1. General Information of Nepal

Nepal is a land -locked and mountainous country and is situated in the central part of Himalayas. It is divided into five geographical regions .There is the Tarai plain, Siwalik hills (curie Range), middle hill, high mountain (lekh), and High Himalayas (Himalayas and Bhot Valleys) regions.

Ecologically the country is divided into three regions: Terai, Hills and Mountains. Terai occupies about 17% of the total area of the country. This region consists of forests and fertile lands. It is called the food store of Nepal. Hill region occupies about 68% of the total land, which is full of green hills, valleys, rivers, lakes, waterfalls, streams, springs etc. Mountain region occupies about 15% of the land which is full of snow-capped mountains. Naturally, it has given ample opportunities to the people from different countries all over the world come to Nepal to see the spectacular views of the mountains offer and to enjoy mountaineering. Besides, many different ethnic groups and sub-groups live here. They comprise the Hindu, Buddhist, Muslim and Christian religions.

Table 1.1: Climatic Conditions of Nepal

Ecological Belt	Climate	Average Annual Precipitation	Mean Annual Temperature
Mountain	Arctic/Alpine	Snow/150 mm-200 mm	<3°c–10°c
Hill	Cool/warm Temperate	275 mm-2300 mm	10°c–20°c
Terai	Sub-tropical	1100 mm- 3000 mm	20°c–25°c

Source: National Water Plan, Ministry of Energy, Nepal.

Agriculture is the main source of livelihood and more than 80% of the population is engaged in agriculture. Nearly 18% of the total area of the country is cultivated out of total cultivable area, 66.8% area is irrigable and the rest is depending upon rain. The average annual rainfall of the country is about 1,530 millimeters. Nepal has five main categories of ecosystems i.e. forests, wetlands, rangelands, agro ecosystems, and mountain ecosystems .Over 39% of Nepal's total geographic area is classified as forest, of which at least 23% is forested. One quarter of Nepal's forest area is heavily degraded, which has led to loss of biodiversity, increased landslides, and soil erosion. Ecosystems linkages between the environment and livelihoods of communities such as ;Forests supplying fuel wood , Compost used as fertilizers on farms , Grazing areas for domestic animals, Wet land and rangeland products used to secure the livelihood.

Regarding the **water resources**, the country has more than 6000 rivers, 3252 glaciers in Nepal. Major river basins are Saptakoshi in the east, Narayani in the center, Karnali in the west and Mahakali in the western most boarders. Out of the four basins, the three

Saptakoshi, Narayani and Karnali originate from the Tibetan Plateau and enter Nepal crossing Himalaya rivers origin: Grade I - large range rivers originating from the high Himalayas. Grade II - medium range rivers originating from the middle mountains. Grade III - Small River originating from the Siwalik Range or in Terai.

The **population** of Nepal is close to 28 million with annual growth rate of 1.94%.The Country ranks 193 out of 210in terms of Gross National Income. More than 70% of the Population lives on less than US$2 per day. The literacy rate is 54.1% and nearly 25.4% of the population lives below poverty line. Annual GDP growth rate of Nepal is estimated 3.5% in 2009. Inflation rate is 13 % and total GDP for the year 2010 is estimated US $ 15.108 billion.86% of the total foreign trade comprises of imports and remaining 14% are exports, which results huge trade deficit in the economy.

The **total area** of the country is about 1, 47,181 sq .K. M. Altitude variation of is 67m to 8848m .Nepal is extending from 26 22', to 30 27', North Latitude and 80 4', to 88 12', East Longitude. It spreads145 to241 K .M. from North to South and 885k.m.from east to West .It is located in south Asia occupied only 0.01 % of the total landmass of the Earth and surrounded by the Tibetan Autonomous Region of the People's Republic of China in the North and India on other remaining sides.

Briefly explaining the **socio-political composition** of the Nepal, it is declared a federal republic in 2008. The country is still in the process of building a new federal republic constitution and concluding the peace process with an inclusive, equitable and modern state structure. To the date, Nepal is administratively divided into 5 Development Regions, 14 Zones, and 75 Districts. There

Nepal at a Glance:

Total Area: 147181 Sq Km (848 km L and 193 km B)
Elevation: 70 M to 8848 M High
Administrative division: 5 Region, 14 Zones, 75 Districts, 3913 VDCs and 58 Municipalities
Demography: 27.5 Million populations, 1.94 Per cent average growth rate, 102 ethnicity, 92 languages, and 6 religions
Socio- economic: 63.69 Year Life expectancy, 86.5 Per cent Literacy rate, 25.4 per cent poverty, 3.3 Per cent GDP growth, 13 per cent Inflation, HDI 0.428, GDP per capita US $ 536

are 3,913 Village Development Committees and 58 Municipalities. Religiously, 8o.6% populations are Hindus, 10.7% followed by Buddhist, 4.2%, Islam, 3.6% Kirat, 0.5%Christians, and 0.4% others. In March 2008 Nepal is declared as a not religious state.

2. Disaster Profile:-

Nepal is one of the disaster prone countries in the world, mainly due to geographical and geological features. The widespread poverty prevailing in the country and lack of awareness among the people contribute to increase the risk of disasters. Basically, flood, landslides, fire, road accidents are the major hazards prevailing in the country. People living in Nepal have also to cope with uncertain climatic changes, which are leading to slow or rapid onset of disasters every year. Communities livelihood systems which are based on indigenous knowledge, acknowledge the common threats due to such climatic variation, but it is found that this knowledge along is not enough to cope with the rigorous climate change patterns taking place in the present days. Nepal losses more than 3oo lives each year due to water induced disaster, which is likely to be aggravated further in coming years due to climate change.

