degradation and environmental pollution. Hence, Nepal is considered as the ‘hot spot’ of disasters. If we analyze the disaster data of Nepal, we can perceive that the human life loss and property losses are in increasing trend. This is basically due to the low level of preparedness (GoN, 2018).

The central Nepal Himalayas, Gandaki province, the southern slope of Annapuran Himalayan Range is one of the highest precipitation regions in Nepal. The meteorological stations at the Pokhara valley and its peripheries are recorded highest summer monsoon rainfall (records of

hydrology and meteorology, Government of Nepal records since 1971). Since the highest summer monsoon records the area around the Pokhara valley gets highest threats of the landslides, too.

The landscape of the Gandaki province is extending from nearly 104 m. mean sea level in the Triveni at Nawalpur district near to the Dhaulagiri 8167m, Manaslu 8163 m, and Annapurna I 8091 m. peaks are in the great Himalayas within a short areal distance of 150 kilometers. The province covers about 15 % of the total area of the country. The Manang and Mustang districts are completely located at the Inner Himalayan valley or High Himalayan valleys of Gandaki Province. The upper part of Gorkha, Lamjung, Kaski, Mygdi and Baglung districts are along the high Himalayan Massif including some areas in the North across the massif. Lower part of these districts including Tanahun, Syangja, Parbat are at the middle part. The Nawalpur falls mainly within inner Terai from Gaindakot to Dumkibas and rest part of the district are located in the area of Mahabharat range and Chure (Siwalik) and outer Terai too. This small area stretch within outer Terai falls under Binayee, Triveni Rural Municipality. This is the only of Gandaki Province to share its international border with India. Therefore, the Province has high heterogeneity in its landscape. Gandaki River system is the only drainage network. The Province has 5,98,180 households with 25,02,355 number of total population according to 2011 census. Despite few urban concentrations like, Pokhara, Damauli, Kusma Bazar, Baglung Bazar, Beni Bazar, Putali Bazar and Waling Bazar the households are widely distributed even up to the inaccessible mountain terrain. The Province landscape is highly susceptible for different types of hazards, vulnerability and risk including geological, climatic and human induced. Therefore, assessment of the landscape within the hazard and vulnerability perspective is highly needed for the future development. Hence, the extension of the Province landscape within very High Mountain to deep river valleys and Tarai plain comprise heterogeneity of its database, therefore, manual collection of data, integration and analysis by using conventional method may not be feasible.

In this scenario, Ministry of Internal Affairs and Law, Gandaki province has conducted the study for identification and mapping of disaster risk area of the entire province. In this study the major three disasters (fire, flood and landslides) were modeled and mapped by the help of GIS (Geographical Information System) and remote sensing technology.

1.3 Objective of the study

The main objective of the study is **Identification and Scientific Mapping of disaster (HAZARD) of Gandaki Province.** The specific objectives of the study are as follows:

- Identification and mapping of fire risk area of Gandaki province
- Identification and mapping of flood risk area of the study area
- Identification and mapping of landslide risk area of the study area
- Identify the factors involved and their effects from the fire, flood and landslide in the study area.

1.4 Limitation of the study

This is the first provincial level hazard assessment study of the Gandaki province. This study could be better if the provincial government allocated more budgets for it. Due to limited budget, study team couldn't collect all disasters points. In this study, only three hazards: fire, flood and landslide are modeled. But it is imperative to conduct detail studies to assess and model the other types of the hazards like epidemics, road accident, lightning, hailstone, storm and drought. Due to limited time and budget, study team couldn't collect the adequate data of hailstone, road accident and lightening as a result, study couldn't model these types of hazards.

2. LITERATURE REVIEW

Identification and mapping of hazard risks is challenging but this is crucial task for society to mitigate the human, property and ecosystem loss. In Nepal this kind of studies are very limited. After restructuring of the country, the provincial level studies may be useful for provincial government for risk management of the disasters.

Most of the disasters are mix of natural hazards and human action. For example, in many regions wars are inextricably linked with famine. But the wars often either coincide with drought, or make it difficult for people to deal with drought in ways that without war they might have coped satisfactorily. All over the world, but especially in poorer countries, vulnerable people often suffer repeated, multiple, mutually reinforcing shocks to their lives, their settlements, and their livelihoods. As often as not, the pattern of such frequent stresses, brought on by a wide variety of 'natural' trigger mechanisms, has been complicated by human action (Blaikie et al., 1994).

It is impossible to live in a totally risk-free environment. We all face some degree of risk each day, whether it is to life and limb in a road accident, to our possessions from theft or to our personal space from noise or other types of pollution. Some of these threats are chronic or 'routine' and do not create large-scale deaths and damages (Smith, 2004).
Nepal is considered as the 'hot spot' of disasters. If we analyze the disaster data of Nepal, we can perceive that the human life loss and property losses are in increasing trend. This is basically due to the low level of preparedness (GoN, 2018).

Water induced disasters are the most devastating disaster in Nepal in terms of the number of deaths that occur and the damages they cause; and mostly Terai of Nepal faces most devastation because of degraded Siwaliks in upstream. Risk reduction that integrates interventions for reducing land degradation, erosion control in upstream, inundation control in the downstream and early warning systems through the communication between upstream and downstream communities through upstream downstream linkage can be the better options for the reduction of the impact of water induced disasters: flood and landslide (Dhakal, 2013).

The policy formulation and institutional set-up needs to be complemented by the ability and competence to operationalize the intent of the relevant acts and policies at all levels of government to tackle with the disasters in Nepal (Nepal et al., 2018).

3. MATERIALS AND METHODS

3.1 Study area

Nepal is situated in the central part of the Himalaya (26^0 22' - 30^0 27' N and 80^0 04' - 88^0 12' E), covering an area of 147,181 km^2 and an elevation ranges from 58 m. to 8848 m. Nepal has diverse climates due to the large variation in elevation. The climate varies from humid tropical type in the tropical lowlands in the south to alpine cold semi-desert type in the trans-Himalayan zone (Ohsawa et al., 1986). Nepal's forest ecosystems can be categorized into 10 major groups on the basis of climatic conditions: (1) tropical, (2) subtropical broad-leaved, (3) subtropical conifer, (4) lower temperate broad-leaved, (5) lower temperate mixed broad-leaved, (6) upper temperate broadleaved, (7) upper temperate mixed broadleaved, (8) temperate coniferous, (9) subalpine, and (10) alpine scrub (Stainton, 1972). Nepal has diverse geography that ranges from permanently snow and ice covered very rugged Himalayan Mountains in the north to the tropical alluvial plains in the south. Due to variation in climate and topography, Nepal is classified into five physiographic zones (i.e., Terai, Siwalik, middle Mountain, high Mountain and Himalaya) (Barnekow Lillesø et al., 2005; Shrestha et al., 2010). The average annual rainfall is around 1000 – 2000 mm, but sometimes it exceeds to 3000 mm in some lower parts of the country (Ichiyanagi et al., 2007).

Gandaki which is one province out of seven provinces of Nepal. This province is situated at centeral part of Nepal by covering the 11 districts: Nawalpur, Tanahun, Gorkha, Lamjung, Kaski, Syanjya, Parbat, Baglung, Myagdi, Manang, and Mustang (Figure 1). Similarly, there are only 85 local governing bodies in Gandaki Province whereas: 1 Metropolitan City, 26 Municipalities and 58 Rural Municipalities (MoITFE, 2018).

In the central part of Nepal, the Gandaki Province (27^0 26' 15" N - 29^0 19' 15" N and 82^0 52' 45" E - 85^0 12' 01" E) is spread from Himal to Terai with north to south direction (Figure 1). The total area of this state is 21,976.34 km2, i.e. 14.93% of the total area of Nepal. Near the border of India, the lowest part close to the Gandaki canal of Narayani River is at the height of 104 meters above sea level. This elevation goes up gradually to the highest elevation at Dhaulagiri with 8,167 meters. In this province almost all part of Himalayan mountain range

has fallen to the interior parts. These interior parts are Mustang, Manang and Northern Part of Gorkha (Larke-Kutang-Vote) which are known as High Himalayan Valley (MoITFE, 2018).

According to the census 2068, the total number of families in this Province is 578,21. There are average family size is 4. Similarly, the total population of the state is 24,03,022 in which the number of male is 10,90,213 and the number of female 13,12,809. Kaski district is with highest number of population whereas Manang stands with lowest. Brahman, Kshetri, Magar, Gurung, Kami, Damai, Sarki, Tamang, Tharu, Thakali and Kumal are the major caste and ethnic groups of the province (MoITFE, 2018).

Around 37.1% area of the province is covered by forest. Major tree species of the province are *sal sissoo, khair, rani salla, chilaune, katus, utis* and *gobre salla*. The major forest management models exercised in the provinces are community forest management, collaborative forest management and block forest management. Scientific forest management program has been launched in all these forests areas through the Nepal government. *Chiraito, kutki, panchaule, lokta, ban lasun, satuwa, atis, nirmansi* are major Non-timber forest products (NTFPs)(MoITFE, 2018).

Gandaki province is rich in protected area. Around 45.68 % area of the Gandaki province is covered by protected areas. Annapurna Conservation Area, Manaslu Conservation Area, some part of Dhorpatan Hunting Reserve and Chitwan National Park are in this province. Annapurna Conservation area is famous for mountain trekking and unique landscape, Dhorpatan Hunting Reserve is popular for trophy hunting of blue sheep and Himalayan tahr. Similarly, Chitwan National Park is famous for rhino and tiger and Manaslu conservation area is famous for trekking, unique landscape and mountain biodiversity (DNPWC, 2017; MoITFE, 2018).

Figure 1: Location map of the study area

3.2 Geology

Geologically the formation of the Himalaya is dynamic due to the result of active lithospheric plate. Nepal lies within Himalaya with same origin. The Indian plate in the South and Eurasian plate in the north started to collide with each other about 45 million years. As a result, the land under the bottom of the Tethys Sea buckled in the form of Himalaya or ultimately Himalaya was originated. With catastrophic event of upliftment ages long Tethys Sea located in between these two landmasses was disappeared. The collision process is still

active which is associated with the fragile geological structure of the Himalaya. The dynamics of the collision of these mega plates underneath the earth surface of this geographical part of the world is basically connected with fragile environmental character of the Himalaya. It is therefore, serious and scientific consideration before the constructions of heavy manmade in the Himalaya is felt essential.

As matter of these geological fact of the Himalaya, it further can be grouped into several physiographic units. These physiographic units are actual Terai (part of Indo-gangetic plain), Bhavar Tract, Siwalik Range/Churiya (outer Himalaya), Dun/Inner Terai, lesser Himalaya/Mahabharat Lek, Midland Valley Region, Greater or High Himalyas, High Himalayan Valleys and Trans-Himalaya (Tibean Tethys zone). Gandaki province is one out of seven provinces after the latest federal provincial division of Nepal. This province also includes almost all of these geological structures and physiographic units of the Himalaya mentioned above.

Among the five geological zones Terai and Churia zones are less in terms of area coverage and other three zones covers maximum area of this province. Each of these zones has their own inborn geological characteristics and are controlled by the topography and relief as well **(Figure 2)**. During the time of the formation of Himayas in the northern part of Nepal three fault lines were formed in the province and they are:

1. Main Central Thrust (MCT)
2. Main Boundary Thrust (MBT)
3. Main Frontal Thrust (MFT)

The Main Central Trust is extended to south western part to east west of Baglung district and the Main Boundary Trust is extended from the northern part of Nawalpur district up to Devchuli and Bhadchuli of Mahabarat range. There is a long fault line which has created anticline and syncline in Myagdi, Kaski, Lamjung and Gorkha which falls in Central Thrust. The dynamics of plate movements together with diverse geological conditions and high degree of topography change in the Gandaki province have contributed to the evolution of geological hazards, most prominently earthquake, landslides, floods, soil erosion and debris flow. Apart from this the high rate of glacier melting due to global warming has posed serious threat of Glacial Lake Outburst as well. However, the amount of risk of all these hazards is not same throughout the province.

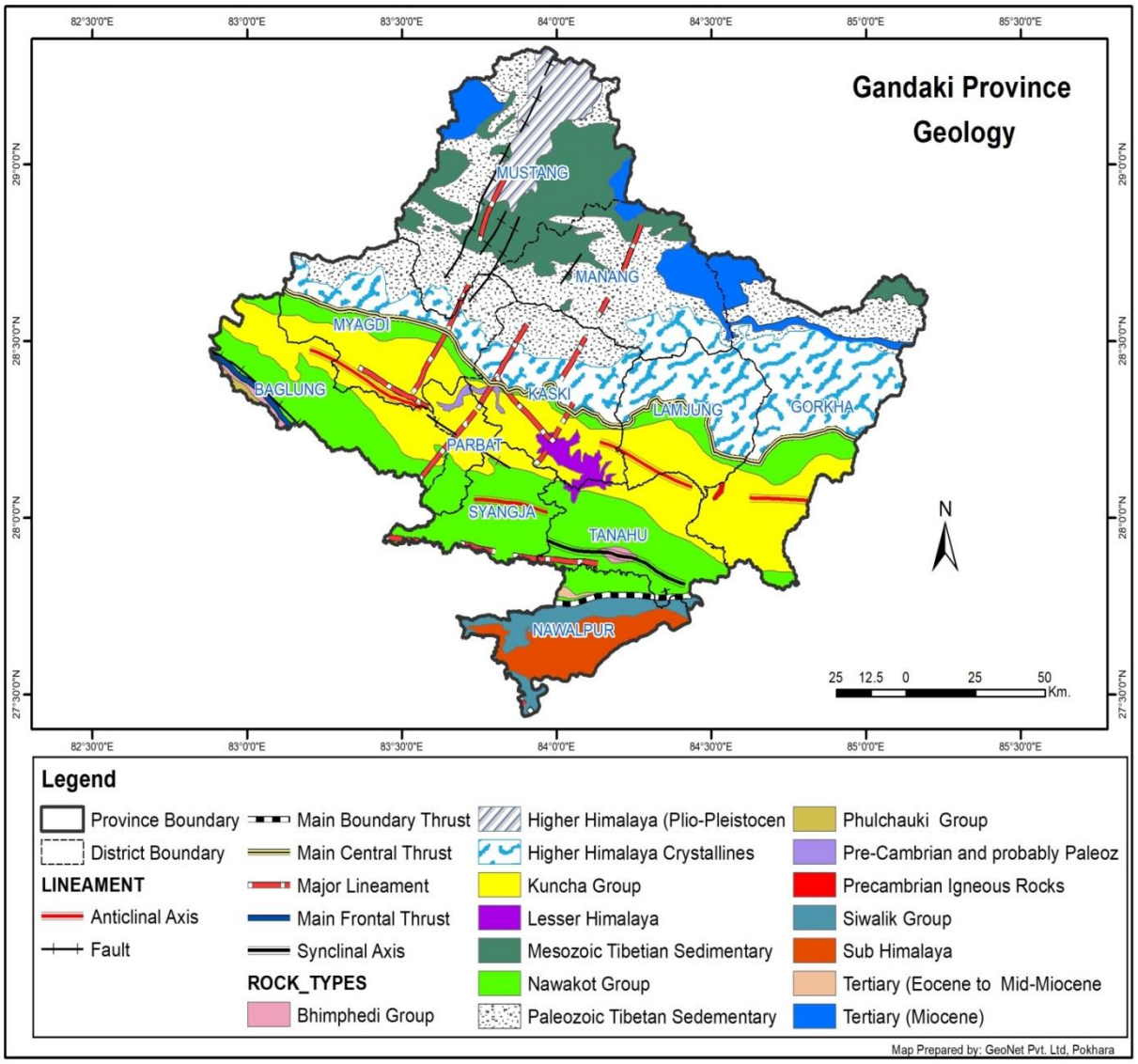

Figure 2: Location map of the study area

3.3 Topography

Topographically the altitude of the Gandaki province extends from 104 m (Tribeni) to 8167 m (Mt. Dhaulagiri) above sea level. It has unique landscape having Terai, Bhabar, Inner Terai, Churia, Duns, river basin, valleys and hills. On this basis the province is divided into eight different physical features **(Figure 3).**

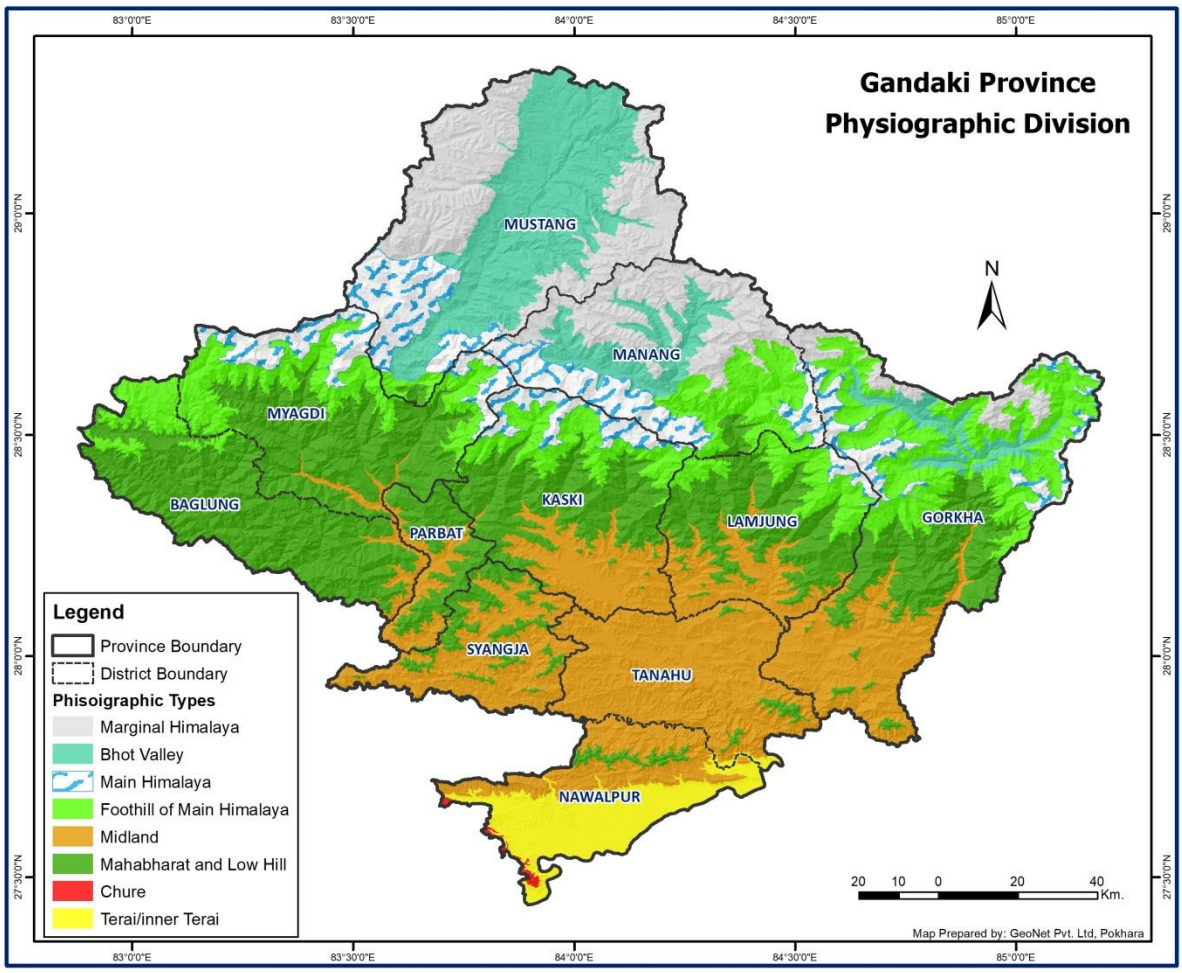

Figure 3: Physical Feature of Gandaki Province

a. Terai and Inner Terai: Terai and Inner Terai lies to the south of this province. It covers an area of 812.22 sq.km. The lowest point Tribeni lies in about 104m and 300 m above sea level. This region is formed with fertile alluvial soil deposited by the rivers. The major places lies in this belt are Gaindakot, Pragatinagar, Dumkibaas, Kawasoti, Chourmara etc. This region covers just 3.69 per cent area of the country and one of the leading producer of good grains having few large scale industries.

b. Churia: To the south of west of province 5 there lies Churia range. This region is believed to be formed during the time of the formation of Himalayas. It is mainly formed by Sand, Shale, Mudstone, Conglomerate, Pebbles, Sandstones and so on. It covers 27.40sq.km area of the province and its altitude extends from 300m – 600 m above sea level. The third grade rivers like the Ombara, the Raipur, the Madari, the Chukarung, the Motiya, the Khor, the Sisini streams flows to this region.

c. Midland: Midland regions is located in between main Himalaya and Mahabharata range to altitude of 600m to 1200m above sea level. The regular tectonic movements leads to the increase of height of the Himalayas this region is formed by the deposition activities of the rivers like the Kaligandaki, the Madi, the Daraundi, the Setigandaki and so on. This region is found to be formed by Dolomite , Shale, Sandstone, Slate, Phyllites, Quartzite, Mica, Schist, Garanite etc. Various duns, valleys are located in this belt and it covers an area of 5072.69sq.km of the province.

d. Mahabharat and Low Hills: Mahabhara and Low hills lies to the middle of the Gandaki province. This belt lies to the southern part of Himalaya mountain. It covers an area of 5980.31sq.km, which is around 27.16 percentage of the total area of the province. The altitude varies from 1200m to 3300 m above sea level. This belt is found to be formed by the tectonic movement where lots of young folded high hills are located in Tanahun, Lamjung, Gorkha and Kaski. The second grade rivers originated from Mahabharat range like the Vijaypur, the Suraudi, the Harpan, the Rudi, the Iindhi, the Midim, the Arun, the Chepe etc drains this region. The hills above 2500m like the Devchuli, the Badchuli the Panchase lies here which attracts thousands of tourist every year.

e. Foothills of Main Himalaya: The high hills lying between 3300-5000m above sea level which is to the south of main Himalaya and to the north of Mahabharat range lies the foothills of main Himalaya. It covers an area of 3295.48 km^2. This region is formed due to geological upliftment and mainly the rock types are Gneiss, Granite, Quartzite, Limestone, Marble and Schist. Animal husbandary is popular in this region as has plenty of grasslands.

f. Main Himalaya: The highest part of Gandaki province is known as main Himalaya. To its north lies the Bhot Valley and to its lies the Mahabharat range. It extends from east to west and covers an area of 2021.59sq.km and extends from 5000m to 8167m above sea level. This region covers with snow all the year round. There are 3 mountain peaks above 8000m which are Dhaulagiri (8156m), Manaslu (8156m) and Annapurna I (8091m). Apart from this the important mountain peaks are Annapurna II, Annapurna III, Annapurna IV, Gangapurna, Lamjung Himal, Mardi Himal, Himalchuli, Churen, Nilgiri north, Mid Nilgiri, Nilgiri South, Ganesh etc.

g. Bhot Valleys: In between the Marginal Himalaya and Main Himalaya between 3300-5000m lies the Bhot Valleys. It covers an area of 2429.75 sq.km, which is 11.04 percentage of the total area of the province. This valley extend in Manang and Mustang

and up to Gorkha. This region lies in the rain shadow area and the temperature is low during winter and the precipitation is in the form of snow. The villages like Muktinath, Jhong, Cusang, charang, lomanthang, ghami, Choser, Chondup of Mustang, Humde, Pisang, Naar, Nogru, Fu of Manang and Larkebazar, Samdo, Logaun, Niigaun are the major villages of Gorkha located in this valley.

h. Marginal Himalay or Boarder Himalaya: Marginal Himalaya lies to the extreme northern part of the Gandaki province in boarder of Tibet. Its altitude varies from 5000-7000m above sea level. It covers an area of 2375.57 sq.km which is just 10.79 percent of the total area of the province. This region is formed by Gneiss, Schist, Marbles, Tethyan Sediments, Limestone, Shale, sandstone etc. This region spreads in the northern part of Mustang, Manang and Gorkha district. The famous Korala pass which is going to be the main entrance to this province from China, lies here.

3.3.1 Aspect

The aspect of the hill slope of the Gandaki province is calculated from the Interpolated Surface in ArcGIS environment. Based on orientation of the landscape, slope aspect is categorized into nine different types Table 1.

Table 1: Distribution of area by Aspect Class

S. No.	Aspect	Area (in %)
1.	Flat	0.74
2.	North	11.16
3.	North East	12.15
4.	East	11.55
5.	South East	13.66
6.	South	13.88
7.	South West	14.04
8.	West	11.32
9.	North West	11.50
	Total	100.00

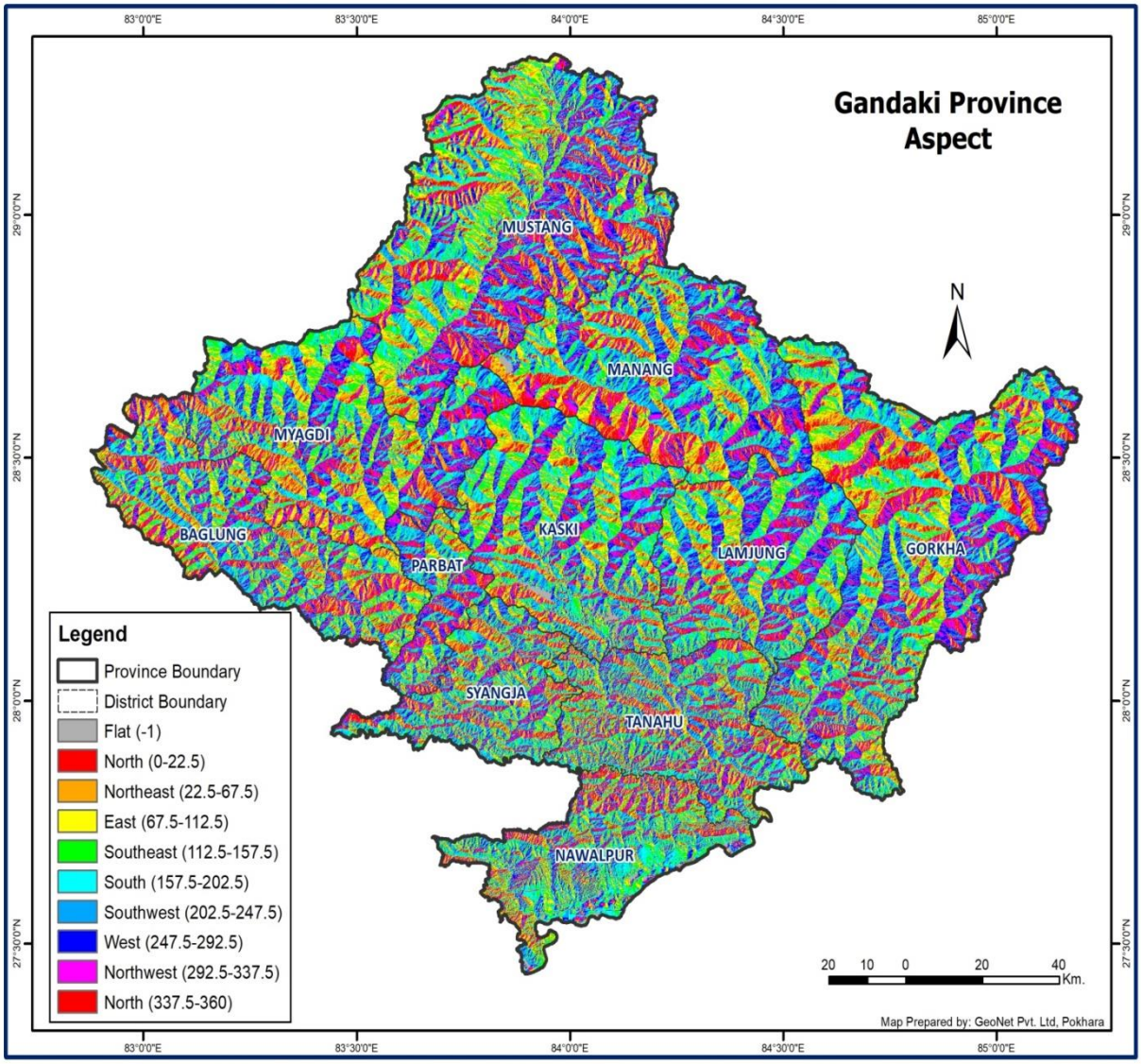

Figure 4: Aspect Map of Gandaki Province

3.3.2 Elevation

Elevation zones of the province are identified based on Digital Elevation Model data from the United States Geological Survey (USGS) (https://earthexplorer.usgs.gov/). The elevation covering the province is derived by applying ArcGIS software and classified into six zones with 1000 meter interval. The elevation above 5000 meter is accommodated within one-zone because of permanently snow covered area (Table 2 and Figure 5).

Table 2: Distribution of area by Elevation Rang

S. No.	Altitude in Meter	Area (in %)
1.	Below 1000 m.	22.17
2.	1000-2000 m.	17.37
3.	2000-3000 m.	13.17
4.	3000-4000 m.	13.93
5.	4000-5000 m.	15.69
6.	Above 5000 m.	17.67
	Total	100.00

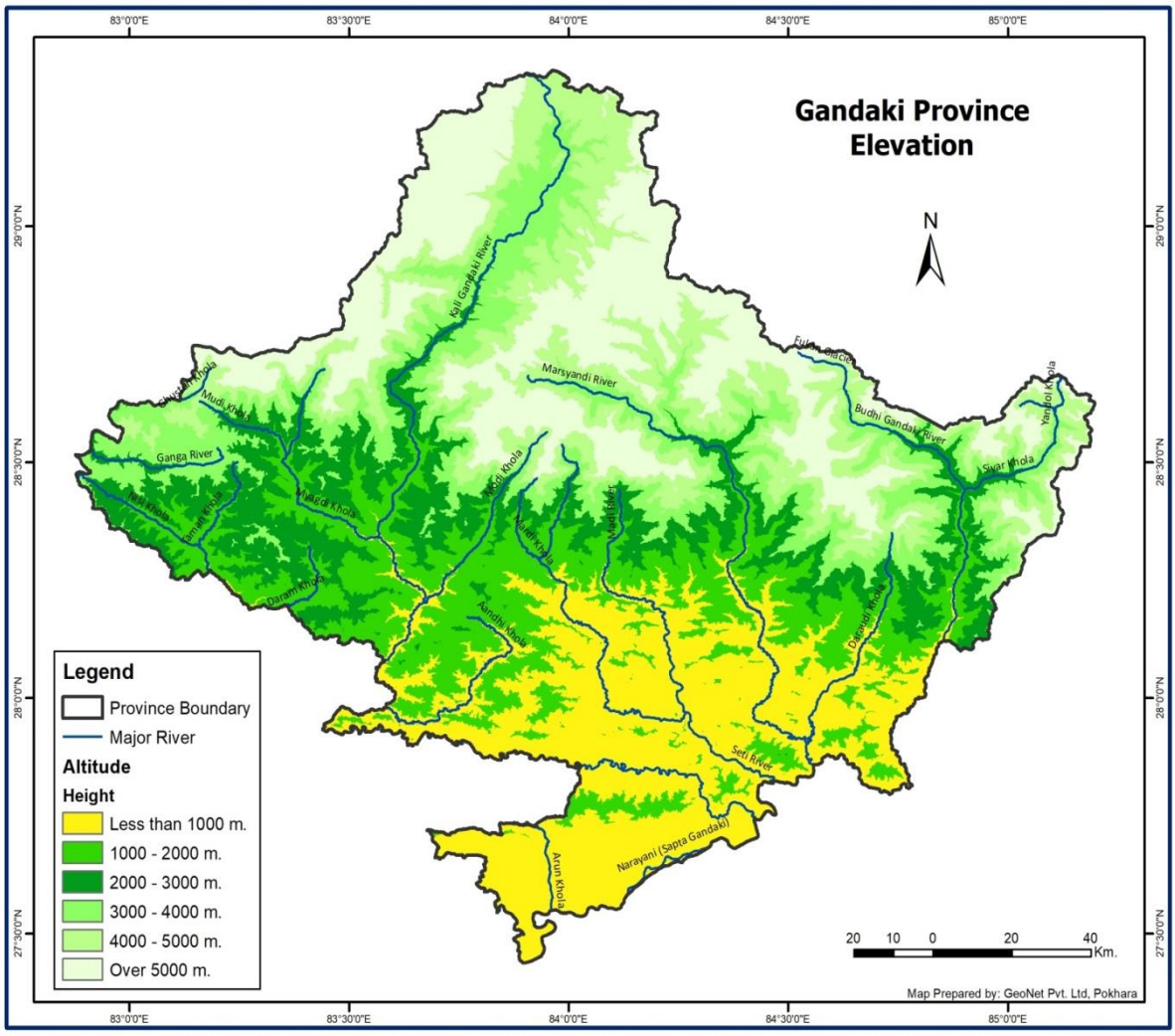

Figure 5: Altitude Map of Gandaki Province

3.3.3 Slope

Slope of the province is calculated from the Surface Interpolation carried out in the ArcGIS Spatial Analysis software environment. The total area of Gandaki Province is divided into six slope classes with different interval. About 38 percent area of the province falls on below 25 degree slope which is considered favorable for cultivation of field crops. The highest 27.44 percent area of the province is extended to 25-35 degree slope. About 35 percent area of Gandaki province is steep to very steep slopes. The detail of the distribution of total area according to slope class is shown in Table 3 and Figure 6.

Table 3: Distribution of area by Slope Class

S. No.	Slope (in degree)	Per cent
1	0-5	6.39
2	5-15	11.68
3	15-25	20.55
4	25- 35	27.44
5	35-45	22.14
6	45	11.79
	Total	100

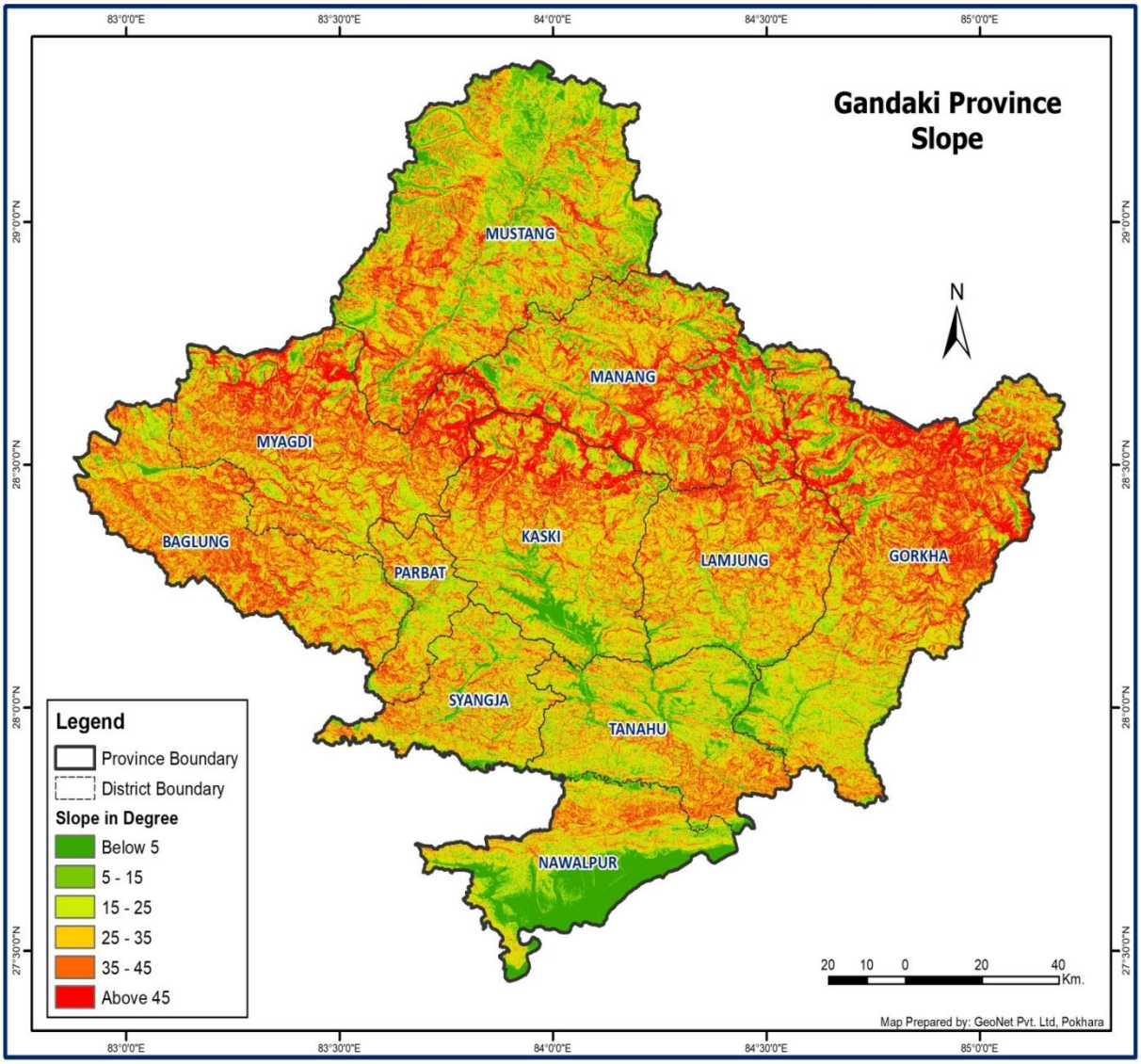

Figure 6: Slope Map of Gandaki Province

3.3.4 Distance to water

In Nepal along with Gadaki Province suffers from different types of water-induced disasters such as soil erosion, landslides, debris flow, flood, bank erosion etc. due to its rugged topography, weak geological formations, active seismic conditions, occasional glacier lake outburst, floods and concentrated monsoon rains associated with unscientific land utilizations. These phenomena induce severe impacts on the vital infrastructures of the nation such as roads, hydropower, irrigation and drinking water facilities causing loss of agricultural lands, properties and human lives posing a severe threat to the sustainable development of the country.

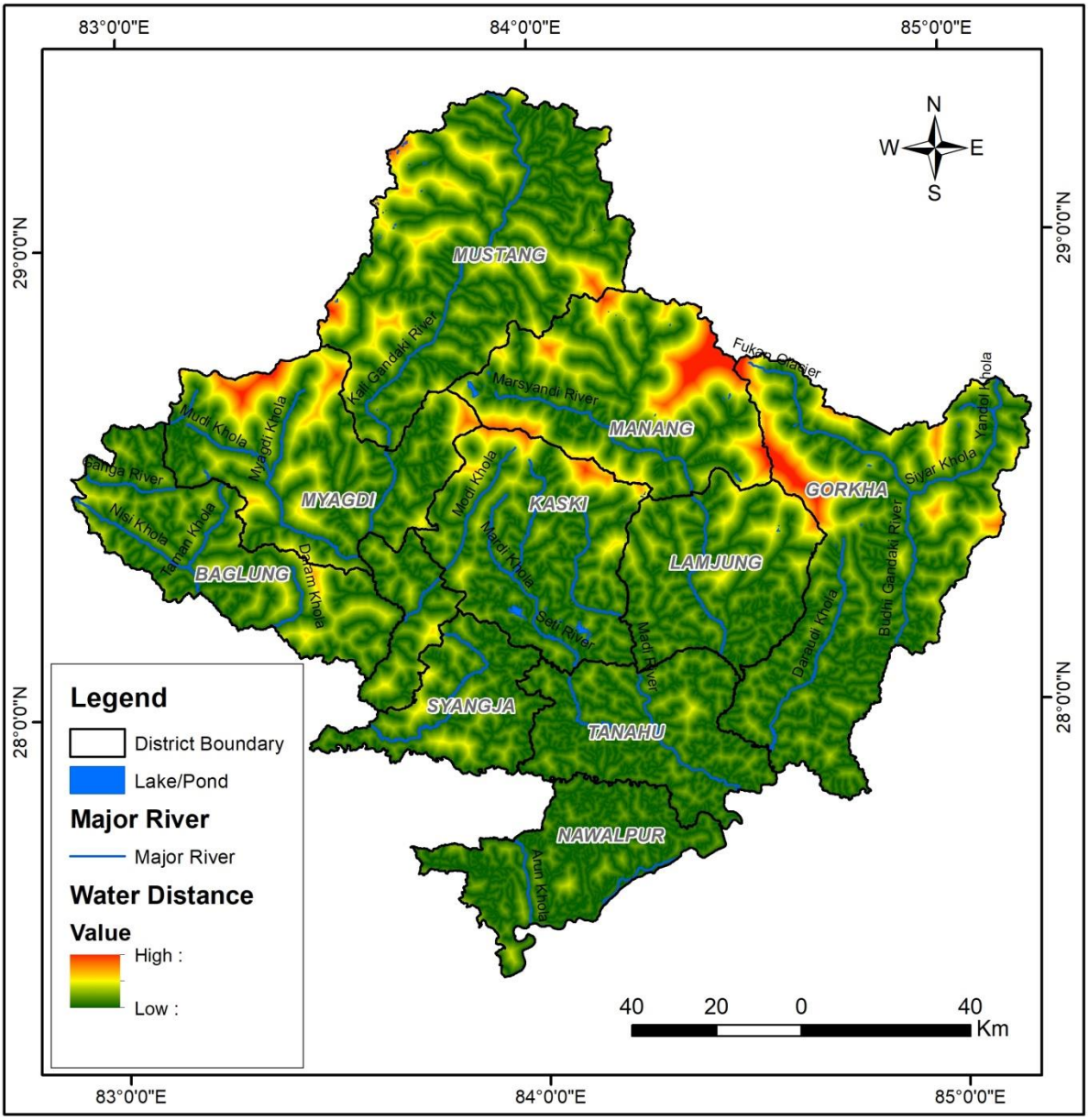

Figure 7: Major Rivers and Water Distance Map of Gandaki Province

Rivers in Nepal and Gandaki Province can be classified into three broad groups on the basis of their origin. The first group of rivers is snow fed-types such as the major rivers systems: the Kali Gandaki, Myagdi, Seti, Modi, Mardi, Madi, Marsyangdi, Daraudi and Budhigandaki **(Figure 7).** They originate from snow and glaciated regions in Himalayas and their flow regimes are mostly governed by the melting of snows and glaciers. As a result, flow in these rivers is perennial and sustain flow during the dry season. These rivers are reliable source of water and also provide potential opportunities for hydro-power generation and irrigation in the downstream. The second group of rivers originates in the middle mountains and hilly regions.

Their flow regimes are affected by both monsoon precipitation and groundwater. Contribution from groundwater yield maintains the minimum flow level and prevents from drying during non-monsoon periods. Aandhikhola, Suraudikhola, Phursekhola, Arunkhola, Daramkhola, Tamankhola, Nisikhola, Mudikhola, Dordikhola, Daraudikhola, etc. are fall into this group. The third group of river (stream) originates in small area of hilly side. The flow in these streams is mostly dependent on monsoon precipitation and their flow level could deplete significantly low during the non-monsoon period. Summer monsoon is important period when about 60-85% of annual runoff of all river systems in Gandaki Province occurs during July to September.

Table 4: Major River and Its Length of Gandaki Province

S. No.	Major River Name	Length (Km)	Remarks
1.	Kaligandaki	381.58	Partly border river
2.	Modi	57.61	
3.	Seti	150.34	
4.	Madi	84.36	
5.	Marsyangdi	176.14	
6.	Daraudi	64.72	
7.	Budhigandaki	147.58	Fully border river
8.	Trishuli	67.78	Fully border river
9.	Narayani	89.69	Fully border river

The Kali Gandaki River is one of the major rivers of Gandaki Province and which is notable for its deep gorge through the Himalayas. It has a total catchment area of 9568 square kilometers (43.46%), most of it in Gandaki Province. The basin also contains three of the world's 14 mountains over 8,000 metres Dhaulagiri, Manaslu and Annapurna I. Dhaulagiri is the highest point of the Gandaki basin. Settlements with flood risk along Kali Gandaki River shown in **Figure 8.**

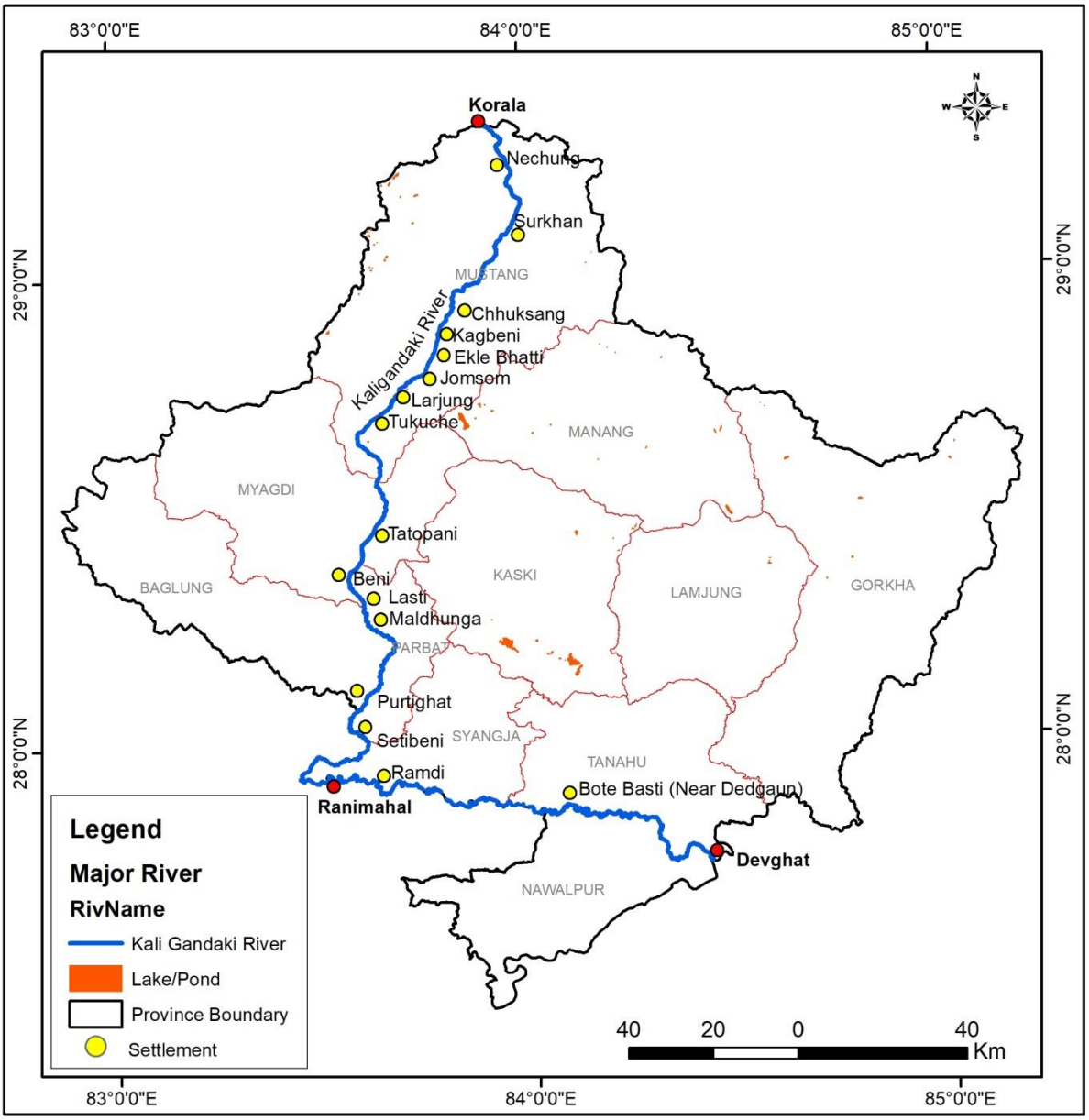

Figure 8: Settlements with flood risk along Kali Gandaki River

Major towns and cities and villages located along or near the banks of the with flood risk along Seti and Madi River shown on **Figure 9**. Similarly, Settlements with flood risk along Marsyangdi and Budhi Gandaki shown on **Figure 10**.

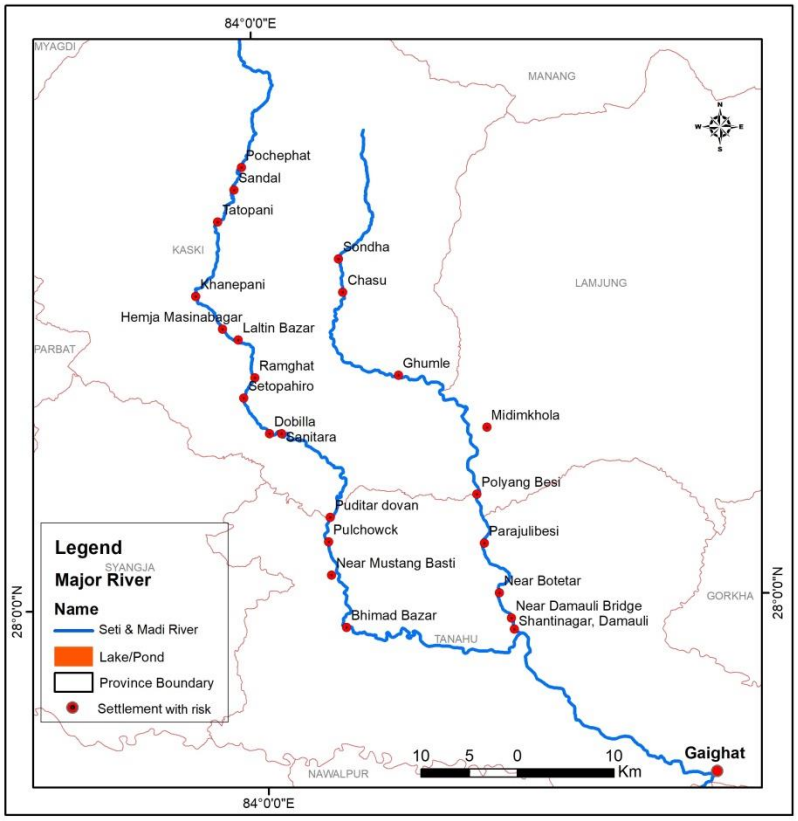

Figure 9: Settlements with flood risk along Seti and Madi River

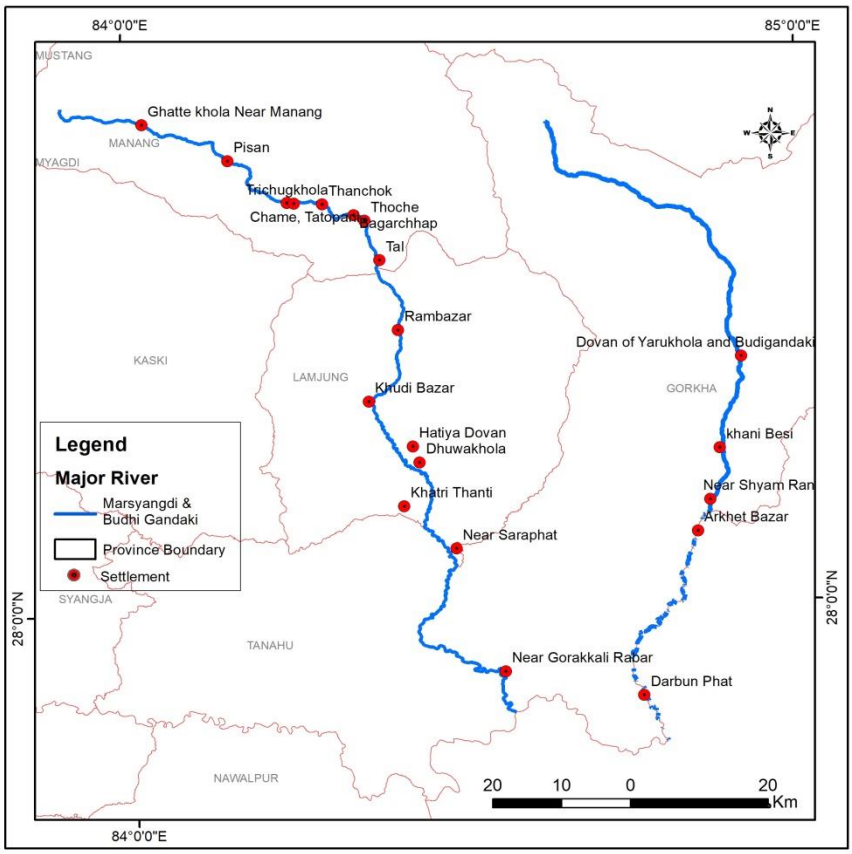

Figure 10: Settlements with flood risk along Marsyangdi & Budhi Gandaki River

Due to varied geological and geographical diversities the Gandaki province faces with different types of natural hazards, unplanned settlement, steep slopes, fast flowing rivers, plenty of uncultivated land, human encroachment on the natural environment leads to cause of hazards. The further descriptions of the hazards and its management process are discussed in the next chapter.

