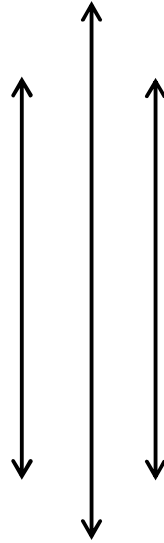
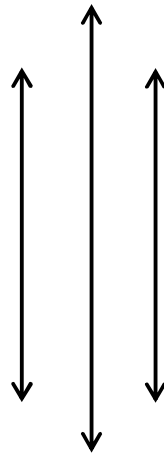


Country Paper  
on  
**Disaster Risk Reduction Management in Nepal**



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## **Abstract**

Nepal is youngest republic country in the world. The country covers an area of 147181 square kilometers between China and India. Nepal lies in the southern slopes of Himalayas in its central part. The country faces different kinds of disasters such as earthquake, landslides, floods, drought, Glacial Lake Outburst Flood (GLOF) etc.

The most potential and notable are the GLOF and avalanches in the Himalaya, landslides and floods in the Hills and water logging and flash floods in Terai as well as earthquake every where.

All these disasters consume lots of government fund every year and affecting in socio-economic development as well as poverty reduction.

This paper attempts to highlight the present situation from the perspective of professional involved in disaster management and recommend future direction for Disaster Risk Reduction Management in Nepal.



## Country Profile:

### **Introduction**

Nepal is a youngest republic country in the world. It has declared Federal Democratic Republic in 28 May, 2008. Nepal has always been an independent and sovereign country with glorious history, culture and tradition that date back to time immemorial.

It has biggest natural museum in the world. Nepal is of the one richest country in the world in terms of bio-diversity due to its unique geographical position and latitudinal variation.

### **Location and Size**

Nepal is a landlocked country and located within the latitudes of 26° 22" to 30° 27" north and the longitudes of 80° 4" to 88° 12" East. It covers an area of 147,181 square kilometers between the India and China.

### **Ecological**

The country is divided into three broad ecological regions e.g. mountains, the hills and the plain area in the south. On an average, it extends to 885 kilometers in the east-west direction and 193 kilometers in north-south direction with a vast difference in elevation that ranges from 70 meters in south to 8848 meters in the Himalayas. The terai plain occupies about 17% of the total area of the country while the rest is hills (68%) and high mountains (15%).

### **Administrative**

The country is divided into five development regions, 14 zones and 75 districts, 58 Municipalities and 3913 village development committees (VDCs). But newly elected constituent assembly and Governments of Nepal has already committed for restructuring the country on Federal System. It will be changed drastically in future.

### **Demographic**

Nepal is an ethnically diverse country. Here, several race, caste, tribes, languages and religious people living with harmony and united. The Nepalese population consists of Indo-Aryan and Mongol races. Two major religions Hinduism and Buddhism, have molded the country's cultural fabrics. Likewise Muslim, Christians and other religions are also in practice. Recently Nepal is declared as a secular country.

The country has approximately 27 million populations with annual growth rate of 2.25% average. Life expectancy about 63 years, literacy about 65% and urban population in the municipalities comprise 14.8% of the total owing to migration from the mountains to the plains and towns there is a tendency to neatly equalize the mountains and the terai plain population.



## **Economy**

The agriculture sector dominates Nepal's economy, accounting for about 41% of GDP. The per capita income is about USD 290. The economic growth rate as compared to the population growth rate has remained stagnant over the past few years (Growth rate 2.2%). Thirty-one percent of people live below the poverty line. About 80% of the population is engaged in agriculture.

## **Temperatures**

The plain area (southern lowlands along the Indian boarder) has a warm and humid climate. It is the hottest part of the country with summer temperature up to 45°C in June/August and down to 5°C at night in winter. In the hills, the climate is mild and pleasant for most of the year, falling to about 0C at night in November/February. The mountains are chilly all year round and below freezing in winter.

## **Rainfall**

The mean annual precipitation is about 1500mm, varying according to the location. Generally, 80 percent or more of the rainfall is experienced during the monsoon season. The winter is rather dry in most part of the country. Annual rainfall varies around 300mm in the northern and western areas to over 2500mm in the eastern region. The south eastern part of the country receives high rainfall. The high rainfall in Nepal is during June to September.