Obviously, poor people are the most vulnerable to disasters than others as they do not have easy access to the resources and alternative options. To indicate few vulnerable people, marginalized or disadvantaged women and men, elderly, people with disability, children, and those already displaced by the natural or human induced disasters.

Nepal falls in the top 20th list for the most multi-hazard prone country in the world. The Country is also ranked 11th in terms of risk from earthquakes and 30th from the risk of floods and 4th from the risk of climate change in world hazard mapping[1]. According to the comparative data, major disaster that occur in Nepal are floods, landslides, fires, earthquakes, droughts, epidemics, glacier lake outburst floods (GLOFs), windstorms, hailstorms , thunderbolts, avalanches, heat wave, cold wave etc. Above them, floods, landslides, fires, and epidemics are the most recurrent disasters that cause huge losses of lives and properties every year.

River training works at East Rapti River.
Source: Ministry of Energy.

[1]NSDRM, MOHA, 2065.

In Terai, thousands of people are affected by Floods every year. In the Hill, Landslides are the main natural hazards occurring very frequently mostly during monsoon season. Nepal is a vulnerable to Earthquake also because of its location in tectonically active Zone.

2.1 Classification of Natural Hazards in Nepal:

- Hydro-metrological hazards (Floods, inundation, GLOFs, avalanches and droughts)
- Geological hazards (Earthquakes and landslides)
- Environmental hazards (forest fire)
- Technological hazards

A brief description of each natural hazard is given below:

2.1.1) Floods

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. Inundation along the river banks and erosion of land causes loss by damaging irrigation and communications facilities and fertile lands across or adjacent to the riverbanks. Such phenomenon's have caused loss of lives and property in mountainous areas of Nepal and have posed severe hazards to physical infrastructure like roads and bridges. Inundations have disrupted social and economic development of many parts of terrain region in the country too. The floods of August 2008 in Koshi River, September 2008 in Western Nepal and July and August 1993 in the Baghmati and other rivers were the most devastating floods in Nepal. Nepal has observed Monsoon flood as well as Flash flood. Rainfall variability (unequal rainfall in time and space), topography (steep Mountain and flat Tarai), Deforestation (decreasing vegetative cover) are the major factors contributing to the floods in Nepal.

Saptakoshi Flood, 2008

2.1.2) Landslides

Kathmandu-Narayanghat high-way side's landslide. Source: www.dwidp.gov.np

The movement of earth, rock or debris down slope under the influence of gravity by certain processes is called landslide. Landslide usually occurs as secondary effects of heavy rainfall and earthquakes. A debris flow is slurry of soils, rocks and organic matter combined with air and water. The causes of landslide in Nepal are natural as well as manmade. In general the middle hills are prone to landslides. The natural phenomena like heavy rainfall, fragile geology, steep and rugged topography, deforestation and disturbance of hill slopes are also the major causes for occurring landslides. In Nepal floods and landslides are the most recurrent, intertwined and the most destructive types of hazards in terms of loss of lives and properties.

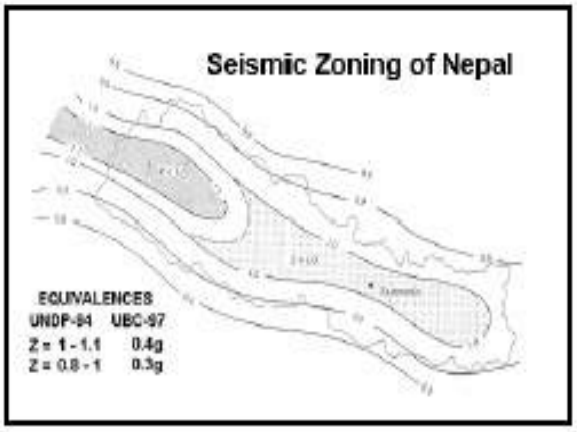
Picture: Landslides in Upstream of Road in Nepal.

A landslide photo. Source: Ministry of Home Affairs

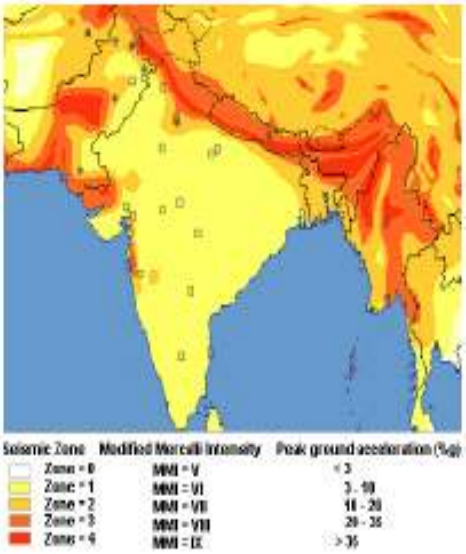
2.1.3) Earthquake:-

The Country Nepal lies in a high earthquake intensity belt .Almost the whole of Nepal falls in high seismic risk scale. The seismic zoning map of Nepal divides the country into three zones. The middle part of the country is estimated to be more susceptible to earthquake hazard than northern and southern parts.

Seismic Hazard Map of Nepal



Source: *Building Code of Nepal*



Source: *Munich re, 2001*

Source: NSDRM, MOHA, 2009

The last great earthquake of magnitude 8.3 occurred in 1934. The seismic record of Nepal is available since 1255 AD in which 7.7 reactor scale in Kathmandu valley king Avaya Malla and one third of population lost their lives in this event. After that, a series of earthquake occurred in Nepal. Majors were in 1260, 1408, 1681, 1767, 1810, 1823, 1833, 1834, 1866, 1934, 1980 and 1988 AD. According to the Seismological Measurement Center of Nepal, medium and small size earthquake event frequently occur in a different part of Nepal. According to Global Earthquake Initiatives, Kathmandu is exposed to the greatest earthquake risk per capita among 21 megacities around the world, largely due to building collapse and insufficient preparedness and medical care. If an earthquake of the 1934 magnitude is reported at this point of time, an estimated 40,000 death, 90,000 injured and 6, 00,000 to 9, 00,000 homeless can be expected.