3.4 Climate

The climate of Gandaki Province along with Nepal is affected by two major weather systems, summer monsoon circulation (June to September) and westerly circulation (November to May). The influence of these two circulation systems is different, with summer precipitation greater in the southeast and westerly-derived winter precipitation greatest in the northwest (Nayava 1980; Mani 1981). Gandaki Province as a whole receives approximately 80 % of its annual precipitation during the summer monsoon (Shrestha 2000).

3.4.1 Mean Precipitation

The highest rain occurs when monsoon comes from the Bay of Bengal. The western disturbances during the winter season affects mostly the western parts of the country and results in snowfall in the high mountains and the Himalayas. The interaction of the complex topography with monsoon and westerly weather systems results into high variation in spatial distribution of precipitation. The windward side of the mountains receives more precipitation while the leeward side receives less. The mean annual precipitation of Gandaki province was found to be around 1800mm with the highest annual precipitation recorded in Lumle of Kaski District with mean annual precipitation of about 5500mm. The lowest precipitation site is recorded in Lomanthang area of Upper Mustang, Mustang District with mean annual precipitation of less than 150mm. Both of these highest and lowest precipitation sites of the Gandaki Province especially in Annapurna Conservation Area.

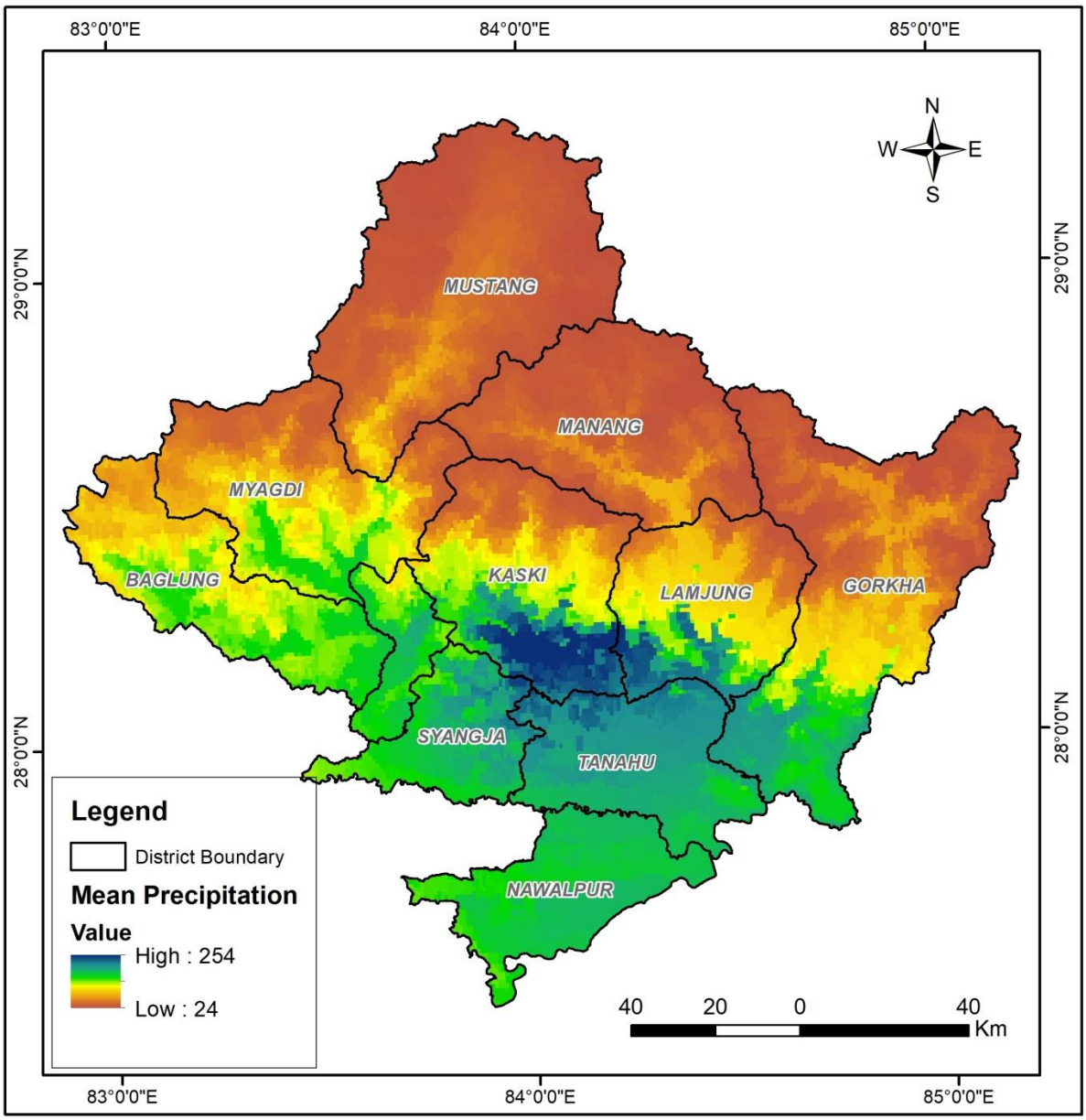

Figure 11: Mean Precipitation of Gandaki Province

3.4.2 Mean Temperature

In Gandaki Province, temperature is lowest during winter (December - January) and increases as spring advances due to increase in solar insolation. However, the arrival of monsoon rain checks the increase in temperature making generally May or early June the hottest months. The temperature starts decreasing from October and reaches the minimum in December or January. Temperature is directly related to season and altitude of the location. The hottest part of the province is the Southern belt and the coldest part lies in the high mountain or the Himalayas in the north.

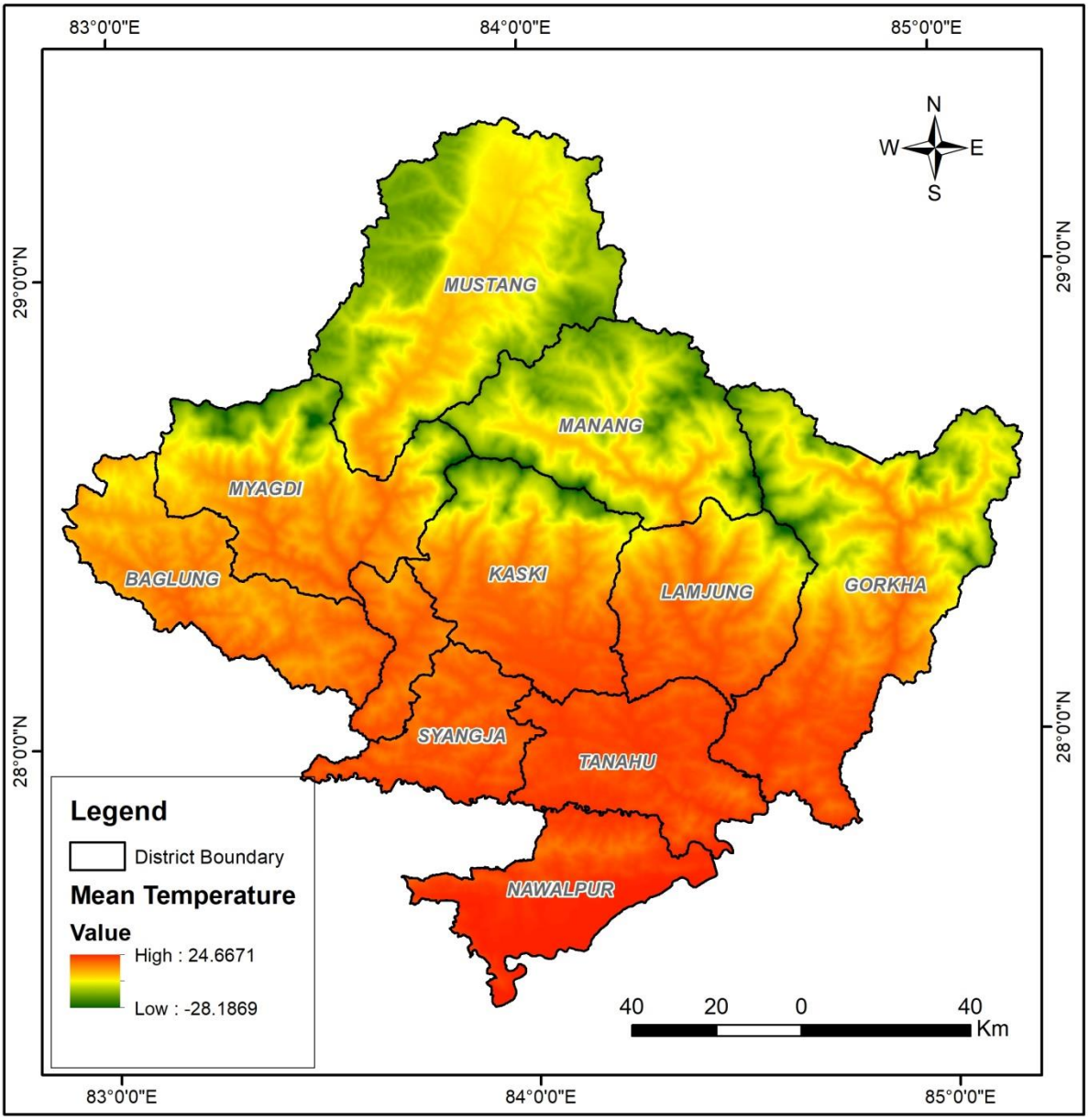

Figure 12: Mean Precipitation of Gandaki Province

3.4.3 Solar Radiation

Climate of any region is controlled by solar radiation input. The sun provides approximately 99.97 % of the energy required for the physical processes taking place in the earth-atmosphere system (Oke, 1999). Spatial and temporal (monthly/seasonal) variations of solar radiation play a decisive role in determining the long-term and short-term variations of the climatic elements.

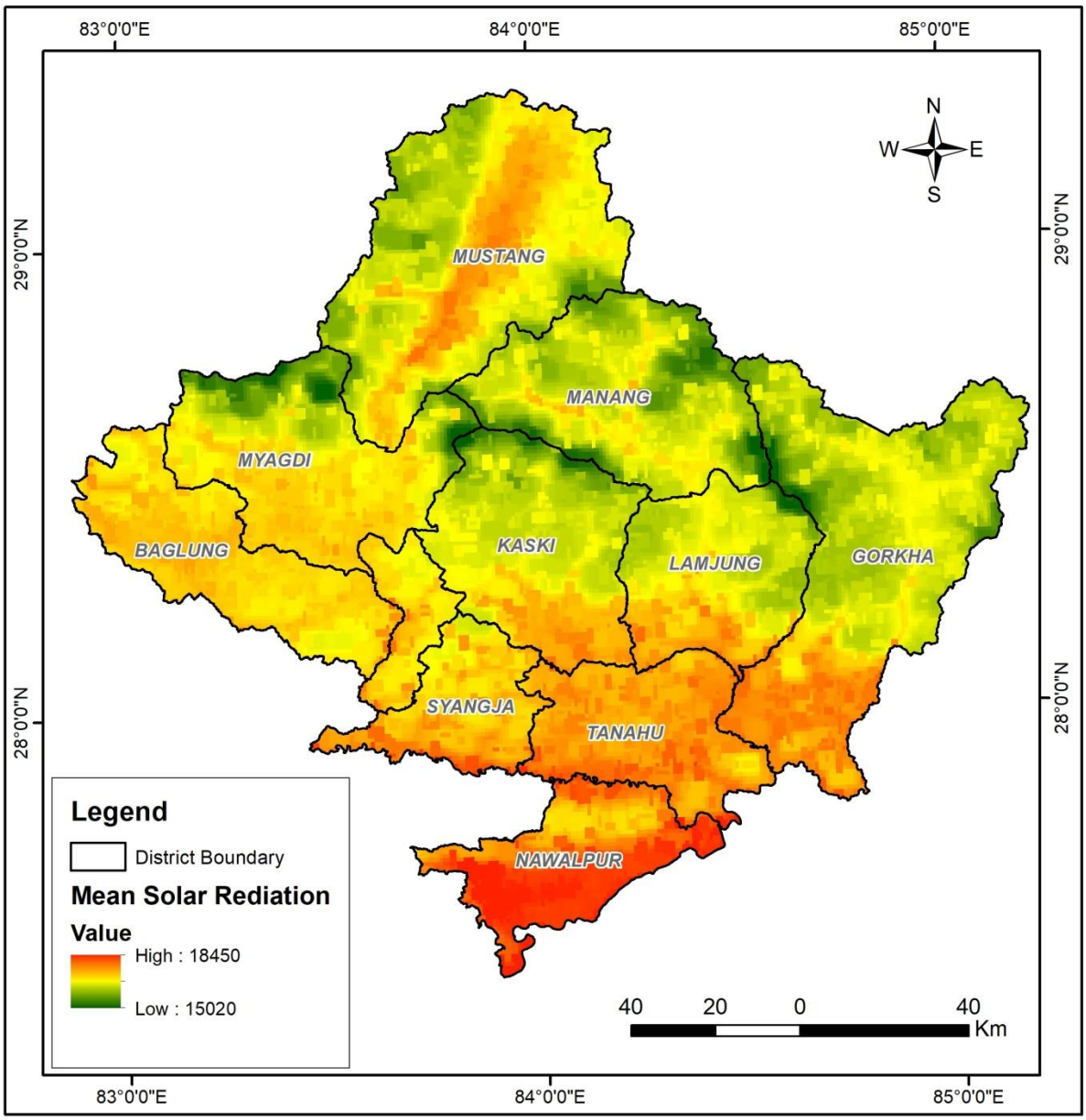

Figure 13: Mean Precipitation of Gandaki Province

3.5 Vegetation

Vegetation is being impacted globally by widespread stressors and changes, including land conversion to human uses, climate change leading to heat and moisture stress, CO2 fertilization, nitrogen deposition, and the spread of pests and invasive species. Here, we study trends in the vegetation cover in Gandaki Province for which the majority of the population is engaged in agriculture and that is highly vulnerable to natural hazard. Gandaki province is a biodiversity hotspot, as a result, in part, of the wide topographic and climatic range found over

relatively short distances, ranging from the Indo-Gangetic Plain in the south to the Himalayan peaks and the Tibetan Plateau to the north.

3.5.1 Forest distribution

Forests and trees can offer physical barrier against natural disasters such as floods, landslides and tsunamis, thereby preventing loss of lives, property and livelihoods. Trees provide protection against floods, landslides and windstorms. Roots of the trees reduce soil erosion and land degradation by binding soils and soil nutrients. By reducing the speeds of the wind and water, forests and trees can diminish the magnitudes of disasters. Forest density and distribution of Gandaki province shows **Figure 14.**

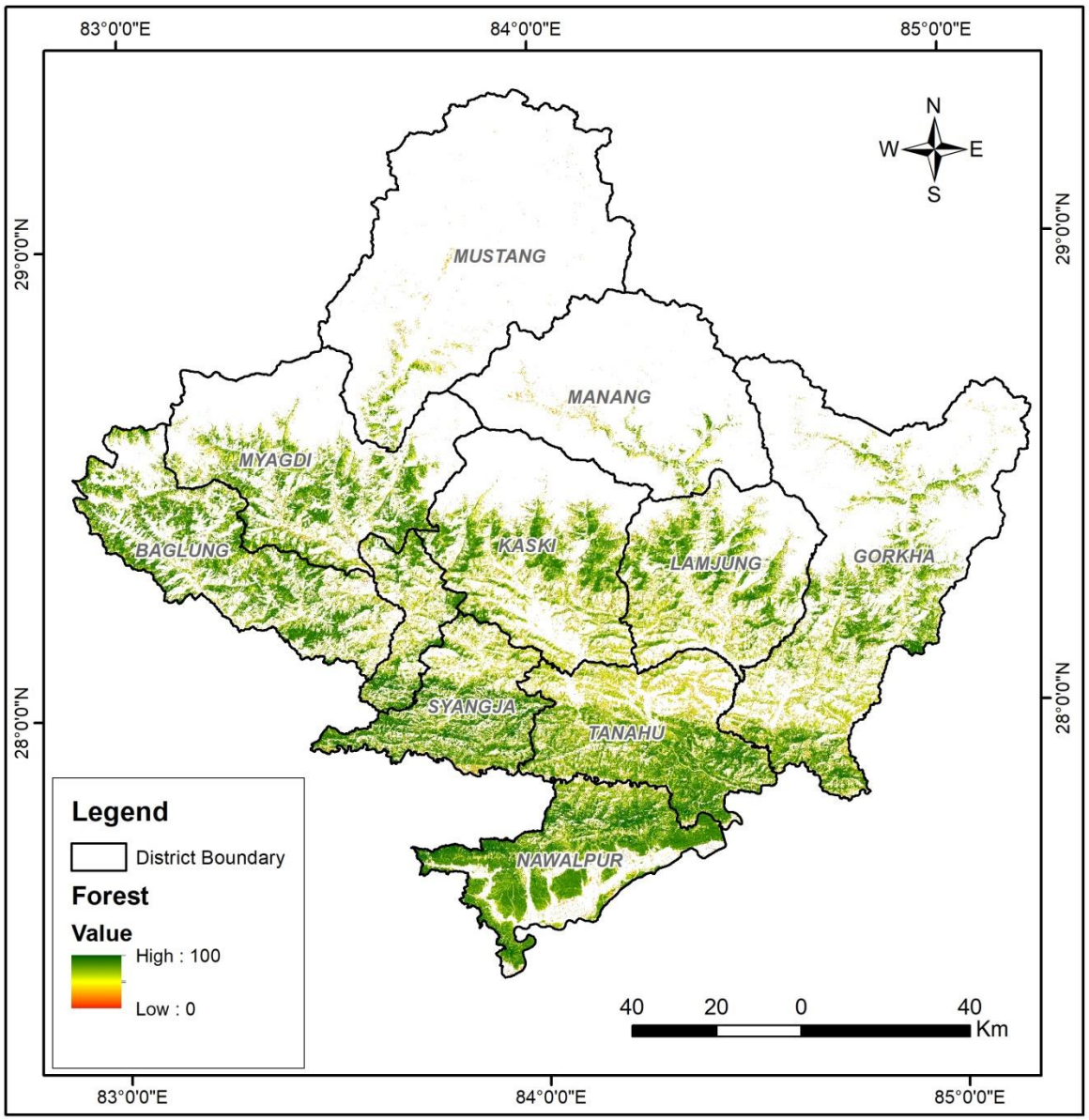

Figure 14: Forest distribution of Gandaki Province

3.6 Anthropogenic Hazard

An Anthropogenic hazard or Man-made disasters cover a wide range of events created largely due to accidents, negligence or sometimes even by human design, which result in huge loss of lives and property every year. These include road, rail, river, marine and aviation accidents, oil spill, building and Bridge collapse, bomb blast, industrial and chemical accidents etc.

3.6.1 Land Use Land Cover

Land use and land cover changes are dynamic. The change in land cover occurs even in the absence of human activities through natural process whereas land use change is the multiple action of land cover by human being for multiple purposes. Many socio-economic and environmental factors are involved in the change of land use and land cover. Land use is the human use of land. Land cover refers to the physical and biological cover of the surface of land. Changes in land use can be due to urban expansion and the loss of agriculture land, changes in river regimes, and the effects of shifting cultivation, the spread of erosion and desertification and so on. This, therefore, requires not only the identification of features but also the comparison of subsequent data in order to recognize when valid change has taken place (Poudel, 2003). Land use/land cover (LULC) changes play a major role in the study of global change. Land use/land cover and human/natural modifications have largely resulted in deforestation, biodiversity loss, global warming and increase of natural disaster-flooding. The growing population and increasing socio-economic necessities creates a pressure on land use/land cover. Land use land cover data from the ICIMOD shows as Table 5 and Figure 15.

Table 5: Land Use Land Cover of Gandaki Province

S. No.	Land Use / Land Cover	Area (Km2)	Percentage
1	Agriculture Land	3111.52	14.13
2	Bare Land	3892.51	17.68
3	Forest	7439.96	33.79
4	Grass Land	1921.54	8.73
5	Settlement	138.40	0.63
6	Bush Land	1719.94	7.81
7	Snow Cover	3682.14	16.72
8	Waterbodies	109.00	0.50
Total		22015.01	100.00

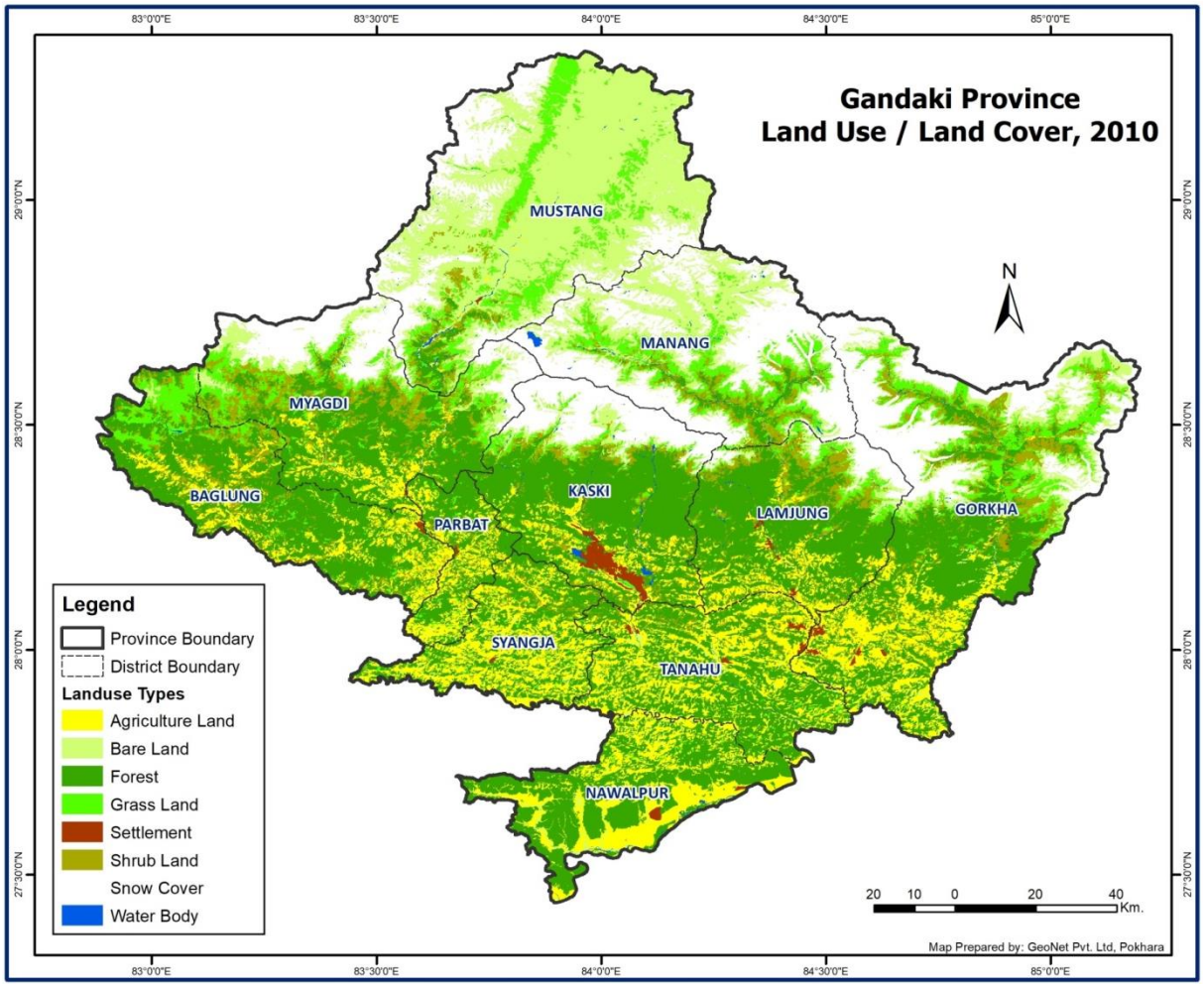

Figure 15: Land use Land cover of Gandaki Province

3.6.2 Distance to Road, Path and Settlement

The number of deaths from landslides in Nepal has been increasing dramatically due to a complex combination of earthquakes, climate change, and an explosion of informal road construction that weakens slopes during the rainy season. This expanded transportation network will have unintended effects on the surrounding landscapes as villages seek to link to these highways with informal roads constructed and maintained with severely limited resources, putting them more at risk of landsliding. The problem of roads and associated landslides has been a long recognized yet understudied phenomenon.

Many villages in the Middle Hills region of rural area of Gandaki Province are connected by simple footpaths that limit economic and social opportunity. As the nation continues developing, communities expand these pathways (funded in part by remittances sent from overseas) into vehicular roads for better access to markets, educational opportunities, and healthcare. The resulting informal roads often create landslides by undercutting slopes, providing pathways for water to seep into potential slide planes, and producing debris that is easily mobilized during heavy rainfall.

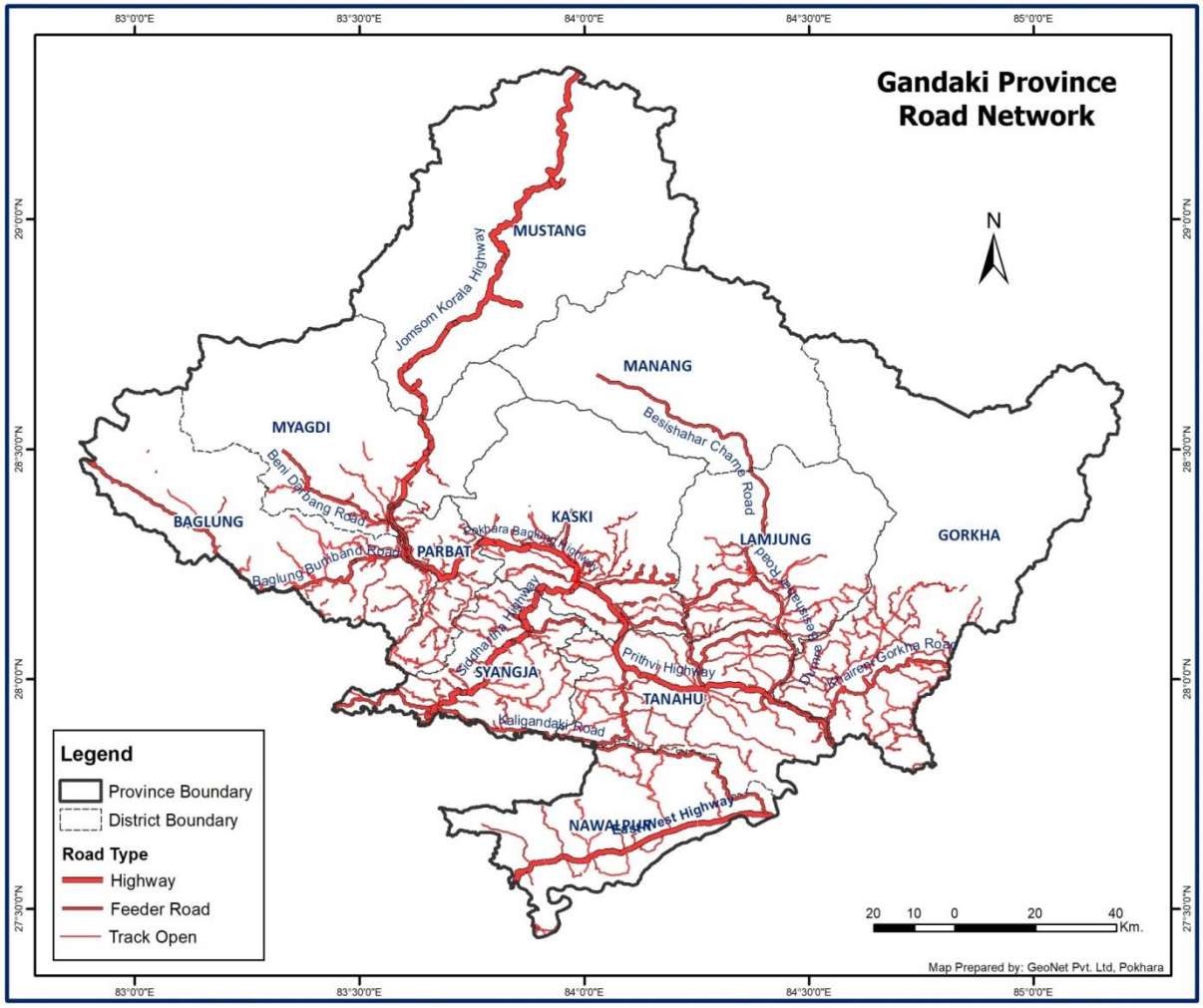

Figure 16: Road Network of Gandaki Province

3.2 Data collection

3.2.1 Primary data collection

Data were collected between February to May 2019 throughout the province. First of all, discussion with government officials (staffs district administration office, district police office, district co-ordination committee, municipality/rural municipality), staffs/ members of Red Cross society and elected community leaders were conducted in all 11 districts of the province to identify the potential risk zone and locations of hazards. Then study team visited the identified locations for collection of GPS points for modeling and mapping. The team also recorded other information likes photos, type of hazards, condition of hazards, affected population, and impact of hazards, land use types and possible remedy measures. During the field work the team recorded 267 GPS locations of flood and landslides (**Figure 17)**.

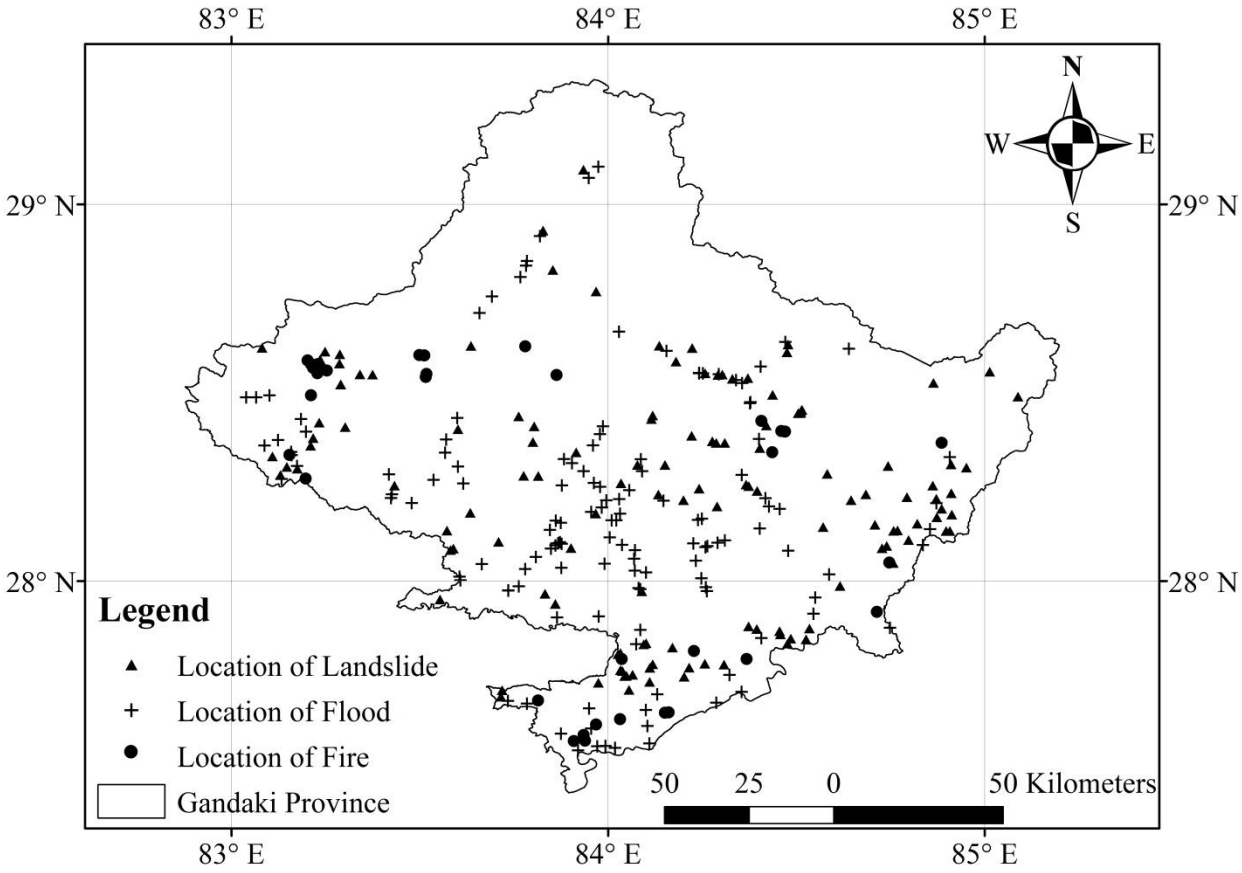

Figure 17: Data collected during the study

3.2.2 Secondary data collection

GPS locations of fire were collected from website of United States Geological Survey (USGS) (https://earthexplorer.usgs.gov/). Thermal anomalies of Moderate Resolution Imaging Spectroradiometer (MODIS) were used as source of fire locations. Fire locations having more than 70 percent confidence limit were considered as actual fire to maximize the reliability of the study. Total 36 fire locations were collected during the study (**Figure 17**). Field surveys of Flood, Landslide, road black spot are major concern and hailstone, lightning are key informants and local personnel query.

3.2.3 Environmental variables

The environmental variables were downloaded from freely available sources (**Table 6**) and pre-processed in ArcGIS (ESRI, 2017) to make appropriate format (ASCII) and same spatial resolution (30 m). Some variables with vector features (i.e. point and line) were also converted into raster format having the same resolution (30 m). The environmental variables were divided into four categories as follows.

Table 6: Environmental variables used for the study

Category	Variables	Source	Unit
Topographic	Aspect	USGS	degree
	Elevation		m
	Slope		degree
	Distance to water	Geofabrik	km
Climatic	Mean precipitation	WorldClim	cm
	Mean temperature		degree
	Mean solar radiation		
Vegetation Related	Mean EVI	MODIS	dimension less
	Forest	Global forest change	dimension less
Anthropogenic	Land use land cover	ICIMOD	type
	Distance to road	Geofabrik	km
	Distance to path		km
	Distance to settlement	Department of survey, Nepal	km

3.2.3.1 Topographical variables

Topographical variables have been widely used for species habitat modeling for 20 years (Osborne et al., 2001). These variables were also used for mapping of disasters because aspect, elevation and slope are directly related to types of disasters. For this study, Digital Elevation Model (DEM) of 30 m resolution was downloaded from the United States Geological Survey (USGS) website (https://earthexplorer.usgs.gov/), and aspect and slope were computed from the DEM using ArcGIS software (ESRI, 2017).

3.2.3.2 Climatic variables

Driving force of the most of hazards are climatic variables. Temperature, precipitation and solar radiation are directly related to the disasters like fire, flood and landslide. Therefore, this study use climatic variable as input of the model. Climatic variables were downloaded from the WorldClim database (http://worldclim.org/). The WorldClim database (version 2) is a set of global climate layers that derived from over 4000 weather stations between 1950 and 2000, including annual time series with annual means, seasonality, and extreme or limiting temperature and precipitation data (Hijmans et al., 2005). In this study, average of temperature, precipitation and solar radiation were used as input of the model (**Table 6**).

3.2.3.3 Vegetation-related variables

Vegetation-related variables are responsible for accelerate or mitigate the disaster. For example, vegetation may be favorable for the fire but unfavorable for the landslide. In this study, forest cover and mean of Enhanced Vegetation Index (EVI) were used as model input. Forest cover data prepared by Hansen et al. (2013) was downloaded from the Global Forest Change (GFC) website was used as a variable. EVI time series data from 2015, 2016, and 2017 from USGS computed from images obtained by Moderate Resolution Imaging Spectroradiometer (MODIS) was smoothed by using an adaptive Savitzky-Golay filter in the TIMESAT program (Jönsson and Eklundh, 2004) to reduce the cloud effect. Finally mean EVI was calculated and used for the modeling.

3.2.3.4 Anthropogenic variables

The triggering factors of most of the natural hazards are human activities. Now a days, roads and paths are being major causes of landslide. Therefore anthropogenic variables were incorporated into the models. Anthropogenic variables included were distance to human paths and roads, distance to settlements, and land use land cover. Location of paths and roads

was obtained from shapefile available on the Geofabrik website (https://www.geofabrik.de/data/shapefiles.html). Settlement locations were obtained from the Department of Survey, Nepal. Distance raster files of paths, roads and settlements were created by using ArcGIS (ESRI, 2017). Land use land cover data were downloaded from the International Centre for Integrated Mountain Development website (ICIMOD; http://www.icimod.org) (Uddin et al., 2015) and incorporated into the model.

3.3 Hazard modelling

MaxEnt is a software program used to model species distributions by using geo-referenced occurrence data and environmental variables to predict suitable habitat for a species (Phillips et al., 2006). This model is successfully used for disaster risk modeling also. Variables listed in **Table 6** were incorporated into MaxEnt (version 3.4.1) along with occurrence data of hazards to determine potential disaster risk zone. We selected ten 1000 maximum iterations and 10 replicates during modeling (Barbet-Massin et al., 2012). We used 70 percent of data to train and rest to validate the model. The maximum sum of sensitivity and specificity (MaxSSS) threshold is appropriate to convert the continuous probability map to binary map when only presence data are available from the field (Liu et al., 2013). Therefore, this threshold was used to produce the risk maps of the fire, flood, and landslide in Gandaki province.

For environmental modeling, wide range of models (e.g. BIOCLIM, BRT, DOMAIN, GARP, GLM, and MaxEnt) has been developed to cover aspects as diverse as climate change, biogeography, biology, spatial ecology and habitat management. These models have been used to predict the distribution of plants, and animals (Gillespie and Walter, 2001; Guisan et al., 1998; Pearce and Ferrier, 2000; Phillips et al., 2006). These species distribution models are also using to predict the risk of landslides (Goetz et al., 2011), fires (Renard et al., 2012), accidents (Maher and Summersgill, 1996) and diseases (Murray et al., 2011). Due to the chance of not occurring the hazards due other causes like human protection and other environmental causes like protection of forests to prevent the flood and landslides, researcher's field visit, the recording of the true absence data points is a challenging task during the study. Moreover, collection of large number of data for hazards is also another challenge in research. Therefore model which needs only presence data from the field is becoming more popular among the species distribution models. In this scenario Maximum

Entropy (MaxEnt) needs only presence data for the modeling (Phillips et al., 2006). Therefore, this study used MaxEnt modeling tool to identify the impact of future climate change on biodiversity in Gandaki province, Nepal.

3.4 Accuracy assessment

All three models were validated by two methods: threshold independent and threshold dependent. In the threshold independent method the value of accuracies was directly obtained from the model but in the threshold dependent method we provided the threshold to maximize the sum of specificity and sensitivity. We used area under the receiver-operator curve (AUC) as the threshold independent method. An AUC <0.7 denotes poor model performance, 0.7–0.9 denotes moderately useful model performance, and >0.9 denotes excellent model performance (Pearce and Ferrier, 2000). We chose true skill statistics (TSS) as the threshold dependent method. TSS = Sensitivity + Specificity − 1, and ranges from −1 to 1, where values less than 0 indicate a performance no better than random and 1 indicates a perfect fit (Allouche et al., 2006). We calculated TSS for all 10 model outputs, and the final TSS was averaged from all ten replications (Jiang et al., 2014). Models which have presence-only data the threshold to maximize the TSS is recommended (Liu et al., 2013) so we used this threshold to convert the continuous map to a binary map.

4. IDENTIFICATION OF DISASTER RISK

4.1 Fire risk

4.1.1 Factors determining the fire risk zone

Land cover and mean precipitation are top most contributor of the fire risk zone modeling. Regularized training gains without these two variables were less than others (**Figure 18**). Therefore these variables contain more information for fire risk zone modeling purpose. The regularized training gain explains how much better the model distribution fits the presence data relative to a uniform distribution. “With all variables” indicates the results of the model when all variables are run; “with only variable” denotes the effect of removing that single variable from the model and “Without variable” denotes the results of the model when an only that variable is run (Phillips, 2017). Distance to road, distance to settlement, distance to path and forest are moderately useful variables for the model. Other variables are least important for the model.

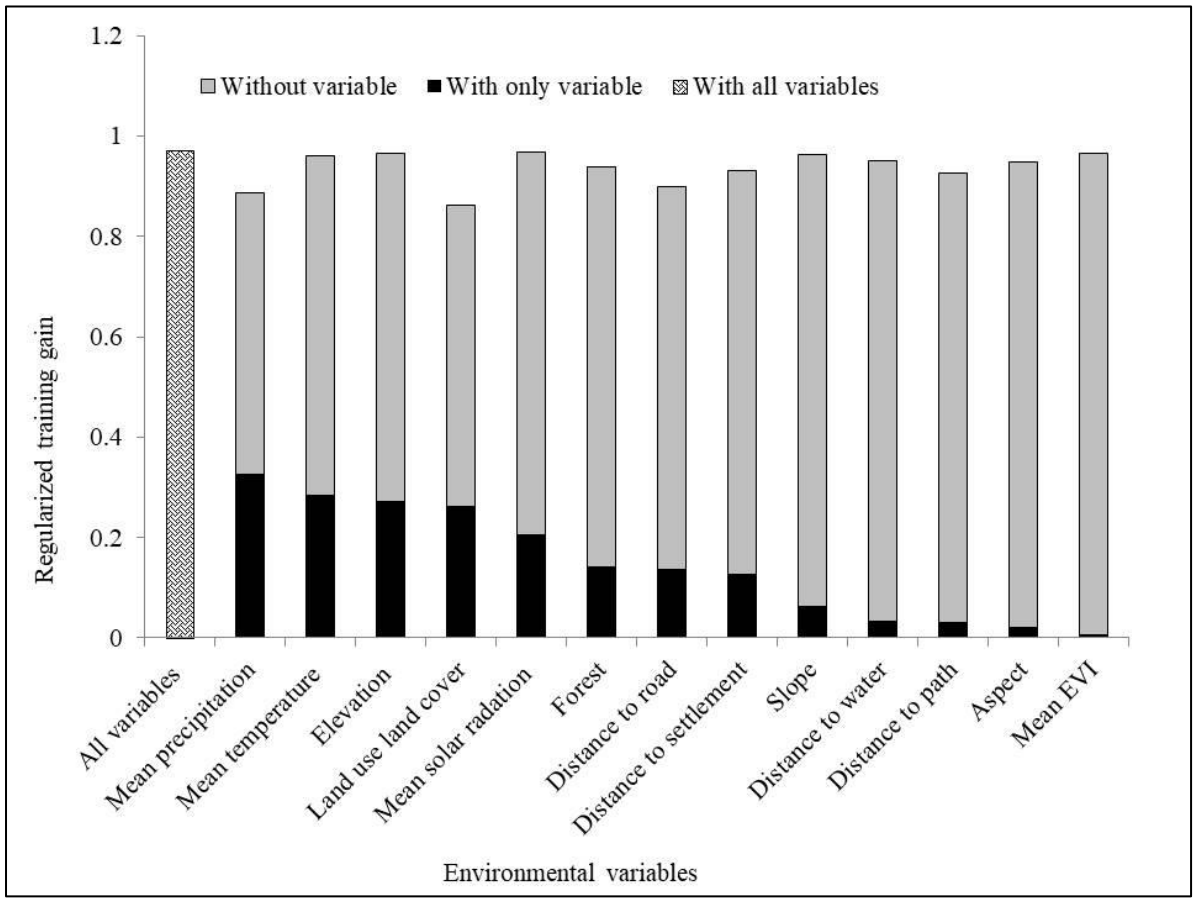

Figure 18: Importance of variables to train the fire risk model

Out of 11 land use land cover types, shrub land is most favorable for the fire (**Figure 19**). Similarly, forests and grasslands are also facing the fire risk during the dry season. Other land cover types such as agriculture land, built-up area, lands around rivers and snow are not facing the risk of fire.

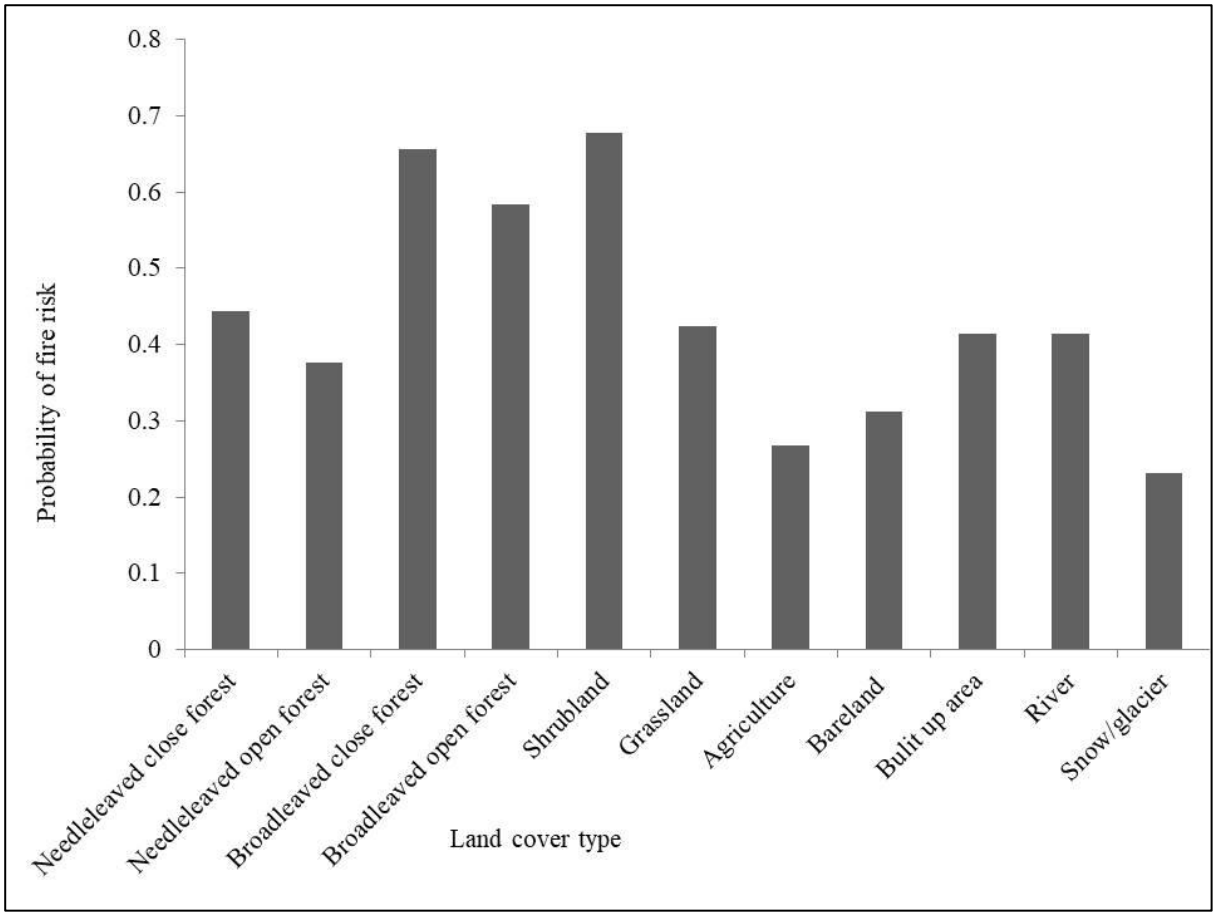

Figure 19: Response of fire risk to land use land cover type

The study found that fire risk is higher in the area having low precipitation. The precipitation can control the dry condition as a result, fire can be controlled. Mean annual precipitation less than 200 cm is favorable for fire. Area having higher than 200 cm precipitation is nearly free from the fire risk (**Figure 20**).

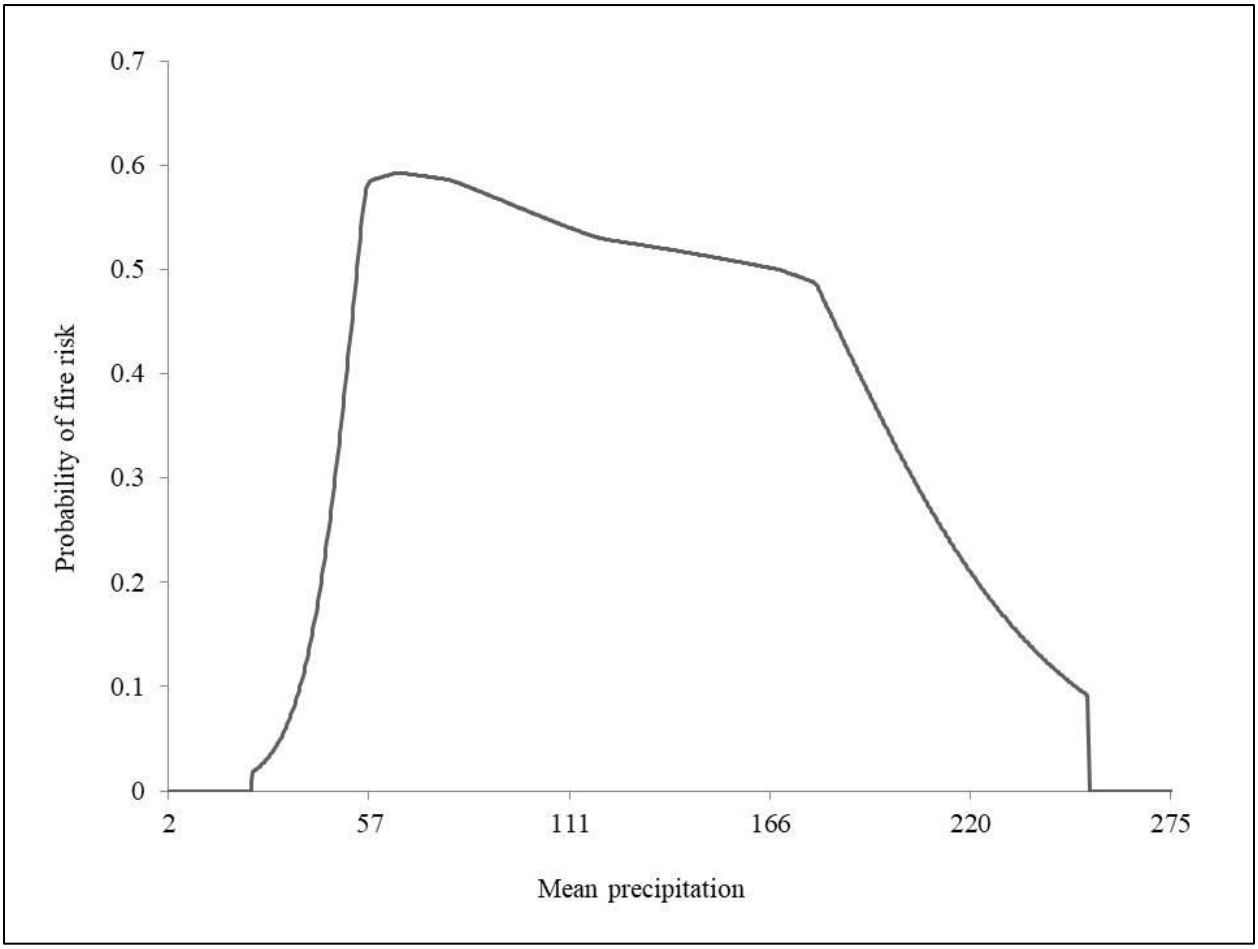

Figure 20: Response of fire risk to mean precipitation

4.1.2 Fire risk in Gandaki province

The study identified and mapped the fire risk zone throughout the Gandaki province (**Figure 21**). The High Mountains and Terai regions are identified as major fire risk zone. Total 6,349 km^2 area is identified as fire risk zone in Gandaki province. Threshold (0.255) to maximize the sum of sensitivity and specificity was used to convert the probabilistic map to binary risk/risk free zone. The High Himalayan and middle hills have low fire risk. In middle hills there are more forest and shrub land so fire can burn the vegetation of forest and shrub land so these regions have more fire prone area.