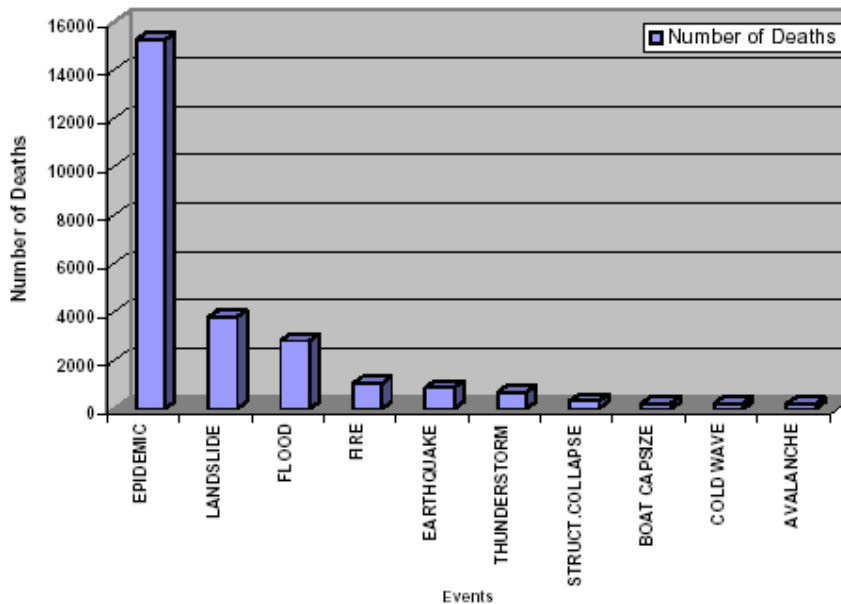
## Disaster Profile

Nepal has unfavorable natural conditions like fragile geology and steep topography make as one of the most disaster prone country in the world. It faces high magnitudes and intensities of a multitude of natural hazards such as flood, landslide, earthquake, fire, hailstorms, and Glacier lake outburst flood (GLOF), cloudburst, drought and epidemics. Industrial accidents, explosion, traffic accidents and hazardous events associated with poisonous substances are also recorded.

## Natural Hazards

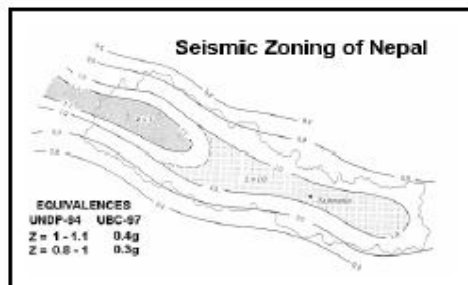
Different departments of Government have made significant efforts in the past in mapping the natural hazards of Nepal. A variety of geologic, hydrologic, climatic hazard maps has been prepared at various scales by the respective technical departments of the government and other agencies. Many of these maps are available in the public domain. The scale usually is 1:100,000 or smaller. Such maps are useful for development planning and for disaster risk management.

Ten Most Lethal Hazards in Nepal (1971 - 2005)

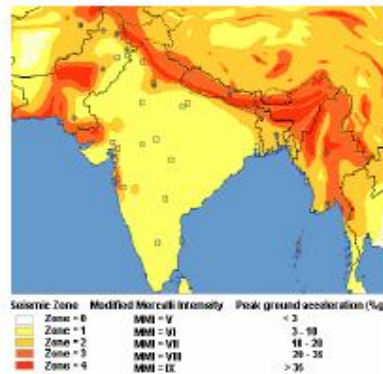


(Source : NSDRM Draft, 2008)

Seismic Hazard Map of Nepal

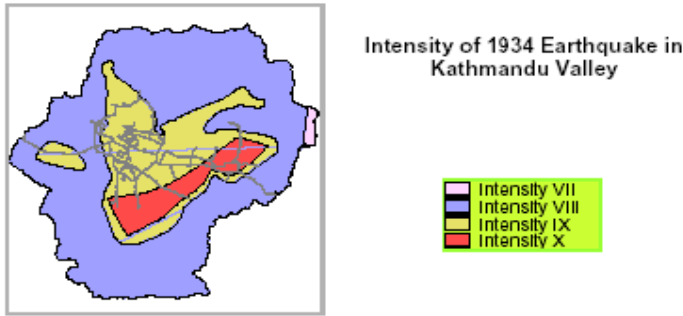


Source: Building Code of Nepal



Source: Munich re, 2001





(Source: Global Seismicity Hazard Assessment Program (GSHAP))