2.1.4) Fire

Fire is a recurring disaster in Nepal. During the dry season from February to May, large numbers of incident of fire are reported, mostly in the Terai where about three quarter of houses is built with thatched roofs. Forest fires incidents occur throughout Nepal and result deforestation of around 1.7 per cent of the total forest area annually. These fires cause economic losses and environmental degradation throwing dedicates ecosystems out of balance. It is also threatening valuable and endangered flora and fauna, degrading the soil and inducing flood and landslide.

Most of the fire incidents are caused by negligence of the people. Hunting practices, negligence by cigarette smoker, intentional fire to accelerate growth of grasses to feed livestock, intentional fire setting by herb and charcoal collectors and children playing with fires are some of the reasons for forest fires. Certain type of trees especially Sal (shores Robusta) is particularly susceptible to fire. About 86 per cent 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. Fire usually outbreaks during dry season.

2.1.5) Glacier Lake Outburst Flood (GLOF)

Glacier lakes are like natural water reservoirs dammed by ice or moraines. Lake outburst can be triggered by several factors: ice or rock avalanches, the collapse of the moraine dam due to the melting of ice buried within, the washing out of fine material by springs flowing through the (piping) earthquakes or sudden inputs of water into the lake e.g. through heavy rains or drainage from lakes further up glacier. ICIMODs 2001 inventory of glaciers, glacial lakes and GLOFs counted 3252 glaciers and 2323 glaciers lakes in Nepal 20 of which are very vulnerable to flooding (MOHA, 2009).

A Glacier Lake Photo. Source: Ministry of Home Affairs

GLOF affects high Himalayan region as well as downstream by extremely damages of lives and properties. Major events shown in past were Tamor Koshi (1980), Sun Koshi (1935, 1981), Dudh Koshi (1977, 1985), Arun (1968, 1969, 1970) etc.

2.1.6) Drought

Drought, which is often referred to as a creeping phenomenon, is a slow-onset natural hazard , and hence, its effects often take weeks or months to appear in reduced stream flows or increased depth to the groundwater table. In Nepal, the grip of drought-like condition from the end of March till the monsoon arrives next in June, but the districts like Manang and Mustang in the Trans-Himalayan region are extremely dry throughout the year and the Terai and western hills are more frequently affected than other regions. Drought results in crop failures and famine, both during the monsoon season and rest of the year, when winter crops are sown.

About 5,000 families living in pockets in the hills and Terai are badly affected by drought each year (Nepal Disaster Report 2009). Planned land use with crop rotation, rain water harvesting, drought monitoring, using recycle water, developing irrigation system, water rationing are some of the strategy which help to minimize impact of drought.

2.1.7 Epidemic

A situation whereby a disease, which unexpectedly and quickly spreads among the people causing deaths due to environmental pollution, lack of pure drinking water and sanitation, unhealthy behavior, which is creating the threat of an epidemic. In Nepal, outbreak of several epidemics takes the largest toll of life every year .Water born diseases like typhoid, diarrhea and vector born diseases like kalaazar, malaria, Japanese encephalitis are the major health problems in terms of morbidity and mortality. About 300 people died in June and July month of 2009 in Midwestern part of the country, by the epidemic of diarrhea (MOHA 2010)

2.1.8) Others:-

Other disasters includes hailstone, thunderbolt, avalanche, boat capsize, structure collapse, cold wave, hot wave, swine flu, bird flu, meningitis is common during hot and rainy season. The lightening, hailstorm are other natural disaster. The sudden avalanche and heavy snow fall in winter season sometimes cause heavy loss of human lives and properties. The avalanche of November, 1995 killed 43 people including some foreign trekkers at Khumbu and Kanchenjunga areas. In 2 January 1999 A.D 5 people were swept away by the avalanche that occurred in Gorkha district. Road accident and aircraft accidents are also major source of disaster in Nepal. In Nepal, road accidents are one of the top ten causes of death. Aircraft accidents are more common in hilly terrain and areas with extreme climatic condition.

Year wise disaster scenario Loss of lives by major types of disasters in Nepal (2000-2009)----------Table 1

year	Flood &landslide	Earth-quake	Thunder-bolt	fire	Hails-tone	Wind-storm	epidemic	avalanche	total
2000	173	0	23	53	1	2	141	-	393
2001	196	1	39	26	1	1	154	-	418
2002	441	0	3	14	0	3	0	-	461
2003	232	0	42	16	0	20	-	-	310
2004	131	0	10	10	0	0	41	-	192
2005	141	0	18	28	0	0	34	21	242
2006	141	0	17	28	1	0	34	-	221
2007	216	0	35	34	18	1	9	9	322
2008	134	0	14	11	0	2	10	0	171
2009	135	0	7	35	0	0	462	2	641

(Source: MOHA, 2009)

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
	TOTAL	**26,656**	**49,570**	**4,715,828**	**188,875**	**5,482**	**841,954**	**236,459**	**13,885**

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.

An scenario of past disastrous events during 1971-2008 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(MOHA Unpublished data). 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.

3. Institutional Arrangement for Disaster Risk Management

This chapter covers the two important provisions of policies with legal base and the structures for the disaster risk management in Nepal.