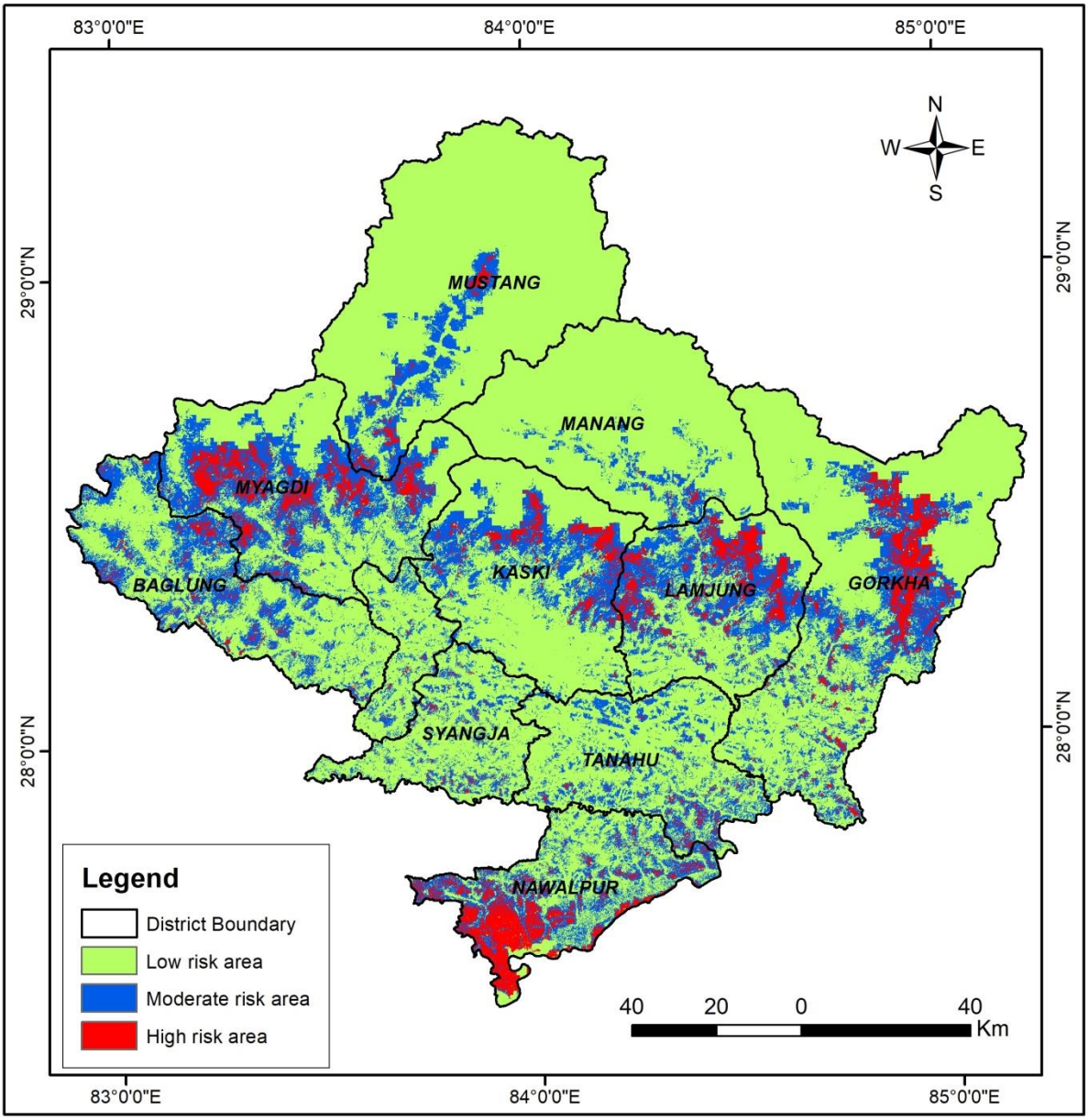

Figure 21: Fire risk zone of Gandaki Province

Out of 11 districts of the province Myagdi and Gorkha districts have more fire risk area whereas Parbat and Manang districts have less fire risk area (**Table 7**). Probably, these districts have more vegetation cover as result they have more fire risk. Local level-wise details existence fire spots shown **Appendix -1** and potential high risk area spots and map are shown in **Appendix – 2.**

Table 7: District wise fire risk area

S. No.	District	Fire risk zone	
		Area (Km^2)	Percentage
1	Baglung	672.66	10.59
2	Gorkha	1051.23	16.56
3	Kaski	681.97	10.74
4	Lamjung	813.23	12.81
5	Manang	151.88	2.39
6	Mustang	376.76	5.93
7	Myagdi	1101.57	17.35
8	Nawalpur	787.98	12.41
9	Parbat	98.96	1.56
10	Syangja	208.21	3.28
11	Tanahun	404.55	6.37
	Total	**6349.00**	**100.00**

4.1.3 Model accuracy of fire risk modeling

Accuracy measures of the model are presented in **Table 8**. The threshold independent method, AUC gives 0.758+/-0.072 and the threshold dependent method TSS gives 0.484+/- 0.122 (**Table 8**). The threshold value 0.255 gives the maximum value of threshold to maximize the sum of sensitivity and specificity. We used this threshold to calculate the TSS and to convert the continuous risk map to a binary risk/risk free map.

Table 8: Accuracies of different replications of fire risk modeling

Replication	0	1	2	3	4	5	6	7	8	9	Average	Std
Threshold	0.360	0.190	0.080	0.600	0.070	0.210	0.460	0.240	0.230	0.110	0.255	0.172
AUC	0.802	0.700	0.678	0.649	0.702	0.847	0.850	0.822	0.763	0.762	0.758	0.072
TSS	0.606	0.384	0.381	0.276	0.414	0.574	0.662	0.584	0.468	0.495	0.484	0.122

4.2 Flood risk

4.2.1 Factors determining the flood zone

Distances to water and slope are top most contributor of the flood risk zone modeling. Regularized training gains without these two variables were less than others (**Figure 22**).

Therefore these variables contain more information for fire risk zone modeling purpose. The regularized training gain explains how much better the model distribution fits the presence data relative to a uniform distribution. “With all variables” indicates the results of the model when all variables are run; “with only variable” denotes the effect of removing that single variable from the model and “Without variable” denotes the results of the model when an only that variable is run (Phillips, 2017). Forest, land use land cover, distance to road, and elevation are moderately useful variables for the model. Other variables are least important for the model.

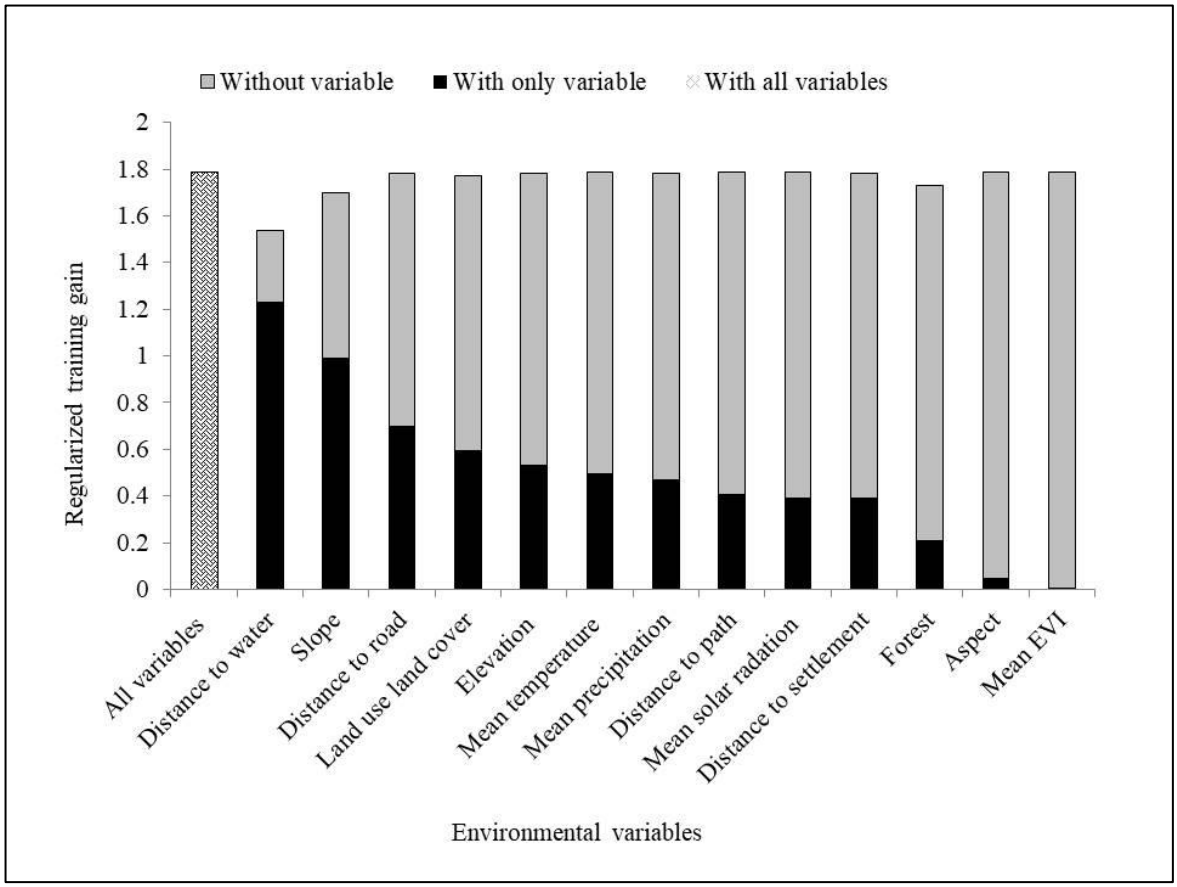

Figure 22: Importance of variables to train the flood risk model

The water is an only flood causing agent. The study found that flood risk is higher near to the water resources. In favorable condition, water automatically creates the flooding. Lands within one kilometer from water body are highly susceptible to flooding (**Figure 23**). Generally, area two kilometer far from the water body is safe from flooding in normal condition.

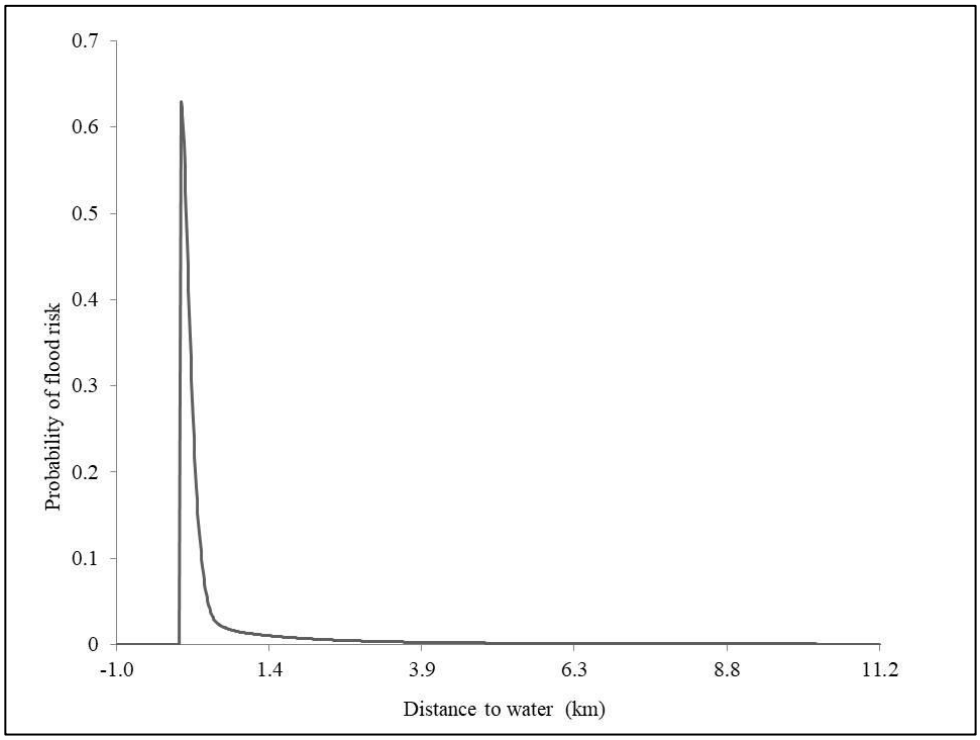

Figure 23: Response of flood risk to distance to water

Normally the flooding occurs in flat land. The study also identified that flat land has risk of flood. Area having slope less than 10 degree is susceptible to high flood risk (**Figure 24**). In flat land water can't drain immediately so land can face the flooding. Lands more than 30 degree slope are safe from the flooding.

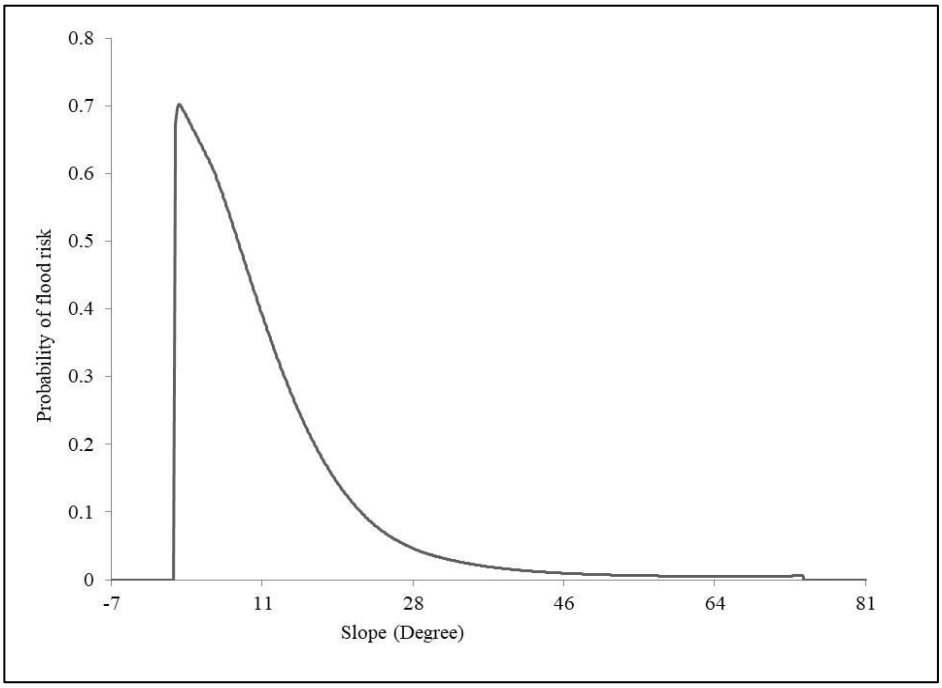

Figure 24: Response of flood risk to slope

4.2.2 Flood risk in Gandaki province

The study identified and mapped the flood risk zone throughout the Gandaki province (**Figure 25**). Flat and Terai region are identified as major flood risk zone. Total 1,443.33 km^2 area is identified as flood risk zone in Gandaki province. Threshold (0.196) to maximize the sum of sensitivity and specificity was used to convert the probabilistic map to binary risk/risk free zone. The slope area and land far from the water resources have low flood risk. Flood is water induced disaster therefore lands near to the water resources are vulnerable to the flood risk. Out of 11 districts of the province Nawalpur and Gorkha districts have more flood risk area whereas Manang and Parbat districts have less flood risk area (**Table 9**). Probably, these districts have less number of flood causing rivers.

Table 9: District wise flood hazard risk area

S.N.	District	Flood risk	
		Area (Km^2)	Percentage
1	Baglung	106.00	7.34
2	Gorkha	210.36	14.57
3	Kaski	191.46	13.27
4	Lamjung	144.23	9.99
5	Manang	29.00	2.01
6	Mustang	110.74	7.67
7	Myagdi	63.37	4.39
8	Nawalpur	237.56	16.46
9	Parbat	49.29	3.42
10	Syangja	108.37	7.51
11	Tanahun	192.95	13.37
	Total	**1443.33**	**100.00**

Local level-wise details existence flood spots shown **Appendix -3,** and flood high risk potential area name and map shown in **Appendix – 4.**

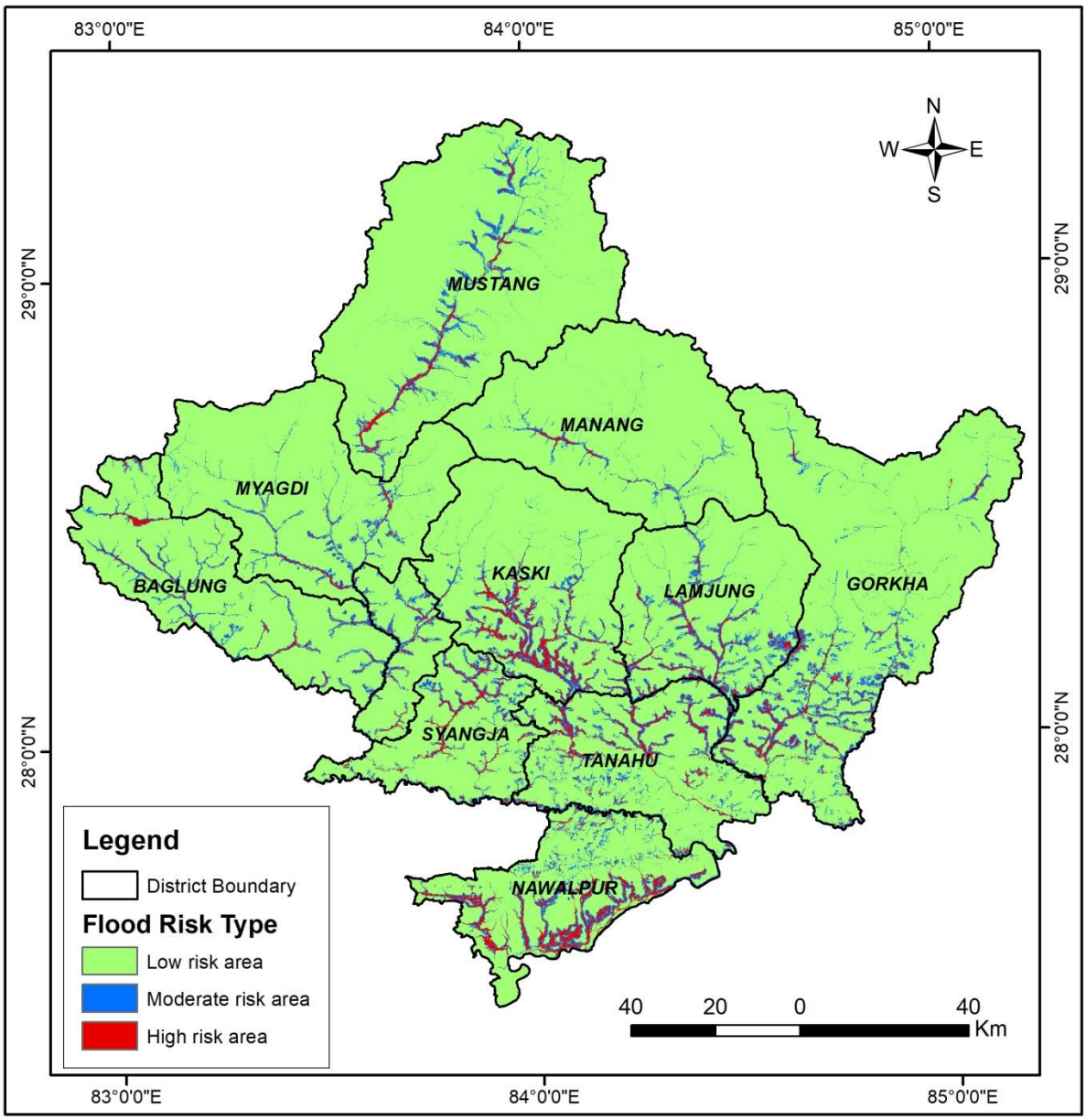

Figure 25: Flood risk zone of Gandaki province

4.2.3 Model accuracy of flood risk modeling

Accuracy measures of the model are presented in **Table 10**. The threshold independent method, AUC gives 0.920+/-0.013 and the threshold dependent method TSS gives 0.851+/-0.030 (**Table 10**). The threshold value 0.196 gives the maximum value of threshold to maximize the sum of sensitivity and specificity. We used this threshold to calculate the TSS and to convert the continuous risk map to a binary risk/risk free map.

Table 10: Accuracies of different replications of flood risk modeling

Replication	0	1	2	3	4	5	6	7	8	9	Average	Std
Threshold	0.260	0.130	0.250	0.190	0.200	0.190	0.190	0.200	0.210	0.140	0.196	0.041
AUC	0.935	0.907	0.932	0.914	0.918	0.901	0.909	0.935	0.916	0.935	0.920	0.013
TSS	0.878	0.840	0.875	0.818	0.864	0.844	0.792	0.868	0.842	0.891	0.851	0.030

4.2.4 River Monitoring and Early Warning System

At the national level, the Department of Hydrology and Meteorology (DHM), under the Ministry of Science Technology and Environment (MoSTE), is mandated to monitor all hydrological and meteorological activities in Nepal. DHM collects hydrological, meteorological, and climate information and disseminates it to a variety of stakeholders for water resources, agriculture, energy, and other development activities (www.dhm.gov.np). In Gandaki Province, DHM has 15 existing river monitoring stations. The stations are regularly monitored and the information is collected centrally at the DHM office. Most of the hydrometeorological stations are manually operated, while some have been upgraded to automatic stations, able to continuously monitor flood parameters such as rainfall and water level around the clock and to transmit the data in real time. A number of flood early warning systems have also been put in place to forewarn communities of approaching flood disasters; these are below Table 11 and Figure 26:

Table 11: Existing River Monitoring Station of Gandaki Province

S.No.	River Name	Existing Station Location	District	Latitude (y)	Longitude (x)
1	Kaligandaki	Jomsom	Mustang	28.77	83.71
2	Kaligandaki	Tatopani	Mygdi	28.48	83.65
3	Kaligandaki	Modibeni	Parbat	28.20	83.67
4	Kaligandaki	Kumalgaun	Syangja	27.88	83.80
5	Kaligandaki	Devghat	Chitwan	27.71	84.43
6	Narayeni	Narayeni Bridge	Chitwan	27.70	84.42
7	Modi	Nayapul Kusma	Parbat	28.22	83.69
8	Aandhi	Borlang Pul	Syangja	28.07	83.81
9	Trishuli	Kalikhola	Chitwan	27.83	84.55
10	Budigandaki	Aarughat	Gorkha	28.05	84.82
11	Chepe	Jarambesi	Lamjung	28.06	84.49
12	Dwang Khola	Chiti	Lamjung	28.19	84.42
13	Madi	Sisaghat	Tanahun	28.09	84.23
14	Seti	Ghachok	Kaski	28.30	83.94
15	Mardi	Lahachok	Kaski	28.30	83.92

Source: Department of Hydrology and Meteorology (DHM)

In Gandaki Province, the study proposed to established river monitoring stations for flood forecasting shown in Table 12 and Figure 26:

Table 12: Proposed River Monitoring Station of Gandaki Province

S.No.	River Name	Proposed Station Location	District	Latitude (y)	Longitude (x)
1	Kali Gandaki	Charan Phedi (Bhatti)	Mustang	29.067500	83.937778
2	Mygdi Khola	Darban	Mygdi	28.433611	83.383889
3	Nisikhola/Badigad	Nisikhola/Badigad Dovan	Baglung	28.277778	83.176111
4	Badigad	Burtibang	Baglung	28.336944	83.160833
5	Modi Khola	New Bridge	Kaski	28.393056	83.826111
6	Mardi Khola	Kuibang Phedi	Kaski	28.353333	83.880000
7	Seti	Juamirbari	Kaski	28.404167	83.984722
8	Madi	Madque	Kaski	28.369444	84.120556
9	Marsyangdi	Chame	Manang	28.553056	84.238611
10	Marsyangdi	Syange	Lamjung	28.383611	84.401389
11	Dordi	Dalun	Lamjung	28.258056	84.504167
12	Budigandaki	Khanibesi	Gorkha	28.207222	84.874722
13	Trishuli	Benighat	Gorkha	27.810611	84.776831
14	Aandi Khola	Seti Dovan	Syangja	28.138027	83.839769

Source: Field Survey, 2019.

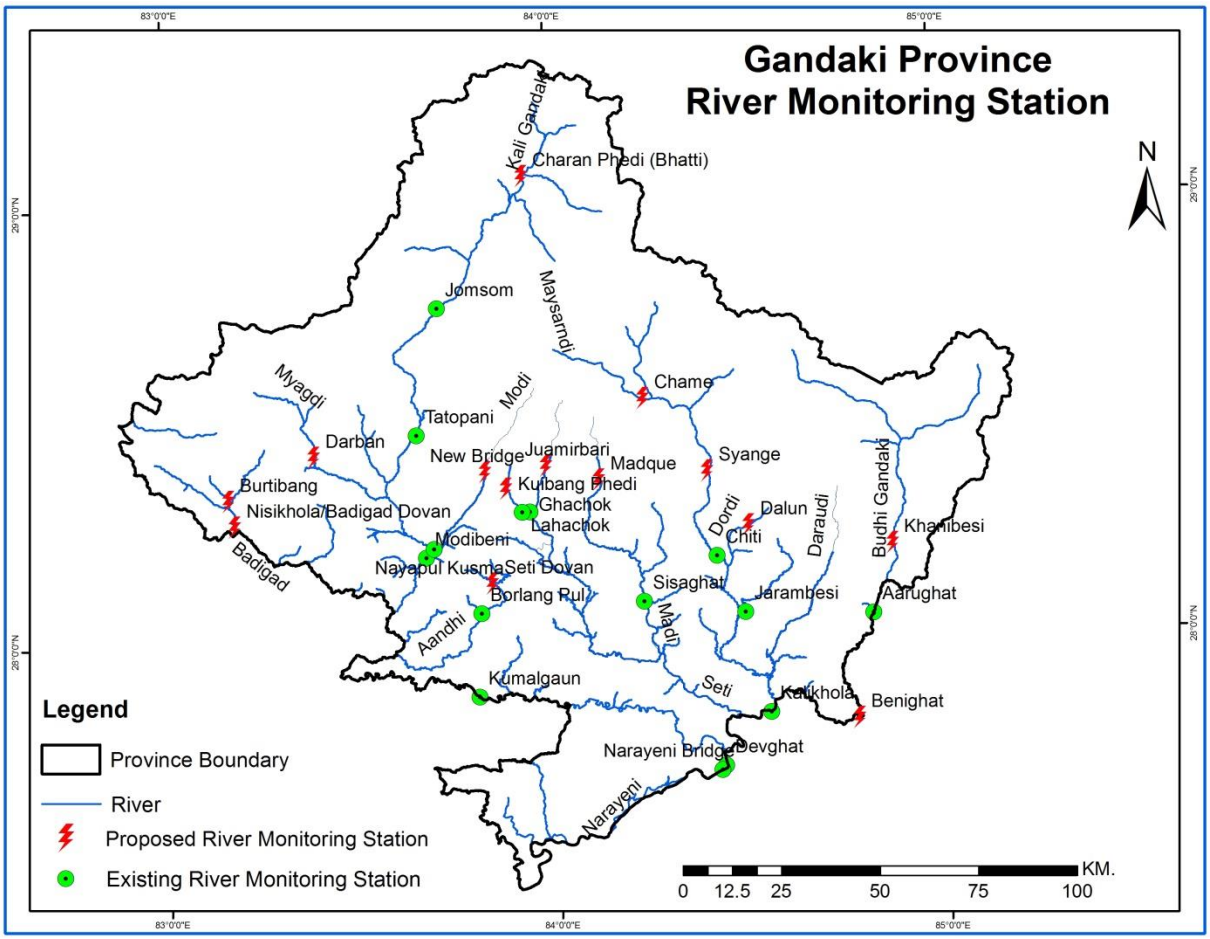

Figure 26: Existing and Prpopsed Flood Monitoring Station of Gandaki Province

4.3 Landslide risk

4.3.1 Factor determining the landslide risk zone

Slope and land use land cover are top most contributor of the landslide risk zone modeling. Regularized training gains without these two variables were less than others (**Figure 27**). Therefore these variables contain more information for fire risk zone modeling purpose. The regularized training gain explains how much better the model distribution fits the presence data relative to a uniform distribution. “With all variables” indicates the results of the model when all variables are run; “with only variable” denotes the effect of removing that single variable from the model and “Without variable” denotes the results of the model when an only that variable is run (Phillips, 2017). Aspect, distance to path and distance to water are moderately useful variables for the model. Other variables are least important for the model.

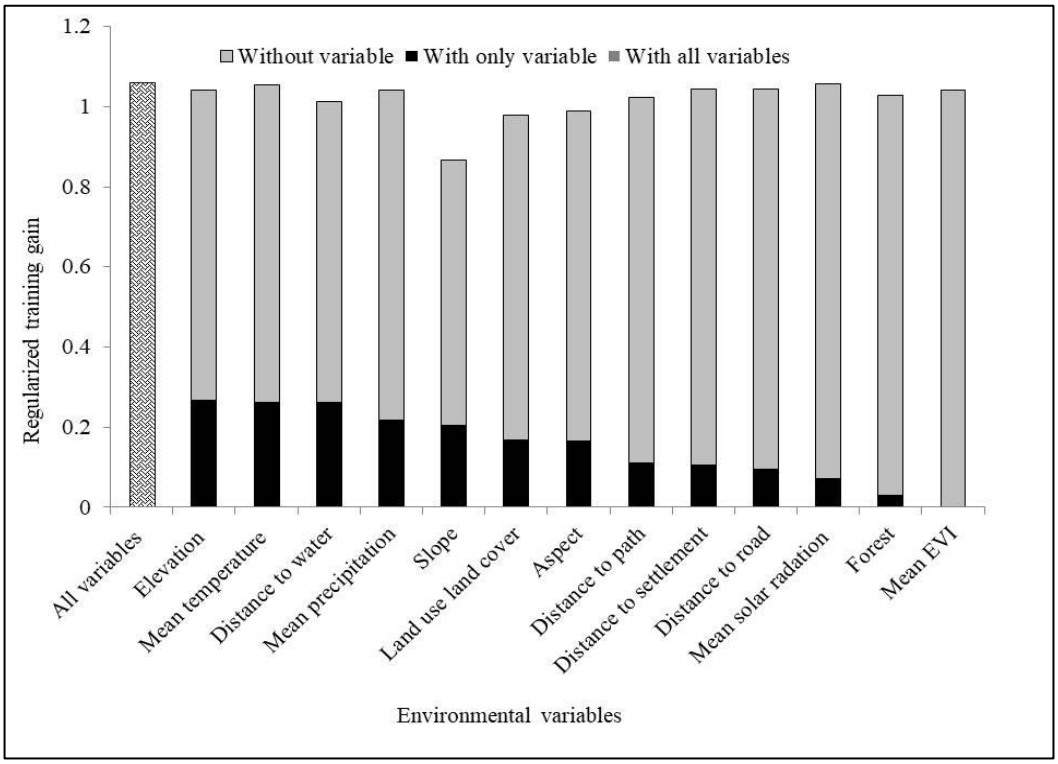

Figure 27: Importance of variables to train the landslide risk model

The major driving force of the landslide is gravity. In higher slope land mass should face the high gravity power. Therefore area having high slope is vulnerable to the landslide. The study identified that higher the slope higher is the risk of landslide (**Figure 28**). Lands having less than 10 degree slopes are nearly safe from the landslide.

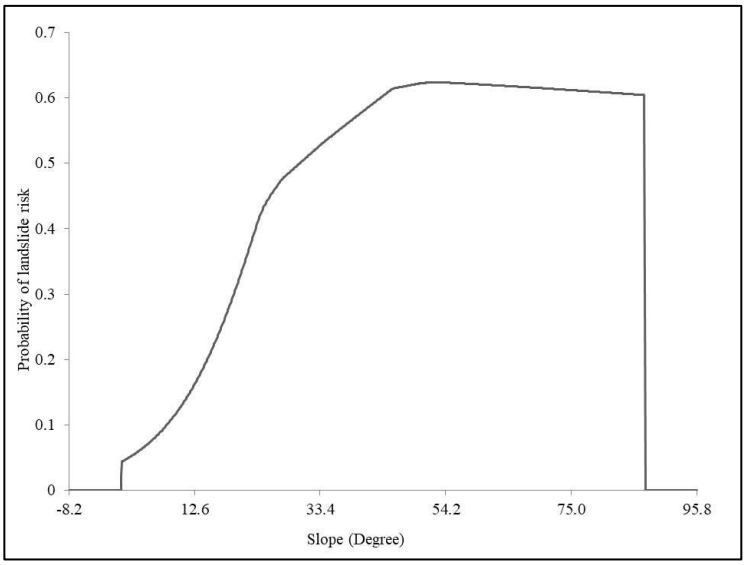

Figure 28: Response of landslide risk to slope

Out of 11 land use land cover types, areas near to the rivers are more susceptible to the landslide (**Figure 29**). Similarly, agricultural lands and grasslands are also facing the landslide risk during the rainy season. Other land cover types such as forest, built-up area and snow covered land are not facing landslide risk.

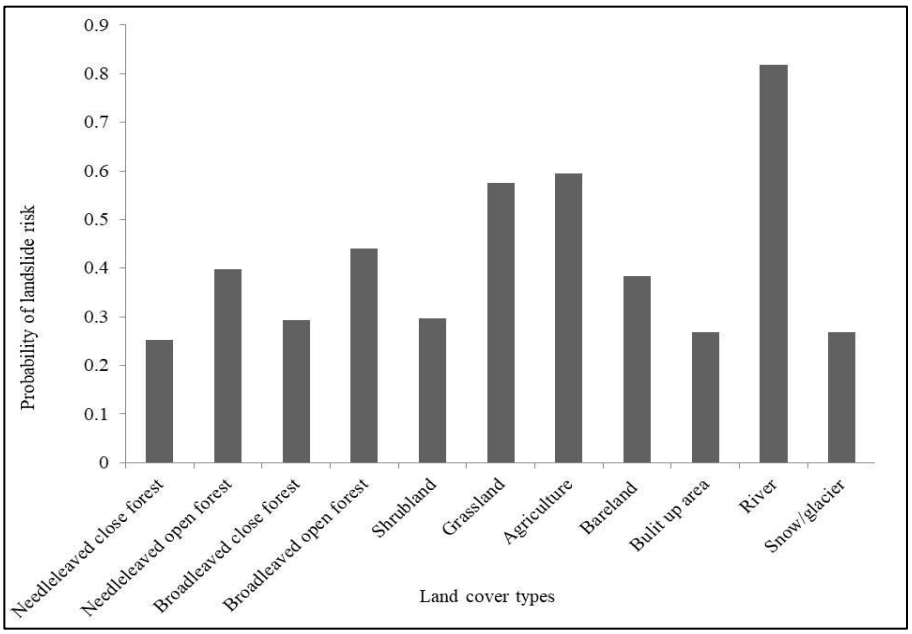

Figure 29: Response of landslide risk to land use land cover types

4.3.2 Landslide risk in Gandaki province

The study identified and mapped the landslide risk zone throughout the Gandaki province (**Figure 30**). Slope and river side area are identified as major landslide risk zone. Total 3,371.32 km^2 area is identified as landslide risk zone in Gandaki province. Threshold (0.303) to maximize the sum of sensitivity and specificity was used to convert the probabilistic map to binary risk/risk free zone. The flat area and area covered by vegetation have low landslide risk. Out of 11 districts of the province Gorkha and Lamjung districts have more landslide risk area whereas Parbat and Nawalpur districts have fewer landslides risk area (**Table 13**). Parbat district is smallest district of the province and it may cover small amount of landslide risk area. In case of Nawalpur, this district has less amount of slope area and most of the land is covered by forest.

Table 13: District wise landslide hazard risk area

S.N.	District	Landslide risk zone	
		Area (Km^2)	Percentage
1	Baglung	409.93	12.16
2	Gorkha	602.62	17.87
3	Kaski	377.52	11.20
4	Lamjung	427.08	12.67
5	Manang	114.54	3.40
6	Mustang	199.17	5.91
7	Myagdi	397.60	11.79
8	Nawalpur	169.92	5.04
9	Parbat	138.05	4.09
10	Syangja	239.30	7.10
11	Tanahun	295.59	8.77
	Total	**3371.32**	**100.00**

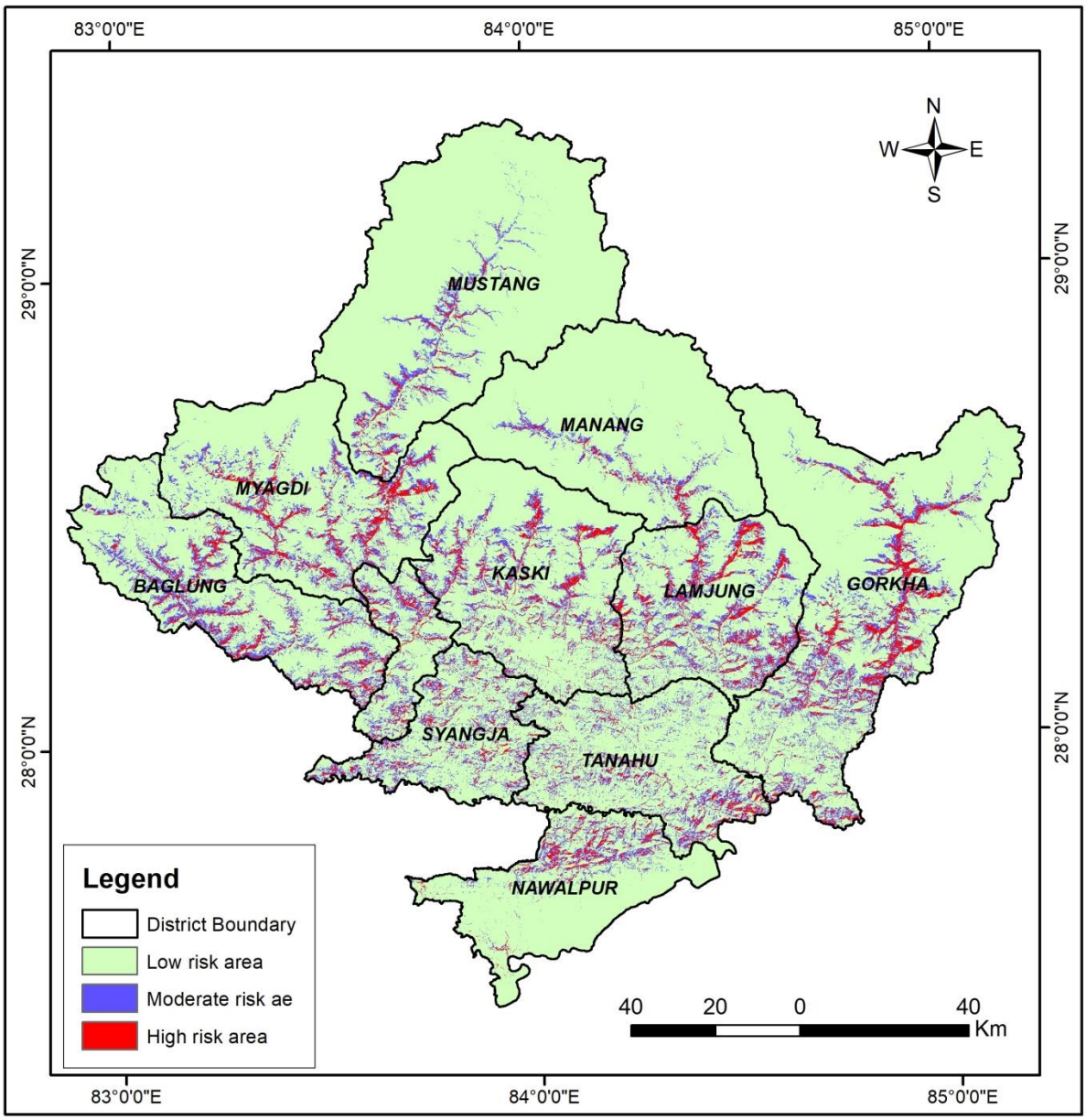

Figure 30: Landslide risk zone of Gandaki province

4.3.3 Model accuracy of landslide risk modeling

Accuracy measures of the model are presented in **Table 14**. The threshold independent method, AUC gives 0.836+/-0.024 and the threshold dependent method TSS gives 0.623+/-0.049 (**Table 14**). The threshold value 0.303 gives the maximum value of threshold to maximize the sum of sensitivity and specificity. We used this threshold to calculate the TSS and to convert the continuous risk map to a binary risk/risk free map.

Table 14: Accuracies of different replications of landslide risk modeling

Replication	0	1	2	3	4	5	6	7	8	9	Average	Std
Threshold	0.460	0.150	0.340	0.330	0.260	0.330	0.270	0.330	0.330	0.230	0.303	0.082
AUC	0.829	0.790	0.861	0.847	0.868	0.808	0.834	0.825	0.858	0.839	0.836	0.024
TSS	0.586	0.530	0.692	0.674	0.648	0.587	0.634	0.610	0.666	0.608	0.623	0.049

4.4 Road accident risk

A road accident means a ride means another accident, pedestrians, animals or any other structures such as trees, poison accidents. Road traffic injuries constitute a major public health and development crisis, and are predicted to increase if road safety is not addressed adequately. Due to a road accident, money loss can be made. In 2013, around 5 million people were injured in the world and about 14 million people died with 68,000 children under five years of age. In Nepal the road accident is considered as serious hazards in terms of human casualties and property loss.

This study identified the 46 road accident events during the study (**Table 15**). Most of the accidents occur in the roundabout and bending roads and sometimes in slope.

Table 15: Road accident in Gandaki province

S.N.	District	Name of place
1	Kaski	Malepatan road
2	Kaski	Hemja, Yamdi
3	Kaski	Palikhe Chwok
4	Kaski	Prithivi Chwok
5	Kaski	Kubinde Bhajyang
6	Kaski	Chauthe
7	Kaski	Bhandardhik
8	Kaski	Tal Chwok
9	Tanahu	Ghasikuwa to Chirkane area
10	Tanahu	Dhayere (Mygde)
11	Tanahu	Akla to Manahari Area
12	Tanahu	Gundadi
13	Tanahu	Seratar Dharapani Area
14	Tanahu	Kotre to Belchautara area
15	Tanahu	Yampaphant to Nala area
16	Syangja	Malunga Area

17	Syangja	Phedikhola Besare area
18	Syangja	Bhalu Pahad
19	Syangja	Ramkosh to Karendanda area
20	Syangja	Changchandi Chiuri
21	Syangja	Karadi
22	Syangja	Galayang
23	Lamjung	Aakhase Bhir (Udipur slope)
24	Lamjung	Bhotewodar Sakale
25	Lamjung	Sundarbazar ko Aakala
26	Baglung	Kalika Temple mode
27	Baglung	Near Bazar 2 mode
28	Baglung	Maldhunga upper 200 m
29	Baglung	Maldhunga to Temple mode
30	Parbat	Maldhunga to Beni 200 m ahead
31	Parbat	Chuwa area
32	Parbat	Durlung Chowk Kusma
33	Parbat	Phalebas turning area
34	Parbat	Milan Chwok to Salija Bhir
35	Nawalpur	Daunne area
36	Nawalpur	Arun Khola Bahuni Kuna
37	Nawalpur	Chalis Kilo
38	Nawalpur	Danda Kora Tandi
39	Nawalpur	Kharkatta forest
40	Nawalpur	Faram Chowck
41	Nawalpur	Thumsi area
42	Nawalpur	Thusmi to Bhedabari area
43	Gorkha	5 Kilo
44	Gorkha	12 Kilo
45	Gorkha	Simal Phed
46	Gorkha	Finam Bhir

4.5 Hail stone risk

Hail stone is common hazard in tropical to subtropical region. This study identified the 121 hail stone events during the study (**Table 16**). Most of the hailstones were recorded in middle hills. The study recorded 35 hailstone events in Parbat and identify as more vulnerable district to the hailstone. Similar to the Parbat, Kaski and Lamjung districts are also vulnerable to the hailstones. The study records only few events of hailstones from other districts. The hailstone mainly damages the crops. Sometimes it can be causes of the human and livestock casualties.

Table 16: Hail stone events in Gandaki province

S.No.	District	Area Name
1	Baglung	Tagram
2	Baglung	Dhamja
3	Baglung	Damek
4	Baglung	Galkot
5	Baglung	Bihun
6	Baglung	Baglung
7	Baglung	Khatekhola
8	Baglung	Narayanthan
9	Baglung	Arjewa
10	Baglung	Salyan
11	Baglung	Sukhuwra
12	Baglung	Kadewas
13	Baglung	Sisakhani
14	Baglung	Rajkut
15	Baglung	Adhakarichour
16	Baglung	Bobang
17	Baglung	jaljala
18	Baglung	Taman
19	Baglung	Misi
20	Gorkha	Dharche
21	Gorkha	Siranchock
22	Gorkha	Jaubari
23	Gorkha	Barphak
24	Gorkha	Laprak
25	Gorkha	Pogaun
26	Gorkha	Karaunja
27	Gorkha	Shyamram
28	Kaski	Chapakot
29	Kaski	Ghandruk
30	Kaski	lumle

S.No.	District	Area Name
31	Kaski	Machhapuchhre
32	Kaski	sildajure
33	Kaski	Ghachowck
34	Kaski	Dhital
35	Kaski	Bhachawock
36	Kaski	Hanspur
37	Kaski	Kalika
38	Kaski	Mijure Danda
39	Kaski	Namarjung
40	Kaski	Parche
41	Kaski	Saimarang
42	Kaski	kahun
43	Kaski	Lamachour
44	Kaski	Mauja
45	Kaski	Kandani Danda
46	Kaski	Sisuwa
47	Kaski	Begnas
48	Kaski	Pokhara
49	Kaski	bharatpokhari
50	Kaski	Kahun
51	Lamjung	Ghale gaun
52	Lamjung	Marsyangdi GP
53	Lamjung	Simpani
54	Lamjung	Ghanpokhara
55	Lamjung	Chandistan
56	Lamjung	Bhujung
57	Lamjung	Dhuseni
58	Lamjung	Faleni
59	Lamjung	Dordi
60	Lamjung	Gaunsahar

S.No.	District	Area Name
61	Lamjung	Singdi
62	Lamjung	Bhorletar
63	Lamjung	Dudhpokhari
64	Lamjung	Ilampokhari
65	Myagdi	Marek
66	Myagdi	Bhakimli
67	Myagdi	Takam
68	Myagdi	Pulachaur
69	Myagdi	Singha
70	Myagdi	kuhan
71	Myagdi	Gurja
72	Myagdi	Mudi
73	Myagdi	Lulang
74	Nawalpur	Hupsekot
75	Nawalpur	Dhaiwadi
76	Nawalpur	Arkhala
77	Parbat	Bajung
78	Parbat	Khaula Lakuri
79	Parbat	Ramja Deurali
80	Parbat	Majhphat
81	Parbat	Dhairing
82	Parbat	Shankhar pokhari
83	Parbat	Salikram
84	Parbat	Ranipani
85	Parbat	Pang
86	Parbat	Limithana
87	Parbat	Kurgha
88	Parbat	Pakhapani
89	Parbat	Khurkot
90	Parbat	Pipaltari
91	Parbat	Khanigaun

S.No.	District	Area Name
92	Parbat	Thanamaula
93	Parbat	Pangrang
94	Parbat	Bachha
95	Parbat	Hosrangdi
96	Parbat	Lunkhu Deurali
97	Parbat	Barrachaur
98	Parbat	Saraunkhola
99	Parbat	Bhorle
100	Parbat	Huwas
101	Parbat	Chuwa
102	Parbat	Mudikuwa
103	Parbat	Devisthan
104	Parbat	Balakot
105	Parbat	Wahakithanti
106	Parbat	Urampokhara
107	Parbat	Taklak
108	Parbat	Treveni
109	Parbat	Shivalaya
110	Parbat	Katuwa Chaupari
111	Parbat	Chitre
112	Syangja	Ganespur
113	Syangja	Satau Chandithan
114	Syangja	Swarekphat
115	Syangja	Aarukharka
116	Syangja	Nuwakot
117	Syangja	Mattikhan
118	Syangja	Chitre
119	Syangja	Darau
120	Syangja	Nuwakot
121	Syangja	Kaule

4.6 Lightning risk

Lightning is common hazard in tropical to subtropical region in pre-monsoon to monsoon season. It can be causes of human casualties and livestock loss. Sometimes trees also died by the lightning. This study identified the 121 accident caused by lightning (**Table 17**). Most of the lightning accidents were recorded in middle hills. Similar to the hailstone, the Parbat district is more vulnerable to the lightning risk. The study collected 35 accidents records from this district. Lamjung, Kaski and Baglung districts are also more vulnerable to the lightning. Other districts are less vulnerable to lightning.