The major kinds of disaster in Nepal:

a) Landslide

The causes of landslide in Nepal are natural as well as man made. Geomorphology of Nepal is very fragile and most of the parts of country fall under seismically active zone. In general the middle hills are prone to landslides. The natural phenomena like heavy rainfall, active geotectonic movements, deforestation and disturbance of hill slopes are also the major causes for occurring landslides.



b) Flood

The topographical feature of Nepal is mainly responsible for flood. Flood is caused by heavy precipitation which may occur at any place except high Himalayan region during the monsoon season. In general Terai, southern belt, are prone to floods and flash floods. The flood of July 1993 was the most devastating.



c) Earthquake



Nepal falls under the seismically active zone mainly due to the subduction of Indian plate under Tibetan plate. The seismic record of Nepal is available since 1255 AD. After that, a series of earthquake occurred in Nepal. Major are in 1408, 1681, 1810, 1833, 1866, 1934, 1980 and 1988 AD. According to the seismological center of Nepal medium and small size earthquake event occur in different part of Nepal frequently

**Table 2: Direct Losses due to Earthquakes (1970-2003)**

Item	Number	Value of direct losses (NR)
<b>Total number of events</b>	<b>22</b>	
Death	876	
Injury	6,840	
Affected	4,539	
Buildings Destroyed	33,706	8,200,838,000
Buildings Damaged	55,234	1,309,606,450
Livestock death	2,215	11,075,000
Total loss at present value (NR)		9,566,605,507
Average loss per year due to earthquake		289,897,136

(Source: NSDRM Draft, 2008)



## d) Fire



About 86% of the population of the country inhabit in the rural areas mainly in thatched houses closely clustered where fire hazards are likely to be common. The forest fire usually outbreaks during dry season.

## e) Glacier Lake Outburst Flood (GLOF)

The impact of climate change has caused GLOF as a major threat in Nepal. GLOF affects high himalayan region as well as down stream by extremely damages of lives and properties. Major events shown in past were Tamor Koshi (1980), Sun Kosi (1935, 1981), Dudh Kosi (1977, 1985), Arun (1968, 1969, 1970) etc. Now Tsho Rolpa and Emji Glacier Lake are in most vulnerable stage according to researcher.



## f) Others

The epidemic of daiherea, encephalitis, meningitis is common during hot and rainy season. The lightning, hailstorm are other natural disaster. The sudden avalanche and heavy snow fall in winter season sometimes cause heavy loss of human lives and properties.

**Table 3: Disaster Losses in Nepal during 1971 – 2006 (37 Years)**

S. No.	Events	Death	Injury	Peoples Affected	Buildings destroyed	Buildings damaged	Land Loss (Ha)	Livestock Death	Reported Direct Loss (Million NRs)
1	DROUGHT	1	-	1,512	-	-	329,332	-	10
2	EARTHQUAKE	873	6,842	4,539	33,710	63	-	2,257	22,8337+50
3	EPIDEMIC	15,529	37,773	323,896	-	-	1	78	0
4	FIRE	1,081	735	218,128	62,634	2,762	352	113,922	6,244
5	FLOOD	2,864	349	3,315,781	70,115	1,041	196,955	31,117	3,713
6	FOREST FIRE	24	13	10,178	1,698	18	3,173	82	1,031
7	LANDSLIDE	3,899	1,188	480,069	16,779	1,209	21,797	9,046	835
8	OTHER	2,385	2,670	360,725	3,917	388	290,323	79,935	2,030
	<b>TOTAL</b>	<b>26,656</b>	<b>49,570</b>	<b>4,715,828</b>	<b>188,875</b>	<b>5,482</b>	<b>841,954</b>	<b>236,459</b>	<b>13,885</b>

Notes:

1 Epidemics means peoples seriously affected, hospitalized etc by epidemic events

2 The number "0" does not mean that the events were not occurred, it does mean the event is not reported.

(Source: NSDRM Draft, 2008)

An inventory of past disastrous events during 1971-2007 reveals that epidemics, landslide and floods takes the largest toll of life every year, and urban or rural fire are the principle hazards in terms of their extent and frequency of occurrence as well as the spread and intensity of physical and socio-economic impacts. Earthquake is a major potential hazard to reckon with – the country is located on an active seismic belt and the exponential urbanization trend over the past decade with general disregard of earthquake-resistant measures in building construction is the cause of ever-increasing earthquake risk.