Policies and Plans

Government of Nepal has initiated range of policies instruments and plans to mitigate the hazard risk. The major initiatives are as follows:

- **National Strategy for Disaster Risk Management (NSDRM) 2009**

  The NSDRM was promulgated in 2009. This strategy has been developed on the base of Hyogo Framework for Action (HFA) 2005. A participatory and methodological process was adopted during the preparation of the NSDRM, 2009. Multiple consultations were organized to solicit the view of governmental, non-governmental agencies, local bodies, academic institutions, private sector, United Nations agencies, national/international non-governmental organizations (N/INGOs) as well as civil society organizations.

  Fundamentally, this strategy has opened up new avenues of response-oriented approach to reduction oriented approach. To ensure this end, the mainstreaming of disaster risk reduction into overall development approach is a main theme of the strategy.

  Long-term vision:

  The long term vision of the strategy is to develop Nepal as a disaster-resilient community. It has also a mission to provide guidance and ensure effective disaster management through development and implementation of the concept of effective preparedness for mitigation, disaster risk reduction and incidence of calamities.

Directives principles for DRM:

Besides this, the strategy has been adopted the following directive principles for disaster risk management.

- Mainstream DRM concept into the development plan
- Ensure safety of life and social security
- Give emphasis to gender and social inclusion
- Adopt decentralize process of implementation
- Follow the holistic approach
- Give priority to staff safety and security (Safety first)
- Follow one-window policy and cluster approach in implementation of DRM
- Promoting the spirit of participation, interaction, and coordination

The strategy has been framed on the foundation of five priority actions of HFA 2005. In addition, 29 sub-activities have been identified within the priority areas. With realization that disaster management is a multidimensional and multi-sectoral responsibility, sectoral strategies have also been adopted. Those sectors are broadly divided into nine areas, which are:

1) Agriculture and Food Security Sector
2) Health Sector
3) Education Sector
4) Shelter Sector,
5) Infrastructure and Physical Planning Sector,
6) Livelihood Protection Sector,
7) Water and Sanitation Sector,
8) Information, Communication, Coordination and Logistics Sector,
9) Search and Rescue and Damage and Need Assessment Sector.

The strategy realizes that disaster management is possible only through integrated, participatory, and collaborative involvement of all partners. As such due importance is given to UN agencies, donor community, inter-governmental agencies, I/NGOs, and people from different segments of civil societies.

The strategy has also proposed new institutional arrangement for disaster management which entail the formation of a National Disaster Management Council (NDMC) being chaired by Prime Minister. Besides, it also envisions National Disaster Management Authority (NDMA) as a secretariat of the council where other three committees under the council for preparedness, rescue and relief and reconstruction and rehabilitation activities.

3.1 Policies and Legal Provisions

There are some legal basis are also in place in order to curb the hazardous risk as well as preparedness planning. The disaster management laws are more or less in-built in many sectoral legal arrangements. This covers the largest areas of multi-type hazards. Following legal tools are instrumental to the Nepalese disaster risk management:

3.1.1 Natural Calamity (Relief) Act, 1982

Natural calamity (Relief) Act, (NCRA) 1982 is a milestone legal instrument for disaster management in Nepal. The act was formulated in 1982 and amended in 1989 and 1992. According to NCRA 1982, natural disaster means earthquake, fire, storm, flood, landslide, heavy rain, drought, famine, epidemic, and other similar natural disaster. The Act has also included industrial accident or accidents caused by the explosions or any other kinds of disaster.

Damaged Bridge in the Khahare Khola, Mugling Narayanghat Road section.
Source: Ministry of Water Resource.

Similarly, the Act defines natural disaster relief work as “any relief work carried out in the area affected or likely to be affected by the natural disaster in order to removed the grief and inconvenience caused to the people, to rehabilitate the victims of the natural disaster, to protect the public property and life and property of the people, to control and prevent the natural disaster and to make advance preparation thereof”.

According to the Act, the provision has been made to set up different institutions from centre to local level to arrange relief and rescue works during the emergency. There has been following types of structure are envisaged to implement the Act:

- Center Natural Disaster Relief Committee (CNDRC) with Relief and Treatment sub-committee and Supply, Shelter and Rehabilitation sub- committee at the centre level as an apex body of disaster management in Nepal.
- Regional Natural Disaster Relief Committee (RDRC),
- District Natural Disaster Relief Committee (DDRC) and
- Local Natural Disaster Relief Committee (LDRC).

Among those institutions CNDRC and DDRC are mostly active all the time, but two subcommittees and RDRC and LDRC could not be functioning as per the stipulated manner.

The Act also empowers the government to declare the state of emergency during the intensive disaster. It also furnishes some special rights to the disaster manager for managing rescue and relief work in an effective and efficient manner. It also empowers the government to allocate for dedicated fund at central to local level as a Disaster Relief Fund for delivering effective relief and during the disaster.

Though, besides of the noble provisions, it is not effective and efficient to cope with the hazardous risks. To show the status of the implementation of the Act, following cycle show the focus of our system:

3.1.2 Local Self Governance Act, 1999

The Local Self Governance Act (LSGA) empowers local bodies to govern themselves and recognises that local people and local bodies are the most appropriate points of entry to meet development needs at the local level. The LSGA authorizes to undertake certain

functions with respect to DRR by local bodies. Some provisions have been made to establish Environment Protection Fund and Disaster Management Fund at DDCs, VDCs and Municipalities. Control of natural calamities, prevention of infectious disease and epidemics, operation and management of fire brigades, developing mitigating and preventive measures against landslide and foods are some of the assigned task that local bodies can pursue by using the legal authority granted by the LSGA.