Table 17: Lightning events in Gandaki province

S.No.	District	Area Name
1	Baglung	Balewa
2	Baglung	Galkot
3	Baglung	Bihun
4	Baglung	Dhorpatan
5	Baglung	Ghumte
6	Gorkha	Dharche
7	Gorkha	Siranchock
8	Gorkha	Jaubari
9	Gorkha	Kharibit
10	Gorkha	Manbu
11	Gorkha	Karunja
12	Gorkha	Pogaun
13	Gorkha	Larpak
14	Gorkha	Barpak
15	Kaski	Chapakot
16	Kaski	Dhikurpokhari
17	Kaski	Lahachowck
18	Kaski	Dhital
19	Kaski	Hanspur
20	Kaski	Majthana
21	Kaski	Parche
22	Kaski	Saimarang
23	Kaski	Thumako Danda
24	Kaski	kristi
25	Kaski	Kaskikot
26	Kaski	Rivan
27	Kaski	Sildajure

S.No.	District	Area Name
28	Kaski	kalika
29	Kaski	Mauja
30	Kaski	Rupakot
31	Kaski	Kandanidanda
32	Kaski	Mauja
33	Kaski	Begnas
34	Lamjung	Chiti
35	Lamjung	Duradanda
36	Lamjung	Purano kot
37	Lamjung	Chisapani
38	Lamjung	Bakre jagat
39	Lamjung	Dhahare
40	Lamjung	Malayedanda (Dudhpokhari)
41	Lamjung	Gaunsahar
42	Lamjung	Karapu
43	Lamjung	Jitkot
44	Lamjung	Pangrang
45	Lamjung	Bhujung
46	Lamjung	Dhuseni
47	Lamjung	Faleni
48	Lamjung	Dadhuwa
49	Mygdi	Gauswara
50	Mygdi	Takam
51	Mygdi	Gurja
52	Mygdi	mudi
53	Nawalparasi(East)	Hupsekot
54	Nawalparasi(East)	Dhawadi

S.No.	District	Area Name
55	Nawalparasi(East)	Devchuli
56	Nawalparasi(East)	Arkhala
57	Parbat	Salija
58	Parbat	Falamkhani Mahasila 6
59	Parbat	Kyang
60	Parbat	Lespar
61	Parbat	Saligram
62	Parbat	Ranipani
63	Parbat	Bannau
64	Parbat	Kyang
65	Parbat	Pakhapani
66	Parbat	Thanamaula
67	Parbat	Hosrandgdi
68	Parbat	Bhoksing
69	Parbat	Saraunkhola
70	Parbat	Bholre
71	Parbat	Huwas
72	Parbat	Wahakithanti
73	Parbat	Urampokhara

S.No.	District	Area Name
74	Parbat	Trebeni
75	Syangja	Mattikhan
76	Syangja	Satau
77	Syangja	Chitre
78	Syangja	Magyam Chisapani
79	Syangja	Sirubari
80	Syangja	Aarupata
81	Syangja	Alamdevi
82	Syangja	kolma
83	Syangja	Nuwakot
84	Tanahu	Pokhari Bhangyang
85	Tanahu	Shyamgha
86	Tanahu	Manahukot
87	Tanahu	Myagde Bhangjyang
88	Tanahu	Chhan
89	Tanahu	Manapang
90	Tanahu	Jamune
91	Tanahu	Bhujikot
92	Tanahu	Taprek

5. CONCLUSION AND RECOMMENDATION

This study identify Gorkha district as hazard risk district of the Gandaki province for fire and flood and landslide. Parbat district has low amount of risk land for these hazards but this district is more vulnerable to hailstone and lightning. The study identified 6,349 km^2 fire risk zone, 1443.33 km^2 flood risk zone and 3,371.32 km^2 landslide risk zone in the Gandaki province. Land use land cover and precipitation are most important variables to model the fire risk. Shrub land, forests and areas having low precipitation are more susceptible to fire risk. Distances to water and slope are most important variables to model the flood risk. Lands near to the water and flat area are facing the flood risk. Slope and land use land cover are most important variables to model the landslide risk. Lands around the river sides and steep slopes are more risky area in terms of landslides.

In this study we idntified and mapped the three hazards: fire, flood and landslide. To save human and properties from hazards the study recommend following precautions.

- To reduce the risk of fire the vegetated area should be cleaned during dry season. Awarness programs should be conducted to convince the people not to burn the flamable materials during the dry season.
- To save the people and properties from flood, people shouldn't build the permanent structure such as buildings, roads within the two kilometers from the river. The constructions should be in gentle slope (around 5 degree) therefore instance water such as rain water can drain quickly.
- To save the people and properties from landslide, The constructions should not be in steep slope (more than 10 degree) and near to the riverside.
- Careful and slow driving is recommended in roundabout and bend roads to mitigate the road accidents.
- Earthing is recommended to mitigate the effect of lightning.
- Hailnets should be use to save valuable and small plants.
- During lightning and hail people should be inside the home to be safe from these hazards.
- Gorkha is identifed as disaster risk disctrict of the Gandaki province. Provincial government should focus on this district to mitigate the effect of the disaster.

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APPENDIX - I

District-wise Existence Fire Spots of Gandaki Province

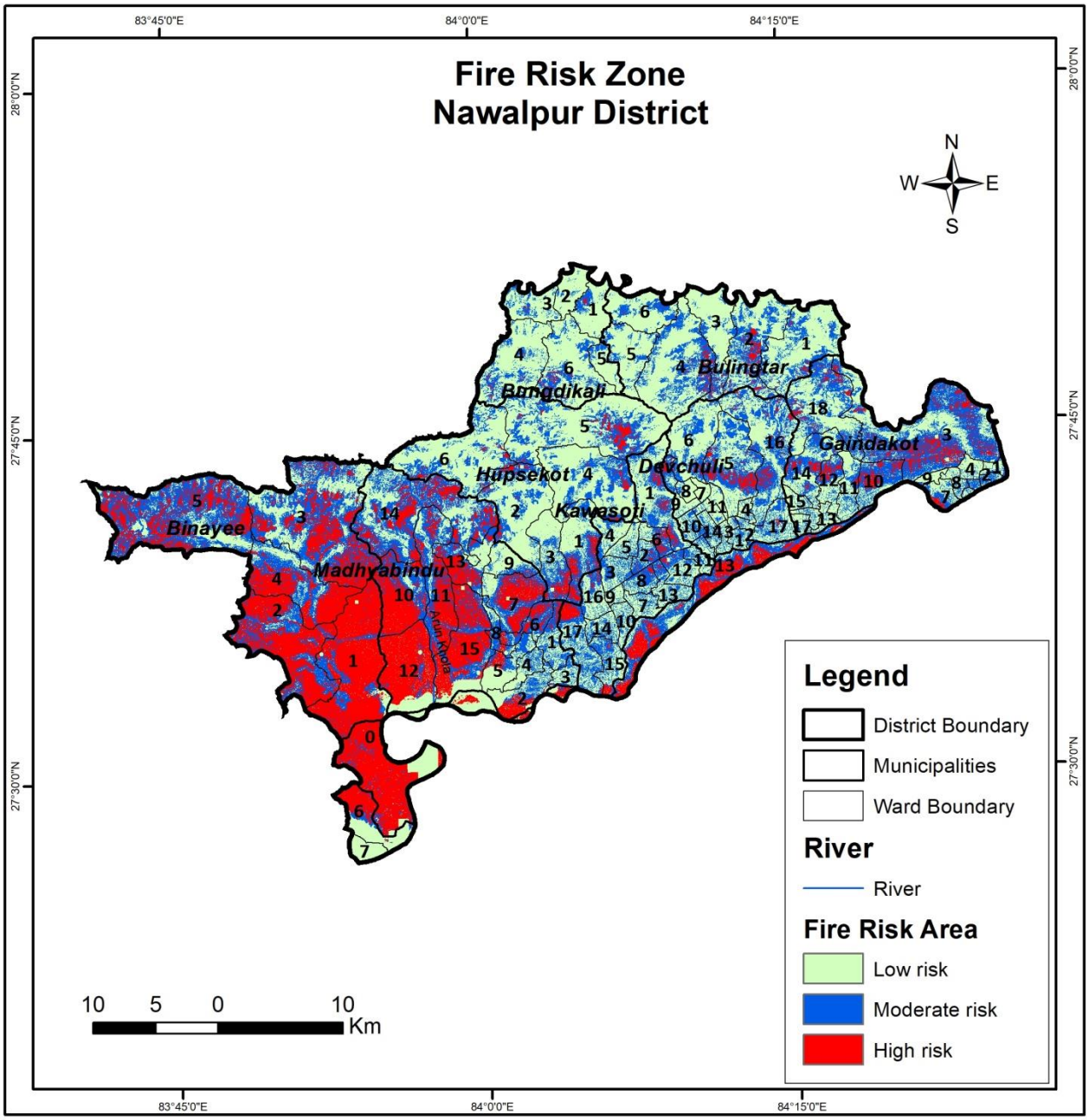
S.N.	District	Longitude (X)	Latitude (Y)
1	Baglung	83.197	28.272
2	Gorkha	84.747	28.049
3	Nawalparasi	83.814	27.683
4	Nawalparasi	83.935	27.591
5	Nawalparasi	84.161	27.651
6	Nawalparasi	84.151	27.65
7	Tanahun	84.368	27.793
8	Nawalparasi	83.968	27.619
9	Nawalparasi	83.939	27.576
10	Lamjung	84.407	28.425
11	Lamjung	84.436	28.342
12	Myagdi	83.499	28.6
13	Myagdi	83.512	28.599
14	Lamjung	84.47	28.397
15	Lamjung	84.46	28.398
16	Kaski	83.863	28.547
17	Nawalparasi	84.228	27.814
18	Gorkha	84.886	28.367
19	Baglung	83.211	28.493
20	Myagdi	83.516	28.542
21	Myagdi	83.518	28.55
22	Myagdi	83.211	28.576
23	Myagdi	83.202	28.586
24	Nawalparasi	84.036	27.793
25	Myagdi	83.233	28.563
26	Myagdi	83.224	28.565
27	Myagdi	83.217	28.566
28	Myagdi	83.229	28.576
29	Myagdi	83.228	28.552
30	Myagdi	83.253	28.559
31	Myagdi	83.241	28.562
32	Nawalparasi	84.032	27.633
33	Myagdi	83.78	28.623
34	Gorkha	84.714	27.918
35	Nawalparasi	83.909	27.575
36	Baglung	83.154	28.335

APPENDIX – II

Local Level-wise Potential High Fire Risk Areas of Gandaki Province

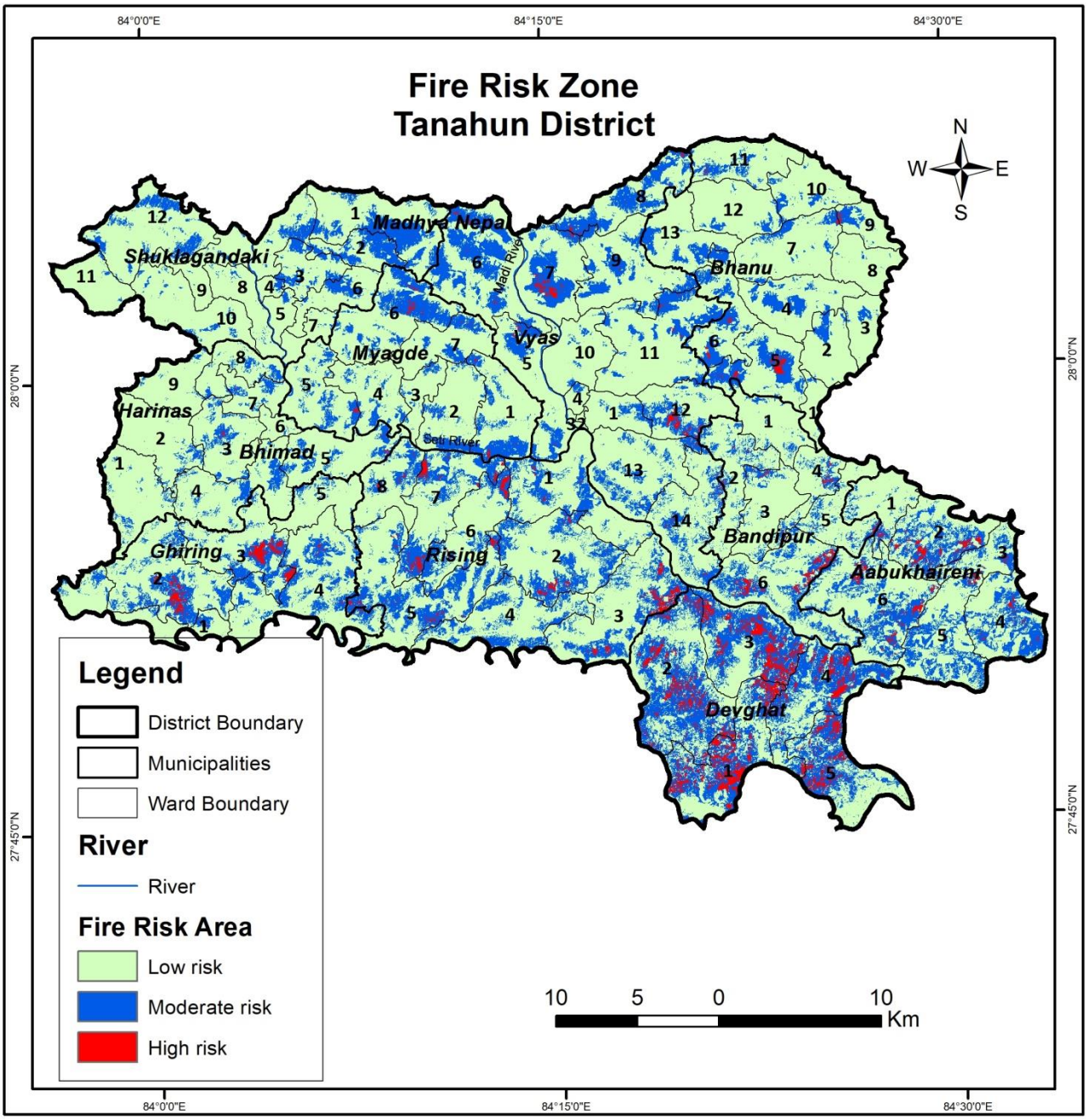
Nawalpur District

Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Nawalpur District			
Binayi Triveni RM	1	Dumkibas area, Chure forest area	Chitwan NP
	2	Dumkibas area,Chure forest area	
	3	Southern part of Patu khahare forest area, upper part of Khorandi khola	
	4	forest area of Gogadi, Jhandi danda area	
	5	Botika deurali	
	6	Northern part of Parsaiya	
Madhyabindu Municipality	2	Southern part of Bhangaha	
	7	Northern and southern part of East West highway	
	10	North west part of Arun khola bazaar, western part of Jhyaltun danda	
	11	Eastern part of Arun khola	
	12	Western part of Belhani and Tamaspur	
	13	Western part of Mainadhar khola	
	14	East part of Charange	
	15	Northern and southern part of East	
Hupsekot RM	1	Southern part of Nayabasti	
	2	East ern part of Chihandanda	
	3	Southern part of Nayabasti	
	4	Eastern part of Kutia	
	5	Dhawadi area	
	6	Eastern part of Chihandanda	
Kawasoti Municipality	1	Northern southern part of East West highway	NP area
	2	Northern part of Hattikhor	
Devchuli Municipality	5	Forest area	
	16	Forest area	
Gaidakot Municipality	3	Maulakali forest area	
	10	Mukundapur forest area	
	12	Northren part of Majikuna	
	14	Taunagar forest area	
	18	Hattisal area	
Buungdikali RM	1	Mithukaram danda	
	4	Kuwakot area	
	6	Laphe forest area	
Bulintar RM	2	Southern part of Ramkot	
	3	Batase forest area	
	4	Sundar Thumki area	


Fire Risk Zone
Nawalpur District
83°45'0"E
84°0'0"E
84°15'0"E
28°0'0"N
27°45'0"N
27°30'0"N
N
W
E
S
Binayee
Madhyabindu
Kawasoti
Hupsekot
Devchuli
Gaindakot
Bulingtar
Bungdikali
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Fire Risk Area
Low risk
Moderate risk
High risk
10 5 0 10
Km

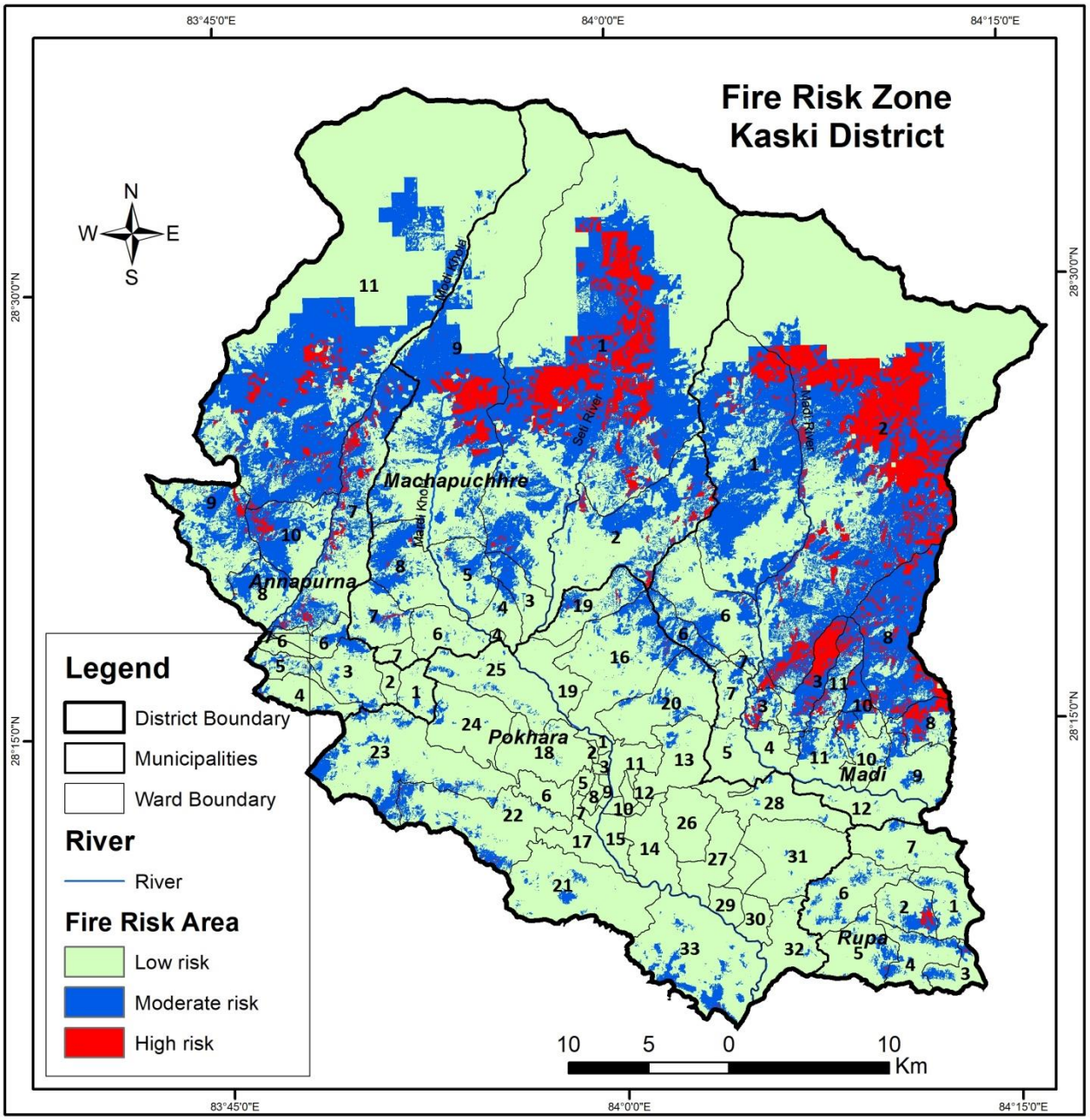
Tanahun District

Tanahun District			
Rural Municipality (RM)/ Municipality	**Ward**	**Location**	**Remarks**
Devghat RM	1	Manudanda area, Northern part of Basenitar	
	2	Kwandi area	
	3	Dagara, Chhapswanra	
	4	Northern part of Sinchyang, Solighopte area,Kaphalswanra	
	5	Bagyan forest area	
Abukhaireni RM	2	Kholakhangaon	
	4	Lopran	
	5	Chhimkeswori area	
	6	Chhimkeswori area	
Bandipur RM	6	Jhalbhangyang, Jhargaon	
Rising RM	2	Dubundanda, Koldanda	
	3	Kattike	
	4	Northern part of Ruptar	
	5	Northern part of Ruptar	
	6	Kundar area	
	7	Koltan area	
Ghirin RM	2	Northern part of Pulgau	
	3	Harsedada area	
	4	Gajarkot forest area	
Bhanu Municipality	4	Tilhar forest area	
	5	Thuldhunga area, Chhaunepani area	
	6	Mulabari area	
	9	Puwargaun area	
Byas Municipality	5	Beten and Chuda area	
	6	Chhabise dihi, Syamgha besi, Bhatgau area	
	7	Botetar area, Jaubari area	
	8	Jaubari area, Pulimaran area	
	9	Somdada area	
	12	Chabdi Barah area, Dhus pakha area	
	14	Nayagaun area, Harkapur area	
Maygde RM	1	Upper part of Barchyang	
	5	Ghaderi area	
	6	Dhoke and Sarbalyang area	
Shuklagandaki Municipality	1	Bhyagute	
	6	Kuse Bagyan	
Bhimad Municipality	3	North part of Bel Bhanjyang	


Fire Risk Zone
Tanahun District
84°0'0"E
84°15'0"E
84°30'0"E
28°0'0"N
27°45'0"N
N
W
E
S
Madhya Nepal
Shuklagandaki
Myagde
Vyas
Bhanu
Harinas
Bhimad
Ghiring
Rising
Bandipur
Aabukhaireni
Devghat
Madi River
Seti River
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Fire Risk Area
Low risk
Moderate risk
High risk
10 5 0 10
Km

Kaski District

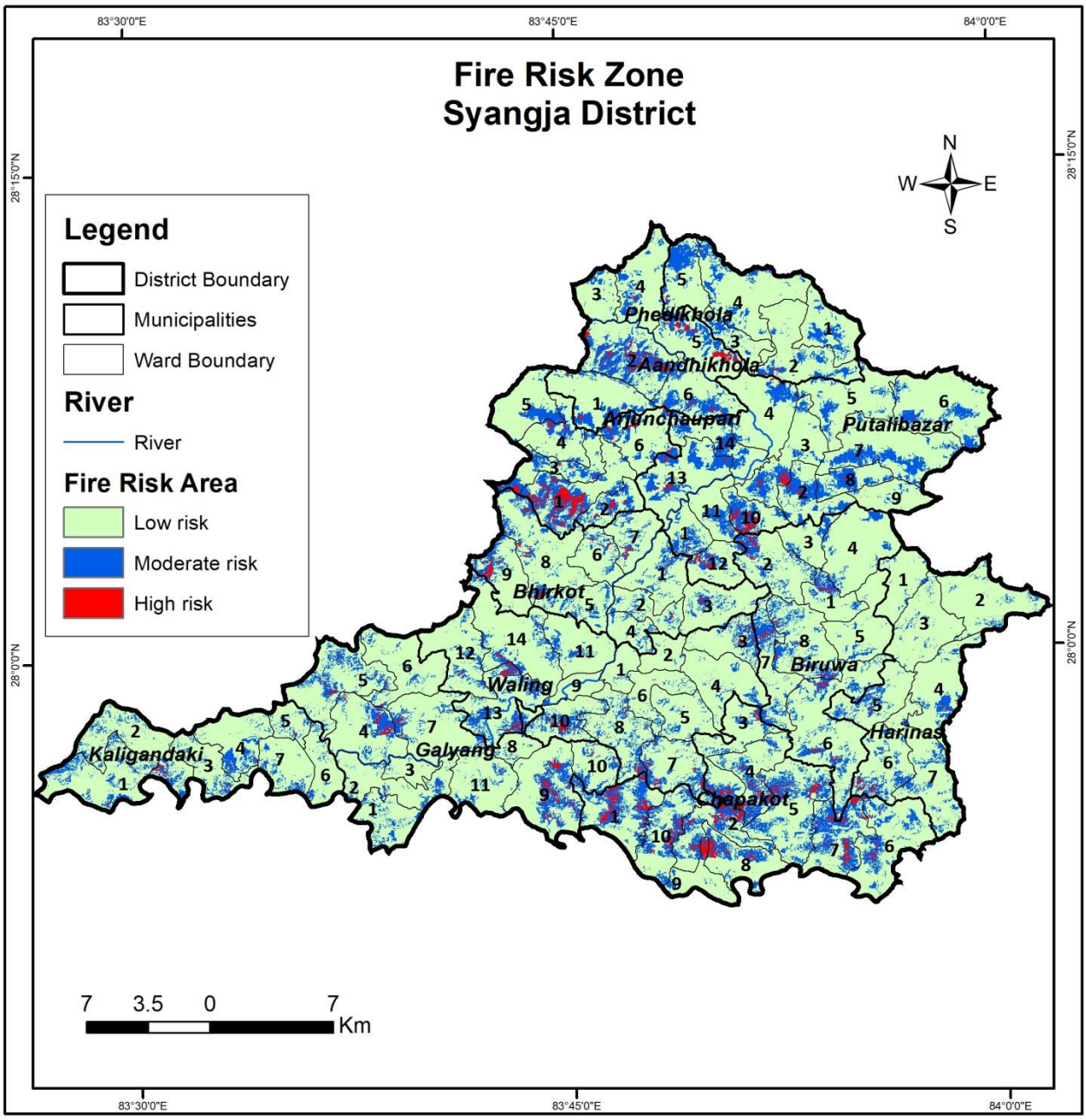
Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Rupa RM	2	Northern part of Birdi khola	
	3	Upper part of Polyang	
	5	Upper part of Majyankor	
Pokhara Metropolis	16	Kali lek Armala forest area	
	19	Nothern part of Tallakot, Lamdanda area of Puranchaur	
	22	Chisapani area of Chapakot	
	23	Himde area of Pumdi	
	33	Bhulbhuladevi community forest area	
Madi RM	1	Hugu area	
	2	Kori area, Kholasonthar area, Krapu, Chingre araea	
	3	Hareswaanra, Northern part of Yangjakot	
	6	Phimro near Sondha	
	10	Kurlun, Jhagre, Northern part of Purano Bhachok	
	11	Upper part of Togi and Warchok	
Machhapuchhre RM	1	Piperkharka, jyamirbari, Sinkyukharka,Dharne danda area, ranikharka, Kitukharka, Odandanda area	
	3	Upper part of Saripakha	
	5	Mahara area	
	7	Dhampus area	
	9	Lower part of Korjadanda, upperpart of Susel khola forest area	
Annapurna RM	4	Phalate area	
	5	Dadakharka	
	7	North Eastern part of Lumle forest area, Maruwapakha	
	8	Sarkyu	
	9	Magyokharka,Luprandanda	
	10	Magyokharka, Luprandanda	
	11	Upper part of Sinwa, Badkhokharka, Kordanda area	


Fire Risk Zone
Kaski District
N
W
E
S
83°45'0"E
84°0'0"E
84°15'0"E
28°30'0"N
28°15'0"N
Machapuchhre
Annapurna
Pokhara
Madi
Rupa
Madi Khola
Seti River
Madi River
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Fire Risk Area
Low risk
Moderate risk
High risk
10 5 0 10
Km

Syangja District

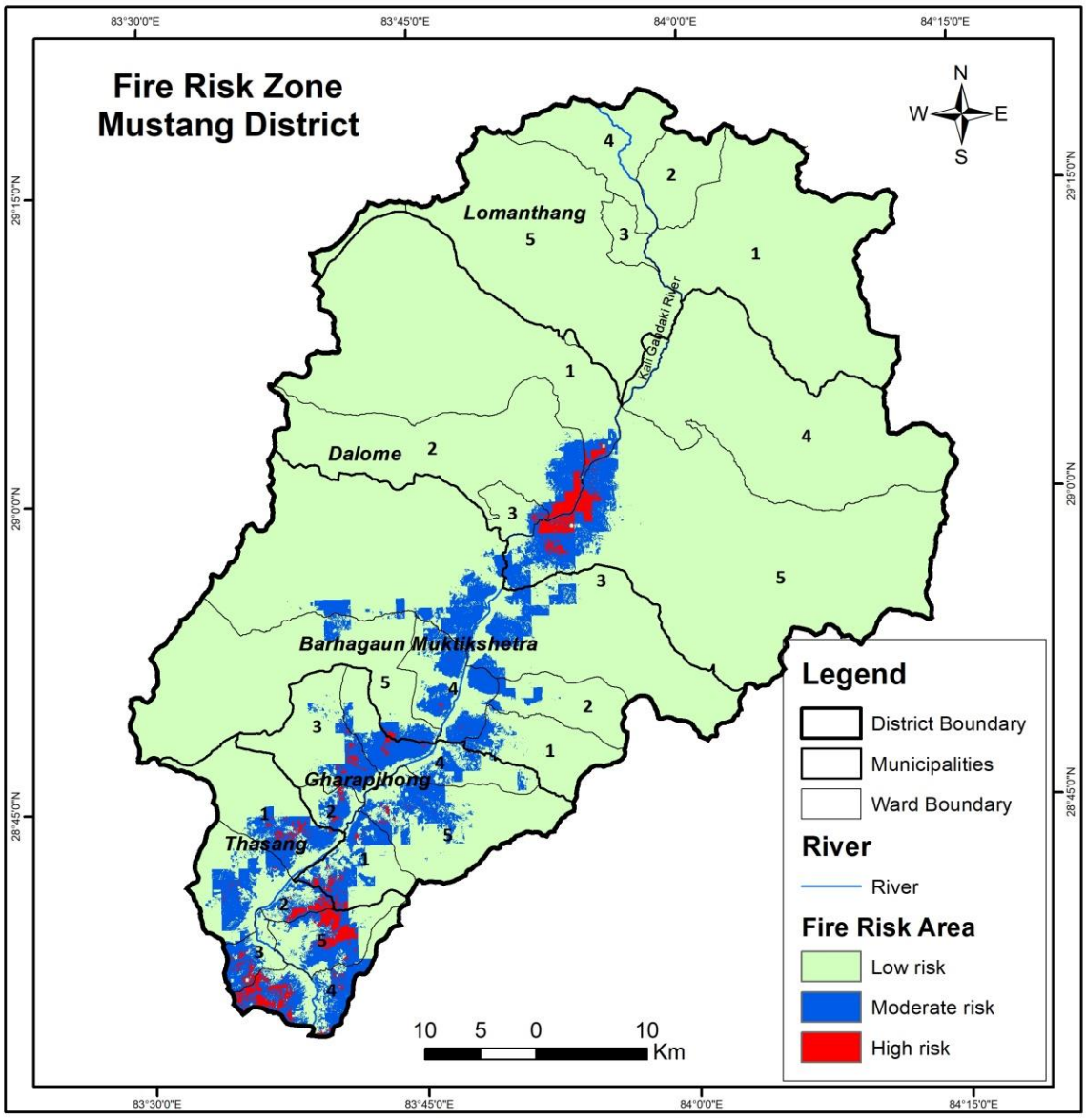
Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Kali Gandaki RM	1	Eastern part of Kali Odar and Kaligandaki River bank	
	2	Western part of Botechaur	
	3	Ghyadada	
	4	Southern Part of Kotgaun forest area	
	5	Gauli Bhanjyang	
	6	Western part of Beltar	
	7	Eastern part of Bastari and Kaligandaki River bank	
Galyang Municipality	4	Aadikharka danda	
	5	Southern part of Banipokhara	
	7	Galla area	
	9	Belchaur, Mathillo and Tallo chitdanda	
Chapakot	1	Sisardanda, Surkhadanda	
	2	Southern part of Basidanda, Dhurkot, Dhurkotbesi	
	4	Northern part of Gillan	
	5	Ghurpal area	
	6	Western part of Sunargaun	
	7	Eastern part of Paindada	
	8	Northern part of Ratanpur	
	9	Northern part of Suntalitar forest area	
	10	Eastern part of Chhap	
Waling Municipality	3	Raniswara forest area	
	7	Pokharidada, Eastern part of Tapka	
	8	Lakun	
	10	Kumswara, Admara, Southern Top Part of Siddhartha Highway	
	12	Dadakharka,Ghurunkha	
	13	Mathillo Chhapa, Bhorle, Armadi	
Bhirkot	2	Jogidada	
	3	Banethok	
	6	Khilun dada	
	7	Pasindada	
	8	Okadi area, Diguwa	
	9	Saundi	
Harinas RM	4	Northern part of Lindiswara,	
	5	Katharite	
	6	Gaid Bhanjyang	
Biruwa	1	Northern part of Archale	
	2	Chandrakot	
	6	Eastern part of Sarugaun, Basantidada, Thumka	
	7	Mankamana area	
	8	Mochabari, Simalgaira	
Putalibazar Municipality	1	Southern top part of Siddhartha Highway	
	3	Khahare, Randan	
	10	Halhale, Lumdi	
	12	Northern top part of Bajadi	

Fedikhola RM	2	Badachaur	
	5	Northern part of Bange	
Aandikhola RM	1	Near Rahelekhola	
	2	Chilaunebas forest area	
	5	Northern part of Kuntika, Seti dovan	
Arjun Chaupari	1	Tamu dada	
	3	Deurali dada	
	4	Western part of Newat	
	6	Kaule, Southern part of Rimalthar	



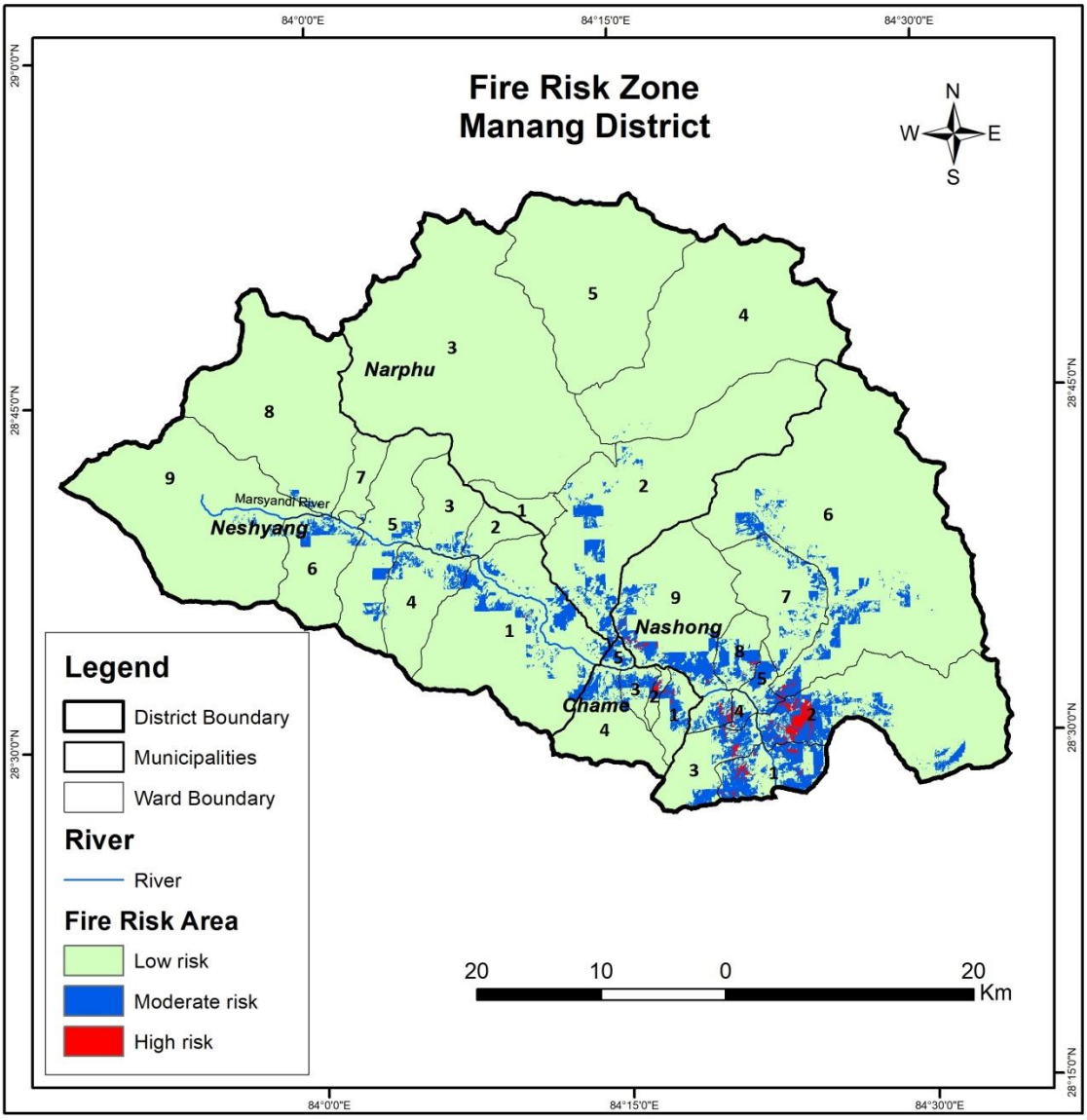
Mustang District

Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Dalome RM	1	East and west river bank of Kaligandaki river	
	2	East and west river bank of Kaligandaki river	
	5	East and west river bank of Kaligandaki river	
Barhagaun Muktikshetra RM	4	Near Kagbeni	
Gharapjhong RM	1	Chokhopani area	
	2	Western upper part of Marpha	
	3	Western upper part of Syan	
	4	North western upper part of Jomsom	
Thasang RM	1	North western upper part of Tukuche	
	2	Eastern upper part of Lajung	
	3	Western upper part of Late	
	4	Western upper part of Ghasa	
	5	Eastern part of Kunjo village	



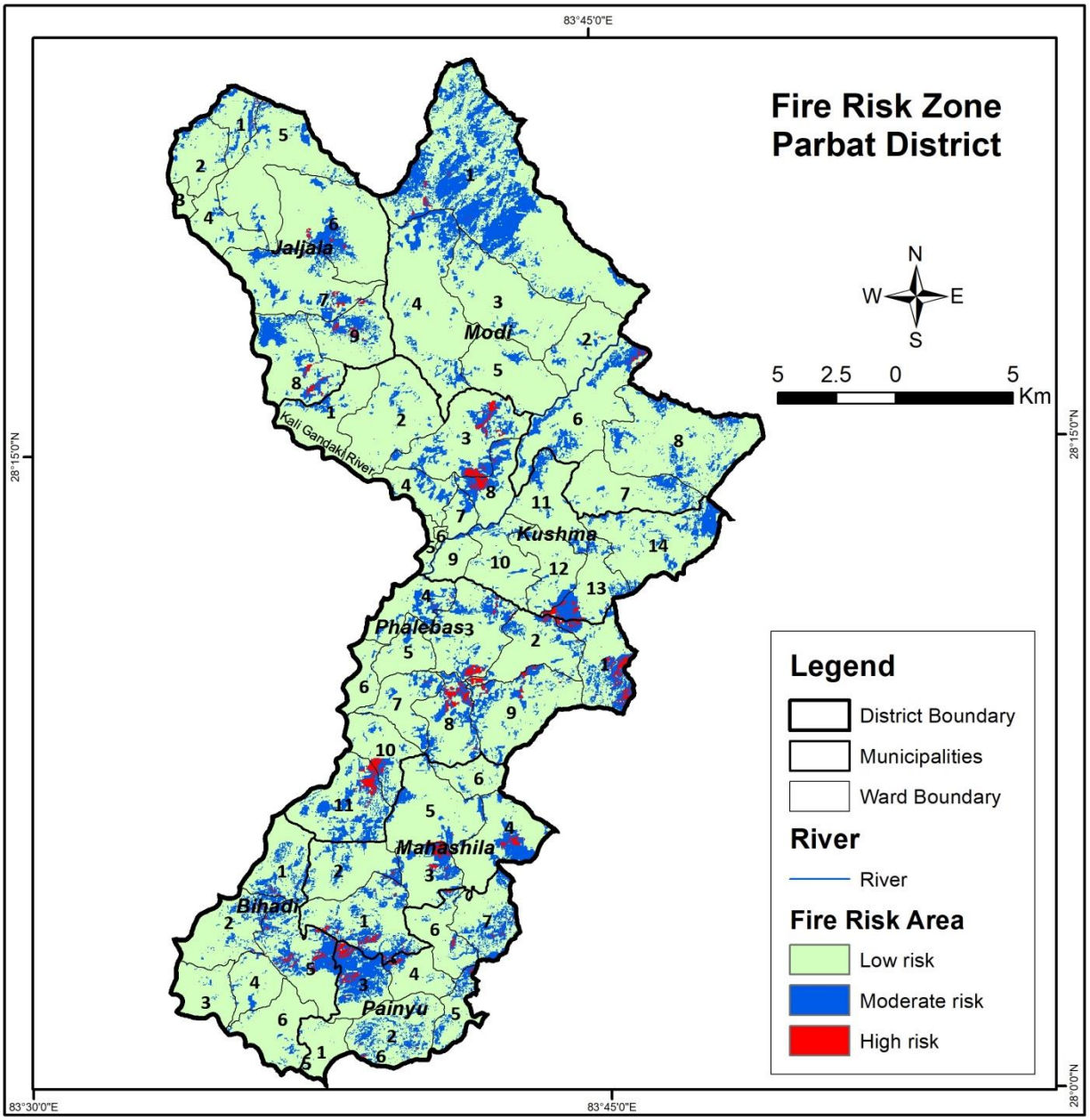
Manang District

Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Chame	1	Western upper part of Timan	
	2	Southern upper part of Thanchok	
	5	Northern upper part of Chame	
Nashong	1	Eastern and western upper part of Tal	
	2	Kromche area	
	3	Western upper part of Kabro	
	4	South western upper part of Odargaun	
	6	Eastern upper part of Plamne area	
	8	North eastern upper part of Tachai	
	9	Southern upper part of Bagarchhap	



Parbat District

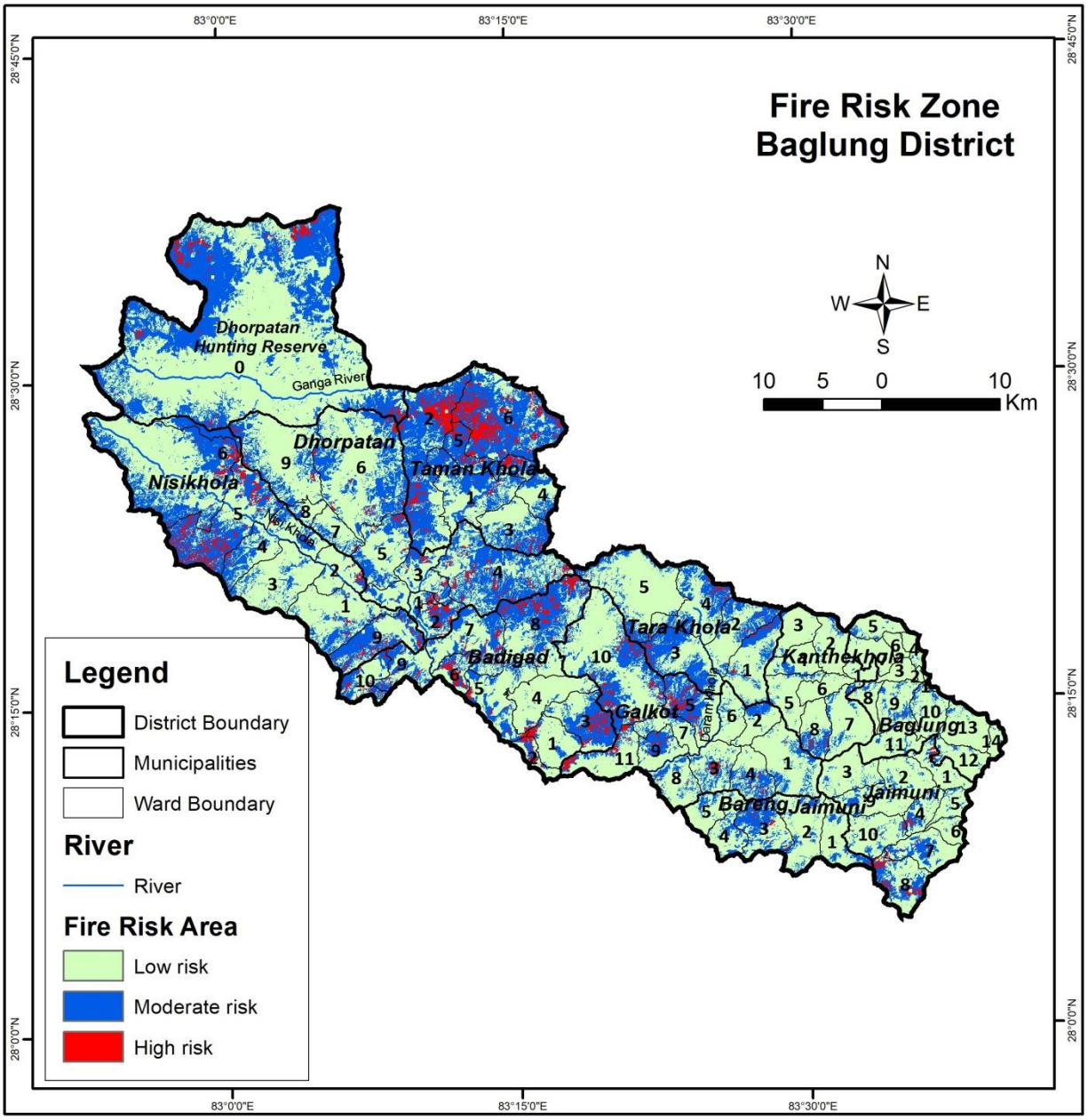
Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Painyu RM	3	Northern part of Beulibas	
	4	Dhapuk area	
	5	Northern part of Dharadi	
	6	Thapathar area	
	7	Kulkharka	
Bihadi RM	2	Salyari forest area	
	5	Gorang Forest area	
Mahashila RM	1	North western part of Painyu darbar	
	3	Northern part of Balkot	
	4	Middle forest part of pakhapani	
Falebas Municipality	1	Southern part of Bhageri	
	3	Purandihi area	
	8	Archale area	
	9	Fulbari area	
Kusma Nunicipality	3	Chaunate forest area, soli forest area	
	8	Northern upper part of Chuwa	
	13	Jogithumka area	
Modi RM	1	Northern west part of Bhuka	
	6	Jayagau Tilahar area	
Jaljala RM	1	Baskharka forest area	
	6	Thotneri area	
	7	Eastern part of Lalun forest area	
	8	Nagliban area	
	9	Gajunge, Dadakhor area	


Fire Risk Zone
Parbat District
83°45'0"E
28°15'0"N
28°0'0"N
83°30'0"E
N
W
E
S
5 2.5 0 5
Km
Jaljala
Modi
Kushma
Phalebas
Mahashila
Bihadi
Painyu
Kali Gandaki River
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Fire Risk Area
Low risk
Moderate risk
High risk

Baglung District

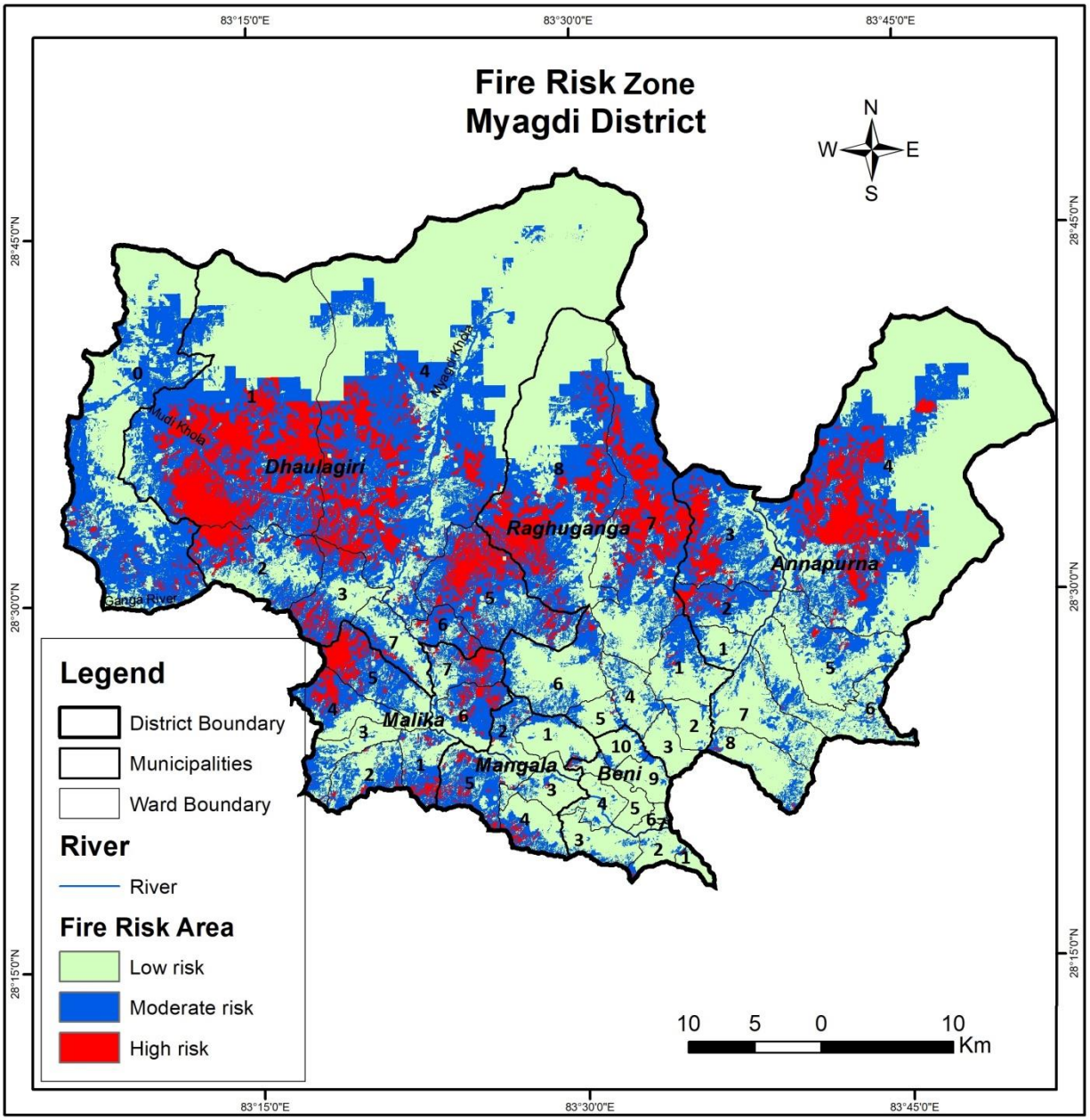
Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Jaimuni	1	Ghaiya Khoriya	
	4	Badaur forest area	
	7	Jaidi area	
	8	Ratmata, Chhisti area, western part of Bhatkuwa, Salendhara area	
	10	Saureni forest area	
Baglung	9	Dayadada, Chisapani area	
Kanthekhola	8	Southern part of Lekhani forest area	
Tarakhola	1	Northern upper part of Karle, Northern upper part of Sirubari	
	2	Shirkhu area	
	3	Gufadhuri forest area	
	4	Tamkas area	
	5	Dunde lek area	
Galkot	3	Mimla area	
	4	Niluwa area, Daruwa Pahad area	
	5	Ghumte lek area	
	8	Dudbise area	
	9	Neta, daukharka area	
	10	Kalikhani dada area, Kimle dada area	
	11	Western part of Sani Righa, Gothlan forest area	
Badigad	1	Western part of Dhandhan	
	2	Northern forest area of Sakner	
	3	Kimle dada area, Malmapani area	
	5	Remi forest area,	
	6	Tallo Ghwan, Chhis, Dankharka	
	7	Northern and southern part of Bhim khola	
	8	Northern upper part of Kholakharka,Lower part of Palamkhani danda	
	9	Palakharka and Gaidabari forest area	
	10	Patale, Nigalpani , Chisapani area	
Bareng RM	3	Daruwa Pahad area	
Nisikhola RM	1	Pakhani forest area	
	2	South Eastern forest part of Sindhure	
	4	Western part of Dobata	
	5	Ghoredhungadhuri forest area, Northern part of Kataha	
	6	Northern part of Lumba	
	7	Eastern , Southern and Western part of Rajkut	
Dhorpatan Municipality	1	Eastern part of Burtiban	
	2	Bhyalkharka, Thnam area	
	3	Salma area, Chirban area	
	4	Lukurban area, Dude lek area	
	5	Northern part of Adhikarichaur	
	6	Taplekharka area	
	9	Taplekharka area	