## **Disaster Risk Reduction Management Framework:**

### **A) Policy**

For the first time Government of Nepal has included Disaster Management Programs in the 10th National Development Plan and it is hoped that this attempt would be a landmark in the history of Disaster Management. Furthermore, separate chapter is provided in the 3 years Interim Plan (11th Period Plan, 2007-2010).

i) The 10th plan had set its objective as "to contribute substantially to make the public life secure by managing the natural and man made disaster systematically and effectively and by making the development and construction related programs in the country sustainable, reliable and highly gainful." To achieve the objective the following strategies have been adopted:

- While formulating plans and policies on natural and man made disaster management, emphasis will be give into the use and development of technologies that lessen harm on natural disaster and environment.
- The relief and rescue activities that are provided to the disaster affected families by the state will be made transparent. Emphasis will be give to enhance awareness regarding natural disaster management.
- The seismological measurement center and the natural disaster management center established in the country will be strengthened.

To support the strategies mentioned above, the following policy and programs will be operationalised during the plan period:

- Use of technologies to minimize the risk of natural disaster and environmental impact in the formulation of plans and policies.
- Reliable measures will be taken in rescue and relief activities.
- Strengthening of seismological measurement center and natural disaster management.

ii) 3 Years Interim Plan, 2007-2010 has following vision, objectives, strategies and programs set out for Disaster Risk Management:

### **Long Term Vision**

The vision is to minimize social and economic loss and damage caused by disasters.

### **Objective**

The main objective is to promote the security of life and property from the hit of natural disasters through sustainable, environment-friendly and result oriented development by making disaster management practices efficient, competent, strengthened and effective.

### **Strategies**

The following strategies will be adopted for the management of disasters:

- Emphasis will be given to develop and apply environment-friendly systems in development and construction works.
- For the mitigation of risks of natural disaster, appropriate information flow and pre- disaster preparedness will be made.
- To strengthen collaborative works between the government, non government and private sector for rapid response and recovery to those affected by disaster.



**Policy and Working Policies**

- Provisions relating to EIA and natural disaster assessment will be strengthened prior to the implementation of infrastructure construction.
- Timely reforms will be made on policy and institutional mechanisms in relation to the mitigation of risk of natural disasters.
- Appropriate mechanisms will be developed to strengthen the collaborative works among the government, non-government and private sector in order to deliver the quality service on response and recovery measures to the people affected by disasters.
- Awareness programs will be run to enhance the participation of the community organizations and the general public in order to mitigate and reduce the risks of natural disasters.
- Emphasis will be given to pre-disaster preparedness by advancing the process of identifying areas with high risk from disasters and their mapping works.
- To strengthen the Ministry of Home as a competent central coordinator for the disaster management by enhancing the capacity of agencies and human resources associated with disaster management.
- Technology for making weather and climatic forecasts robust will be used.
- Soil erosion, landslides, flood and river control works will be implemented in an effective way.

**Programs**

- National strategy formulation and implementation
- Awareness programs
- Disaster competence enhancement program
- Rescue, relief and rehabilitation preparedness programs for the disaster affected
- Study and research program
- Identification and mapping of disaster prone zones
- Storage of relief and rescue materials
- Enhancement of the involvement of local bodies and communities in the prevention works on landslide, river control and soil erosion.

iii) Revisited National Action Plan, 1996, submits in WCDR.

IV) Other Sectoral Plan and Policies

**B) Legal Framework**

i) In 1982 the Natural Disaster Relief Act came into existence, which was amended thrice enunciating the significance of the pre-disaster and post disaster activities. It is the legal instrument for handling disaster in the country. A draft of the Disaster Management Act is under the process of finalization. It has covered all the segments of DRM.