3.1.3 Periodic Plans

Disaster Management Programs was first included in the 10th national plan (2002-2007) of the government of Nepal. It emphasized on the irrigation and water induced disaster control, and also deals on population, environment and natural and human induced disaster management. It reiterates the priority on policy formulation, strengthening institutional mechanism, risk assessment, information collection and dissemination regarding the disaster management. It also emphasized on the low costs disaster resilience construction practices.

Similarly, the Three Year Interim Plan (2007/08-2009/10) devoted on natural disaster management. The interim plan emphasizes on policy formulation, strengthening institutional mechanism, EWS, coordinated approach for DRR and linking disaster management with climate change. It is hoped that this attempt would be a landmark in the history of Disaster Management.

The plan has set up its vision to minimize social and economic loss and damage caused by disasters. The main objective of plan is to promote the security of life and property from the impact of natural disasters through sustainable, environment-friendly and result oriented development by making disaster management practices efficient, competent, strengthened and effective.

Develop and apply environment-friendly systems in development and construction works, appropriate information flow and pre- disaster preparedness for the mitigation of risks of natural disaster, strengthen collaborative works between the government, non government and private sector for rapid response and recovery are the major strategies of the plan. The plan has listed the programs of formulation of national strategy, awareness raising, preparedness for effective response and recovery, study and research, risk and hazard zone mapping, stockpiling of relief and rescue materials, and enhancement of involvement of local bodies.

3.1.4 Other Major Policies and Laws

As disaster is a multi-dimensional phenomenon, there are other cross-cutting and direct policies and laws are also place in Nepal. Among them, the major are as follows:

- Soil and water conversation act, 1982
- Nepal building act, 2007 and Building Code, 1994
- Environmental protection act, 1996
- National agriculture policy, 2004
- National shelter policy, 1996
- National urban policy, 2006
- National water plan, 2005 and Water resource policy, 1993
- National water resource strategy, 2002
- Water induced disaster management policy, 2006
- Strategies related to health sector

3.2 Structural Arrangements:

In order to enforce the prevailing policies and legal instrument, following major structures are active from center to local level:

3.2.1 Ministry of Home Affairs

Ministry of Home Affairs (MoHA) acts as National Focal Agency on Disaster Management and lead agency responsible for implementation of the Natural Calamity (Relief) Act, 1982. The MoHA is also responsible for rescue and relief work, data collection and dissemination, as well as collection and distribution of funds and resources.

3.2.2 Central Natural Disaster Relief Committee (CNDRC)

The CNDRC is chaired by the Minister for Home Affairs and includes related ministries and security agencies representative along with voluntary organizations such as the NRCS. The CNDRC is responsible for preparing national policies on preparedness, response and recovery and ensuring their implementation, stockpiling relief and rescue materials, collecting and disseminating relief materials and disbursing the funds during emergency, give direction to the district and local committees for the execution of relief work. To support the functioning of the CNDRC, there is a Working Committee and the Subcommittees of Relief and Treatment, and Supply, Shelter and Rehabilitation.

3.2.3 Regional Disaster Relief Committee (RDRC)

The RDRC is present in all five regions of Nepal and is chaired by the Regional Administrator. It comprises related government agencies and security agencies (law and order, emergency response and development institutions) along with voluntary organizations such as the Red Cross. It is responsible for supporting and monitoring the activities implemented by the DDRCs and formulates regional plans and coordinates among the district level disaster management plan and response activities.

3.2.4 District Disaster Relief Committee (DDRC)

All 75 districts of Nepal have the DDRC. The chairperson is the Chief District Officer (CDO), who is the highest-level government official at district level to take disaster-related decisions. It comprises various line agencies such as law and order, emergency response (police and armed police), district chapter of NRCS and critical facilities such as irrigation, road, livestock, health etc. The role of the DDRC is to coordinate the local committees, formulate district disaster management plan, coordinate and operate relief work during emergencies and provide information to RDRC and CNDRC (through MoHA).

3.2.5 Local Disaster Relief Committee (LDRC)

The committee is responsible for disaster management at the local level, such as disbursement of funds during emergencies, and rescue and transport of the injured to hospitals. Though it is not executed formally so far but informally there are some community has already started in organized way to cope with the hazardous risk.

3.2.6 Other Government Institutions Working on Disaster Risk Management

- Ministry of Irrigation
- Ministry of Defence
- Ministry of Energy
- Ministry of Physical Planning and Works
- Ministry of Environment
- Ministry of Local Development
- Ministry of Forest
- Department of Water Induced Disaster Prevention
- Department of Mines and Geology
- Department of Hydrology and Meteorology
- Department of Soil Conservation and Watershed Management
- Department of Forest
- Department of Irrigation
- Epidemiology and Disease Control Division **a**nd
- Local Bodies

Picture: A hydropower project of Nepal, source: www.moen.gov.np

- **An Example of Water Resource Strategic Policies regarding water-induced hazards:**

Output 1: Effective Measures to Manage and Mitigate Water -Induced Disasters are Functional.

Catastrophic events that cannot be controlled can, to some degree, be rendered less

dangerous by advance planning and preparation. In addition to preparations for emergency response, rescue and relief, the Water Resources Strategy identifies a number of actions that will be taken to mitigate the effects of water-induced disasters.

Activities:

- Prepare and implement a water- induced disaster management policy and plan.
- Conduct risk/vulnerability mapping and zoning.
- Strengthen the disaster networking and information system.
- Establish disaster relief and rehabilitation systems.
- Carry out community awareness/education on disaster management.
- Activate Inundation Committee(s) with respect to neighbouring countries.
- Prepare and implement floodplain action plan
- Implement disaster reduction/mitigation measures.
- Strengthen institutional set-up and capacity.