Tamankhola	1	Mun, Therban area	
	2	Dhurkhani Dhuri area,Muthachaur	
	3	Lukhani Ghari, Soli Lek	
	5	Nayaban kharka, Upasban area	
	6	Dhurkhani Dhuri area, Nayaban kharka, Khuinkhani area	



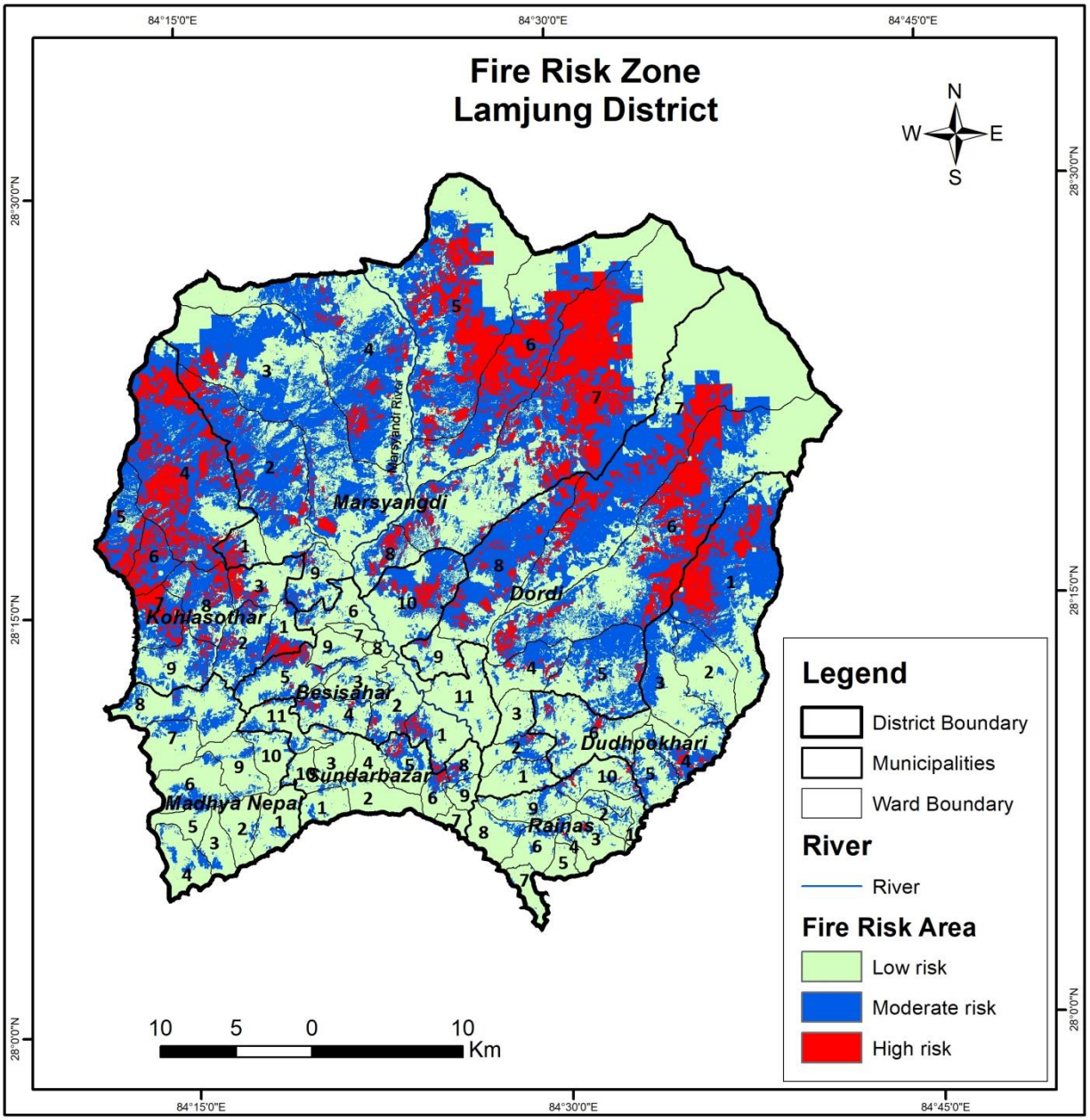
Tanahun District

Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Dhaulagiri	1	Almost forest and bush area of Gurja	
	2	Khorekharka, Dhungadharkharka, Dandadhuri area	
	3	Dandadhuri area, Malika Dhuri area, Jugja pahad area	
	4	Dandadhuri area, Arguldhuru area, Mulbaskharka,Thulopatakharka, Dhurikharka	
	5	Deurali Dhuri, Hesnam Dhuri, Umi danda, malkaban, Maran area,	
	6	Ghanteban, northen part of Damka	
	7	Southern part of Takam	
Malika	1	Basbot forest area, Niskot fera area,	
	2	Dhamjalek area, Chhale area	
	3	Sulelek area	
	4	Sagbari, Khban area	
	5	Jugja pahad area,Southern Upper part of Haskholagaun	
	6	North and North Eastern part of Dichyarn	
	7	Eastern part of forest in ward no.7	
Beni	3	Northern part of chinakhet	
	5	Daduwa area	
Mangala	2	Hidi area, Datun area	
	3	Northern upper part of chimkholagaun	
	4	Southern and western part of Baranja	
	5	Deurali danda, Northern and southern upper part of Sirkum	
Raghuganga	1	Baskot area	
	5	Eastern part of jhigaun	
	6	Patalekharka	
	7	Northen upper forest part of Chimkhola and Kuinemangala	
	8	Chamelidanda area, Bhalechuli area, Samaitauko area,Shrikharka,	
Annapurna	2	Western part of Bhurun Tatopani	
	3	SIran Mapuri, Dharakhaka, Losedanda, taletro	
	4	Western, Northern and Southern part of Solighopte danda (Near Nilgiri Khola)	
	5	Lareni area	
	8	Ripudanda	


Fire Risk Zone
Myagdi District
N
W
E
S
83°15'0"E
83°30'0"E
83°45'0"E
28°45'0"N
28°30'0"N
28°15'0"N
Dhaulagiri
Raghuganga
Annapurna
Malika
Mangala
Beni
Mudi Khola
Myagdi Khola
Ganga River
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Fire Risk Area
Low risk
Moderate risk
High risk
10 5 0 10
Km

Lamjung District

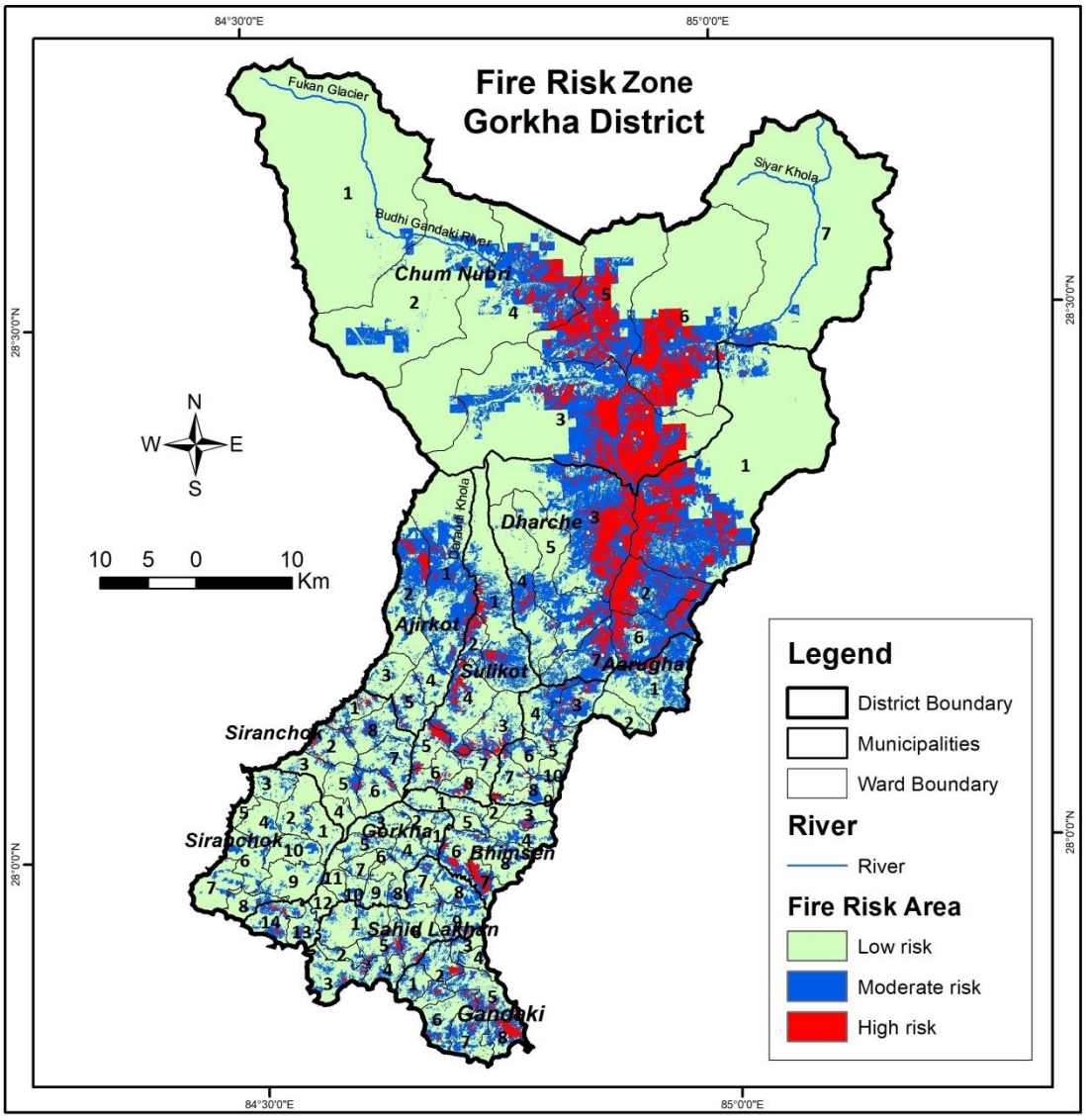
Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Sundarbazar Municipality	5	Bagedanda area	
	6	Northern part of Bahunthok	
	8	Kuwargaun Forest	
Besisahar Municipality	1	Ghatelek area	
	2	Khan Bhajyang, Lakureswanra,	
	4	Hile area,	
	5	Syare, Lausibot, Sabai	
	10	Khache, Deurali, Kalleri	
Kohlasonthar RM	1	Kyaku forest area , Western part of Pidhi area	
	2	Eastern and western part of Torma	
	3	Midim khola river bank	
	4	Almost forest part of Bhujun	
	5	Singdi, Singdi besi, Sigu area	
	6	Kiche area, Pasgaun area	
	7	Taramro area, Chara area, Bhonje area	
	8	Tamubesi, Ghiche, Pago area	
	9	Taksar area	
Dudhpokhari RM	1	Lipedanda, Kharmunidanda, upallo nisimro, Patalekharka	
	4	East and west part of Disedanda	
	5	Western part of Simalgaun	
	6	Betyanigaun, Okhari	
Dordi	2	Sallabot, Gogidanda area	
	4	Northern part of basbot, Lamidanda	
	5	Ramsidanda	
	6	Lipedanda, Kharmunidanda, Dhodenipakha, Kirtipur, Chhikalwo danda, Nalekharka,Ukhadakharka,	
Marsyangdi RM	1	Pugrun, Kalau area	
	2	Ghopte, Ghimrun, Thulokhola and Chhaharekhola, Southern part of Probi gaun, Upper part of Thulokhola, Dhomekharka, Purnekharka	
	3	Tanphrukharka, Purangaun	
	4	Mimdu danda, Ghaderi dil, Jital, upper part of Gaidu khola	
	5	Almost forest part of Ghermu	
	6	Dahere Bahundanda, Nagilek	
	7	Nayagau, Usta,TarachokUpper part of Siurikhola, Jalauche	
	8	Rintan, Bhusme	
	9	Bhalamchaur, Lamagau, Pamchok	
Rainas RM	10	Dikeswara area, Sisneri area	
	3	Dandakharka area	


Fire Risk Zone
Lamjung District
N
W
E
S
84°15'0"E
84°30'0"E
84°45'0"E
28°30'0"N
28°15'0"N
28°0'0"N
Marsyangdi River
Marsyangdi
Dordi
Kohiasothar
Besisahar
Sundarbazar
Madhya Nepal
Dudhpokhari
Rainas
10 5 0 10
Km
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Fire Risk Area
Low risk
Moderate risk
High risk

Gorkha District

Rural Municipality (RM)/ Municipality	Ward	Location	Remarks
Palungtar	8	Dharapani area	
Gorkha Municipality	5	Northern part of Rip	
	13	Northern upper part of Dadgaun	
	14	Northern part of Pamdi, Thapathan, Pyughargaun	
Sahid Lakhan	2	Eastern Part of Beteni	
	3	Northern part of Chunitar, Chhandanda	
	5	Western, eastern and southern part of Dadagaun	
	6	Southern part of Batase	
	7	Ludiswara area, northern part of Kotthok	
	8	Southern part of Jogidanda	
	9	Archela area	
Gandaki	1	Easern part of Shikharkhola	
	2	Almtar area, Simle	
	3	Chamatigau area	
	5	Southern part of tinghare,Sanodurbun,southern part of Rampur	
	6	Ghamsur, Majuwa, Totak area	
	7	Southern part of Chiplete	
	8	Toriswanra, Benigau,Churedanda	
Bhimsen	3	Southern part of Dadabesi	
	4	Chautara bhanjyang area	
	6	Northern part of hare Bisaune,western part of Banthangaun,Upper part of Banthanbesi	
	7	Almost forest part of Borlan ward 7	
	8	Chhapathok area	
Siranchok	1	Raga near Chepe khola,Kubhnde, Balkathan, Sirchaur area	
	2	Upper part of Pandebesi, western part of Jamune	
	5	Dadagau area	
	6	Western part of Dumre, eastern part of Baspur	
	7	Western part of Sarkigaun	
	8	Nayagau, Chisapani area	
Arughat	1	Majhgau, Dhunchet, Dorba area	
	3	Soti, Armala, Deurali, Kaurepani, Sorangau	
	4	Dharchedada,Jamunedanda, Thumi, Swaragau	
	5	Ghorpani area	
	6	Northern part of Khharekhola	
	7	Lakure area, Churun	
	8	Western part of Deurali, Dhadgaun, Tunibote	
Agirkot	1	Eastern part of Dhansira, Bhugtol, Thumgaun	
	2	Northern part of Madramari	
	5	Dharapani area, Sabdurgaun, Eastern part of Ratmata	
Sulikot	1	Western part of Syamet, Kebun, Jongon area	
	2	Tumsika, Harslmle,Goge area, Jhyalkholagau, Galmu area	
	3	Sulikot,Istul khola	
	4	Balphe area, Tukran area, Kalibote area, Western part of Phunchok,	

		Gairegaun,Southren part of Phuknachok	
	5	Northern part of Hudi khola	
	6	Mathillo Masar, Western part of Apaswara,Eastern part of Kaurepani	
	7	Daunekhola area	
	8	Western part of Ramche	
Chumnubri	3	Philim, Gumba, Nagjet, area Yubu danda,Jagat, salleri, Pukyu area	
	4	Prok area, Chhak area, Nambache area, Lau area, Kwak area	
	5	Bihi, ranagaun, Krayak, Syaran, Baibhuk, Saran lek	
	6	Lakuwa area, Ripche, Ghumin, Gumba, yarju, Sarpu kholasarti khola, Tharun area, Chumlin	
Dharche	1	Doban, Hulchok, Almost Forest part of Keraunja	
	2	Keraunjabesi, Rumchetbesi, Machha kholagau, Samnokhola	
	3	Uiya area, Bhinchet, Renbon, Phaiban,Korla, korlabesi	
	4	Northern Part of Laprak	
	5	Lapsibot, Yamkari area	
	6	Birimdada, Chhumodada, Khanibesi, chamkharka, Phalbari	
	7	Khanigau, Khanibesi, Lapu, Lapubesi	



APPENDIX – III

District-wise Existence Flood Spots of Gandaki Province

District	Area Name	Latitude (X)	Latitude Y
Kaski	Sondha	84.086982	28.322924
Kaski	Chasu	84.09061	28.291507
Kaski	Ghumle	84.147042	28.212809
Kaski	Polyang Besi	84.226675	28.099683
Kaski	Idi	83.882888	28.323446
Kaski	Khorakomukh	83.904137	28.312765
Kaski	Pochephat	83.986691	28.410622
Kaski	Sandal	83.978302	28.389829
Kaski	Tatopani	83.960192	28.360105
Kaski	Hemja Masinabagar	83.96264	28.260096
Kaski	Laltin Bazar	83.97883	28.249624
Kaski	Ramghat	83.995436	28.213842
Kaski	Setopahiro	83.983227	28.195003
Kaski	Dobilla	84.009527	28.161142
Kaski	Furse, Chorepatn	83.955422	28.183384
Kaski	Khanepani	83.935154	28.291224
Kaski	Kaure Phedi	84.056682	28.240687
Kaski	Dudhpokhari Chock	84.029492	28.217025
Kaski	Sanitara	84.022167	28.160849
Kaski	Gandaki hydro	84.031931	28.178654
Kaski	Thulakhet	83.87722	28.253608
Kaski	Puditar dovan	84.071419	28.081574
Mustang	Surkhan	83.974174	29.099769
Mustang	Dhechayang Khola	83.948721	29.069927
Mustang	Kagbeni	83.782171	28.837189
Mustang	Tirigaun	83.78488	28.849668
Mustang	Chhuksan	83.819096	28.915409
Mustang	Marpha	83.691911	28.755444
Mustang	Chokhopani	83.65863	28.71134
Mustang	Pandakhola	83.767089	28.807062
Myagdi	Beni	83.567594	28.340453
Myagdi	Galeshowr	83.570179	28.375311
Myagdi	Begkhola	83.599749	28.43258
Parbat	Lasti	83.601327	28.303733
Parbat	Maldhaunga	83.615472	28.258713
Parbat	Seti Beni	83.605677	28.011183
Parbat	Huwas	83.664545	28.044611
Tanahu	Baragaun	84.407274	27.848209

Tanahu	Bhimad Bazar	84.085799	27.978302
Tanahu	Sankhe	83.051054	28.051054
Tanahu	Dumrebesi	83.975065	27.905658
Tanahu	Lamakhet	84.037237	28.095793
Tanahu	Risti Near Soti Pasal	84.264055	28.092566
Tanahu	Baguwa Bazar	84.310121	28.107601
Tanahu	Bhimad Bazar	84.08117	27.980816
Tanahu	Near Dedgaun	84.08568	27.870128
Tanahu	Parajulibesi	84.23328	28.053757
Tanahu	Near Botetar	84.247615	28.00696
Tanahu	Near Damauli Bridge	84.25945	27.983316
Tanahu	Shantinagar, Damauli	84.262286	27.972742
Tanahu	Pulchowck	84.069007	28.058765
Tanahu	Near khairenitar	84.100934	28.022761
Tanahu	Near Mustang Basti	84.071243	28.02748
Syangja	Setidovan	83.845903	28.135275
Syangja	Putalibazar	83.8724	28.102859
Syangja	Near khallubote	83.86054	28.094594
Syangja	Jhapkot	83.875934	28.034632
Syangja	Jogimara Near Setibeni	83.607834	28.001795
Syangja	Pyuridovan	84.004426	28.115705
Syangja	Near Sauthar, Bhatkhola	83.86142	28.159944
Syangja	Khadketari	83.874397	28.154217
Syangja	Swerek Phat	83.735312	27.974593
Syangja	Pargatinagar	83.876683	28.098557
Syangja	Lamake Phat	83.867546	28.100076
Syangja	Waling	83.762816	27.985707
Syangja	Bayerghari	83.779842	28.031383
Syangja	Daraukhola Dovan	83.808276	28.063817
Syangja	Rangkhola	83.848785	28.085688
Syangja	Dumriswara Phat	83.735274	27.974811
Syangja	Dhurkot Besi	83.864761	27.902866
Syangja	Near Senkhe	83.990886	28.045591
Manang	Ghatte khola Near Manang	84.028857	28.661917
Manang	Pisan	84.155086	28.610791
Manang	Chame, Tatopani	84.241639	28.55221
Manang	Chame	84.242279	28.551284
Manang	Thanchok	84.294133	28.548934
Manang	Bagarchhap	84.339941	28.533521
Manang	Thoche	84.35606	28.525383
Manang	Goa	84.405106	28.569065

Manang	Bhimtang	84.470911	28.634671
Manang	Tal	84.376642	28.471896
Manang	Tal	84.378168	28.474641
Manang	Trichugkhola	84.252206	28.551113
Lamjung	Midimkhola	84.239101	28.162024
Lamjung	Midimkhola	84.249097	28.16512
Lamjung	Khudi Bazar	84.355026	28.281615
Lamjung	Khatri Thanti	84.402975	28.139257
Lamjung	Dhuwakhola	84.427577	28.197693
Lamjung	Sera	84.455773	28.191058
Lamjung	Risti Near Sotipasal	84.258521	28.089536
Lamjung	Jitatar	84.29078	28.101339
Lamjung	Rambazar	84.400985	28.377053
Nawalpur	Near Suryanagar	84.354797	27.705516
Nawalpur	Mukundapur, Sirkauli	84.287557	27.676566
Nawalpur	Near Sitapur	84.018558	27.556637
Nawalpur	Godarkhola Dovan	83.993201	27.56194
Nawalpur	Amalatari	84.110092	27.568616
Nawalpur	Materi	84.322624	27.750305
Nawalpur	Deurali	83.784995	27.674352
Nawalpur	Hattikhor	84.130595	27.698649
Nawalpur	Near Tribhuvantar	84.10471	27.614779
Nawalpur	Near Chatisghare	84.100288	27.657276
Nawalpur	Bungdikhola	84.07495	27.832051
Nawalpur	Near Khayarsal	83.949802	27.661488
Nawalpur	Kusunde	83.955556	27.607913
Nawalpur	Chisapani, Badarjhula	83.971258	27.560881
Nawalpur	Near Dumkibas	83.874879	27.594296
Nawalpur	Bahuban	83.920481	27.549883
Nawalpur	Bagh khola (Barabise)	83.733985	27.681374
Baglung	Chhentun, Uttarganga	83.100865	28.492607
Baglung	Syalphakha,Dhorpatan	83.065365	28.487539
Baglung	Barahthan , Dhorpatan	83.03898	28.487691
Baglung	Bongathan	83.184726	28.429825
Baglung	Bongadovan Bazar	83.19784	28.396303
Baglung	Burtibang	83.159634	28.334014
Baglung	Near Burtibang	83.15871	28.342384
Baglung	Shahi khola	83.123565	28.374325
Baglung	Unknown	83.087593	28.359311
Baglung	Khahare Darlin	83.133197	28.270803
Baglung	Khatekhola Bridge Area	83.536625	28.268295

Baglung	Galkot Hatiya	83.423677	28.220208
Baglung	Dudhilabhati	83.47845	28.206757
Baglung	Hatiya Dovan	84.417976	28.219528
Baglung	Daram Khola	83.426187	28.23023
Baglung	Ghusmeli	83.418287	28.283047
Baglung	Turture Badigad	83.174372	28.305277
Gorkha	Near Gorakkali Rabar	84.545586	27.913041
Gorkha	Near Adhai Gaun	84.550169	27.955736
Gorkha	Dovan of Bhusundi and Daraudi	84.586997	28.017166
Gorkha	Darbun Phat	84.748681	27.875738
Gorkha	Arkhet Bazar	84.835993	28.095299
Gorkha	Near Shyam Ran	84.855277	28.137312
Gorkha	khani Besi	84.87204	28.206375
Gorkha	Dovan of Yarukhola and Budigandaki	84.907593	28.328936
Gorkha	Unknow	84.639407	28.616393
Gorkha	Near Saraphat	84.478211	28.080308

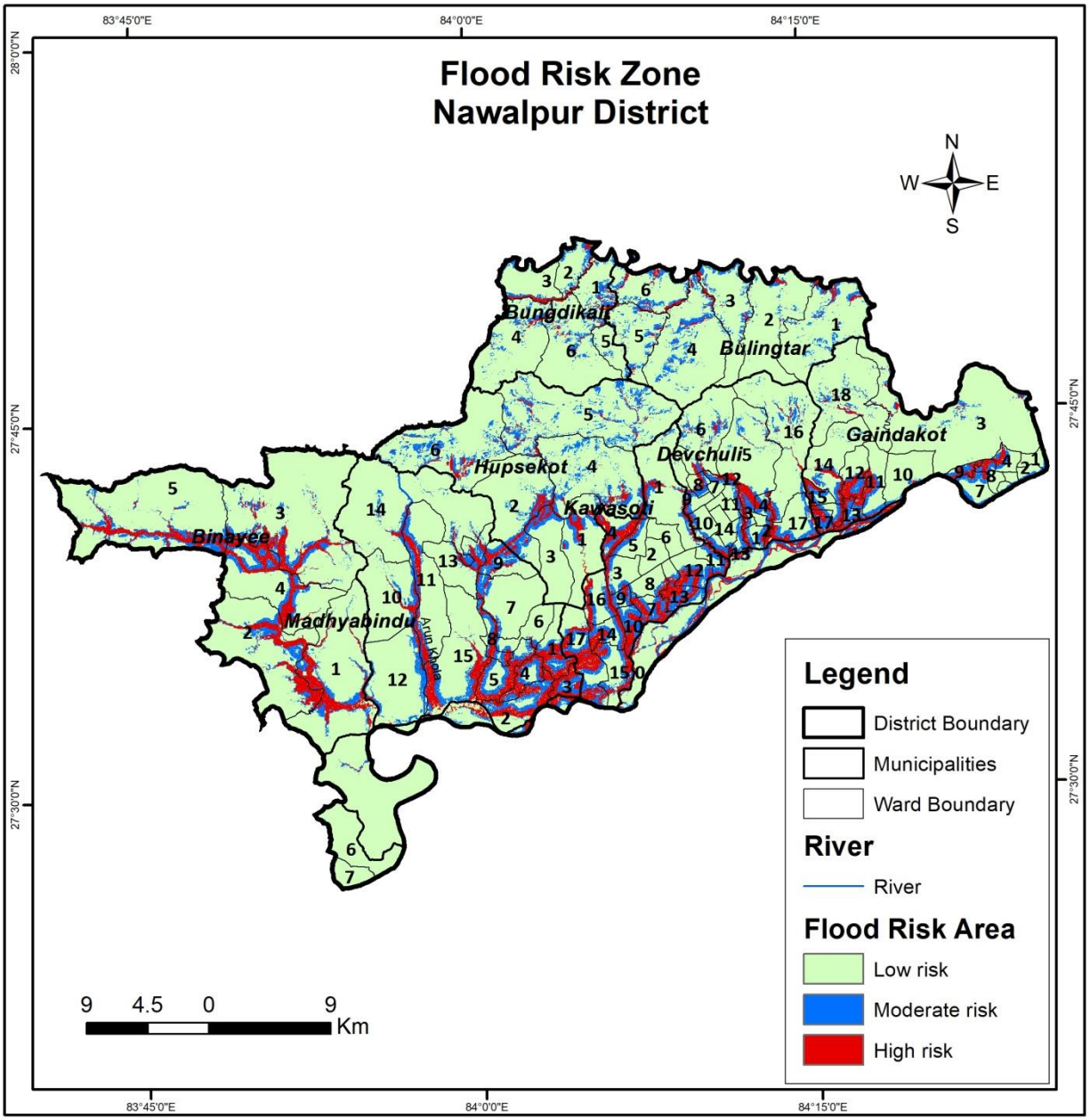
APPENDIX – IV

Local Level-wise Potential High Flood Area of Gandaki Province

Nawalpur District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Binayi Triveni RM	1	Both side of Binayi khola from Bahuban to Dumkibas	Binayi Khola
	2	Khumaltar, Jyamire,Suntandi, Dadajhor, Graderitari throughSansarkot	Binayi khola
	3	Sunal River area, Patukhahare area, Khorandi khola area,Bharta,Katasgare,	Sunal Khola,Khorandi khola, Patu Khahare
	4	Sihe, Bogadi, Sardi,Ghumaure, Bagaincha,	Binayi Khola
	5	Dharapani,Gorijhok, Admare, Deurali, Kusunde, Barbishe	Binayi khola
Madhyabindu Municipality	1	Dandior,Rammandi, Chanuli	Danda khola,Rammandi
	2	Surrounding area of Sitapur	Stream
	3	Northern part of Narayani and Rammandir area	Narayani
	4	Western side of Ulti khola, Bhdhkhor gaun	Ulti khola
	5	Eastern part of Ulti khola, Western part of Godar khola	Ulti, Godar Khola
	7	Eastern part of Gadar khola	Godar khola
	8	Dewakotatol and Surrounding settlement of Godar khola	Godar khola
	9	Basantapur, Maqarsin, Simreni	Girwan khola
	10	Charikun, Arun khola bazaar, western part of Arun khola	Arun khola
	11	Eastern part of Arun khola, Kusunde	Arun khola
	12	Western part of Arun khola	Arun khola
	13	Western part of Mainadhar khola	Maindhara khola
	14	Western part of Dwaredaha	Arun khola
	15	Chisapani, Prasauni, Muslimtol, Bhawanitol	Arun khola
Hupsekot RM	1	Jugepani,Eastern part of Nayabasti	Stream
	2	Western part of Koliya and Chpanagaun, Gori	Girwan khola
	3	Western part of Girwari, Northern part of Bailani	Girwan khola
	4	Jhyalbas, Dihi	Girwan khola
	5	South east part of ward no. 5	Girwan khola
Devchuli Municipality	1,3,5,9, 10,14,15,16	Both side of Gindri khola	Gindri khola
	1,11,12	Eastern part of Laukaha khola	Laukaha khola
	9,10,15	Eastern part of Laukaha khola	Laukaha khola
	1,3,5,7, 12,13	Both edge part of Deusal khola	Deusal khola
	1,2,4, 16,17	Both edge part of Mukunde khola	Mukunde khola
	17	Kottadi, Kujauli and edge of Narayani river, Western part of Khahare khola	Narayani River, Khahare khola
	16	Western part of Rajahar bazar	Mukunde khola

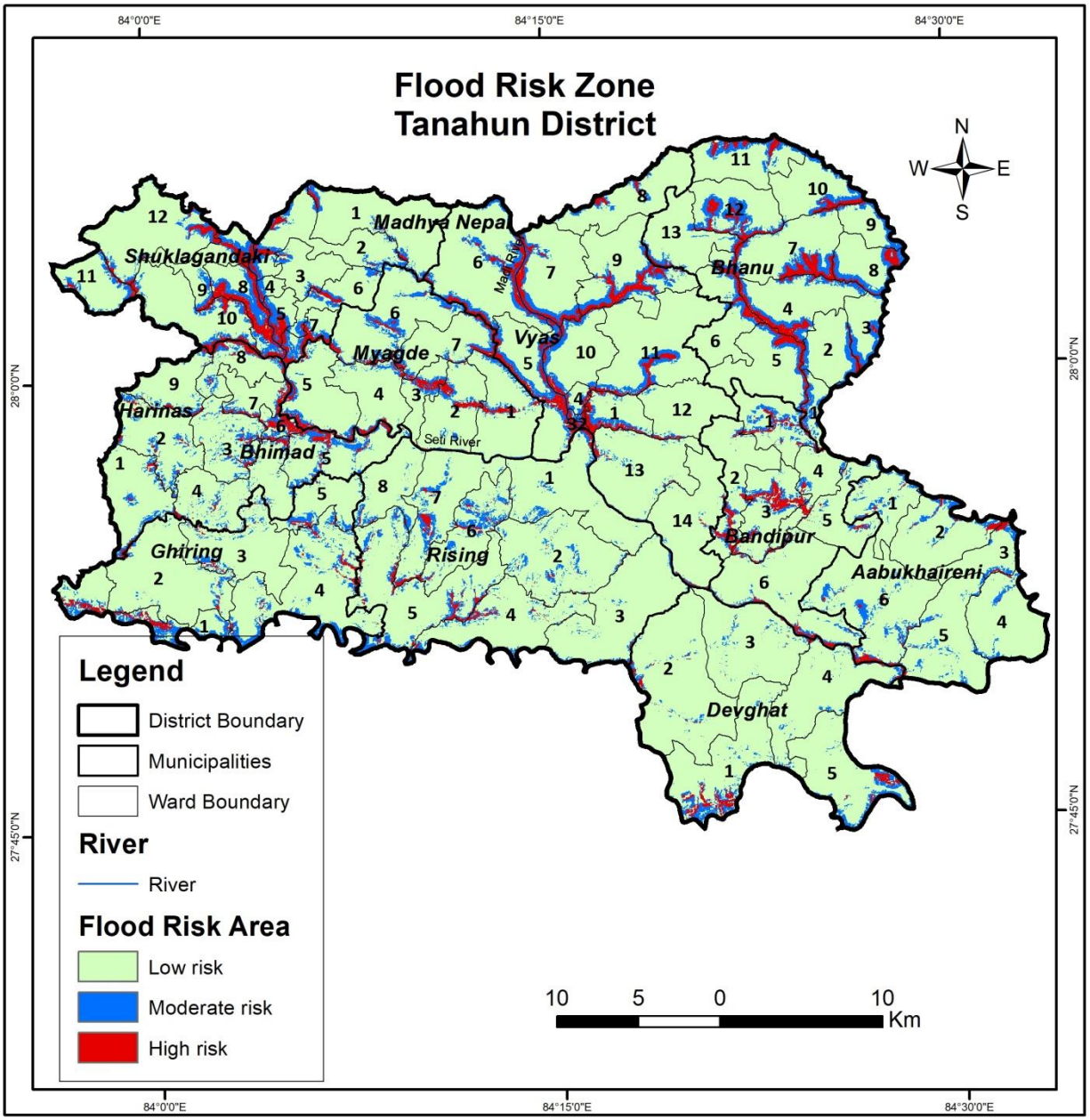
Gaidakot Municipality	1,2,5,6, 7, 9,10, 11,12,1 3, 17	Northern edge of Narayani River	Narayani River
	17	Eastern part of Khahare khola	Khahare khola
	13,16,1 2,14	Both side of Beldiya khola	Beldiya khola
Bungdikali RM	4,3,6,2	Both side of Bungdi khola	Bungdi khola
	2	Lower part of Kharsantar	Kaligandaki River
	3	Banjhobari	Stream
Bulintar RM	4	Lower part of Korbetar	Stream



Tanahun District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Devghat RM	3,4	Lower part of Bargaun	Bar khola
Abukhaireni RM	6	Lower part of Piughare	Seti river
	1	Lower part of Baradiphat	Stream
Bandipur RM	1	Lower part of Nahola Upallophat	Nahola khola
	2	Sukaura	Godi khola
	3	Bartar,Tharubas	Stream
Rising RM	1	Lower part of Jhalputar	Seti River
	7	Lower part of Barhabise	Stream
	5	Edge of Kaligandaki	Kaligandaki River
	1	Lower part of Puttar, Gadhi	Kaligandaki River
	4	Dumriswanra	Kaligandaki River
Bhanu Municipality	1,2,4,5,6, 7	Both sides settlement of Chudi khola (Bariphat, Sepa Bagaincha, Syauli, Chudi Ramghabesi, Pauwadihi, Padke Pasal, Tuhure Pasal)	Chudi khola
	4,7,8	Both edge of Dharampani khola	Dharampani khola
	4,7	Both edge of Phaudi khola	Phaudi khola
	9	Archaldhara, Karkigau	Chiti khola
	8	Near Jharuwaphat	Telkati khola
	11	Jyamire, Rupakot phedi, Masyantar, Thati	Sawdi khola
	11,10	Manechauka,Luitelphat	Naudi/Paudi khola
Byas Municipality	1,2,3,4,10 ,11	Both edge settlements of Buldi khola (Bisghare Damauli, Bigyanchaur, Malebagar,Judipari, Talghare, Atighat, Ghasikuwa, Jalbire,Beltan)	Buldi khola
	3,4,10,7	Shantinagar, Byas Cave, Damauli Bridge, Botegaun, Lower part of Kalesti Bazaar,Kumalgaun, Lower part of Jymirkholagau, Dulaipani, Parajulibesi, Patal	Madi River
	7,8	Near Soti Pasal, Sotibesi, Bhandarigau, Baguwa bazaar,	Risti khola
	7,10,9	Simaltat, Pokhralphat, Kumalgaun, Jhinuwatar, Lower part of Sunkholsigau, Bajaude, Ranipani	Kalesti khola
	6	Ratmate	Mand khola, Madi River
	6	Lower part of Lamichhanedihi, Kholibesi, Kaphalphat, Barhabise	Sage khola
	5	Nepaltar, Barbote, Sagephat, Thulotal, Patenitar, Chapaghat, Patan	Sage khola
	5	Patan	Madi /Seti River
Maygde RM	3,4,5,6,7	Tilahartar,Boltar, Thatitar, Chhabise, Rithepani,	Magde khola
	1,2	Tallo Gunadi,Pipaldihi, Samadi, Pipaldihi, Dabunphat	Gunadi khola
	5	Jhakkas, Tallotar, Lower part of Chhan Patan,	Seti River
Shuklagandaki Municipality	2	Pulchok	Seti River
	7	Simaltar	Kumle/ Mygde khola
	7	Eklethar,Syauli Bazaar,	Seti River
	7	Chyandada	Mygde khola

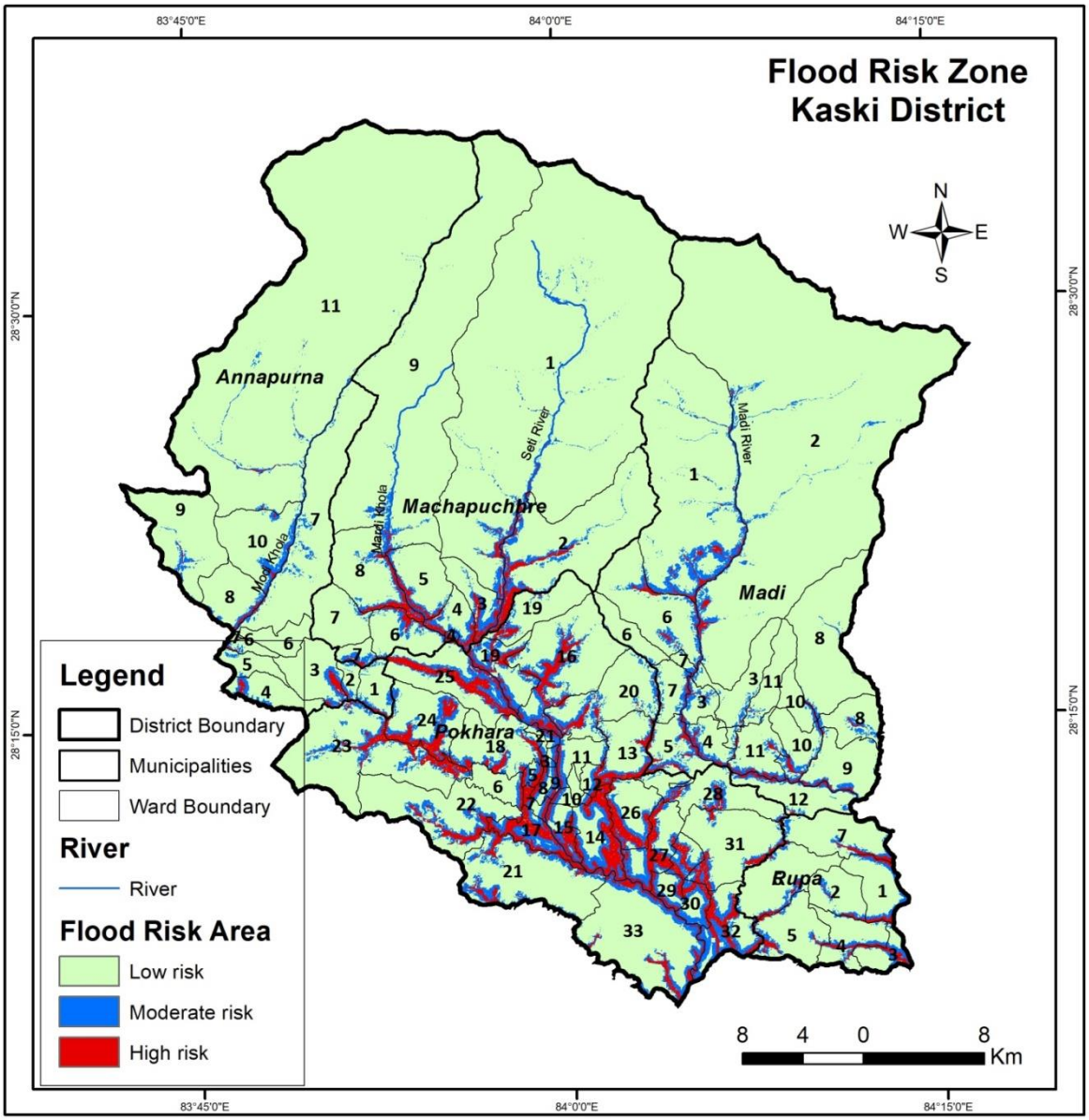
	9	Dhamar, Lower part of Syauli Bazaar, Male Bagar	Suraudi khola
	8	Mustan Basti, Lalimgau,Dhorphirdi, Male Bagar lower part	Bange khola/Kyangdi khola
	12	Lower part of Bhatdada, Lamakhet, Korlin, Puridobhan	Hadi khola/ Suraudi khola
	11	Sankhe	Dagdi khola
	10	Simle	Kyangdi khola
Bhimad Municipality	6,7	Bhimad Bazaar,	Seti River
	1	Dumribesi, Lower part of Pallabari	Maldi/Saldi/Kamangdi khola
	6,7	Male Bagar, Both side of Jyagdi khola	Jyagdi khola
	5,6	Both edge of Pirung khola	Pirung khola



Kaski District

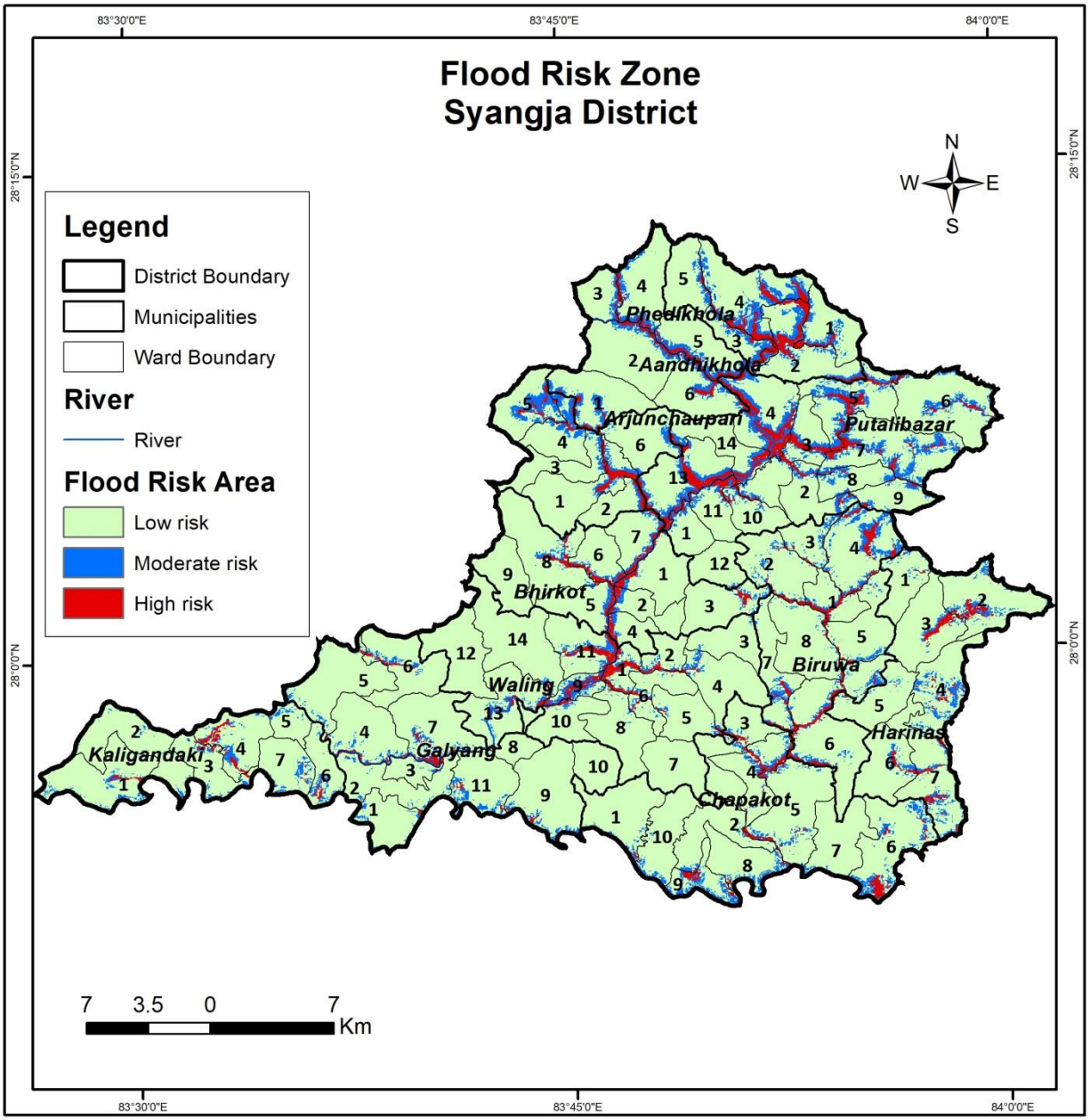
Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Rupa RM	1,7	Piple,Thulobesi, Syastri, Majhbesi	Madi River/Paste khola
	1	Birdi Phat,Botegaun, Birdi khola edge	Madi River/Birdi khola
	4	Lower part of Thuliswanra	Khalte khola
	5,6	Deuralibesi, Pipaldali	Apu khola
	6,7	Talbesi Bazaar	Dobhan khola, Chisa khola
	3	Polyang besi,Bagtar, Lower part of Nepal pakha	Khalte khola/Madi River
	3	Puranadihi	Sundarijal khola
Pokhara Metropolis	1,16	Laltin Bazaar, Gaighat, Lower part of GBS	Seti River
	16	Jogimare phat	Kali khola
	25	Yamdi, Masina Bagar, Suikhet phat, Majhbhatti, Bansbot, Phedi	Seti River/Yamdi khola
	20	Kalikhola Dovan	Bhalam khola
	11,9	Ramghat	Seti River
	13	Dudhpokhari chowk, Kaseri, Dhadbesi	Kahun khola/ Bijayapur khola
	14	Okhaldhunga, Shivalaya Dobilla,Opposite side of Gandaki hydro	Seti River/Bijayapur khola
	15	Sitaghat,Lower part of Tutunga, Seto Pahiro,	Seti River
	10	Sukumbasi Ramghat	Seti River
	4,8,2,18, 5,7,	Sukumbasitol near Phirkepul, Scout Office, Saipal Tamu Samaj, Phirke Engineering College, Near Malpot Office, Gaighat Phewa lake	Phirke khola
	5,6,7	Nuwarthok, Gairikhet	Bulaundi khola
	18	Sedi Bagar, Gairachautara,	Sedi khola
	18	Khapaundi, Bhakunde Bagar	Khapaundi /Khahare khola
	24	Pame, Thulakhet	Betani khola/Khahare khola
	23	Ghatichhina, Thulakhet, Marse, Lower Magargaun	Harpan khola/Tora khola
	22	Lower part of Simaltuda, Chhapswara	Phurse khola
	21	Duwar, Kamere	Seti River/Ambot khola
	17	Dobilla, Lower part of Sitapaila, Pragatitol, Ratopahiro near Phewa Power House, Masinotara	Seti River/Phurse khola
	33	Ambot, Puridovan, Lamakhet, Chordi	Suraudi khola
	33	Puditar Dovan, Lamgadi, Gandakibesi	Seti River
	26	Gandaki Hydropower	Bijayapur khola
	28	Syankhudi	Syankhudi khola
	32	Kholakochheu	Talkhola
Madi RM	1,2	Hugu, Madque, Sondha, Seti khola	Madi River
	6,7	Chansu, Sabi, Jyamdu	Madi River
	5,4	Lower part of Chitre, Pulko Mukh, Betainiphat, Kaure Phedi, Jarkate	Madi River, Bijayapur Khola
	11,12	Ghumle, Lower part of Barbise, Bhagawati	Madi River
	10	Lower part of Tumsikot, Lower part of Makaikhola	Madi River/ Makai khola
	9	Naya Bazar, Gahatebesi, Lower part of Mugribesi	Madi River

Machhapuchhre RM	1	Dhiprang, Karuwa, Talunge	Seti River/Dhiprang khola/Balaudi Khola
	2	Kharapani (Tatopani), Sandal, Meprang	Seti River/ Sardikhola
	4	Pulakomukha, Patikhola	Mardi / Patikhola
	5	Charang, Ananta Thanti, Nayapul	Mardi/Patikhola/ Khahare
	6	Bhedabari, Lower part of Phalle, Idi Gau, Phedi	Mardi/Idi/Ghatte Khola
	7	Upallo Phedi, Ghatte Khola	Ghatte Khola
	8	Khorakomukh, Nayapul, Lumre	Mardi/Idi/Paukhola
	9	Saiti Ghatta	Mardi/Saiti Khola
Annapurna RM	1	Phedi	Ghatte Khola
	5, 6	Nayapul	Modi/Dhoti Khola
	7	Birethanti	Modi
	8	Birethanti, Lamdawali, Lamakhet, Saullibhatti, Chimrum	Modi/Dhurundi Khola
	10	Kityu	Modi/Thado Khahare