ii) Local Self Governance Act, 1999

iii) Building Code, 1994

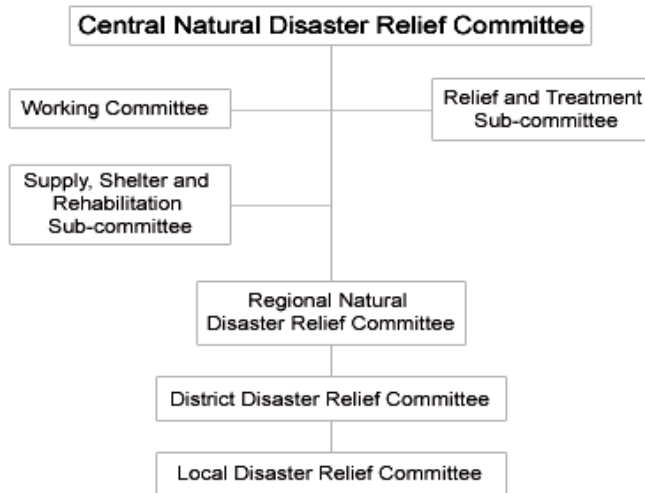
iv) And other sectoral Acts, Rules and Regulations.

**c) Institutional Framework**

As the national focal point, Ministry of Home Affairs is accountable to prepare national policies and ensuring its implementation. MoHA is also responsible for rescue and relief works, data collection, dissemination as well as and distribution of funds and resources to the affected population through the structured process.

There is structural network throughout the country set up under the provision of Natural Calamity Relief Act, 1982.





#### (i) Central Natural Disaster Relief Committee

A-30 member (24 permanent and 6 invited members) central Natural Disaster Relief Committee, represented by various disaster related ministries, has been constituted under the chairmanship of Home Minister. This committee can invite at its meetings the concerned Member of Parliament representing the district affected by natural disaster.

The main functions and duties of the Central Natural Disaster Relief Committee are:

- A) Recommend the Government to declare the area affected by natural disasters.
  - B) Formulation of the national policies regarding the Response and Recovery.
  - C) Pre-positioning of money, foodstuff, medicines, as well as NFRI.
  - D) To associate the social organizations in natural disaster risk reduction.
  - E) Formulation of volunteers group to support the victims of disaster.
- Direct the district and local committee on the matters related to Response and Recovery.
- F) Monitor the works specified by Government for the execution of natural disaster relief works.
  - G) Assessment of work progress report to Government.

#### (ii) Regional Natural Disaster Relief Committee:

The main functions and duties of the Regional Natural Disaster Relief Committee are:

- A) Provide necessary suggestions to the CDRC.
- B) Formulate regional and district level plans on natural disaster.
- C) Coordinate district disaster relief committees regarding disaster.
- D) Provide disaster related information to CDRC.
- E) Implement directions of the CDRC.

#### (iii) District Natural Disaster Relief Committee:

A 12-15 members Districts Natural Disaster Relief Committee represented by line agencies has been constituted under the chairmanship of Chief District Officer.

The Main functions and duties of the District Natural Disaster Relief Committee are:

- A) To coordinate or direct to coordinate among local committees regarding the natural disaster relief works.



- B) To formulate district level plan on natural disaster relief works and submit such plans to the regional committee.
- C) To monitor the natural disaster relief work conducted by the Local Committee and supports the ongoing works.
- D) To provide information to Regional Committee related to natural disaster relief works from time to time.
- E) To work in accordance with the directives of the Central and Regional Committee.

(iv) Local Disaster Relief Committee: Formulate as per requirement and will responsible for response and recovery.

Even though the establishment of Disaster Relief Committees at the central, regional, district and local level is possible, the committees at the central level (CDRC) and district level (DDRC) are functional and the local level (LDRC) have yet to operate on a regular basis. Efforts are underway to operationalise the regional (RDRC), which is chaired by the Regional Administrator.

As per the Act the other partners in this process are various Ministries, National Planning Commission and Non Government Organizations are also included in the present setup. Department of Water Induced Disaster (DWIDP) has been established to give special focus on water induced disaster and mitigate the adverse effect from it under the Ministry of Water Resources, likewise Department of Mines and Geology for seismological hazards.

Nepal is taking actively participants on the activities of UNISDR, ADRC, ADPC, SDMC and other national and international agencies for Disaster Risk Reduction.