Indicators:

- by 2007, potential disaster zones identified by type and located on district maps;
- by 2007, emergency relief materials are available in all five regions;
- by 2017, infrastructure for mitigating predictable disasters put in place in 20 districts;
- by 2017, warning systems established and functioning, encompassing the country; and
- by 2027, social and economic losses reduced to levels experienced in developed Countries.

The goal during the Strategy's first five years is to enhance institutional capabilities for managing water- induced disasters. To that end, the Department of Water Induced Disaster Prevention (DWIDP) will be designated as lead agency and given a clear mandate to implement output activities, including the development of a disaster management policy and plan. DWIDP will also be responsible for coordinating efforts to reduce risks and mitigate damages. Other agencies involved in the prevention and management of water- induced disasters will include the Department of Hydrology and Meteorology (DHM), the Department of Irrigation (DOI), and the Ministry of Home Affairs (MOHA).

Information Source: Water Resource Strategy 2002-2027 (Executive Summary), Ministry of Energy (http://www.moen.gov.np/pdf_files/water_resources_strategy.pdf).

4. The Responsibilities of Ministry of Home Affairs (MoHA) as National Focal Point

As the lead responsible agency, MOHA is accountable for preparing national policies and ensuring its implementation. MOHA is also responsible for rescue and relief works, data collection, dissemination and collection and distribution of funds and resources to the affected population through the structured process. Ministry of Home Affairs is the apex body in the field of disaster management.

- MOHA is designated as the lead agency responsible for implementation Disaster Management in Nepal.
- Currently, various agencies of Government of Nepal are assigned with different aspects of Disaster Risk Management.
- Central Natural Disaster Relief Committee (CNDRC) is chaired by the Home Minister. This Committee is accountable for preparing national policies and ensuring its Implementation.
- MOHA is also responsible for rescue and relief works, data collection and dissemination as well as distribution of funds and resources.
- The District Disaster Relief Committees (DDRC) has been constituted in all 75 administrative districts of the Country. This Committee is chaired by the Chief District Officer (CDO) in the District.
- DDRCs consists of wider representatives from the district level offices of the various line agencies related with law and order, emergency response(Army, Police, and the district chapter of Nepal Red Cross Society), critical Facilities and development Institutions such as irrigation, road, livestock, health, etc.
- The CDO as the Chair Person of the DDRC is empowered to be the highest level Government official to take vital decisions including rescue and distribution of the relief materials to the victims following a disaster incident.
- The Regional Administrator, who heads the Regional Natural Disaster Relief Committee (RNDRC), is the coordinating mechanism for the different five regions as decentralized approach.

Functions of CNDRC

The main functions and duties of the Center Natural Disaster Relief Committee (CDRC) are to:

a. Formulate the national policies regarding the relief works including the rehabilitation of the victims of natural disaster and the reconstruction in the areas affected by natural disasters and the advance preparation thereof and to prepare the programmes in accordance with the said policy and submit it to Nepal Government.
b. Implement of direct to implement the policies and programs formulated pursuant to the clause above after it has been approved by Nepal Government.
c. Keep the money, food stuff, clothes, medicines, construction materials and other goods received within the country Nepal and from outside as aid or donation under Central Disaster Relief Aid fund and to send such goods as required for relief work in disaster areas;
d. Associate the social organizations in natural disaster relief works and coordinate the activities of those organizations;
e. Form teams and send them to disaster area to assist in natural disaster relief works;
f. Give directions to the district committee and local committee on the matters relating to relief works;
g. Perform the works specified by Nepal Government for the execution of natural disaster relief works;
h. Submit report on work progress to Nepal Government from time to time.

Functions of RNDRC

The main functions and duties of the RNDRC are to:

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.

Functions of DDRC

The main functions and duties of the DDRC are to:

a. Coordinate or direct to be coordinate among Local Committees regarding natural disaster relief works;
b. Formulate district level plans on disaster relief works and submit such plans to the Regional Committee;

c. Monitor the disaster relief works being conducted by the Local Committees and support the ongoing works;
d. Provide information to the Regional Committee about natural disaster relief works from time to time;
e. Work in accordance with the directives of the Central and Regional Committees

To further elaborating the responsibilities, MOHA well as many Governmental, non-Governmental organizations, international Agencies and UN Agencies are actively engaged in the field of Disaster Management (DM) in Nepal. It is realized that the coordination and communication mechanisms among organizations involved in DM needs to be further strengthened, and collaborative efforts are required to be made for effective disaster preparedness and response in the Country.

DRR is a proactive approach that needs to be integrated in regular development planning and poverty reduction program at all levels. Properly formulated strategies in this regard can play an instrumental role to achieve the overall development goal of Nation. The Government of Nepal, considering the importance of disaster risk management for the overall development of the Country, has approved the NSDRM on 11 October, 2009.

Legislatively, disaster management initiatives have been governed under Natural Disaster Relief Act, 1982.The existing Act give more emphasis on rescue and relief work during emergencies and less concentrate on disaster risk reduction and recovery .Realizing this fact, an effort has been made to develop comprehensive disaster management legislation and the government of Nepal is in the process of enacting new act for disaster risk reduction with covering full cycle of DRM.

- Developing and sharing information in Disaster Risk Reduction (DRR) and Climate Change Adaptation (CAA) at all levels reduce the risk reduction. Ministry of Home Affairs has set up National Emergency Operation Center (NEOC) at national level and it has been planned to develop its national network through establishment to similar centers in all development regions within next five years. The network will be further expanded to all district headquarters in the future.