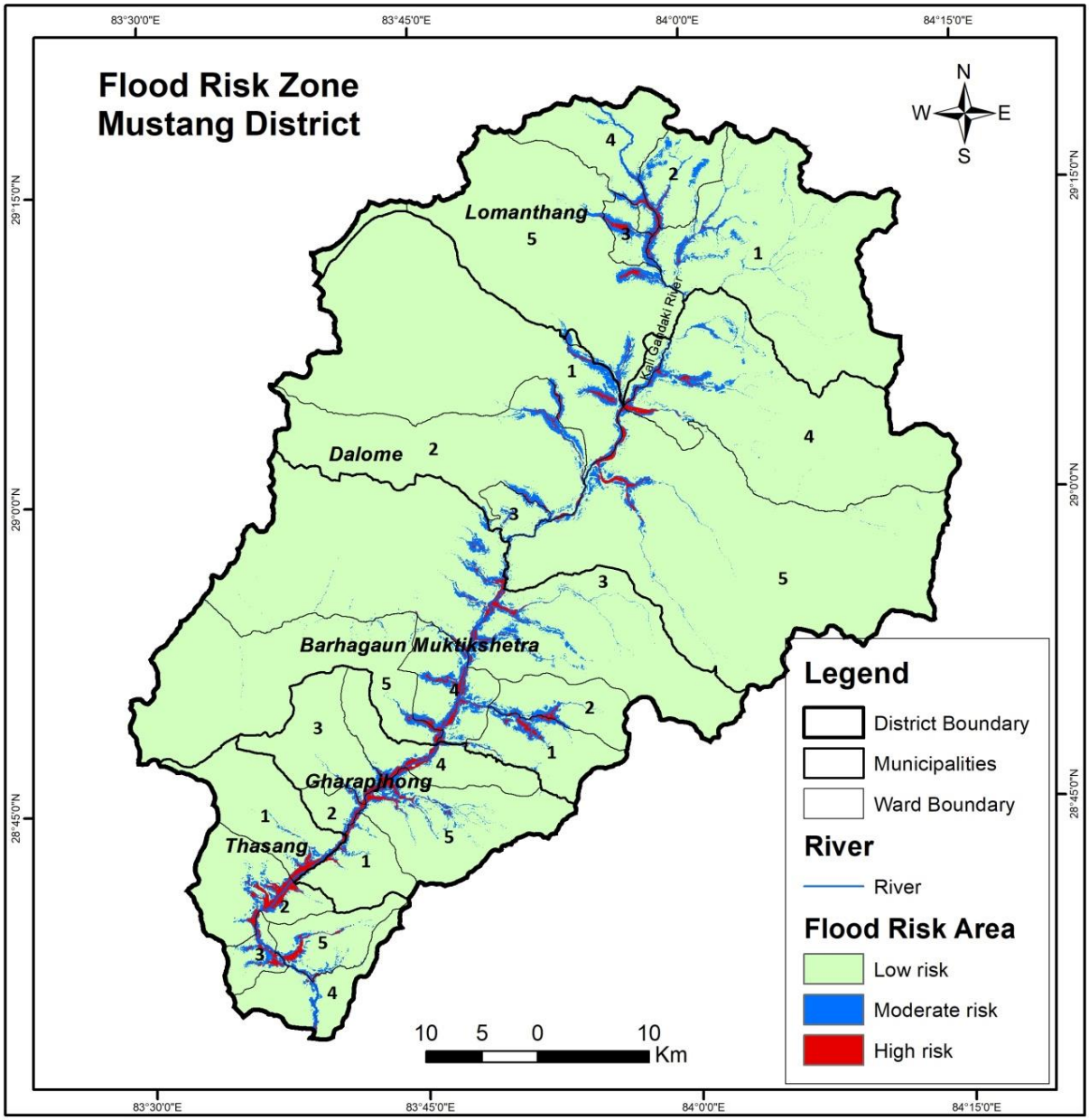
Syangja District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Galyang Municipality	1	Ramdi	Kaligandaki
	2,3,7	Tallo Galyang Bazar (both side)	Aandikhola
	5	Setibeni	Kaligandaki/Seti khola
Chapakot	5, 8	Damachaur	Kallgandaki/Jyagdi
	6	Keladighat,	Kaligandaki/Keladi Khola
Waling Municipality	1,2	Rambachha (Both side of Armadi) & Mirdi	Armadi/Mirdi/Aandhi Khola
	9	Lower part of Tallo Walling, Chhistin, Bhumre	Aandi Khola
	13	Sworekphant, Dumre, Bayatari	Baya Khola
Bhirkot	1	Helui, Lamachaur	Aandhikhola
	2	Bayarghari, Dahathum (lower settlement)	Aandhikhola
	6	Eakbar, Dumribot, Bagare Bazar	Aandhi/Lubdi Khola
	7	Raniraha, Gairathar	Aandhikhola
Biruwa	1, 8	Biruwabazar	Bastara/Baraha Khola
Putalibazar Municipality	3,10	Pragatinagar, Bhatkhola gau, Rangkhola bazar	Sundar/Bad/Rangdi Khola
	4	Putalikhet, Putalibazar, Setidovan	Bad/Aandhi Khola
	6	Puiri Dobhan, Nuwar	Suraudi/Puiri Khola
	13	Daraukhola Dovan	Darau/Aandhi Khola
	14	Lamake Phant, Luladi, Khallubote	Aandhi/Rangdi Khola
Fedikhola RM	4	Khadketari, Sarketari	Dhumre/Kune / Seti Khola
Aandikhola RM	4	Chanaute	Aandhi Khola
	5	Seti Dobhan	Aandhi Khola
Arjun Chaupari RM	1	Arjun Chaupari, Majuwa, Matathok	Darau Khola
	2	Sisnepani	Darau Khola


Flood Risk Zone
Syangja District
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Flood Risk Area
Low risk
Moderate risk
High risk
N
W
E
S
83°30'0"E
83°45'0"E
84°0'0"E
28°15'0"N
28°0'0"N
Pheelkhola
Aandhikhola
Arjunchaupari
Putalibazar
Bhirkot
Waling
Biruwa
Harinas
Galyang
Kaligandaki
Chapakot
7 3.5 0 7
Km

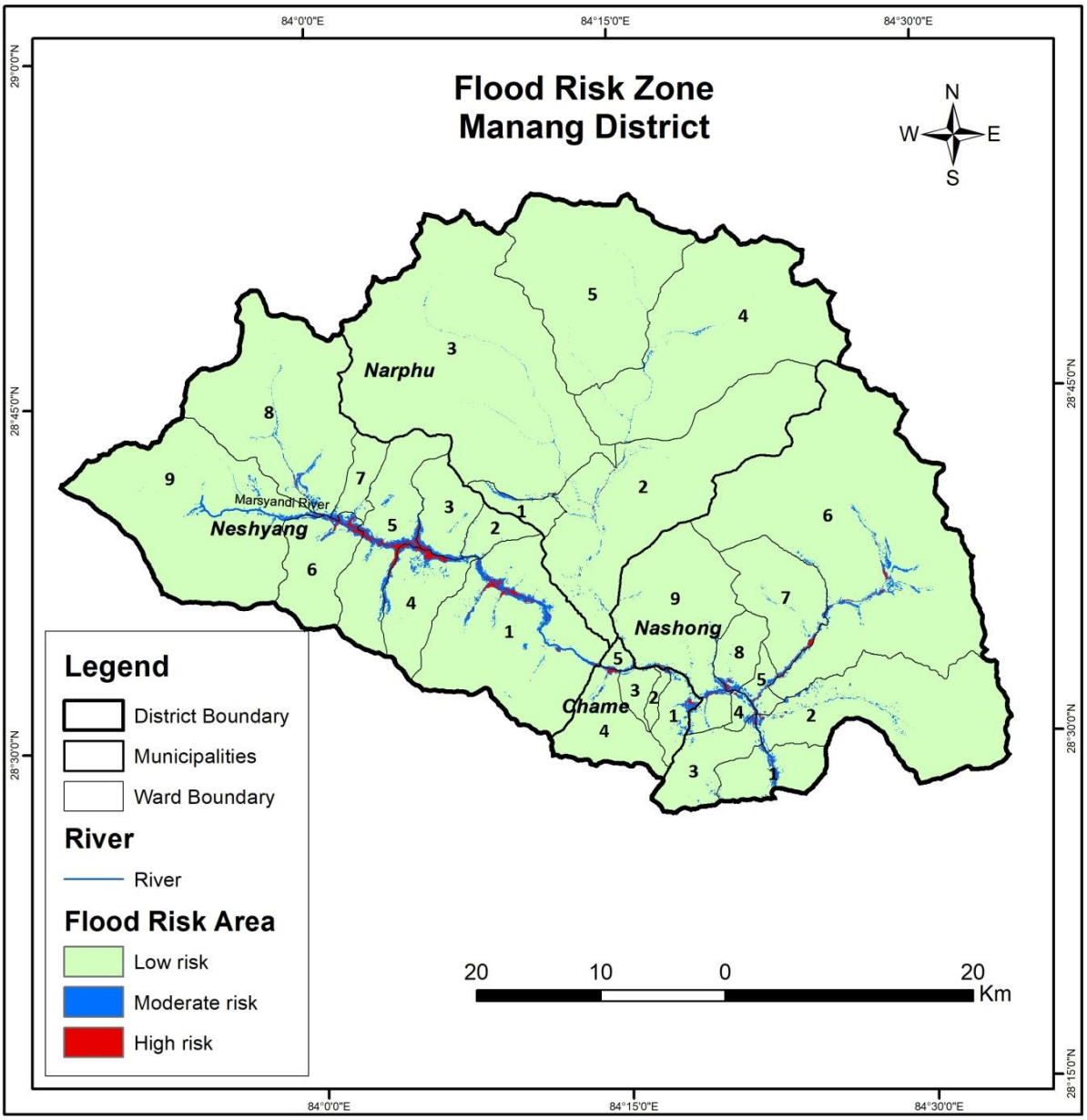
Mustang District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Dalome RM	1	Bhatti	Kaligandaki/ Charan Khola
	4	Surkhan	Kalagandaki/Puyun Khola
Barhagaun Muktikshetra RM	3	Chhuksan	Kalagandaki/Nursing Khola
	4	Tirigau, Kagbeni, Eklebhatti	Kaligandaki/Jhong Khola/Rataula Khola
Gharapjhong RM	1	Chokhopani	Kaligandaki/Chokhopani Khola
	2	Marpha (Northern Part)	Tongkyu Khola
	4	Jomsom, Old Jomsom	Kaligandaki
Thasang RM	1	Tukuche	Kaligandaki/Thapa Khola
	2	Khanti, Koban, Larjung	Kaligandaki/Larjung Khola
Lomanthang RM	4	Nechung	Nechung Khola/ Chhauma Khola



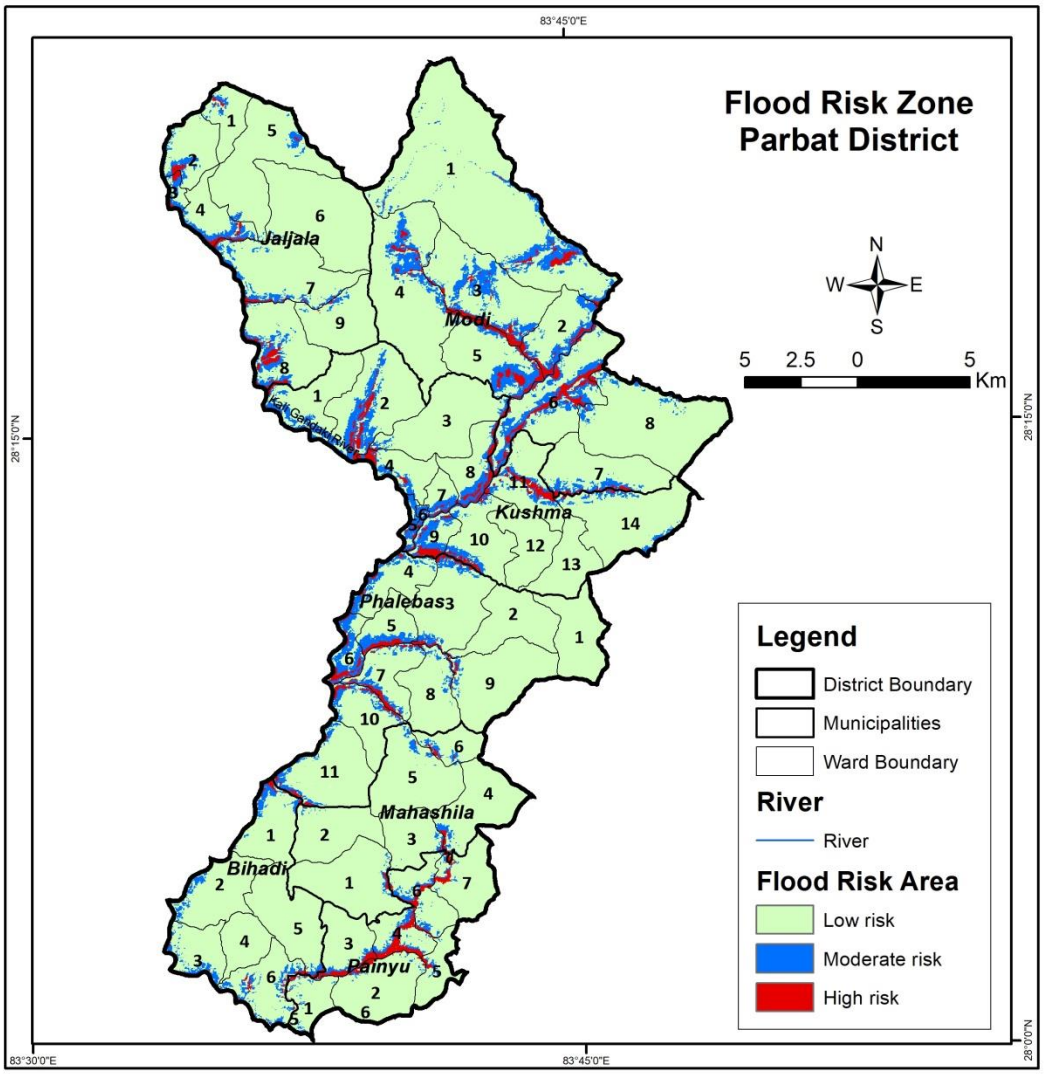
Manang District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Chame RM	1	Thanchok	Marsyangdi/Ghatte Khola
	3	Trichug Khola	Marsyangdi/Trichug Khola
	4	Chame	Marsyangdi / Ghatte Khola
	5	Chame Tatopani	Marsyangdi
Nashong RM	1	Tal	Marsyangdi / Kawaichhatiara Khola
	4	Bagarchhap	Marsyangdi
	5	Thoche	Marsyangdi / Dudh Khola
	7	Ghogaun	Marsyangdi
Neshyan RM	1	Pisang	Marsyangdi / Chauwai Khola /
	6	Ghattekhola, Bhimtang	Ghatte Khola/ Bhimtang Glacier



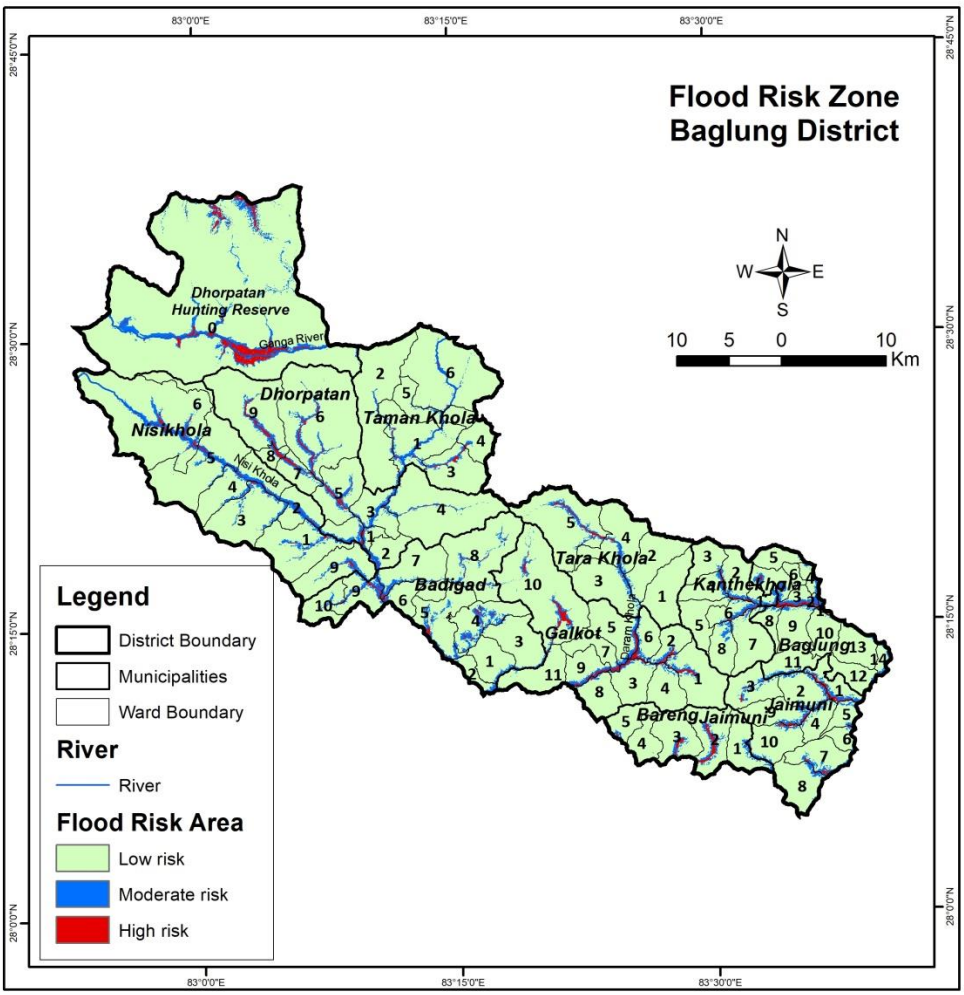
Parbat District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Painyu RM	2	Arthun Bazar	Seti/Bharma/Boke Khola
	3	Chiluwa	Seti Khola
	4	Hatiya, Kikirka	Seti/Modi /Gedi Khola
	6	Saraukhola	Seti / Sisne Khola
Bihadi RM	6	Setibeni, Golan	Kaligandaki/Seti Khola
Kusma Municipality	1	Maldhunga	Kaligandaki
	4	Armadi, Gupteshwor	Kaligandaki/Khahare Khola
Modi RM	1	Budherumta	Modi/Sathika Khola
	2,5	Patichaur	Patikhola
	6	Tilahar	Ratikhola
Jaljala RM	2	Galeshwor (Opposite side)	Kaligandaki
	3	Beni	Kaligandaki
	4,7	Milanchok	Phursekhola
	7,8	Lasti	Lasti Khola



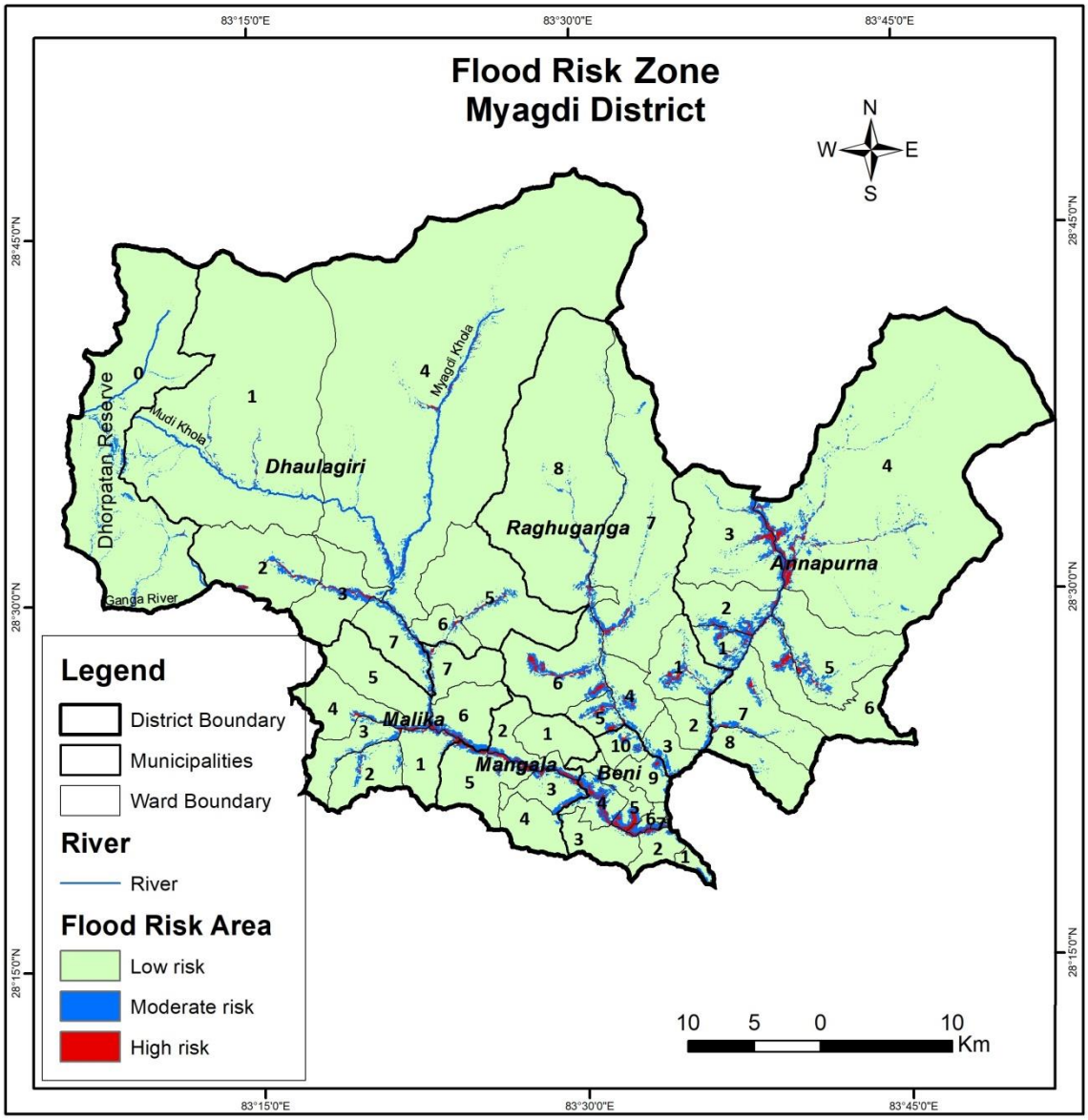
Baglung District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Jaimuni RM	1	Bayeli (Kusmisera)	Rudi
Kanthekhola RM	1,2	Kathekhola Bridge	Kathe/Khahare Khola
Tarakhola RM	3	Ghusmeli	Daramkhola
Galkot Municipality	3,6	Hatiya, Dharam Khola both side	Dharam/Gaudi Khola
	7	Baniya	Daram Khola
	8	Chipleti	Daram Khola
	9	Baskhola Gaun	Daram khola
Badigad RM	2	Karwan	Daram / Badigadh Khola
	6,7	Dobata	Badigadh/Bhim Khola
Nisikhola RM	5	Devisthan	Nisi Khola, Kebang Khola
	6	Nisi , Madhuban	Nisi Khola
	4	Bhalkot	Nisi Khola
Dhorpatan Municipality	1	Burtibang	Badigadh
	2	Turture	Nisi Khola
	5	Lower part of Ghaiyakhet.	Gadi Khola
Tamankhola RM	1	Bangadovan, Bongathan	Bongakhani Khola



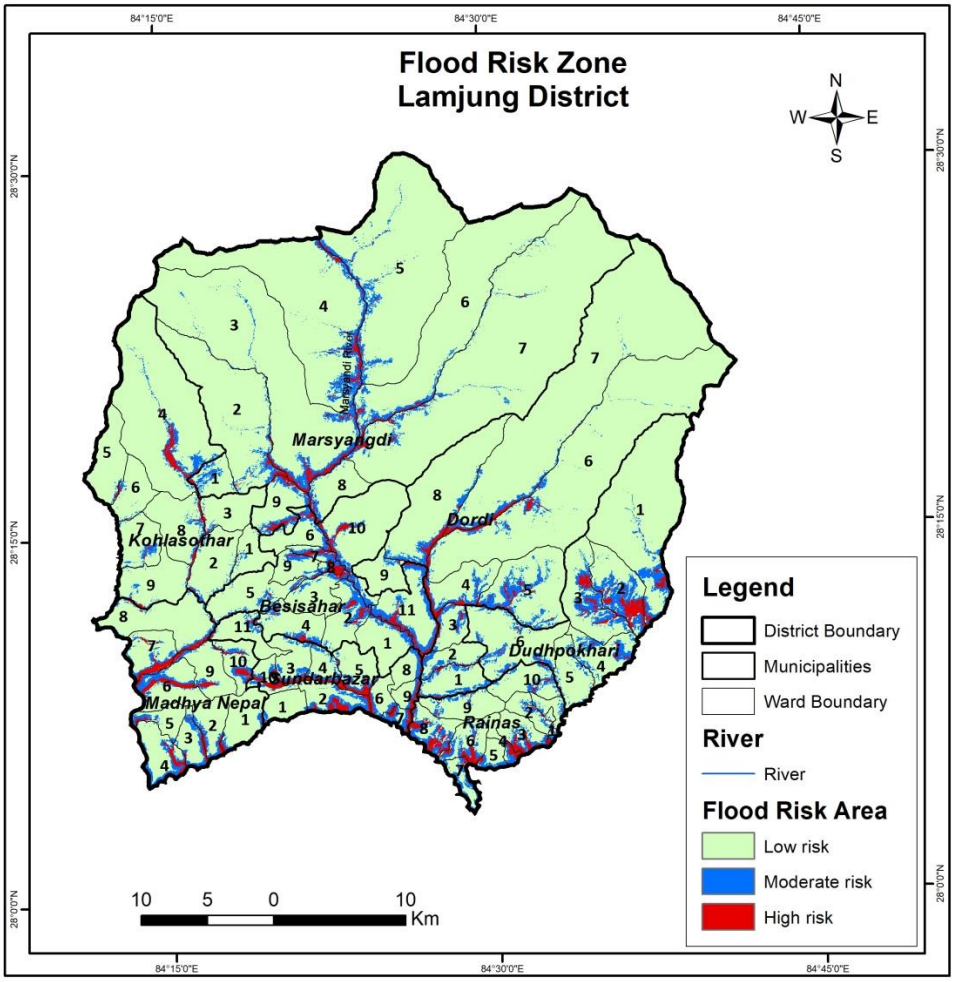
Myagdi District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Malika RM	5,6	Darbang	Myagdi Khola
	6	Balaute	Myagdi Khola/Dukhu Khola
Beni Municipality	4	Singha Tatopani	Myagdi Khola
	7,8	Beni Bazar	Kaligandaki, Myagdi Khola
Mangala RM	2	Simalchaur, Tarakhet	Myagdi Khola
	5	Babiyachaur, Pipalbot	Myagdi Khola
Raghuganga RM	1	Beg Khola	Beg Khola
	3	Galeshwor	Raughat Khola
	7	Chim Khola Gaun	Bagare Khola
Annapurna RM	2	Tatopani	Kaligandaki/ Bhurung Khola
	3	Dana	Kaligandaki/Ghatte Khola



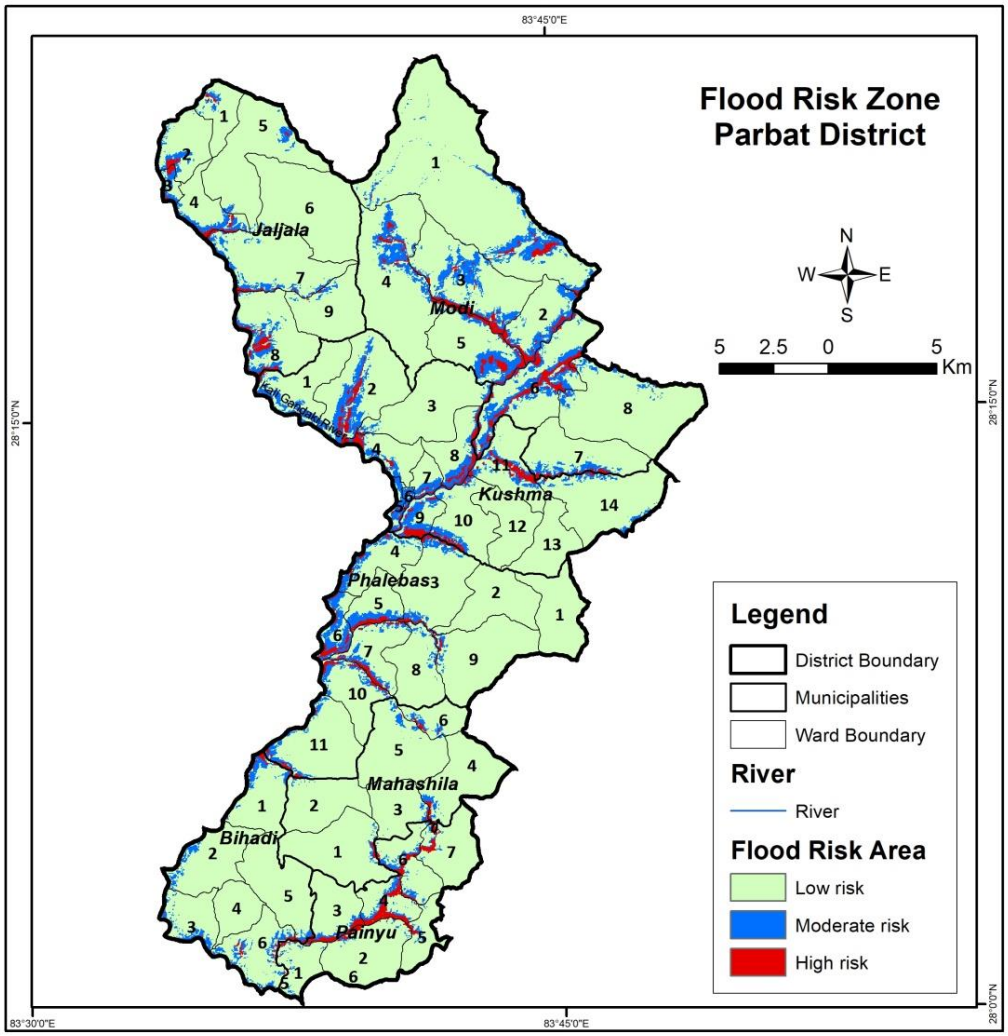
Lamjung District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Sundarbazar Municipality	4	Satrasayahal	Paudi/Kilinche Khola
	5,6	Khatrithanti	Paudi/Khahare Khola
	7	Paudidhik	Marsyangdi/Paudi
Besishahar Municipality	6,7	Sahaji	Puma Khola
	11	Bazar Khutta	Dhwang Khola
Dordi	3,4	Sera	Dhodi/Kaisedi Khola
	6	Dhodeni	Dordi Khola
Marsyangdi RM	3	Khudibazar	Marsyangdi/Khudi Khola
	4	Ram Bazar	Marsyangdi/Raidu
Rainas RM	1	Seltar Bazar	Katbate /Chepe Khola
	3	Timure	Chepe/Timure Khola
	3,4	Satdobato	Attarkhola
	7	Bange Chaur (Near Sara Phant), Chepe Sangu	Chepe Khola
Madhya Nepal	1	Jitatar, Apchaur	Risti/Khahare Khola
	2,3	Sotipasal	Risti/Golandi Khola
	3,4	Chardi Pasal	Chardi Khola
	4	Sisha Ghat, Dui Piple	Madi River
	7	Ram Bazar	Madi River/Midim Khola



Gorkha District

Rural Municipality (RM)/ Municipality	Ward	Location of Flood	River/stream
Palungtar Municipality	5	Dovan	Marsyandi River/ Chepekhola
	7	Satighat	Marsyangdi River/ Pyaudikhola
Gorkha Municipality	2	Shikhar	Daraudi/Masel khola
	10	Chepetar	Daraudi/Larenkhola
	12	Deurali	Daraudi/Larenkhola
	13	Phedi Bagar	Daraudi
Sahid Lakhan RM	3	Kalleri (Lower part)	Daraudi
Gandaki RM	5	Darbun Phant	Budhigandaki/ Gamsur Khola
Bhimsen	1	Nirmal Diya	Jarang Khola, Daraudi
	3,4	Bolan, Tari Phant	Budhi Gandaki / Bhurlung Khola
Siranchok	4	Chorkate Dovan, Chamdanda	Daraudi / Budhigandaki/ Busundi
	6	Naya Sagu, Ratmate, Magar Gaun	Daraudi/Kharse, Kusunde Khola
Arughat	4	Arughat	Budhi Gandaki/Istul Khola
	3	Arkhet Bazar	Arkhet Khola
Ajirkot	1	Baluwa, Soda	Mahabhir / Daraudi / Sau Khola
	5	Chanaute	Daraudi / Syangdi
Sulikot	6	Ulte Gaun	Jarang Khola / Daraudi Khola



APPENDIX – V

District-wise Existence Landslide Sports of Gandaki Province

S.N.	District	Area Name	Longitude (X)	Latitude (Y)
1	Kaski	Naunu, Tapran	84.077902	28.30837
2	Kaski	Near Krapu	84.150869	28.30826
3	Kaski	Near Kafuche	84.118545	28.43994
4	Kaski	Seto Pahiro (Mugri)	84.200064	28.21483
5	Kaski	Saimarang	84.133635	28.23022
6	Kaski	Andherikhola	83.81476	28.27913
7	Kaski	Salyan	83.77599	28.2796
8	Kaski	Ghandruk	83.803767	28.41075
9	Kaski	Rivan	83.915403	28.34201
10	Kaski	Lumle		
11	Kaski	Upper Ghandruk	83.762548	28.43765
12	Kaski	Mauja	84.034223	28.25974
13	Kaski	Ratopahiro, Near Phewa Power house	83.967129	28.17954
14	Kaski	Ghandruk	83.800207	28.36959
15	Mustang	Jhong	83.853485	28.82623
16	Mustang	Chaile	83.827103	28.93054
17	Mustang	Charang	83.934477	29.0924
18	Mustang	Near Kunjo	83.636142	28.62437
19	Myagdi	Baseri	83.60149	28.40329
20	Myagdi	Near Bagara	83.374438	28.54862
21	Myagdi	Muna	83.290074	28.52273
22	Myagdi	Guraja	83.248453	28.60946
23	Myagdi	Tinghare	83.302069	28.40919
24	Myagdi	Unknow	83.287675	28.60223
25	Syangja	Birgha	83.553802	27.95129
26	Syangja	Biruwa	83.85972	27.93929
27	Syangja	Badahare	83.832342	27.96647
28	Syangja	Near Kaule	83.901669	28.08764
29	Parbat	Near Tarebhir	83.708975	28.10451
30	Tanahu	Near Ghumaune	84.476726	27.8339
31	Tanahu	Dharampani	84.373126	27.87992
32	Tanahu	Near Amdanda	84.525619	27.84544
33	Tanahu	Lakhupakaha	84.485122	27.84703
34	Tanahu	Near Siharkhola	84.455274	27.86707
35	Tanahu	Near Ratnapur	84.45754	27.85843
36	Tanahu	Bhutkhola	84.395037	27.87281
37	Tanahu	Near Marsyangdi Hydro	84.534604	27.87422
38	Tanahu	Alchhichautri, Near Bhimad	84.089749	27.97316
39	Nawalpur	Dhurkot	83.718775	27.71032
40	Nawalpur	Near BinayiKhola	83.715422	27.69321

41	Nawalpur	Near Pipal Danda	83.97424	27.72992
42	Nawalpur	Dhauwadi Near Kamigaun	84.065079	27.75143
43	Nawalpur	Dhauwadi	84.110931	27.76975
44	Nawalpur	Jaubari	84.118528	27.77925
45	Nawalpur	Near Girwankhola	84.055749	27.711
46	Nawalpur	Near Pahereghat	84.110454	27.73255
47	Nawalpur	Near Hatiya	84.100709	27.83475
48	Nawalpur	Near Kwangukot	84.17094	27.82376
49	Nawalpur	Tarankhola	84.256715	27.7808
50	Nawalpur	Near Hattisal	84.308054	27.77849
51	Nawalpur	Near Chidiya	83.724829	27698537
52	Nawalpur	Tallo Kuwakot	84.026663	27.80606
53	Nawalpur	Near Ruchang	84.033042	27.80908
54	Nawalpur	Unknow	84.215392	27.77034
55	Nawalpur	near Bardipur	84.202227	27.74608
56	Nawalpur	Near baseni	84.038024	27.76118
57	Nawalpur	Near Ramjikot	84.048877	27.74864
58	Nawalpur	Near Ramjikot	84.04419	27.74781
59	Nawalpur	Near mithukaram	84.094687	27.83229
60	Nawalpur	Unknown	84.03266	27.76351
61	Lamjung	Upper Khudi Near Saituti	84.287117	28.36681
62	Lamjung	Upper khudi Near Saituti	84.276889	28.37136
63	Lamjung	Mathilo Chipla	84.420494	28.41316
64	Lamjung	Kudi khola	84.309869	28.36686
65	Lamjung	Near kholasonther	84.221652	28.38591
66	Lamjung	Bhonje	84.241477	28.2455
67	Lamjung	Ramche	84.571186	28.14341
68	Lamjung	Near Gothkharka	84.581701	28.28481
69	Lamjung	Nadikhola Upperpart	84.514703	28.45512
70	Lamjung	Nadikhola Upperpart	84.512131	28.45099
71	Lamjung	Nadikhola Upperpart	84.511306	28.44649
72	Lamjung	Nadikhola Upperpart	84.504956	28.44614
73	Lamjung	Upper Radi khola	84.436805	28.49481
74	Lamjung	Phedi Near Nalma	84.289532	28.19815
75	Lamjung	Bajhakhet	84.395655	28.23936
76	Lamjung	Makai Danda	84.366324	28.25638
77	Lamjung	Chame Road	84.402844	28.35312
78	Lamjung	Unknown	84.373541	28.25209
79	Gorkha	Near Dundurekhola	84.90732	28.13325
80	Gorkha	Near Dundurekhola	84.897673	28.13316
81	Gorkha	Dharche Danda	84.821008	28.15263
82	Gorkha	Arkhetkhola	84.797874	28.10924
83	Gorkha	Khaharekhola	84.739601	28.09356
84	Gorkha	Near Maudikhola	84.75704	28.04801

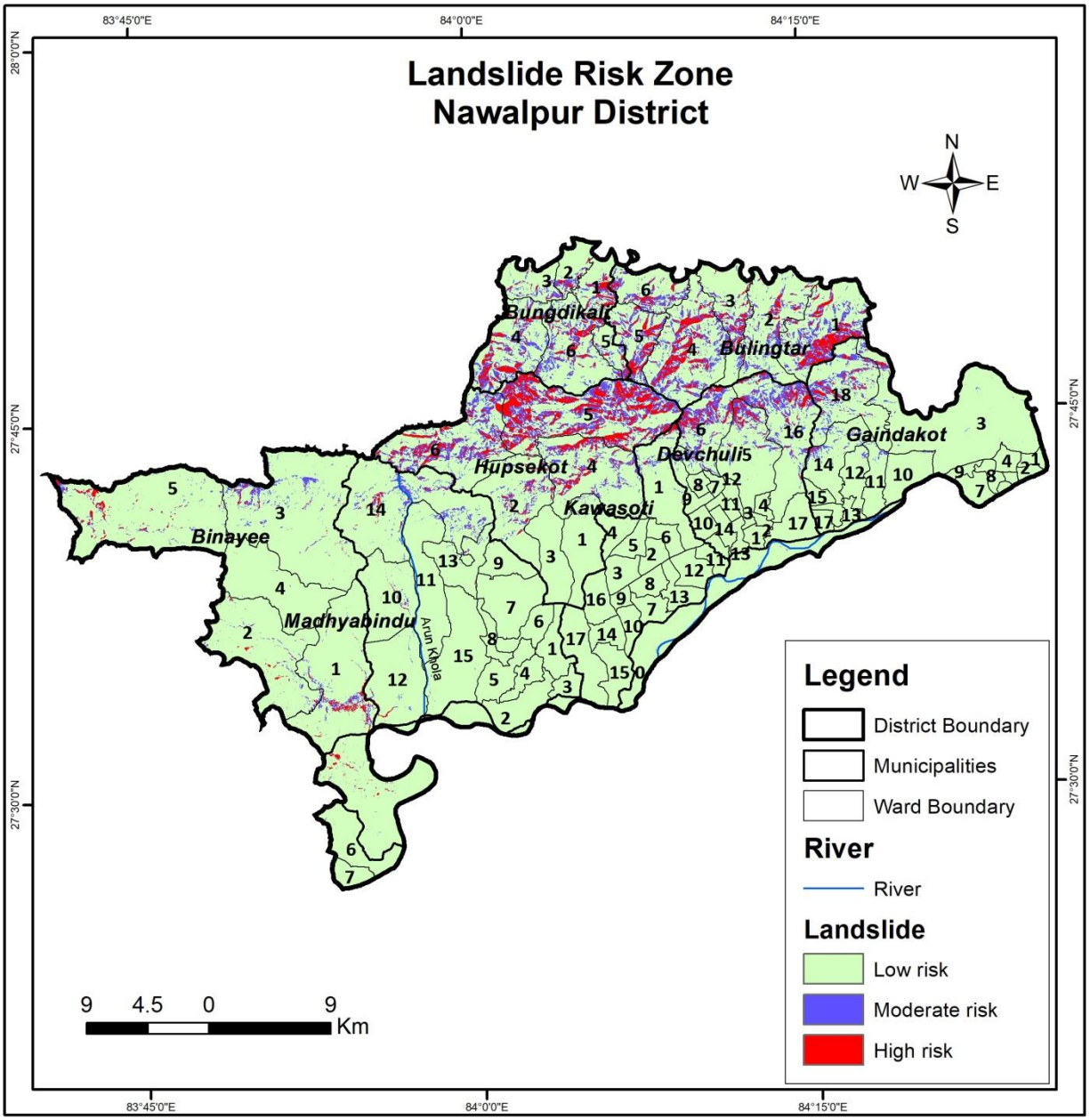
85	Gorkha	Near Daraudikhola	84.743369	28.30574
86	Gorkha	Near Kalibote	84.708577	28.14962
87	Gorkha	Near Chitre	84.768357	28.13464
88	Gorkha	Near Chitre	84.758002	28.13354
89	Gorkha	Khanikhola Muhan	84.727466	28.08717
90	Gorkha	Saukhola Muhan	84.684664	28.23062
91	Gorkha	Unknown	84.951588	28.30141
92	Gorkha	Indur	84.910626	28.30999
93	Gorkha	Near Mindapuk	84.861956	28.25346
94	Gorkha	Near Lapsibot	84.871728	28.21856
95	Gorkha	Near Khanibesi	84.88565	28.19222
96	Gorkha	Near Yarsa	84.912603	28.17667
97	Gorkha	Lapubesi	84.873126	28.16943
98	Gorkha	Near Laprak	84.793662	28.22268
99	Gorkha	Near Nayku	85.088588	28.48985
100	Gorkha	Unknown	85.013348	28.55591
101	Gorkha	Near Surankhola	84.864061	28.52635
102	Gorkha	Lower Part of Gorkha Bazar	84.61575	27.98697
103	Gorkha	Karaunja	84.911394	28.23352
104	Gorkha	Atun	84.645051	28.21473
105	Baglung	Tyan	83.589164	28.08619
106	Baglung	Dhus	83.581644	28.08247
107	Baglung	Hadikot	83.572031	28.13411
108	Baglung	Thulekhola	83.634077	28.18112
109	Baglung	Near Hislan	83.432578	28.25371
110	Baglung	Near Darlin	83.129804	28.28136
111	Baglung	Simalchour	83.14688	28.30318
112	Baglung	Near Malmachour	83.108589	28.33124
113	Baglung	Near Khunga	83.21691	28.37995
114	Baglung	Chhapalla	83.210065	28.35937
115	Baglung	Near Patichour	83.232711	28.42083
116	Baglung	Unknown	83.08102	28.6193
117	Baglung	Turture, Badigad	83.174659	28.29872
118	Manang	Near Than chowk	84.291631	28.5477
119	Manang	Unknown	84.303228	28.5485
120	Manang	Near Tilche	84.371264	28.53896
121	Manang	Near Bhimthan	84.478012	28.6284
122	Manang	Near Bhimthan	84.475129	28.60742
123	Manang	Near Thorang Phedi	83.96798	28.76938
124	Manang	Unknown	84.223132	28.61884
125	Manang	Near Trichungkhola	84.257884	28.55156
126	Manang	Near Pisang	84.135967	28.62507
127	Manang	Near Bhartang	84.180088	
128	Manang	Near Danaque	84.32998	28.53731

APPENDIX – VI

Local Level-wise Potential High Risk Landslide Area of Gandaki Province

Nawalpur District

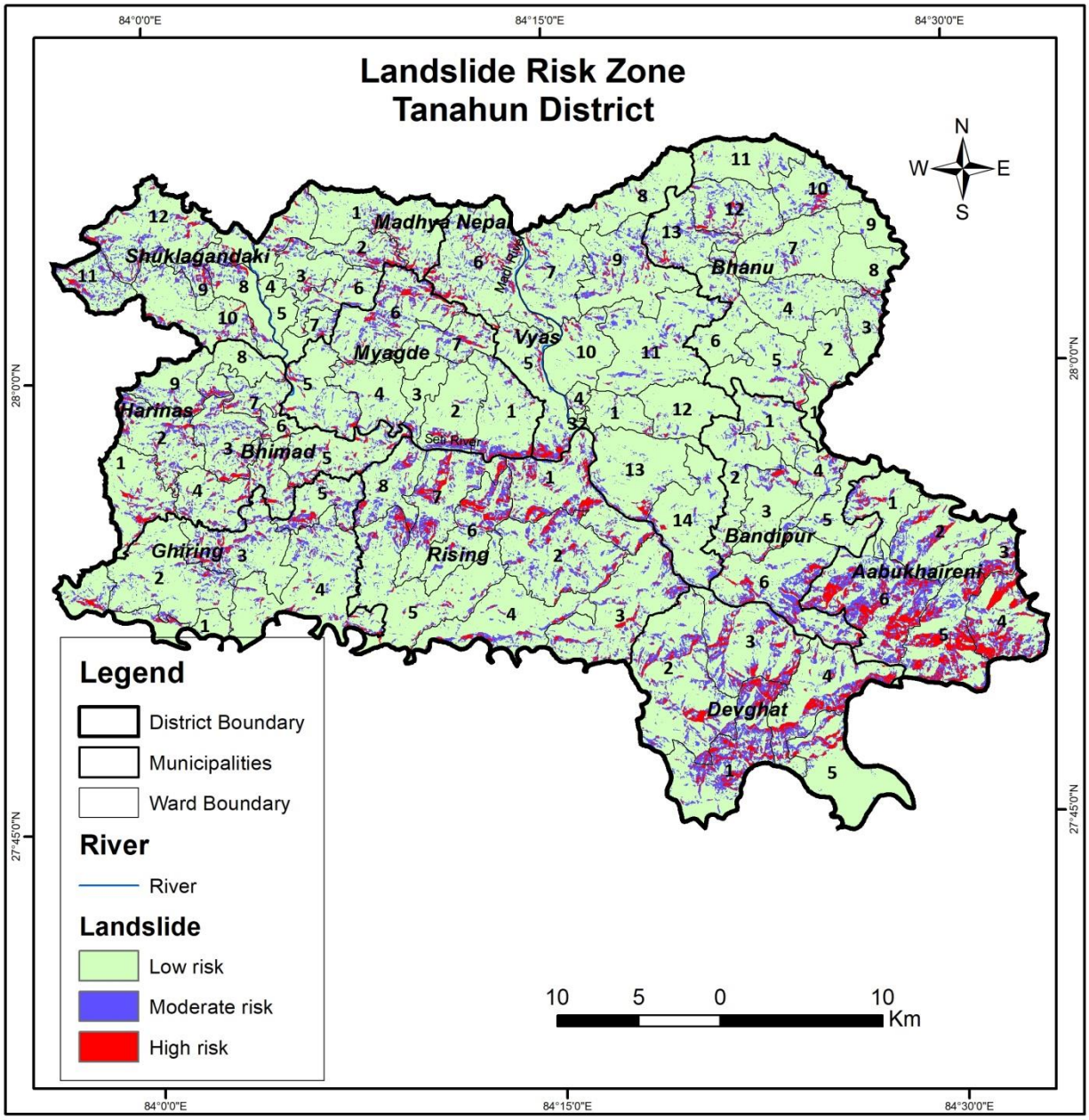
Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Binayi Triveni RM	1	Both side of Binayi khola and Khahare khola	Edge cutting, edge fall
	2	Jyamire khola northern side	Edge fall
	3	Upper part of Dangie khola and Dhago khola, Harbare and northern part,	Landslide
	5	Dhurkot, Majhkot area, Near Binayi khola	Landslide, edge fall
	10	Near Charikun	Edge fall
	14	Charange, Jilan khola	Landslide, edge cutting
	2	Western side of Girwan khola	Edge cutting
	4	Eastern side of Girwan khola,northern side of Girdi khola, Rumse area	Edge cutting, landslide
	5	Most of the part of ward no. 5 (Baseni, Ramjikot, Kamigaun, Dhawadi, Pahereghat)	Landslide
	6	Pipaldanda area, northern and southern upper part of Keuradhap and Birkharka, Southern part of Bharidare and Dhobala	Landslide
Devchuli Municipality	5	Northern part of ward no. 5 Bardipur area	Landslide
	6	Both side of Deusal khola, northern part of ward 6 Mahabharat Lek area	Edge fall, landslide
	16	Northern part of Mahabharat Lek area	Landslide
Gaidakot Municipality	3	Hattisal area	Landslide,
	14	Upper part of Taun khola	landslide
	18	Ratanpur area, Belthumka area	Landslide
Bungdikali RM	1	Hatiya area, Mithukaram danda area	Landslide
	2	Northern upper part of Bungdi khola	Landslide
	3	Upper part of Madanswanra	Landslide
	4	Tallo kuwakot area, Ruchan area, southern part of ward no. 4	Landslide
	5	Jaubari area	Landslide
	6	Eastern part of Becchhap, Northern, eastern and southern part of Naram village	Landslide
Bulintar RM	1	Northern part of Tarang khola, Satikot area and Southern part of Koldada	Landslide
	2	Dadajhari area	Landslide
	3	Southern part of Batase, Dadathok and Thapre area	Landslide
	4	Near Kuwakot area,westernern part of Deusat khola,Tallo Arkhala, Eastern and southern part of Deurali	Landslide
	5	Lapak area,northern and eastern part of Bhadure, Phulandi khola ege fall and northern part of Phulandi khola	Landslide, edge fall
	6	Southern part of Bharatipur, Hatiya area,Udayapur, edge cutting of Phulmadi khola	Landslide


Landslide Risk Zone
Nawalpur District
83°45'0"E
84°0'0"E
84°15'0"E
28°0'0"N
27°45'0"N
27°30'0"N
N
W
E
S
Bungdikali
Bulingtar
Gaindakot
Devchuli
Hupsekot
Kawasoti
Binayee
Madhyabindu
Arun Khola
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk
9 4.5 0 9
Km