#### Role of MoHA:

- Ministry of Home Affairs, which is also National Focal Point of Disaster Management in Nepal, has been taking initiation to address the issues of disasters and mitigate the adverse effect from it. We value very much interaction within country and sharing of experience with international organization working in this field.
- As a national focal point, Ministry of Home Affairs trying to develop appropriate policy related to the management of disasters.
- MoHA is doing various activities such as, the raising of awareness among the peoples, transfer of technology through training, networking with relevant national and international organizations and enhancing the capability of Government of Nepal to mitigate the impact of disaster.
- Rescue deals with the situation when the disaster occurs and the MoHA has started responding to the situation. It is in fact testing the preparedness of the community. Additional responsibilities are listed which come under roles of MoHA during disaster are as follows:
  - Coordinate and command to carry out rescue operation in such a way that nobody is left unattended with priority being given to disabled, old persons, women and children.
  - Monitor health conditions of the people in the community with the first priority.
  - Gives direction to the concerned authorities to the availing of portable drinking water and maintaining good sanitation condition and monitoring incidence of epidemics.
  - Distribution of relief materials to the people as required.
  - Coordinate rescue relief and operation being assisted by external institutions.
  - Directs security institutions in maintaining law and order situation in the area.



### **Challenges:**

In present, Nepal is facing following challenges:

i. Strategic Challenges:

As a main strategic challenge the lack of comprehensive act and regulation is considered. Present Natural Calamity Relief Act, 1982 is focusing only on post disaster activities. Lack of sufficient strategic plan for preparedness, mitigation and sustainable development are other pertinent issues.

ii. Social-Cultural Challenges:

The general faith of Nepalese people is that disaster occurrence is caused due to wrath of God. So, it is difficult to persuade them that disaster is not the curse of God.

iii. Economic and Technical Challenges:

High poverty caused incapable to implement programmes relating to preparedness and mitigation. As a result number of poor people is increasing every year. Inability to identify the alternative of livelihood and sustainable sectors are the major challenges.

iv. Legal Challenges:

Present law is focuses only on post disaster activities so preparedness and Risk Reduction works could not be effective. No clear role defined of GO/NGO and other stakeholders. It is considered that Legally Government is only responsible for Disaster Management.

v. Behavioral Challenges

Political, Administrative and Social customs preference is on talk than action. In addition, the trend of shifting responsibility rather than accepting challenges is another cruse of this issue. As well as, there is no pro-active culture for preparedness and risk reduction.



### **Counter Measures:**

In viewing weak socio-economic condition of Nepal there is a need to focus more on less expensive and sustainable Structural and non-structural counter measures, that can also help raise the over all awareness level of local communities towards disasters risk reduction. Despite the above challenges, appropriate policy measures could help to face the challenges. It is believed that if the following measures could be taken then the above mentioned challenges be solved to a greater extent:

A) Policy and Legal Reform:

- i. Formulation of New Policy
- ii. Revisit Act
- iii. Review of National Action Plan
- iv. Effective Implementation of Building Code
- v. Formulation and Revisit Sectoral Policies - water resources, forestry, climate change, Lifeline infrastructure etc.

B) Institutional Reform:

- i. Establishment of Independent Organization (Center to local level).
- ii. Establishment of National Platform.

C) Develop Professionalism

D) Use of Information Technology

E) Sharing of Knowledge between and among National and International agencies.

F) Promote Community Based Disaster Management.



### **Conclusion:**

Nepal faces myriads of hazards. It stands at 11th position to earthquake and 30th position to water induced disasters.

The Hindu-Kush Himalayas are one of the youngest mountain ranges in the world and has a fragile geological composition. Situated in the Himalayan range, which has unstable mountain terrain and high rate of precipitation during the monsoon have made Nepal a country vulnerable to natural disaster. So the management of disaster risk reduction is one of the burning issues for socio-economic development as well as poverty alleviation in Nepal.

The Ministry of Home Affairs is the focal agency with regard the disaster management in Nepal. It helps to formulate national policies and implements programs on natural disaster preparedness and mitigation, immediate rescue and relief works, data collection and dissemination and mobilization of funds and resources. It has its network throughout the country to cope with the natural disaster.

Presently Government of Nepal has set such a high priority to disasters reduction because it is also related to the reduction of poverty and can contribute much to the over all economic growth of the country. In future, Nepal should do policy intervention with political commitment for effective Disaster Risk Reduction Management (DRRM). In addition holistic approach would be an appropriate strategy.

Website: [www.drrgon.gov.np](http://www.drrgon.gov.np)

Sources: Various publications of Government & Non –Government organizations of Nepal  
Publication of UNISDR, UNDP, ADRC etc.