- The Ministry of Home Affairs with support from World Bank is finalizing country level Multi-Hazard Risk Assessment. The different hazards including in the assessment are earthquake, flood, drought, landslides and epidemic
- The Early Warning Strategy has been drafted and will be completed in 2010 which will be instrumental in developing framework for installation, operation and maintenance of early warning system for major hazards floods, landslides, GOLFS and drought

throughout the country. The strategy, along with NSDRM, will be effective guiding document for development and sustainability of effective early warning system in Nepal.

- Realizing the importance of collective efforts of all stakeholders at all level to put in the disaster risk management, a National Platform for DRR has been formed with multi-sectoral involvement.
- Disaster preparedness and Pre-Monsoon Workshop is organizing each year with involvement of stakeholders.
- International coordination mechanism at Ministry of Home Affairs with relevant stakeholder's linkages has been also developed and strengthened to enhance the institutional capacity for implementing DRR activities in the country. Moreover, the government has established disaster risk management focal desk and appointed officials in different ministries and departments to synergize DRR effort in the relevant line agencies.

5. Five Flagship Program: A New Programmatic Tool for Disaster Risk Management.

An international consortium was formed in May 2009 to support the Government of Nepal to develop a long term Disaster Risk Reduction Action Plan building on the National Strategy for Disaster Risk Management (NSDRM). Members of the Consortium are the Asian Development Bank (ADB), the International Federation of the Red Cross and Red Crescent Societies (IFRC), United Nations Development Programme (UNDP), UN Office for the Coordination of Humanitarian Affairs (OCHA), UN International Strategy for Disaster Reduction (ISDR) and the World Bank. In addition, the Consortium initiated a multi-stakeholder participatory process with the Government of Nepal and civil society organizations to identify short to medium term disaster risk reduction priorities that are both urgent and viable within the current institutional and policy arrangements in the country.

Based on the priorities set by the government and also discussions with multi-stakeholder groups, five flagship areas of immediate action for disaster risk management in Nepal are as follows:

1. School and hospital safety- structural and non-structural aspects of making schools and hospitals earthquake resilient,
2. Emergency preparedness and response capacity
3. Flood management in the Koshi river basin
4. Integrated community based disaster risk reduction/management

5. Policy/Institutional support for disaster risk management

The estimated total budget of the three-year Flagship Programme is US $131.1 million.
In developing the programme, the priorities outlined in the 'Hyogo Framework of Action 2005-2015, Building the Resilience of Nations and Communities to Disasters', and the Outcomes of the Global Platform for Disaster Risk Reduction (2009), which sets out specific targets for reducing losses from disasters, were taken into account.
On 19 March 2010 the Government formally established the Nepal Risk Reduction Consortium (NRRC) Steering Committee, chaired by the Secretary of Home Affairs. Members include the Joint Secretaries of the Ministries of Finance, Education, Irrigation, Local Development, Physical Planning, Health and Population, and the National Planning Commission. Directors and Representatives of the ADB, WB, UNDP, OCHA, IFRC, NRCS, and DP-Net are also members. The Joint Secretary of MoHA is Member Secretary.

6. Major Achievements (including Updates on Progress on HFA):-

Nepal is a participant country to HFA 2005. It has already expressed a commitment to achieve the HFA goals by 2015. So far, Nepal has submitted one final and one interim HFA progress monitoring report. Nepal has achieved the following progresses which are also featured in HFA final repot

Strategic goal 1

The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction.

- The 10th five year plan (2002-2007) underscored that the main objective of DRR as to contribute substantially to make the public life secure by managing the natural and man-made disaster systematically and effectively.
- The 3-year interim plan (2008-2010) also emphasized that DRR is an integral component of sustainable development and accorded priority to pre-disaster preparedness.
- National Strategy for Disaster Risk Management (NSDRM) 2009 has been adopted
- Sixty Seven districts have disaster preparedness plans.
- At local level the 3-year interim plan (2008-2010) has envisaged to enhance the engagements of local bodies and communities in the prevention works.
- 3 municipalities have started implementing safe building construction practices using the seismic code provisions in the local context.
- Multi-Hazard Risk Assessment has been done which covers five major hazards.

Strategic goal 2

The development and strengthening of institutions, mechanisms and capacities at all levels, in particularity the community level that can systematically contribute to building resilience to hazards.

- The Ministry of Home Affairs (MoHA) is the nodal agency for coordinating disaster management in Nepal.
- International coordination mechanism with relevant stakeholder's linkages has been developed at MoHA and strengthened to enhance the institutional capacity for implementing DRR activities in the country.
- NSDRM proposes High level council and Disaster Management Authority.
- Local Self-Governance Act (1999) which has initiated decentralization process and local bodies are delegated more authority, responsibility and resources.
- The government has established disaster risk management focal desk and appointed officials in concern ministries, departments.
- Cluster Approach has been adopted.
- Risk Reduction Consortium comprising of ADB, IFRC, UNDP, UNOCHA, UNISDR and World Bank has formed and identified five flagship areas of immediate intervention for DRR.

Strategic goal 3

The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery program in the reconstruction of affected communities.

- Pre-Monsoon planning workshop has been conducted at national, regional and district level with multi-stakeholders involvement.
- One window policy and cluster approach in emergency response has been successfully realized in dealing with different disasters in the past.
- For initial damage and loss estimation, a standard information collection process using Multi-Sectoral Initial Rapid Assessment (MIRA) has been practiced since 2009.
- 64 open spaces for evacuation during emergencies have been identified within Kathmandu valley.
- National Emergency Operation Center (NEOC) has been established at MOHA
- Hospital Preparedness for Emergencies (HoPE, Medical First Respondent (MFR) and Collapsed Structure Search and Rescue (CSSR) training are being given to Medical officers and security officers.
- Earthquake Simulation Exercise (INSARAG) has been conducted in 2009.
- Model agreement between GON and UN to expedite import/export and transit of relief consignments in the event of disasters and emergencies was signed on 31 May, 2007.
- A comprehensive Logistics Capacity Assessment of Nepal has been done.