Tanahun District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Devghat RM	1	Northern part od ward 1 (Damdame,Gharibas), Samthar, Ghatedada, Saldada,Mandhane	Landslide
	2	Southern part of Naram, northern part of Chherang khola, Northern part of Chundi khola	Landslide, edge fall
	3	Bhokteni area, western part of Ngaldi khola, eastern part of Gendran and northern part of Bar khola	Landslide
	4	Solighopte area,Saldada area, Kaphaldada area, Kartap,Sinchyang area, Amdada area	Landslide
	5	Southern part of Phoshrepani and Bagandi	Landslide
Abukhaireni RM	1	Bardada, Khanikhan, Bhangeri	Landslide
	2	Pauwa and western side of Raudi khola, Eastern part of Nayagaun and western side of Khani khola	Landslide
	3	Khanikholagau, Dharapani area, Lutpakha area	Landslide
	4	Marsyangdi Hydro area, Shankhargaun, Amdada area, Khashran area, Trishuli River edge fall	Landslide, edge fall
	5	Western part of Siudi khola, bagai area, Kheusni and Lakhupakha area, Dumsidhunga, San Bhanjyang, Bhoteswara, Domarbesi, Trishuli River edge fall,	Landslide, edge fall
	6	Ratnapur and Dadagaun area, Near Sihar khola, tallo Hilekharka area,Dharagaubesi, Jal Bhanjyang area,	Landslide
Bandipur RM	1	Southern upper part of Dumre bazaar	Landslide
	3	Bandipur Paragliding area, Muchuk area,	Landslide,
	4	Marsyangdi River edge cutting at Bimalnagar area	Edge cutting
	6	Dharampani area, Bhutkhola area, eastern part of Gajeswara	Landslide
Rising RM	1	Mathillo Setan, Ramche area, southern part of Dhobla, edge fall of Seti River and Dihul khola	Landslide, edge fall
	2	Apthok, Jhakridada, northern part of Charghare, edge fall of Dihul khola	Landslide, edge fall
	3	Dubun dada area, southern part of Archaldi, edge fall of Seti River and Kaligandaki River	Landslide, edge fall
	4	Singuwa, southern part of Bhirkot, edge fall of Kaligandaki River	Landslide, edge fall
	5	Jhatare area, Ratenidhara, Sapaudi, edge cutting of Jwala khola	Landslide, edge fall
	6	Kaphaldada, Dharampani,Madariswara,Syanlun, edge fall of Jyamire khola	Landslide, edge fall
	7	Bolswara, Pokhari bhanjyang area,Machadan, Kotlan	Landslide
	8	Chhatiwan,Gordi area	Landslide
Ghirin RM	1	Nayagaun, northern upper part of Puttar	Landslide
	3	Garhathok,Silimthok	Landslide
	4	Edge fall of Kaligandaki River	Edge fall
	5	Bhoteni area, Bel bhanjyang area	Landslide
Bhanu Municipality	1	Marsyangdi River edge fall	Edge fall
	3	Marsyangdi River and Paudi khola edge fall	Edge fall
	5	Thulodhunga area	Landslide

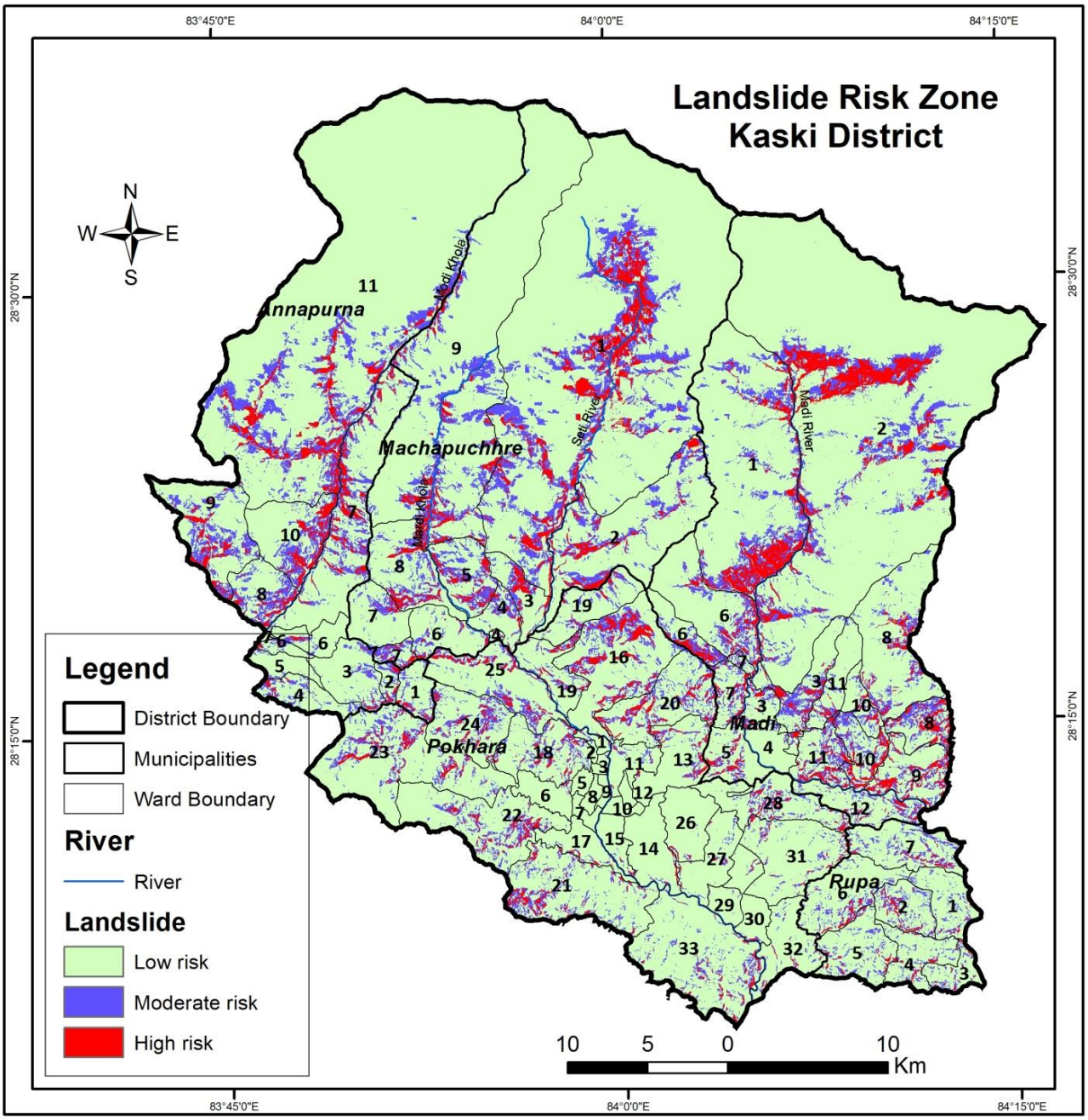
	6	Padke pasal area, Chudi khola edge cutting	Landslide, edge fall
	7	Upper part of Sagbari	Landslide
	8	Paudi khola edge fall	Edge fall
	10	Arukharka, Bandre	Landslide
	12	Eastern part of Ahale village, edge fall of Okhale khola and Karsyangdi khola	Landslide, edge fall
	13	Upper part of Bajhidihi	Landslide
Byas Municipality	1	Belghan area	Landslide
	5	Edge cutting of Madi River	Edge cutting
	6	Side cutting of Manda khola	Edge cutting
	9	Edge fall of Beteni and Paudi khola	Edge cutting
	10	Boksigara area	Landslide
	11	Mulpanikuna area	Landslide
	12	Chhabdibarah area	Landslide
	13	Upper part of Seti River and Khirkhandi khola dovan	Edge cutting
	14	Seti river edge cutting	Edge cutting
Myagde RM	1	Seti river edge Fall	Edge fall
	2	Northern part of Seti river	Landslide
	5	Jhakkas area,western part of Chhakrak area	Landslide
	6	Southern part of Sarbalang area,Sage khola edge cutting,	Landslide, edge cutting
	7	Dharampani area	Landslide
Shuklagandaki Municipality	1	Edge cutting of Sage, Manda and Gahate khola	Edge cutting
	2	Rimalgau area, Bandi area, edge cutting of Khani khola	Edge cutting, Landslide
	3	Thumdada, Sikhere area	Landslide
	6	Edge cutting of Jamdi khola	Edge cutting
	7	Male Bagar	Edge cutting
	8	Edge cutting of Saraudi khola	Edge cutting
	9	Lukunswara, Edge cutting of Saraudi khola	Landslide,Edge cutting
	10	Lampata, Seplan area, Bange khola edge cutting	Landslide, Edge cutting
	11	Simleswara area	Landslide
	12	Southern part of Ghaderi gaun	Landslide
Bhimad Municipality	1	Miyagaun area, Chhimpun, Edge cutting of Saldi khola	Landslide, Edge cutting
	2	Jaupani, northern part of Nayagaun,	Landslide
	3	Southern part of ward 3	Landslide
	4	Eastern part of Satidada	Landslide
	5	Edge cutting of wanting khola	Edge cutting
	6	Alchhi chautara area, edge cutting of Seti River at Bhimad bazaar	Landslide, Edge cutting
	7	Edge cutting of Jyagdi khola	Edge cutting
	8	Edge cutting of Jyagdi khola	Edge cutting
	9	Edge cutting of Jyagdi khola	Edge cutting


Landslide Risk Zone
Tanahun District
84°0'0"E
84°15'0"E
84°30'0"E
28°0'0"N
27°45'0"N
N
W
E
S
Madhya Nepal
Shuklagandaki
Myagde
Vyas
Bhanu
Harinas
Bhimad
Ghiring
Rising
Bandipur
Aabukhaireni
Devghat
Marsyangdi River
Seti River
Legend
District Boundary
Municipalities
Ward Boundary
River
Landslide
Low risk
Moderate risk
High risk
10 5 0 10
Km

Kaski District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Rupa RM	2	Edge cutting of Chalne and Sakhar khola	Edge cutting
	3	Jogidada area	Landslide
	4	Gairagaun, Shikhar area	Landslide
	6	Side cutting of Gharte and Apu khola	Edge cutting
	7	Madi River edge fall	Edge fall
Pokhara Metropolis	1,3,9,11, 10,17, 15, 21, 14, 27, 29,30, 33, 33, 25, 19	Edge cutting of Seti River (PN campus, Naranthan, Ramghat, Tulsighat, China pul, Rangashala, Chorsangu, Ratopahiro, Sitapaila, Tutunga,Dobilla, Bachhe buduwa, Okhaldhunga, More khahare, Lamgadi,Lower part of puditar)	Edge fall
	13,26, 14,27,28	Edge cutting of Bijaypur khola (Dhadbesi, Jarkate, Kaseri, Arwaghari, Dudhpokhari chok, Bijayapur pul, Gandaki hydro)	Edge fall
	22,17	Edge cutting of Phurse khola (Chhapswanra, Lower part of Simaltuda, Ratopahiro, Damsadi, dobilla)	Edge fall
	23	Edge cutting of Harpan khola (Ghatichhina)	Edge fall
	24	Edge cutting of Khahare khola (Dadakhet, Deurali)	Edge fall
	25	Edge cutting of Yamdi khola (Yamdi)	Edge fall
	21,33	Edge cutting of Suraudi khola (Puri dovan,Lower part of shanty Bhanjyang0	Edge cutting
	20,11,13	Edge cutting of Kahun khola(Dudhpokhari chok)	Edge fall
	32	Edge cutting of Kotre khola (Majuwa)	Edge fall
	13	Khamghale area	
	20	Dadagaun, Mauja, lamdada	
	16	Kalilek area ,Rawaldada, Jumleti	
	19	Lamdada,Gharmi	
	25	Bhut khalte, Raurun, Jalkuno,Tibrikot, Paripakhaban,Paniswara,Sarangkot pakha	
	24	Chhipchhipepani, Chlimdada,dadakhet	
	18	Pakha,Sarankot area, Sedipakha,Methlang	
	23	Kudbidanda, Chainpur, Harpan, Chapakot	
	22	Okhaledada, Thuldhunga area,Uppallo Khalse,Kalimati,dadathok,Archalbot,Odare)	
	21	Bhirswara, Thulachaur, Dadaligau,	
	33	Bar Pandethum area	
	31	Lamaswara area	
	28	Thulakot area, AAhle, Bhurtelgau, Jimire Pakha	
	30	Dudakomukh dada	
Madi RM	1	Sikles , Khilang, Parche area,Hugu , Kaphuche area, edge fall of Madi River	Landslide, edge fall
	2	Northern part of Madme khola,Nacha khola area, Garchyang khola area, edge fall of Madi River	Landslide, edge fall

	3	Hareswara area, Syarchok area, Ghipli area,Upper part of Udulke	Landslide
	4	Edge cutting of Madi River	Edge cutting
	5	Southern part of Thulswara,Chitepani , Lankathar	Landslide
	6	Naunu, Tapran area, Edge cutting of Madi River	Landslide, edge fall
	7	Gurung Chhachok ,Thak area, Edge cutting of Madi River	Landslide, edge fall
	8	Rabaidada, Kasna area, samle area, Sarbikharka area, Karpu area, Edge cutting of Rudi khola	Landslide, edge fall
	9	Southern part of Thuloswanra, Northern part of Mugribesi, Seto pahiro, Mugri area, Edge cutting of Madi River and Rudi khola	Landslide, edge fall
	10	Lumar area, Jhaure area, Southern part of Dhodeni, Eastern part of Kaure, Dovan area,Edge cutting of Wardi khola	Landslide, edge fall
	11	Saimaran, Lower part of Tase, Tallo Saple, Baraldada area, Edge cutting of Madi River	Landslide, edge fall
	12	Kamalbari area, Paire, Edge cutting of Madi River	Landslide, edge fall
Machhapuchhre RM	1	Upper part of Seti River,Lower part of rani kharka, Lower part of Dhanyedada, Northern side of Sadhu khola,Piparkharka area, Kharapani area, Karuwa area, Dhipran area, Khumedada area,Edge cutting of Seti River	Landslide, edge fall
	2	Khadarjun area, Mepran,Eastern upper part of Bharabhuri, Pwochochodada area, Edge cutting of Seti River	Landslide, edge fall
	3	North Western part of Ghachok, saripakha area,Edge cutting of Seti River	Landslide, edge fall
	5	Dhada area,Rivan area, Edge cutting of Mardi khola	Landslide, edge fall
	7	Dhad area, Lower part of Khanigau,Edge cutting of Ghatte khola,	Landslide, edge fall
	8	Tallo Idi area, Bau khola area,Edge cutting of Idi khola	Landslide, edge fall
	9	Keshban area, Ghalel area, Kalimati area, Purundhun area, Nagi area, Ghipli area, Khumedada area, Korjadada area, Upper part of Mardi khola, Edge cutting of Mardi khola	Landslide, edge fall
Annapurna RM	1	Edge cutting of Khahare khola	Landslide, edge fall
	2	Upper part of Ghatte khola	Landslide, edge fall
	3	Sureni, Andheri khola pahiro, Edge cutting of Khahare khola	Landslide, edge fall
	4	Salyan, Phalate and Lamachaur area	Landslide, edge fall
	6	Lumle area	Landslide, edge fall
	7	Ghisrung khola area,Jugepani ,Bhirkuna area,Namildun area, Bumingna khola area,Duithep khola area, Edge cutting of Modi khola	Landslide, edge fall
	8	Lamdawali, Edge cutting of Modi khola and Bhurungdi khola	Landslide, edge fall
	9	Southern Part of Sabet,Ulleri area, Banthanti area, Dovan area of Mahabhir khola and Bhurungdi khola, Edge cutting of Bhurungdi khola	Landslide, edge fall
	10	Kilyu, Ghandruk area, Toja area,Edge cutting of Modi khola and Kimrong khola	Landslide, edge fall
	11	Ghurjun area,Jhinudada area, talun area, Chhomrong area, Tilche, Dalphu, Kimrong khola pahiro, Lidurchhidur khola area,Edge cutting of Modi khola , Chhomrong khola and Kimrong khola	Landslide, edge fall

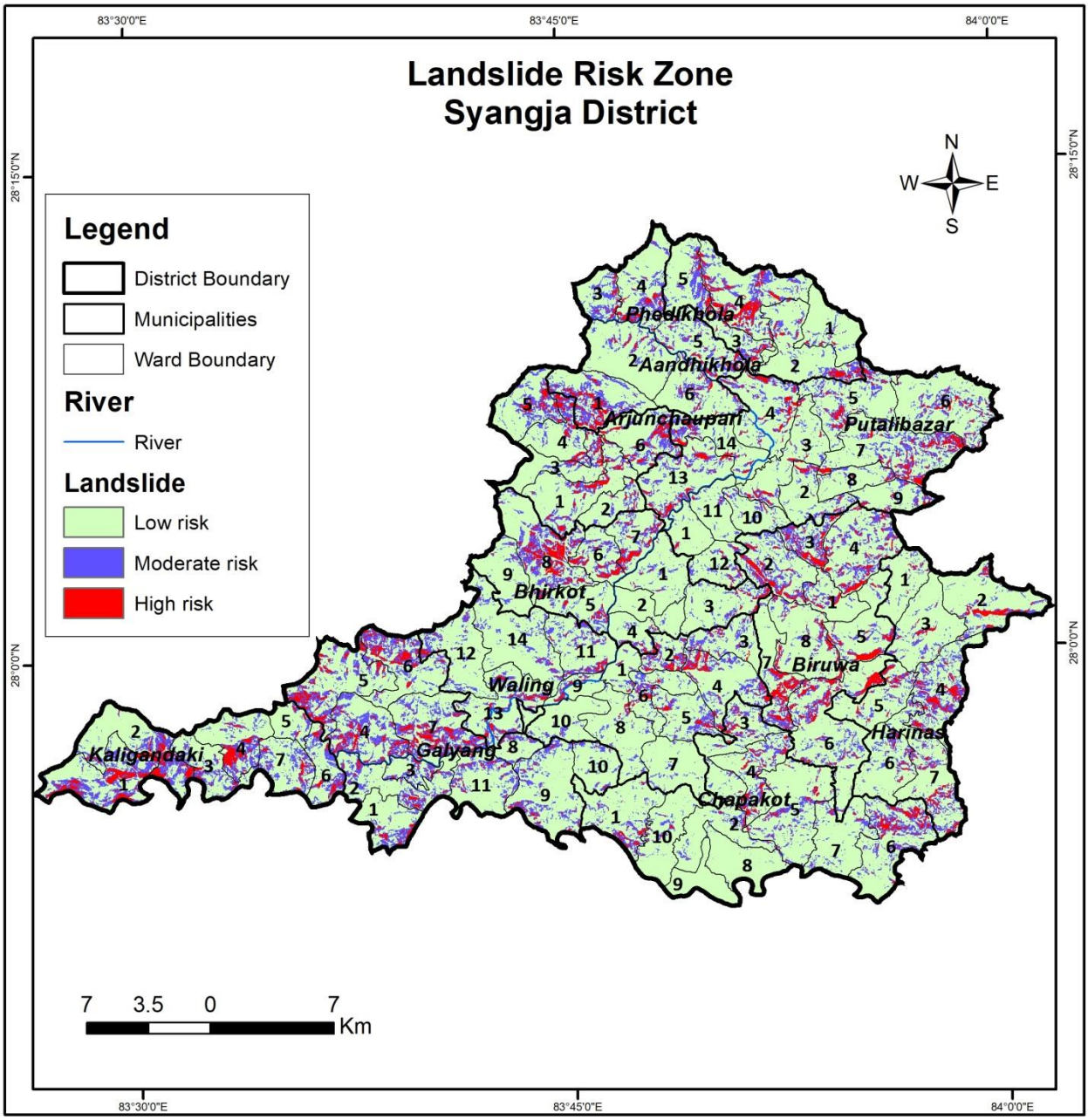

Landslide Risk Zone
Kaski District
83°45'0"E
84°0'0"E
84°15'0"E
28°30'0"N
28°15'0"N
N
W
E
S
Annapurna
Machapuchhre
Pokhara
Madi
Rupa
Madi Khola
Seti River
Madi River
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk
10 5 0 10
Km

Syangja District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Kali Gandaki RM	1	Southern part of Karikot, Upper part of Sindurdi khola, kholaEdge cutting of Kaligandaki River	Landslide, edge fall
	2	Odarchap area, Alamdevi area,Pakhadada area, Edge cutting of Kaligandaki River	Landslide, edge fall
	3	Dadighat area, Edge cutting of Kaligandaki River	Landslide, edge fall
	4	Eastern part of Waigha, Edge cutting of Kaligandaki River	Landslide, edge fall
	6	Tap area, Dihidada area,Barudada, Edge cutting of Kaligandaki River	Landslide, edge fall
	7	Balandada area, Edge cutting of Kaligandaki River	Landslide, edge fall
Galyang Municipality	1	Southern part of Tallo Bajhadi, Edge cutting of Kaligandaki River	Landslide, edge fall
	2	Tallo bajuwa area, Edge cutting of Kaligandaki River	Landslide, edge fall
	4	Pelli area, Bhorthok, sano Nibuwakharka area	Landslide
	5	Newardada area, Gaudada, Edge cutting of Kaligandaki River	Landslide, edge fall
	6	Eastern part of Ghalam,Kubinde area, Daduwa area, Mathillo Bhorle area	Landslide
	7	Bardada, Dharandi, Mulibas, Padkan,Northern part of Kamare, Edge cutting of Aandhi khola	Landslide, edge fall
	9	Chhatiwan area, Edge cutting of Kaligandaki River	Landslide, edge fall
	11	Dhanubase area,Edge cutting of Kaligandaki River and Aandhi khola	Landslide, edge fall
Chapakot Municipality	1	Adigau area, Pokharichhap area, Edge cutting of Kaligandaki River	Landslide, edge fall
	3	Panaudi area, western part of tallo Chyare	Landslide
	4	Jyagdi and Bhumdi khola Dovan area, Binadi area Jagandada area, edge cutting of Jyagdi khola,	Side cutting of Aandhi khola
	5	Ganjar,Hatiya area	Landslide
	6	Dharapani,Tahu area,Gairathar area	Landslide
	9	Edge cutting of Kaligandaki River	Edge fall
Waling Municipality	1	Pandada area	Landslide
	2	Bakse area, Katkuri area, edge cutting of Armadi khola,	Landslide, Edge cutting
	3	Majhkot area	Landslide
	4	Tinghare area, Baidada,Dude chaupari, Northern part of Regmigau	Landslide
	5	Badhare area,Minankot, Dhichhap area,Bhesardada	Landslide
	6	Pitlek dada area,Dhanubas area	Landslide
	9	Side cutting of Aandhi khola	Edge Cutting
	11	Paleypata,Side cutting of Aandhi khola	Landslide, edge cutting
	12	Western part of Betini khola	Edge cutting
	13	Bodi Bhanjyang, Dumiswara, Side cutting of Aandhi khola	Landslide, edge cutting
Bhirkot Municipality	3	Side cutting of Musaha and Mirdi khola	Edge cutting
	4	Mansyangkot Area	Landslide
	5	Swrekkot area, Dhundada area	Landslide

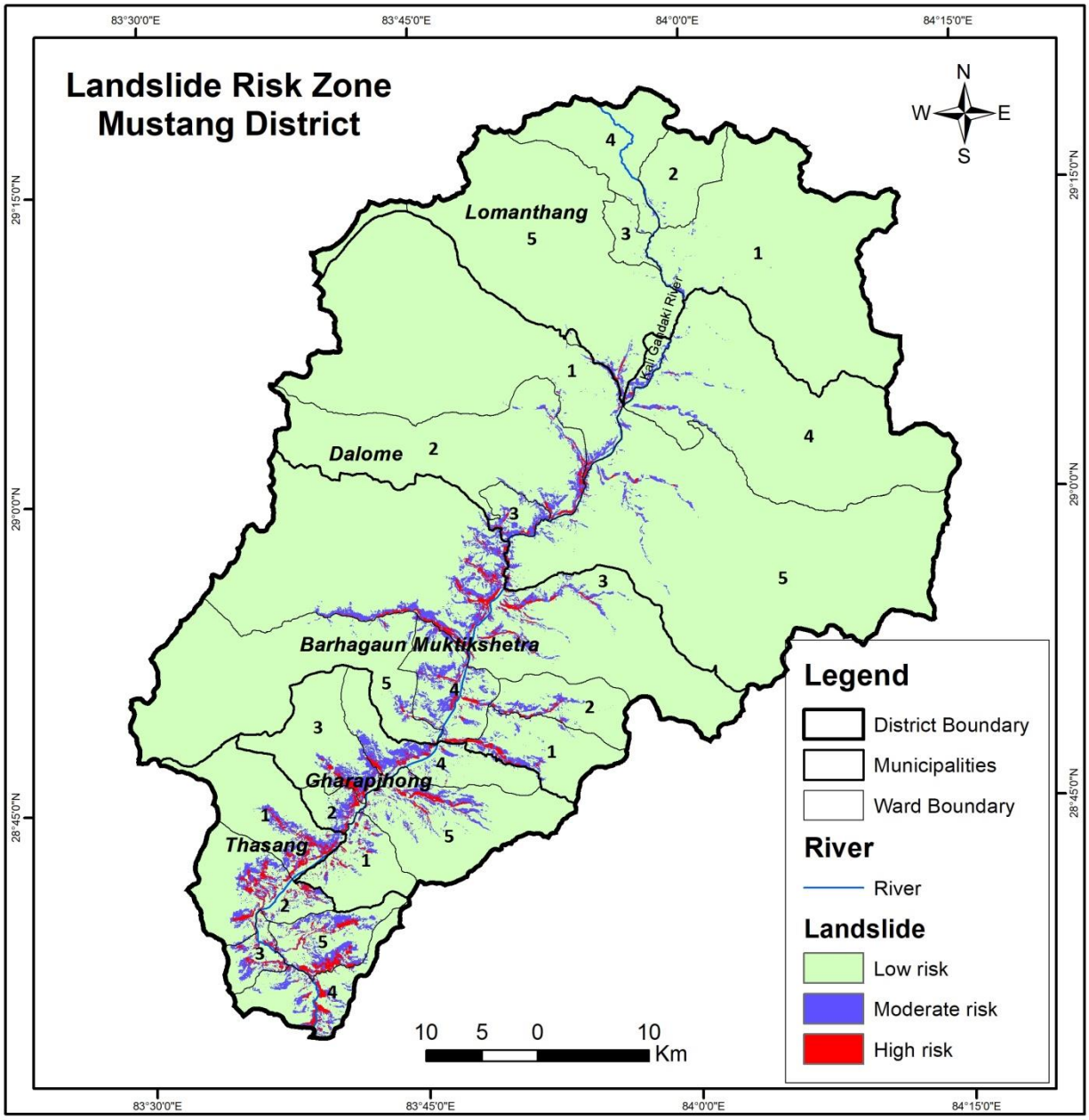
	6	Bicharibari, Dumbribot, Simalchaur	Landslide
	7	Pasindada area, Thada hatiya area, Balmata area	Landslide
	8	Godikholagau, Mahandada, Dhapuk, upper part of Ghusteni khola	Landslide
Harinas RM	2	Namsikot dada area	Landslide
	3	Eastern and southern part of Gaireswara	Landslide
	4	Northern part of Dhundhar khola, middle part of Karanswara and Lindiswara, northern part of Kulung khola	Landslide
	5	Jumandada area	Landslide
	6	Onjar area, Khantichhap	Landslide
	7	Khamariswara, Sapandada, Khanaldada	Landslide
Biruwa RM	1	Archale area	Landslide
	2	Machabari area,northern part of thakurigau, Southern part of Bagare	Landslide
	3	Northern part of Budhi khola, edge cutting of Baraha khola	Landslide, edge cutting
	4	Eastern and northern side of Patane, Edge cutting of Myang khola	Landslide, edge cutting
	5	Northern and Western part of Khahare khola	Landslide
	6	Chinnebas area, Bhuwan,northern part of Thumka, Northern side of Syangdi khola	Landslide
	7	Most of the southern part of ward 7	Landslide
	8	Gophadi, edge cutting of Jyagdi khola	Landslide, edge cutting
Putalibazar Municipality	1	Aledada area	Landslide
	2	Gyudada area	Landslide
	3	Upper part of Randan	Landslide
	4	Rankos area	Landslide
	5	Gaude area,Tarieastern part of Badahare khola,	Landslide
	6	Edge cutting of Pyuri khola and Tuni khola, Bardada area	Landslide
	7	Bardada area, Northern part of Kyangdi khola, Northern side of Sundar khola	Landslide
	8	Northern part of Dendi khola,	Landslide
	9	Bajurthum dada, Khamare	Landslide
	10	Eastern part of Shribari	Landslide
	12	Sorka, western part of Tilchaur, eastern part of Ramche	Landslide
	13	Edge cutting of Aandhi khola, Hirapata, Southern part of Sewadi	Landslide, edge cutting
	14	Karkidada, Kharsugau	Landslide
Fedikhola RM	1	Chaukiswara area	Landslide
	2	Arkhale, Kamere	Landslide
	3	Thulo Dihi,Bhandaridada	Landslide
	4	Galyam area, Northern part of Todka, Rapu, Side cutting of Bhat khola	Landslide,edge cutting
	5	Deuraliswara, Side cutting of Bhat khola	Landslide, edge cutting
Aandikhola RM	1	Southern part of ward 1, northern part of Panchmul	Landslide
	2	Bohoragau	Landslide
	3	Edge cutting of Saradi khola	Edge cutting
	4	Edge cutting of Aandi khola,Northen of Argadi,Patalkharka,southern part of Bhadurga	Landslide, edge cutting
	5	Edge cutting of Aandi khola, Upper part of Simkhet,	Landslide, edge cutting

Arjun Chaupari RM	1	Tama dada, Chapkharka, Devkotathar	Landslide
	2	Chhapa	Landslide
	3	Edge cutting of Darau khola, Rimalphedi, Northern side Dirje khola	Landslide
	4	Ramche, Khor, Northern side Dirje khola	Landslide
	5	Musarbari Area, eastern part of Rahale khola	Landslide
	6	Ghorsyan, Bhedabari area,Southern part of todkapani, Raite	Landslide



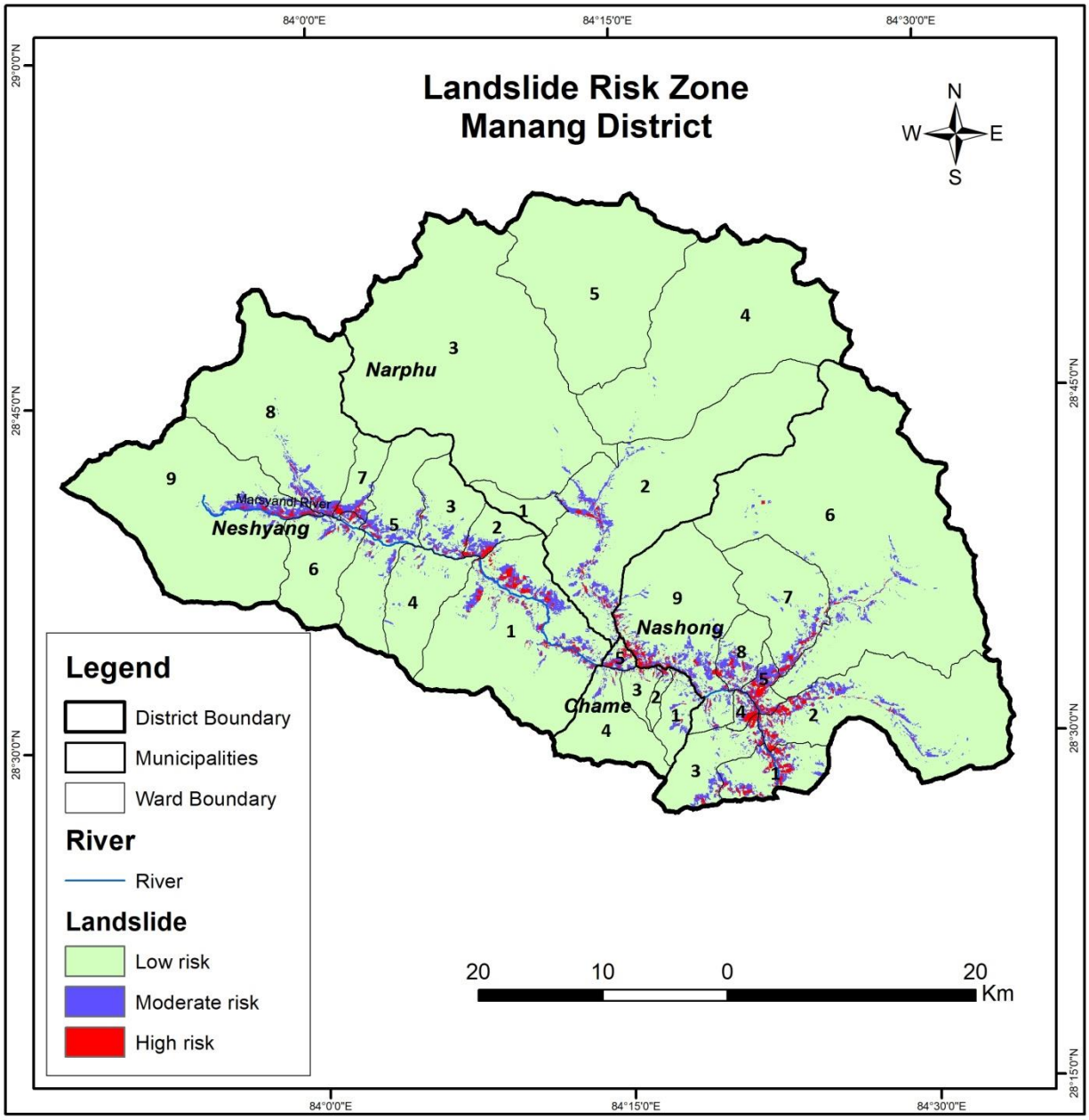
Mustang District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Dalome RM	1	Charang	Landslide
	2	Edge cutting Of Kaligandaki River, Ghami khola, Tama khola and Sangboche khola	Landslide, Edge fall
	3	Edge cutting Of Kaligandaki River, Ghami khola, Tama khola and Sangboche khola	Landslide, Edge fall
	5	Edge cutting of Tange khola	Landslide, Edge fall
Lomanthang RM	5	Edge cutting of Charang and Thulung khola	Landslide, Edge fall
Barhagaun Muktikshetra RM	1	Edge cutting of Panda khola,	Edge fall
	2	Jhong village, Edge cutting of Jhong Khola,	Landslide, Edge fall
	3	Chaile, Edge cutting of Kaligandaki River,Narsing khola, Dehingkyo khola,Jhuwa khola, Ghyakar khola, Chhincho khola chilungpa khola	Landslide, Edge fall
	4	Edge cutting of Kaligandaki River, Panda khola, Jhong Khola, Rataula khola and Lumbek khola	Edge fall
Gharapjhong RM	1	Edge cutting of Kaligandaki River,Chokhopani khola and Chimang khola	Edge fall
	2	Marpha, Edge cutting of Kaligandaki River and Pongkyo khola	Landslide, Edge fall
	3	Edge cutting of Kaligandaki River and Pongkyo khola	Edge fall
	4	Edge cutting of Kaligandaki River and Syan khola	Edge fall
	5	Edge cutting of Thini khola, Murghyuna khola	Edge fall
Thasang RM	1	Tukuche, Kyupar, Edge cutting of Kaligandaki River and Thapa khola,	Landslide, Edge fall
	2	Koban,Edge cutting of Kaligandaki River, Sun khola, Gurusangba khola and Latjung khola	Landslide, Edge fall
	3	Edge cutting of Kaligandaki River, Seti khola and Late khola	Edge fall
	4	Pairothapla, Nauli Ghyan, Ghansa,Edge cutting of Kaligandaki River	Landslide, Edge fall
	5	Jhipra,Nimek dada, Edge cutting of Kaligandaki River, Pangpu khola and Tantung khola	Landslide, Edge fall


Landslide Risk Zone
Mustang District
N
W
E
S
Lomanthang
Dalome
Barhagaun Muktikshetra
Gharapjhong
Thasang
Kali Gandaki River
83°30'0"E
83°45'0"E
84°0'0"E
84°15'0"E
29°15'0"N
29°0'0"N
28°45'0"N
10 5 0 10
Km
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk

Manang District

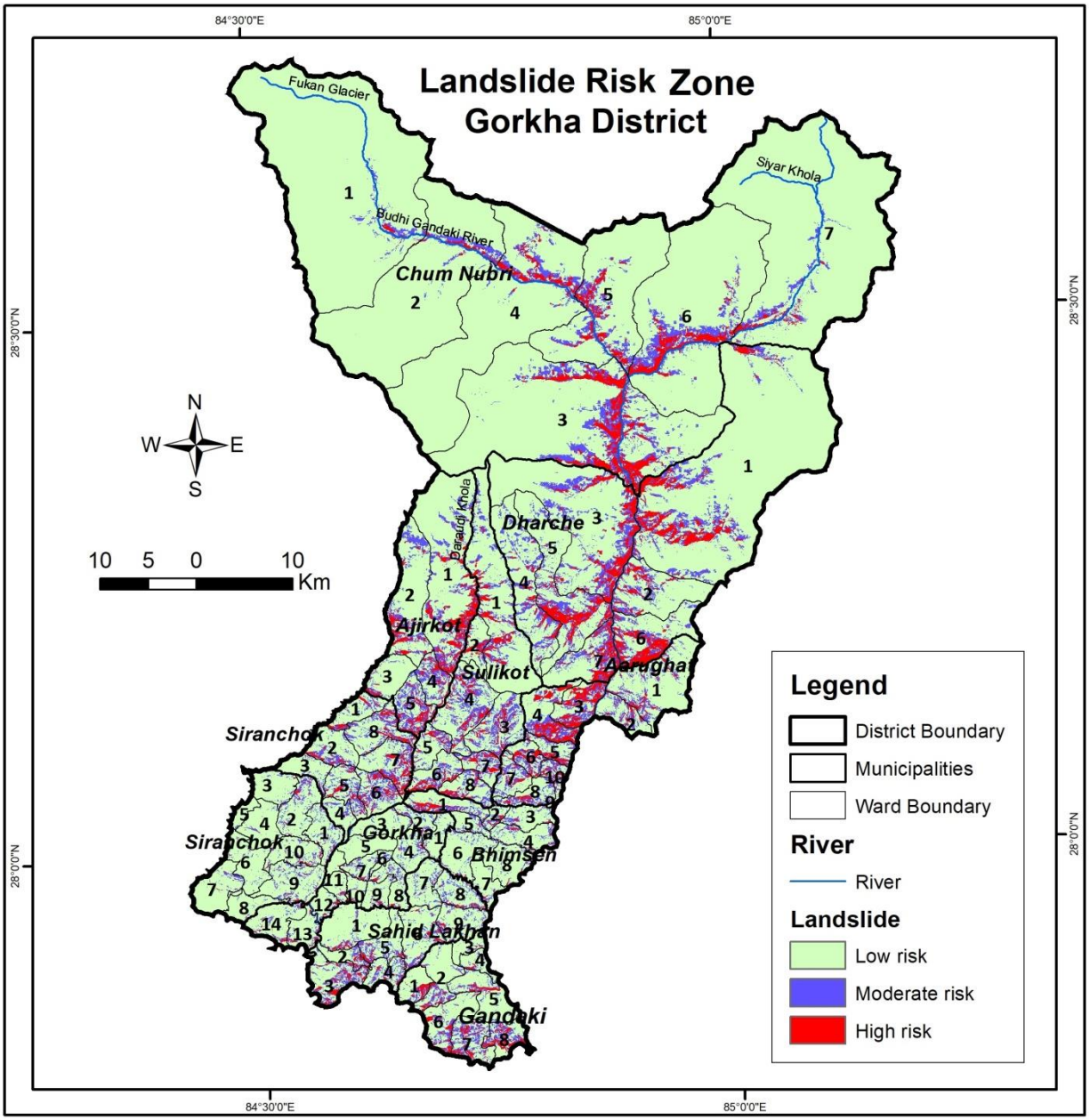
Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Chame RM	1	Edge cutting of Marsyangdi River	Edge fall
	2	Thanchok, Edge cutting of Marsyangdi River	Landslide, Edge fall
	3	Kyoto, Edge cutting of Marsyangdi River	Landslide, Edge fall
	4	Chame, Edge cutting of Marsyangdi River	Landslide, Edge fall
	5	Chame, Edge cutting of Marsyangdi River	Landslide, Edge fall
Nashong RM	1	Tal, Chhaijo, Edge cutting of Marsyangdi River	Landslide, Edge fall
	2	Kyodo,Edge cutting of Marsyangdi River and Dana khola	Landslide, Edge fall
	3	Chyopiu, Edge cutting of Marsyangdi River	Landslide, Edge fall
	4	Dharapani, Upper part of Odargaun,Edge cutting of Marsyangdi River	Landslide, Edge fall
	5	Thoche,Tangbra,Rau, Edge cutting of Marsyangdi River and Dana khola	Landslide, Edge fall
	6	Near Bhimthan, Edge cutting of Dudh khola	Landslide, Edge fall
	7	Tilche, Edge cutting of Dudh khola	Landslide, Edge fall
	8	Tachai area, Edge cutting of Marsyangdi River	Landslide, Edge fall
	9	Danaque, Kyupar, Edge cutting of Marsyangdi River, Danaque khola and Nar khola	Landslide, Edge fall
Narphu RM	2	Edge cutting of Nar khola and Ghatte khola	Edge fall
Neshyang RM	1	Bhartang, Pisang, Edge cutting of Marsyangdi River	Landslide, Edge fall
	2	Ghyaru, Edge cutting of Marsyangdi River,Ghatte khola	Landslide, Edge fall
	3	Paktha	Landslide
	5	Edge cutting of Marsyangdi River	Edge fall
	6	Manang,Edge cutting of Marsyangdi River	Landslide, Edge fall
	7	Tanki Manan, Edge cutting of Ghatte khola,	Landslide, Edge fall
	8	Thorang Fedi, Edge cutting of Thorang khola	Landslide, Edge fall
	9	Khansar, Tosinja, Mursan, Edge cutting of Marsyangdi River	Landslide, Edge fall


Landslide Risk Zone
Manang District
N
W
E
S
84°0'0"E
84°15'0"E
84°30'0"E
29°0'0"N
28°45'0"N
28°30'0"N
28°15'0"N
Narphu
Neshyang
Nashong
Chame
Marsyandi River
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk
20
10
0
20
Km

Parbat District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Painyu RM	1	Sigarkos area, Northern Part of Seti and Turture khola Dovan, Edge fall of Kaligandaki River	Landslide, Edge fall
	2	Northern part of Bamdi khola	Landslide
	3	Palosthan, Edge cutting of Seti River	Landslide, Edge fall
	4	Dharampani, Kikirka area, Mardi khola area	Landslide, Edge cutting
	5	Eastern and western part of Bandada, Dharadi area, Edge fall of Chahare khola,	Landslide, Edge cutting
	6	Gadikhola gau, Darsu, southern part of Sadhane, Ramche, Sirbani area, Edge Cutting of Seti khola	Landslide, Edge cutting
	7	Southern part of Bhorle, Edge cutting of Seti khola, southern part of Chalalun,	Landslide, Edge cutting
Bihadi RM	1	Edge cutting of Bachchha khola, Majhthar area	Landslide, Edge cutting
	2	Dorma	Landslide
	3	Edge fall of Kaligandaki River	Landslide, Edge fall
	4	Baspokhara area	Landslide
	5	Tarubas, Sundada	Landslide
	6	Sundada Area, Northern part of Mudus khola, chilaunekharka, Darbari area, Chhap area, Edge fall of Kaligandaki River	Landslide, Edge fall
Mahashila RM	1	Tallo Goradi area, Chhagadi khola area	Landslide, Edge cutting
	2	Kaula, Thauswara	Landslide
	3	Sitila area,Hirukharka area, Delidada area	Landslide
	4	Simle area, Damaidada area	Landslide
	5	Lumkhu Deurali, Batase, Aruchaur area	Landslide
	6	North western part of Ghantari	Landslide
Falebas Municipality	3	Phedi and Sarandi area	Landslide
	4	Edge fall of Kaligandaki River, edge cutting of Modi khola	Edge fall, edge cutting
	5	Armana korlohat area	Landslide
	6	Edge fall of Kaligandaki River and Lamahe khola	Edge fall
	7	Chirdikhani, Bhirkateri, Edge fall of Chirdi khola	Landslide, edge fall
	10	Chhahara area, Edge fall of Kaligandaki River	Landslide, edge fall
	11	Khoriya kharka, Amdigau area, Edge cutting of Bachha khola	Landslide, edge cutting
Kusma Municipality	1	Southern part edge fall of Pan area	Edge fall
	2	Southern part edge fall of Bagaincha, Tismare area, Khurkot,Upper part of Khahare khola, Edge fall of Khahare khola and Kewadi khola	Landslide, edge fall
	3	Ambot area	Landslide
	4	Edge fall of Kaligandaki River	Edge fall
	5	Edge fall of Kaligandaki River and Modi khola	Edge fall
	6	Edge fall of Modi khola	Edge fall
	7	Godam area, Edge fall of Modi khola	Landslide, edge fall
	8	Edge fall of Modi khola	Edge fall

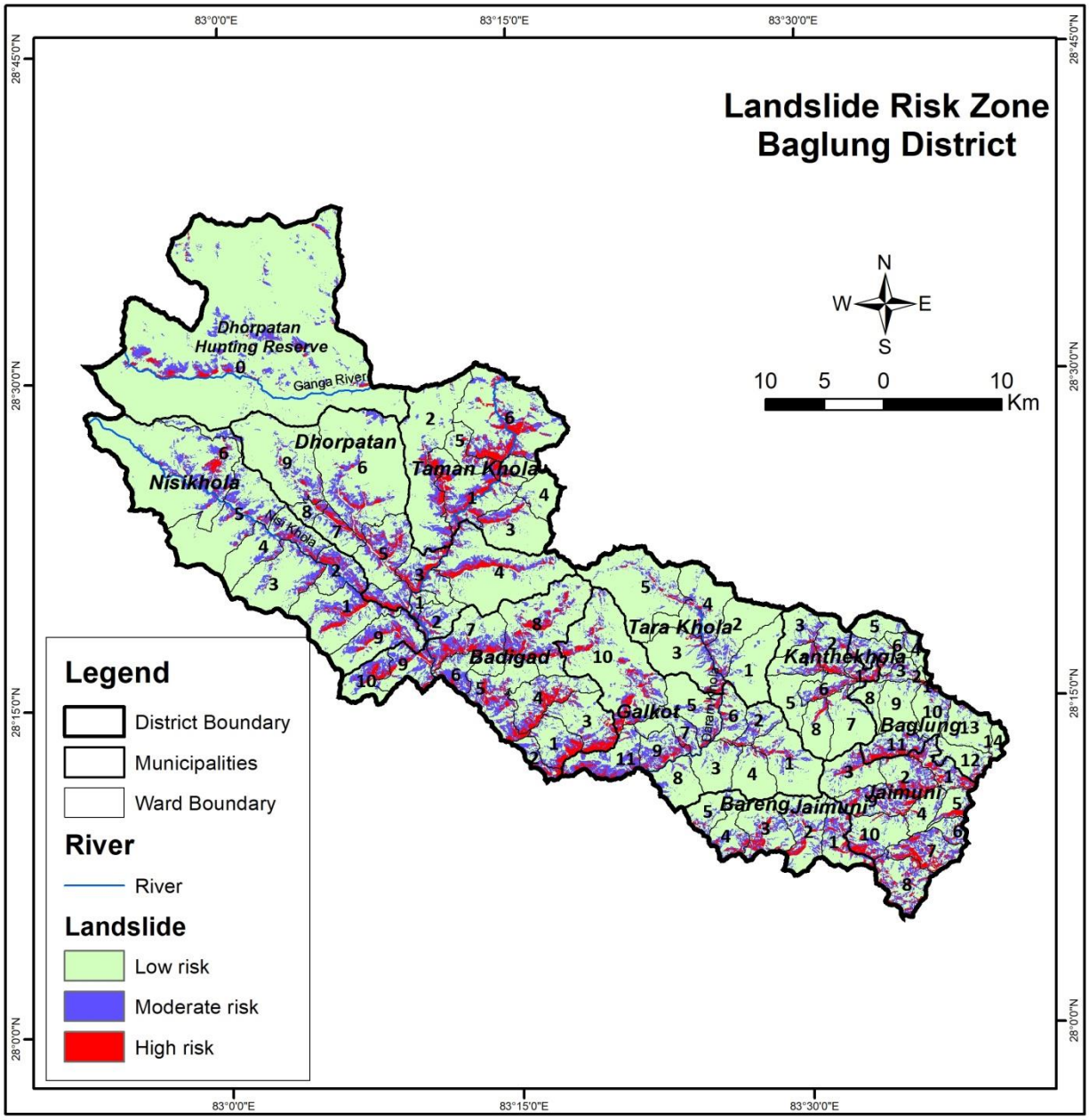
	9	Edge cutting of Malyangdi River	Edge cutting
	11	Northern and southern part of Pakuwa	Landslide
	14	Northern part of Patle and Luni khola dovan	Landslide
Modi RM	1	Mohoria area, Edge cutting of Mahabhir River, Bhurundi khola and Parauche khola	Landslide, edge cutting
	2	Edge fall of Modi kholaupper part of Dadakharka, Jaisithok area	Edge fall, Landslide
	3	Gurun sera, Janyale, Kamare, Aurekhet,Middle part of Purana gau and Landi, Dadakharka, Ghurunga, edge cutting of Pati khola	Landslide, edge cutting
	4	Sinkhore, Kyan, Phedi, Southern and eastern part oof Lespar, edge cutting of Pati khola	Landslide, edge cutting
	5	Eastern part of Bhuma, edge cutting of Modi khola	Landslide, edge cutting
	6	Tan and Tilahar area, edge cutting of Rati khola	Landslide, edge cutting
	7	Northern part of Jare khola (Lamde, Jaulakuna, Mahabhir)	Landslide
Jaljala RM	2	Bairagi tol area	Landslide
	3	Paribeni area	Landslide
	4	Lamakhet, Palsin, Dobilla, Kholakhet area	Landslide
	5	Phurse khola Gahate area	Landslide
	6	Salyan area, Tallo Salija area	Landslide
	7	Bhedabari, Lamabagar, Basbot, northern part of Lasti khola	Landslide
	8	Daha area, Pallo Ghhun, upper part of Khaniyaghat, Damuwa khola area	Landslide
	9	Edge cutting of Lasti khola	Edge cutting


Landslide Risk Zone
Gorkha District
84°30'0"E
85°0'0"E
28°30'0"N
28°0'0"N
Fukan Glacier
Budhi Gandaki River
Siyar Khola
Chum Nubri
Dharche
Barauti Khola
Ajirkot
Sulikot
Aarughat
Siranchok
Gorkha
Bhimsen
Sahid Lakhan
Gandaki
N
W
E
S
10 5 0 10
Km
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk

Baglung District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Jaimuni Municipality	1	Thula khola area, Jaimunighat area, Tunbot area,Ramche pokhari, Thadakhet, Kanle, Kalleri	Landslide
	2	Gauda, Kusunde, Kiteni, Theule khola and Paiyu khola	Landslide, Edge cut
	3	Northern part of Raudi khola,Tallogaun, Khok	Landslide
	5	Northern part Kabhre khola, Edge fall of Kaligandaki River	Landslide, edge fall
	6	Samagaun area, Yankot, Edge fall of Kaligandaki River	Landslide, edge fall
	7	Hadikot, edge cutting of Kaligandaki River, Chaur and Lauwa	Landslide, edge cutting
	8	Dhus, Tyan, Wainkuna, Kholakhan area, Kudi area, Gawo area, Salendhara area	Landslide
	9	Theule, Niyalikharka, Lamkhoriya, Bagar, Dhodre, Bor area, biraune area,Tarebhir, Kachure, Edge cutting of Kulun khola	Landslide, edge cutting
	10	Ghaiyakhoriya, Bhirkuna, Kaphal Pahira, Samundre, Edge cutting of Palung,edge cutting of Kaligandaki and Palung Khola	Landslide, edge cutting
Baglung Municipality	1	Edge fall of Kaligandaki River and Kathe khola	Edge fall
	2	Edge fall of Kathe khola	Edge fall
	3	Simle and Power house area, northern part of Tatopani	Landslide
	4	Edge fall of Kaligandaki River	Edge fall
	5	Edge fall of Thulo khola	Edge fall
	7	Chisapani area, Dhikichaur	Landslide
	11	Northern part edge cutting of Raudi khola(Tallo Sarlen, Simle, Bhagar,Tilahar, Tallo Ramtola)	Edge cutting
	12	Narikot area, Edge fall of Kaligandaki River	Landslide, Edge fall
	13	Edge fall of Kaligandaki River	Edge fall
	14	Edge fall of Kaligandaki River	Edge fall
Kathekhola RM	1	Nirlun area, Karina area, Dhimi, Edge cutting of Kathe khola and Khahare khola	Landslide, Edge cutting
	2	Niralpata, Edge cutting of Kathe khola and Tangram khola	Landslide, Edge cut
	3	Eastern part of Dhamja	Landslide
	4	Khatigara, Burlun, Edge cutting Tangram khola	Landslide, Edge cut
	6	Northern Side cutting of Jirdi and Thulo khola ,Karlim, Dobilla, Suldada)	Landslide, side cutting
	8	Side cutting of Bhudi khola	Edge cutting
Tarakhola RM	2	Edge cutting of Daram khola	Edge cutting
	3	Upper part of Huslan, Edge cutting of Daram khola	Edge cutting
	4	Edge cutting of Tara khola	Edge cutting
	5	Edge cutting of Tara khola	Edge cutting
Galkot Municipality	1	Gahate, Dubilabhati, Edge cutting of Gaudi khola	Landslide, Edge cut
	2	Bhayalkot, Edge cutting of Gaudi khola	Landslide, Edge cut
	5	Northern part of Harichaur, Bhainse, Daram khola	Edge cutting
	6	Near Lamdada, Masar	Landslide
	9	Timarbot, Phaparkhet, Bayasalla area, Badgau, Darbar, Edge cutting of Daram khola	Landslide, edge cutting
	10	Northern part of Bhim khola, Ramuwa area, Terso Mungare, Pallo Kholagau,Thulo Bagar, badhigau area, Luenguri area	Landslide, Edge cutting

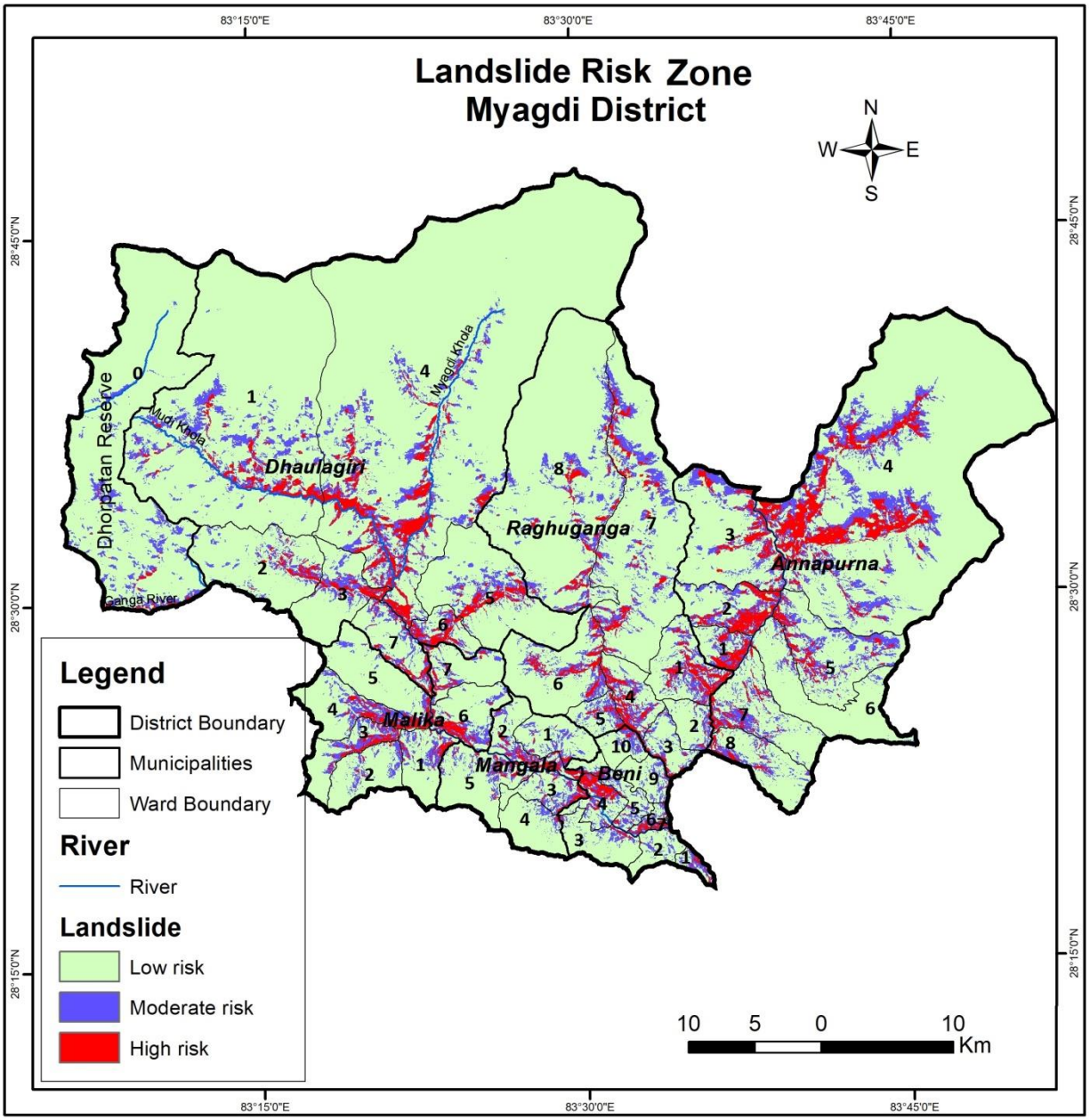
	11	Northern part of Daram khola (Baseri, Simalkorukh, Labdi, Manewa, Dihi, Manewapata, Gaighat, Kauchha),	Landslide, edge cutting
Badigad RM	1	Sallepakha, Tamlin, Chamlaphed, Edge cutting of Saune khola	Landslide,edge cutting
	2	Rakse, Tulphed, Kharwan, Edge cut Saune and Bidygad khola	
	3	Malmi, Simalphed, Ghaderi, Salphed, Edge cutSaune khola	
	4	Remi, Chiude, Tallo Nautul, Takar, Edge cut of Labdi khola	Landslide, edge cutting
	5	Aduwabari, Dagaphedi, Chharara area, Edge cutting of Badigad khola and Daga khola	Landslide, Edge cutting
	6	Gokhar, Khal, Northern part of Badigad khola	Landslide, Edge cut
	7	Turture, Northern Edge cutting of Bhim khola, Dadagaun, Gawa, Idikholagau, Tunibot, Bhetreni, Saireni, Thamka	Edge cutting, Landslide
	8	Puranogau, Bajani, Dovan khloa Gau, Dhansardada, Raisans, Edge cutting of Bhim khola	Edge cutting, Landslide
	9	Bhorlekharka, Uralukni, Edge cutting of Darlin and Badigad	
	10	Darlin, Khahare darling, Edge cutting of Darlin Khola	
Bareng RM	1	Todke, Jhule, Kokaldi, Lawa, Kadeni, Baskot, Chhap, Urleni	Landslide
	2	Bhumra, Kanle, Baj Di, Bhedakharka, Khoriya	Landslide
	3	Kisimkot, Thum, Bhirkuna, Dadra, Kudar,Bhalachaur area, Bajala, Chahada, Baskot	Landslide
	4	Southern part of Thula Pokhari, Lamdhara	Landslide
	5	Bahundada, Panchauli	Landslide
Nisikhola RM	1	Northern part of Lebang khola and Gaspur khola, Baga area	Landslide
	2	Dhara area,Kalnechaur area	Landslide
	3	Edge cutting of Jugja khola	Edge cutting
	4	Badachaur area, Jadepa, Dhankharka, Bengri	Landslide
	5	Masalgau area, Karigau area, Tiku area	Landslide
	6	Thulo khola side cutting, Upper part of Pokhara kharka	Landslide, edge cutting
	7	Simalchaur, Bhaj area,Kutula area, Edge cutting of Kut khola	Landslide, edge cutting
Dhorpatan Municipality	1	Khaptariban	Landslide
	2	Made area, southern part of Arnak, Dadagaun, Edge cutting of Nisi Khola and Badigad	Landslide, edge cutting
	3	Upper part of Khunga, Ghosakhani area, Side cutting of Taman and Bhuji khola	Landslide, edge cutting
	4	Chhapalla area, Dhiri area, Side cutting of Lukharban khola,	Landslide, edge cutting
	5	Gobjagau, Kharka, Side cut of Bhuji and Bhaisikharka khola,	Landslide, edge cutting
	6	Okhareni, Bhandarigau, Gadikholakhola gau,Pagraghar area	Landslide
	7	North part Bhuji (Dogadi, Dhanbot, Sallabot, Argeja tola)	Landslide
	8	Argeja tola	Landslide
	9	North part of Argeja tola, Malma, Paira, Duwalkhame kharka	Landslide
Tamankhola RM	1	Seula khola (Lamdali, Sommar, Kalagoth, Panchirban) and Bongakhani khola (Hija, Garpu, Bongakhani area)	Landslide,Edge cutting
	2	Mansun, Liga, Lower part of Riban, Bhaerboriga, Naban,Lamachour, Paira	Landslide
	3	Side cutting of Taman khola,Handari, Naban, Serma,	Landslide, Edge cut
	5	Jogidada, Chaurban area, Dhumachharne area	Landslide
	6	Chhelohalna kharka area Gor khol area,basthala area, Bhitiban area, purandaha area,patle area, Dovan area of Bhitriban and Asampatal, Side cutting of Khunkhani khola and Nirja khola	LandslideEdge cutting


Landslide Risk Zone
Baglung District
83°0'0"E
83°15'0"E
83°30'0"E
28°45'0"N
28°30'0"N
28°15'0"N
28°0'0"N
N
W
E
S
10 5 0 10
Km
Dhorpatan Hunting Reserve
Ganga River
Dhorpatan
Taman Khola
Nisikhola
Nisi Khola
Tara Khola
Badigad
Galkot
Kanthekhola
Baglung
Jaimuni
Bareng
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk

Myagdi District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Dhaulagiri RM	1	Ghurma,Jharmaling, Lachhaban, Gurjakhani, upper part of Gurjakhani gau, side cutting of Gurja, Dhaula and Kheyas khola	Landslide, edge cutting
	2	Narja, Jukepani, Lulan, Khaban area, side cutting of Dar khola	Landslide, edge cutting
	3	Sinban, Dar, Ghattekholagau, side cutting of Dar khola	Landslide, edge cutting
	4	Chharigau, Khamila area, Mudi area, Ghlmlati, Mahatala, Baraban, Himalja, Simalkharka, Pilankoskharka, Dovankharka,Tirija area, Side cutting of Mudi and Myagdi Khola	Landslide, edge cutting
	5	Malkaban, Kuinekhani, Side cutting of Kuine khola	Landslide, edge cutting
	6	Damka, Ketani, Side cutting of Kuine khola and Myagdi khola	Landslide, edge cutting
	7	Southern Part of Dharapani, Side cutting of Myagdi khola and Dang khola	Landslide, edge cutting
Malika RM	1	Northern side pf Okharbot, Side cutting of Khopti khola	Landslide, edge cutting
	3	Saglun, Dhikraban, Dinban, Saraghar, Bamba, Gurkhal, Side cutting of Khahare khola	Landslide, edge cutting
	4	Tinghare, Saurbor, Salyari, Ritun, Mahabhir, Dasban , side cutting of Dajung khola	Landslide, edge cutting
	5	Phulbari area, Gajara, Panbasa, eastern part of Okhaldhunga	Landslide, edge cutting
	6	Darban area, Dhadkharka, pateni, Lambala, Side cutting of Myagdi khola	Landslide, edge cutting
	7	Jiphu, South western part of ward 7, Side cutting of Myagdi khola	Landslide, edge cutting
Beni Municipality	1	Ratnechaur edge area, Thagne Bagar, lamagara, Edge cutting of Kaligandaki River	Landslide, edge cutting
	2	Edge cutting of Kaligandaki River and Myagdi khola	Landslide, edge cutting
	3	Edge cutting of Myagdi khola	edge cutting
	4	Northern part of ward 4 (Phaparkhet, Patrukh, Kaule,Thulo khola area, Bhujelchaur), Swata area,Edge cutting of Myagdi khola	Landslide, edge cutting
	5	Eastern part of Daduwa, Raju kulo area	Landslide
	6	Majhkhet, Dambara, Edge cutting of Myagdi khola	Landslide, edge cutting
	7	Mangalat, Edge cutting of Myagdi khola	Landslide, edge cutting
	8	Edge cutting of Kaligandaki River	edge cutting
	9	Edge cutting of Kaligandaki River and raughat khola	edge cutting
	10	Ghatte khola area, Edge cutting of Raughat khola	Landslide, edge cutting
Mangala RM	1	Lower part of Kahu	Landslide
	2	Newargau, Kotreban, upper part of Babiyachaur, Darun area, Hidi chhapali area, Simalchaur area, Edge cutting of Myagdi khola	Landslide, edge cutting
	3	Banaha,Arkuti,Edge cutting of Arje khola	edge cutting
	5	Southern upperpart of Pipalbot, haribhir, Dhara, Neta,Edge cutting of Myagdi khola	Landslide, edge cutting

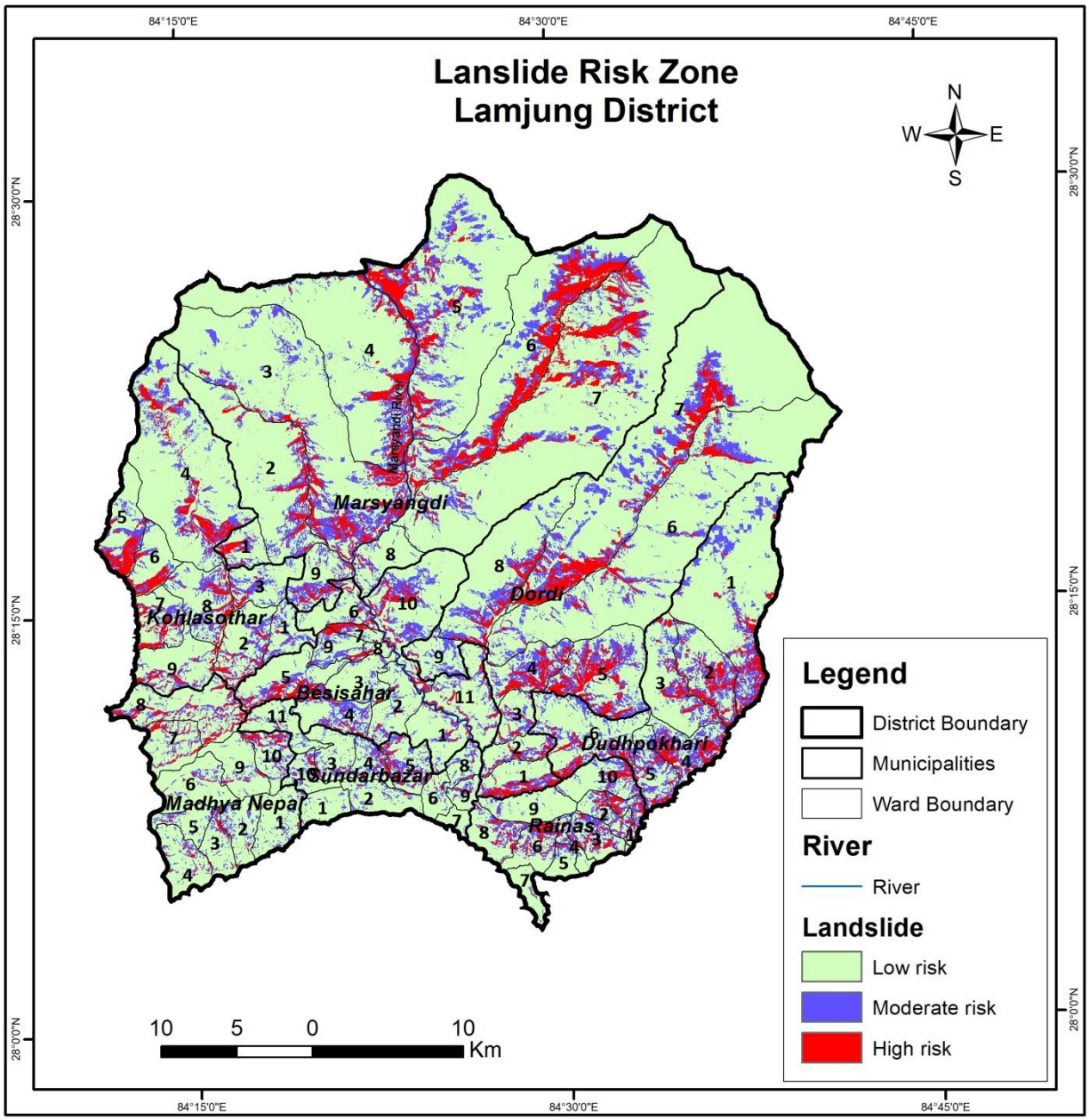
Raghuganga RM	1	Kuchudipuk area, Baduk, Mahabhir, Tiplyang area, Danrechaur area, Patgau, Lisne area, Edge cutting of Kaligandaki River and Beg khola	Landslide, edge cutting
	2	Edge cutting of Kaligandaki River	Landslide, edge cutting
	3	Raughat area,Edge cutting of Kaligandaki River and Raughat khola	Landslide, edge cutting
	4	Bakula area, Dagam area, Edge cutting of Raughghat khola	Landslide, edge cutting
	5	Jhi area, Edge cutting of Raughghat khola	Landslide, edge cutting
	6	Pakhapani,Mulpani,Thada khani khola area,Edge cutting of Raughghat khola	Landslide, edge cutting
	7	Chimkhola, western part of Bagare Khola, Phursin area, Phedi area, upper part of Bagare khola, Edge cutting of Bagare khola	Landslide, edge cutting
	8	Chaurikhani, Ghyasikharka, Mara area, Shrikharka, Chhari, Upper part of Lamphi khola	Landslide, edge cutting
Annapurna RM	1	Majhkharka, Demkharka, Dhadegau, Doba, Doba bagar, Edge fall of Kaligandaki River	Landslide, edge cutting
	2	Thulo Bagar,Sonari, Manderadhunga, Tatopani, western part of Tatopani, Upper part of Gakhar khola, Edge fall of Kaligandaki River	Landslide, edge cutting
	3	Suwa, Guythe, Duwari khola gau, Dana,rTitar, Rupse area,Kabre Bhir, Edge fall of Kaligandaki River, Ghatte khola cutting	Landslide, edge cutting
	4	Narchyan besi, Patar, Baskot, Gadpar, Gadkhane, Bhalebas, Kopchepani, upper part of Nilgiri khola and Ghalemdi khola, edge cutting of Kaligandaki River, Ghalemdi, Nilgiri, Gagarghari khola	Landslide, edge cutting
	5	Gharkholagau, Ghar khola area,Sikha, Kindu,Jharban,khopra dada	Landslide, edge cutting
	7	Aul, Kalleri, Pairhagaun, Gharamdi, eastern part of Thado khola, Edge cutting of Kaligandaki River	Landslide, edge cutting
	8	Baseri, Mahabhir, Ramche area, Chhote Bagar	Landslide


Landslide Risk Zone
Myagdi District
N
W
E
S
83°15'0"E
83°30'0"E
83°45'0"E
28°45'0"N
28°30'0"N
28°15'0"N
Dhorpatan Reserve
Mudi Khola
Myagdi Khola
Ganga River
Dhaulagiri
Raghuganga
Annapurna
Malika
Mangala
Beni
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk
10 5 0 10
Km

Lamjung District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Sundarbazar Municipality	4	Saunipani, Simpani	Landslide
	5	Thakle, Kiting khola cutting	Landslide
	10	Baspani area	Landslide
	11	Western upper part of Bhaktichok	Landslide
Besisahar Municipality	1	Upper part of Udipur, Edge cutting of Marsyangdi River	Landslide, edge cutting
	2	Lakuriswara	Landslide
	4	Jhagre area,Dakateri	Landslide
	5	Upper part of Fedi, Yuru, kholakhet, Bakhre Jagat, Lausibot,Edge cutting of Ramche khola	Landslide, edge cutting
	6	Makaidada, Edge cutting of Marsyangdi River	Landslide, edge cutting
	7	Upper part of Mugum, Edge cutting of Marsyangdi River	Landslide, edge cutting
	8	Edge cutting of Marsyangdi River	Edge cutting
	9	Bhirmuni, Dudhe area	Landslide
	10	Bajakhet, Dejunthok, Saldada,Edge cutting of Marsyangdi River	Landslide, edge cutting
	11	Kusunde area, western part of Odare, eastern part of Sedaigaun, Edge cutting of Marsyangdi River	Landslide, edge cutting
Madhya Nepal Municipality	1	Edge cutting of Risti khola	Landslide, edge cutting
	3	Newar Hatiya	Landslide
	4	Chameriswara	Landslide
	5	Kharibari	Landslide
	6	Edge cutting of Pisti khola	edge cutting
	7	Edge cutting of Midim khola and Siti khola	Landslide
	8	Naglemro, Aldada area, Karapu area, Edge cutting of Midim khola and Madi River	Landslide, edge cutting
	9	Western part of Kotgau	Landslide
	10	Simlegau area, Bardim area, Hadikholagau	Landslide
	2	Pandar area, Walmo, Sumle, Eastern part of Rajgau, Edge cutting of Midim khola and Hadi khola	Landslide, edge cutting
	3	Kamdun and Khagum area	Landslide
	4	Sudi area, Ramje area, Kama area, Talinu area,Syauda area, Lower part of Kholasonthar dada, Ghamrukharka	Landslide
	5	Rudi khola and Chhedewa khola area, Singdi,Sigu area	Landslide
	6	Pasgau area, Pasgau pakho	Landslide
	7	Bhonje area, Raksi khola edge cutting, tallo Charagau, Sasarau	Landslide, edge cutting
	8	Tamukot,Lower part of Mapin, Edge cutting of Midim khola,	Landslide,edge cutting
	9	Southern part of Gilun,upper part of Rudi and Pandhara dovan	Landslide
Dudhpokhari RM	1	Charthar area, upallo Nisimro, Chitre area, Patle area, Dadagau,kallabati, Nayagau,Kunaswara, edge cutting of Chepe khola	Landslide, edge cutting
	2	Palje area,Kyukodada, Syalme, Baledada area, Bichaur Marathagau,Edge cutting of langdi khola,	Landslide, edge cutting
	3	Phulingiri Madi, Thulo Kapre,Edge cutting of langdi khola	Landslide, edge cutting
	4	Kuyale, Muge Bazar area, Keureni Digau and its upper part, Archele, Jamunedada, Swargabas, Edge cutting of Chepe and	Landslide, edge cutting

		Kri khola	
	5	Kolki area and its eastern part, Ramche area, Bandeswara, Bansarbesi, Kotod and Northern part of Kotod Edge cutting of Chepe	Landslide, edge cutting
	6	Hau, Natheswara, Lakhjun and its southern part, eastern part of Jaubaridada	Landslide
Dordi RM	1	Sirubaribesi, sirubari, Thulaghar, Bikharka,Jhughara,Edge cutting of Tardi khola	Landslide, edge cutting
	2	Archalbot, Pipar Bhanjyang, Thadswara, Bhaiswara, Edge cutting of Pyardi khola	Landslide, edge cutting
	3	Karabaridada area, Gairigau, Kamrakhu	Landslide
	4	Jitaurephedi, southern part of Sikhra, Thulakhet phat area,lamidada, northern part of Jireswara,eastern part of Jumdada,Edge cutting of Lamidada khola and Kisedi khola	Landslide, edge cutting
	5	Arubotbesi, Wakswasra, arubot, Jamtudada, Tallo Pachok, Kaichi, Simrodada, Phrumche, barigau, Chhaigau, Edge cutting of Kisedi khola	Landslide, edge cutting
	6	Chhuswara, Lodo khola area, Goth kharka, Dudh khola area	Landslide
	7	Phateni, Dailun, Phadka, Lausibot, Malagyu, Upper part of Dordi khola, Edge cutting of Dordi khola	Landslide, edge cutting
	8	Tao, Paswara, Bansar area, Edge cutting of Dordi, Pagi and Chhanoi khola	Landslide, edge cutting
Marsyangdi RM	1	Kalau area	Landslide
	2	Saituti area, Probi, Sabje, Ghimrun, Edge cutting of Khudi khola,Ghimrung Khola and Thule khola	Landslide, edge cutting
	3	Topu, Khudi bazaar, Dhadu, Purangau, Dhagai, Dhagibesi, Thakan area, Sirunbeshi, Edge cutting of Khudi khola and Marsyangdi River	Landslide, edge cutting
	4	Nalu khola area, Ghoptegau, Kabre, Chhapagau, Mipra area, Syage area, Purano Jagat, Chyamche,Edge cutting of Marsyangdi River and Syaga khola	Landslide, edge cutting
	5	Badalbisauna, Khanigau, Chhichu, mathillo Chipla, upper part of Koyeprdkyu khla, Sattale area,Edge cutting of Marsyangdi River and Koyeprdkyu khola	Landslide, edge cutting
	6	Thulibesi, Sanla, Naiche, Dahare, Upper part Nadi khola, Edge cutting of Nadi khola	Landslide, edge cutting
	7	Upper part of Upallobesi,Kolkoche area, Upper part of Taban, Edge cutting of Siuri khola	Landslide, edge cutting
	8	Bandre area	Landslide
	9	Lamagau, Bhalamchaur area	Landslide
Rainas RM	1	Simlegaun, Chapswara,Damadhunga,Seltar	Landslide
	2	Tinghare area,Edge cutting of Borang khola	Landslide
	3	Rimidada,Gaurigau, Northern upper part of Timure	Landslide
	4	Manegauda area	Landslide
	6	Manegauda area, Gaebote and northern part of Gaebote, Phulbari area	Landslide
	7	Edge cutting of Marsyangdi River	Edge cutting
	8	Neupanedada, Amledada area	Landslide
	10	Sisneri, Pyarjun dada area	Landslide

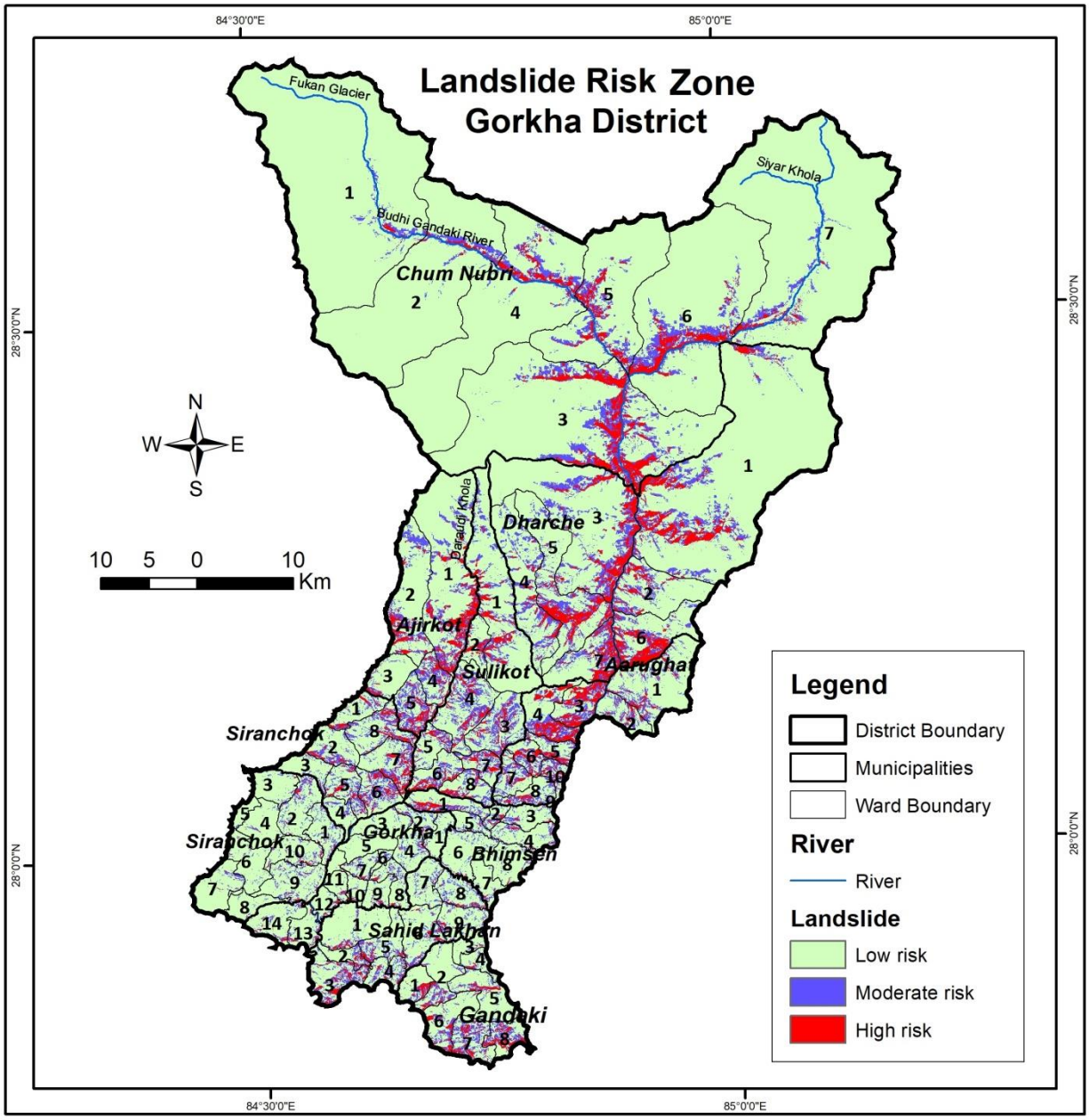

Lanslide Risk Zone
Lamjung District
N
W
E
S
84°15'0"E
84°30'0"E
84°45'0"E
28°30'0"N
28°15'0"N
28°0'0"N
Marsyangdi
Kohlasothar
Besisahar
Dordi
Dudhpokhari
Sundarbazar
Madhya Nepal
Rainas
10 5 0 10
Km
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk

Gorkha District

Rural Municipality (RM)/ Municipality	Ward	Locations of Landslide	Potential Hazard
Palungtar Municipality	1	Edge cutting of Daraudi River	Edge cutting
	2	Karki Gau, Simpani area	Landslide
	3	Bhandarthok	Landslide
	9	Chherak Area,	Landslide
	10	Edge cutting of Kher khola and Dhau khola	Edge cutting
Gorkha Municipality	2	Ahale Bhangjyang area	Landslide
	4	Eastern part of Toikepani area	Landslide
	6	Lower part of Gorkha Bazaar	Landslide
	7	Edge cutting of Khol khola	Edge cutting
	8	Southern part of Khalte,Khamarebesi	Landslide
	9	Southern part of Shikhar	Landslide
	10	Northern part of Ludi khola	Landslide
	11	Northern part of Ludi khola	Landslide
	12	Edge cutting of Ludi khola	
	13	Dadagaun,Edge cutting of Ludi khola	Landslide
Sahid Lakhan RM	1	Bakreswara, Galdhuk,Bakreshwari	Landslide
	2	Khaltepani area	Landslide
	3	Nibhare area,Gyajhadada area,Bhawantar, Kewarapani area, Edge cutting of Trishuli River and Marsyangdi River	Edge cutting, Landslide
	4	Dhadegau area, Edge cutting of Trishuli River and Judhi khola	Landslide, edge fall
	5	Thumsidada, edge cutting of Dovan khola	Edge cutting, Landslide
	6	Baskotgau, Southern part of Dharchegau	Landslide
	7	Basantegau area	Landslide
	8	Bahi khola edge cutting	Edge cutting
	9	Kholaparigau, Ganigau	Landslide
Gandaki RM	1	Eastern part of Dadagaun and southern part of Devisthan	Landslide
	2	Gyabintar, Bhedabari area, Edge fall of Trishuli River, edge cutting of Pashupati khola	Edge cutting, Landslide
	4	Deurali area	Landslide
	5	Northern side of Gamnsur khola (Keurani area,Darbunphat area)	Landslide
	6	Thumka, Kautikhet, northern part of Korak, Gadhaibesi, Edge fall of Trishuli River	Landslide, edge fall
	7	Badala, Darshandada, edge fall of Trishuli River	Edge fall, Landslide
	8	Lower part of Toriswara, Churedada, upper part of Lambu khola, Dhobadighat, upperpart oa Ghalchok, Pallotar area, Edge fall of Trishuli River and Budigandaki River	Edge cutting, Landslide
Bhimsen RM	1	Northern part of Masel khola	Landslide
	2	Khamare rea, Southren part of Okhle, Birupalo area	Landslide
	3	Chautara area, Edge cutting of Budigandaki River	Edge cutting, Landslide
	4	Baddada area, Edge cutting of Budigandaki River	Edge cutting, Landslide,

	5	Kathekholagau	Landslide
	6	Lower part of Barrabote	Landslide
	7	Edge cutting of Budigandaki River and Jyadu khola	Edge cutting
	8	Phedi khola dovan	Landslide
Siranchok RM	1	Khani khola area, easternside of Siranchaur	Landslide
	2	Ramcheamune area, northern part of Khar khola	Landslide
	3	Nawalpue area	Landslide
	4	Phirphire area	Landslide
	5	Bashetgau,Chhoprek area, Western part of Bokse khola, eastern part of Pam	Landslide
	6	Sakhu area, Mathillo gakhu area, tallo Gakhu area,Dhansadada area	Landslide
	7	Jhulungebagar, Shikhar Bhaite, Damalgau area, Sano Dhorani, Kapare area, Kapuswara, Southern part of Goredada, Edge cutting of Daraudi River and Khahare khola	Edge cutting, Landslide
	8	Northern side of Ladi khola, Kalimati area,Edge cutting of Daraudi River and ladi khola	Edge cutting, Landslide
Arughat RM	1	Chhuwardada area, Shyamchet area, Majhgau area, Dhunchet khola area,	Landslide
	2	Bharendada area, Patalekharka	Landslide
	3	Southern Part of ward 3 (Keurepani, Dharapani, Sorangau area), Northern part of ward 3 (Deurali, Shyamran, Soti, Armala, Edge cutting of Budigandaki River	Edge cutting, Landslide
	4	Dharche dada,Westrrn part of Thanti, Thumi, Kokhetar, Buddhigaira, Nebot pokhari, Gundhumu, Edge cutting of Budigandaki River and Arkhet khola	Edge cutting, Landslide
	5	Northern part of samara khola	Edge cutting, Landslide
	6	Khahare khola and Andheri khola area	Landslide
	7	Kalleri, Dadapari, Istul khola area	Landslide
	8	Deurali, Lambagar	Landslide
	9	Edge cutting of Budigandaki River	Landslide
	10	Simarphat,Khatriswara,	Landslide
Ajirkot RM	1	Lower part of marsyu khola, Sadkhola Muhan area, Chisan area, Pachgau, Kharbari area, Dhansira area, Chamrau, Soda, Nilmu, Basbot, Dewalswara, Kaldunswara, Sayagau, Salghari, Edge cutting of Daraudi River, Sad khola and Mahabhir khola	Edge cutting, Landslide
	2	Pos area, Khinpu area, Chiskharka, Olan area, Bhirkuna, Gartatol, Edge cutting of Chepe khola, Syalle khola and Sadi khola	Edge cutting, Landslide
	3	Northern part of Kundung khola, Batase area	Landslide
	4	Mahabhir area, Sirandada, Patle, Harenghaderi, Sirbari area, Edge cutting of Daraudi River and Mahabhir khola	Edge cutting, Landslide
	5	Chanaute area, Manigau area, Ramche, Ghalyabari, Sotekhola area, Lambagar, Sabdirgau, Darbote, Edge cutting of Daraudi River and Syangdi khola	Edge cutting, Landslide
Sulikot RM	1	Upper part of Daraudi River, Pauko khola dovan area, Rumsalkharka area, Syamet, Birujun, Edge cutting of Daraudi River, Chhicha khola and Sherma khola	Edge cutting, Landslide

	2	Barpak area, Shan area, Chhatan area,Rangrun khola area, Pokhari, Edge cutting of Daraudi River and Rangrun khola	Edge cutting, Landslide
	3	Thulogau, upper part of Chitre, Istul khola area, Sisapani area, Thotneri area	Landslide
	4	Saurpani, Arubot, Chanaute area,Hudi khola and Apeng khola dovan area,banchok area, Tallo Simle, Chhahare khola and Adheri khola dovan area,Ranchok area	Landslide
	5	Hudipariban area, Northern part of Hudi khola area	Landslide
	6	Bhaluswara, tallo Masar, Southern part of Keurepani, Southern part of Manun,Edge cutting of Jarang khola	Edge cutting, Landslide
	7	Amle area,Upper part of Khanikhola,Northern part of Daune khola	Landslide
	8	Northern part of Jarang khola,Dhawaridhan, Pandrun	Landslide
Chumnubri RM	1	Burchu and Kasupan area near Samagau,	Edge cutting, Landslide
	2	Side cutting of Budhigandaki River (Ningau, Hunbugau, Gomdan, Linlin)	Edge cutting, Landslide
	3	Side cutting of Budhigandaki River(Bansani, Philim, Nagjet, Sirdibas, Paimo, salleri, Jagat), Northern part of Chhilung khola area, Bhalu khola area and Ghatta khola area,	Edge cutting, Landslide
	4	Side cutting of Budhigandaki River (Tala,Suksam, Gap, Prok, Chhak), Tom khola area	Edge cutting, Landslide
	5	Side cutting of Budhigandaki River (Burbihi, Ranagau), Serang khola area(Krayak, Syaran),Dyang khola area, Baiahuk area,Durjunkharka	Edge cutting, Landslide
	6	Northern Part of Syar khola (Tharun, Taju,Chumlin, Kowa), Sarpukharka area, Ribukharka	Edge cutting, Landslide
	7	Chhokun,Rachen gumba, Southern part of Rachen gumba	Edge cutting, Landslide
Dharche RM	1	Southern part of Landan dada, Yaru khola area,northern part of Dovan khola,Indur area	Edge cutting, Landslide
	2	Side cutting of Budhigandaki River, Samno khola area,Rumchet khola area, Kerauja, Machhakholagau, Miujut khola area	Edge cutting, Landslide
	3	Phabang khola area,Nimrung khola area, side cutting of Budhigandaki River, Lhakpa,Maiku,Renbon,Lisyapu, Mindapuk,Khorlabeshi,Lower part of Khorla	Edge cutting, Landslide
	4	Laprak village,Northern part of laprak, Malong khola area,	Landslide
	5	Northern part of Machhakhola, Sinla, Gumda area, Sinladada area, Lapsibot area	Landslide
	6	Side cutting of Budhigandaki River, Chame khola cutting (Khanibesi, Chamakharka), Yarsa khola cutting, Yarsa, Yarsa dada, Phalban	Edge cutting, Landslide
	7	Side cutting of Budhigandaki River, Khanibesi, Lapubesi, Lapu, Lidin, Bhirkuna, Potgaun	Edge cutting, Landslide


Landslide Risk Zone
Gorkha District
84°30'0"E
85°0'0"E
28°30'0"N
28°0'0"N
Fukan Glacier
Budhi Gandaki River
Siyar Khola
Chum Nubri
Dharche
Barauti Khola
Ajirkot
Sulikot
Aarughat
Siranchok
Gorkha
Bhimsen
Sahid Lakhan
Gandaki
N
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S
10 5 0 10
Km
Legend
District Boundary
Municipalities
Ward Boundary
River
River
Landslide
Low risk
Moderate risk
High risk

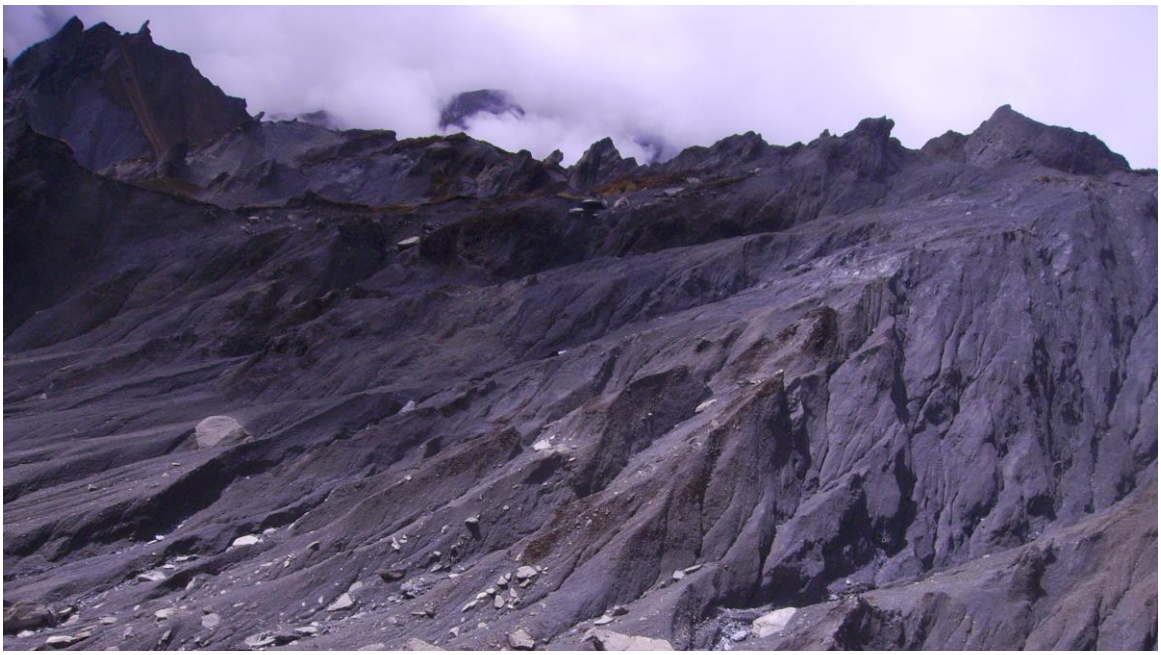
APPENDIX – VII
PHOTO PLATES

Interaction Program on Hazard Mapping of Gandaki Province with Hon. Chief Minister Prithvi Shubba Gurung, Minister Hari Bahadur Chuman, Secretary and other VIP personnel at Internal Affairs and Law, Pokhara

Beni Bazar, Myagdi district: high flood risk area by Kaligandaki River

Landslide: Andheri Khola, Annapurna Rural Municipality, Kaski

Seti Flood: Seti Dam, Pokhara



Landslide: Sabche Cirque, Seti River headwater area of Kaski

Bansbot, Hemja, Pokhara -25: Damage agriculture land by Landslide

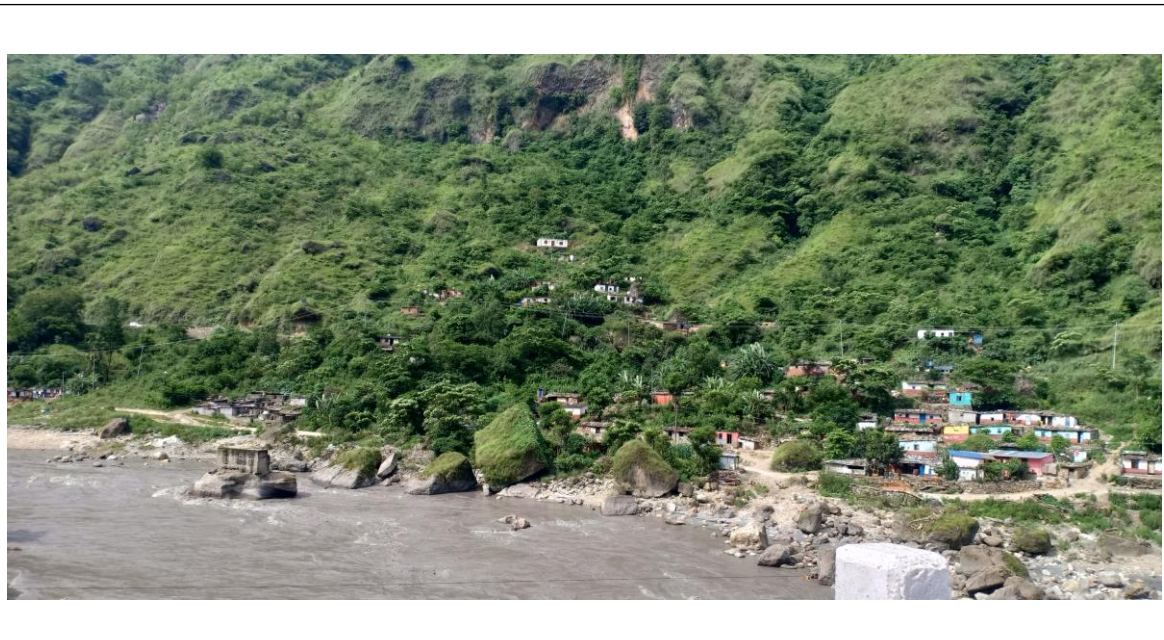
Tal Gaun, Manang: Both, landslide and flood risk hazard

Landslide Hazard: Chame Rural Municipality, Manang

Local Interaction: Bungdikali Rural Municipality, Nawalpur

Bhimad Bazar: Near the Seti river

Flood: Phewa lake headwater area



Maldhunga, Parbat: Human encroachment

APPENDIX -VIII

PERSONS CONTACTED DURING THE PERIOD OF FIELD STUDY

District	Related office	Designation	Name	Contact
Syangja	D.Co. Committee	Vice Chairman	Dilip Kumar Bagale	9856028023
Syangja	D.Co. Committee	D.Co. Officer	Bishwo Prakash Aryal	9856009222
Syangja	D.Co. Committee	Social Mobilizer	Dolraj Dhakal	9856050692
Syangja	Dist. Adm. Office	Account Officer	Dinbandhu Poudel	9846052095
Syangja	Putalibazar Municipality	Information Officer		
Manang	Chame RM	Chairman	Lokendra B. Ghale	9856049531
Manang	Chame RM	Adm. Officer	Ganga B. Thapa	9856049270
Manang	Annapurna SS, Manang	Teacher	Bikal Paudel	9846550085
Manang	Chame RM	Ward no. 3, Member	Prem K. Shrestha	9846229777
Lamjung	Besishahar Municipality	Chairman	Guman Singh Aryal	9856046510
Lamjung	Besishahar Municipality	Infromation Officer	Mohan Marasini	9856009111
Lamjung	Besishahar Municipality	Program Officer	Meghendra Pokheral	9856046209
Lamjung	Dist. Traffic Office	Head Constable	Bhumi Raj Ghimire	9846050448
Lamjung	Dist. Adm. Office	Accountant	Shiva Pujan Mandal	9856049225
Lamjung	Dist.Coordination Committee	Member	Nanda Ram B.K.	9846089926
Lamjung	WASH Office	WASH Program Officer	Shiva Prasad Devkota	9841854685
Lamjung	RCDC	Executive Officer	Prem Bhattarai	9856065111
Lamjung	RCDC	Program Officer	Promod Ghimire	9856046462
Lamjung	RCDC	Project Officer	Bikram Sedai	9846634709
Baglung	Dist. Adm. Office	Adm. Officer	Dhirendra Raj Panta	9857634444
Baglung	Dist. Adm. Office	Infromation Officer	Keshav Lamichhane	9841146378
Baglung	Dist. Traffic Office	Constable	Amrit GC.	984479359
Baglung	Dist.Coordination Committee	Accountant	Laxmi Prasad Poudel	9847624941
Baglung	Dist.Coordination Committee	Khariddar	Govinda Sharama	9857622131
Baglung	Baglung Municipality	Adm. Officer	Yukta Prasad Subedi	9857621416
Parbat	Dist. Adm. Office	Ass.CDO	Chabi Lal Subedi	9857656777
Parbat	Dist. Adm. Office	Ass.Officer(Nasu)	Narayan Poudel	9857623577
Parbat	DEOC		Laxman Bista	9807498893
Parbat	Dist.Coordination Committee	Section officer	Kamal Pun	9846034190
Parbat	Dist. Traffic Office	Assistant Sub Inspector	Ram Krishna Gauli	9841492900
Parbat	Dist.Coordination Committee	Ass. Officer(Nasu)	Devi Sharama	9847623949
Tanahu	Dist. Adm. Office	Adm. Officer	Lok Raj Subedi	
Tanahu	Dist. Adm. Office	Adm. Officer	Ram Prasad Dhakal	

Tanahu	Dist.Coordination Committee	Kharidar	Ek Bahadur Rana	9846147305
Tanahu	Byas Municipality	Deputy Mayor	Mira Joshi	
Tanahu	Byas Municipality	Information Officer	Bishal Pandit	9846770102
Tanahu	Byas Municipality	Section Officer	Bimal Giri	9856060173
Tanahu	Maygde RM.	Chairman	Maya Devi Ale	9846090831
Tanahu	Maygde RM.	Adm. Officer	Daya Ram Tiwari	9856063108
Tanahu	Shuklagandaki Municipality	Information Officer	Trilochan Lamsal	9856022181
Tanahu	Dist. Traffic Office	Main Officer	Purna Bhadur Adhikari	9856090799
Tanahu	Bhimad Municipality	Ward Chirman 6	Shyam Sundar Shrestha	9856072506
Nawalpur	BungdiKali RM.	Ass. Chairman	Maya Devi Shrestha	9857041054
Nawalpur	BungdiKali RM.	Surveyor	Ramesh Uperkoti	9866581700
Nawalpur	BungdiKali RM.		Shayam Shrestha	9856037653
Nawalpur	BungdiKali RM.	Business Man	Tanka Pulami	9816155354
Nawalpur	BungdiKali RM.	ward chairman 4	Man Bdr. Saru	9857041192
Nawalpur	BungdiKali RM.	Ward Secretary 4	Lal Bdr Khatri	9857040071
Nawalpur	Dist. Traffic Office	Head Constable	Padam Batu	9857040543
Nawalpur	Dist. Traffic Office	Constable	Shree Ram Kurmi	9869241634
Nawalpur	Madyebindu Municipality	Business Man	Rajesh Shestha	9857041807
Nawalpur	Dist. Adm. Office	Adm. Officer	Ananda Sharama	9849180058
Nawalpur	Kawasoti Municipality	Enginner	Pawan Rupakheti	9857041415
Nawalpur	Dist. Coordination Committee	Voice Chairman	Sarada BK	9857040478
Nawalpur	Dist. Coordination Committee	Officer	Krishna Prd Lamsal	9855069159
Gorkha	Dist. Adm. Office	Asst. CDO	Pusparaj Poudel	
Gorkha	Dist. Adm. Office	Adm. Officer	Gautam Bhandari	9846068111
Gorkha	Dist. Coordination Committee	Chairman	Ashok K. Gurung	9856043443
Gorkha	Dist. Traffic Office	Asst. Officer	Dayaram Paudel	9856090518
Gorkha	GMALI	Asst. Officer	Puspa Ghale	9806602404
Gorkha	Gorkha Municipality	Environment Officer	Dhurwa Ghimire	9841474207