Challenges for implementing HFA

Mainstreaming DRR

- The new development policy of Nepal now acknowledges the incorporation of DRR into development plans. However, what is reflected and underscored in the plans is not substantiated in the annual programs and budgets.
- One of the reasons for this is lack of tools to assess contribution of an investment in development sectors towards disaster resiliency of a community and/or nation.
- A separate and robust mechanism is required in place to assess disaster resiliency of the project itself and also of its contribution toward disaster resiliency of a community.

Institutional strengthening and capacity building

- The emergency response and relief approach is so entrenched in the current system that it will take time to mobilize the system to more comprehensive disaster risk management approach.
- The new policy and act - currently in pipeline- will be instrumental to gear up the efforts towards changing the existing mindset.
- The new policy and act will also authorize the government to arrange and mobilize sufficient budget with straight mechanism to spend on mitigation, preparedness and recovery.
- The new legal and policy frameworks are expected to empower the government to undertake preparedness of better emergency response in effective way.
- Although emergency response has been the main thrust of the disaster risk management in the previous years, it was basically ‘wait and see’ approach with natural reactions to provide rescue and relief.
- SOPs have not been fully developed, institutional mechanisms are in need of strengthening
- There is need to develop network of EOC across the country from central to local level.

7. Disaster management challenges and opportunities:-

Nepal is exposed to several types of disasters every year. Different database proved that there are 2.0 reported events of disasters per day on an average in Nepal causing the loss of lives and properties as well as destructing the development works. Government of Nepal is compelled to spend large amounts so recover such losses but in comparison with the demand and necessities, very little have been done to reduce the risk of it far.

Water-sector Environmental Issues:

- Environmental database and mapping
- Integration of environmental considerations into planning of water
- resources developments
- Effective implementation and
- enforcement of environmental impact assessment (EIA) and strategic environmental assessment (SEA) norms and recommendations
- Bio-diversity conservation
- Surface and groundwater pollution
- Lowering of groundwater tables
- Lack of environmental awareness
- Landslides, erosion, sedimentation, glacial lake outburst flood (GLOF),
- flooding.
- Watershed conservation

Database Issues:

- Inadequate hydro-meteorological network
- Inadequate funding and management of existing network
- Inadequate flood forecasting and warning systems
- Lack of regulatory mechanism in hydrogeology and geo-seismology sectors
- Inadequate geo-seismic data and information

Source: Water Resource Strategy of Nepal, 2002

The plans and policies also lack adequate attention in the field of pre-disaster works, i.e. preparedness or preventive activities. Large parts of the population in the country are still not aware of natural disasters. Though, the country is suffering from disasters on a continual basis; the studies on identifying most vulnerable places and types of disasters are still inadequate. As per disaster events/hazards types and their preparedness and mitigation parts are lacking except for few urban centers. Similarly, the prior, during and post disaster major activities for different hazards are yet to be established, interlinked and coordinated. In Nepal, the

disaster related works are done on an ad-hoc basis except large-scale hazards. The priority, so far, is mostly focused on the post disaster activities i.e. rescue and relief works not the preventive approach itself.

Though, the past decade has witnessed several achievements made by Nepal in the field of disaster risk reduction. These include development of methodology for risk assessment and action planning at municipal and district levels for the implementation of complex community-based programs successfully. In order to efficiently manage the disaster in the pre, during and post period, Nepal has also tried to get engaged into it in a more professional manner. As a result there had been some efforts made in formulating perspective and periodic plans of disaster management. Nepal is generally regarded very proactive in:

a) Basis of implementation of community-based programs,
b) Earthquake risk management and implementation of school earthquake safety programs, especially at Kathmandu,
c) Expanding formal and informal education and awareness, and
d) Successes in implementing joint programmes by government agencies, local bodies and NGO/INGOs.

Besides, inadequate policy and legal environment is the biggest impediment. Such condition inhibits replication of the successful cases to other places although there are high potentials for the same. Development of an efficient and effective institutional mechanism had always been preferred but without any successes. Absence of organizational outfit at the highest level that could be tasked to provide intellectual and administerial leadership is seriously noted in Nepal. In fact, the country could learn from the experiences of the other countries like Japan, India, Bangladesh and many other nations to provide a strong and efficient leadership to undertake all issues of disaster reduction and management. Thus, improving on the role of leadership and the creation of the National Disaster Risk Management Council or National Emergency Operations Centre, backed by appropriate legislative instrument, seems to be the priority agenda for Nepal. UN system may also be interested to assist in such ventures.

Responsible stakeholders have been meeting frequently at the governmental as well as non-governmental level to review the performances of the programs. The monitoring and evaluation of disaster-related projects and programmes have also been conducted on regular basis. Such serious attentions of all stakeholders have brought a sense of belongingness with the sector to guide its future priorities and actions.

To sort out the major challenges in DRM practices can be categorized as follows:

A typical mountain settlement and agricultural farming.
Source: Ministry of Energy.

- **Policies:** To implement the NSDRM, Nepalese DRM community is still waiting for the comprehensive new Disaster Management Act as well as other institutional reform form center to local level.

- **Structure:** To curb with the hazard risk in different sector, the structural strengthening is a must and also equally important to coordinate and collaborate with major actor and stakeholders. Thus, ensuring a very pragmatic mechanism will only sustain the mission of disaster resilience Nepal.

- **Economic:** One hand we have less capacity of resource mobilization and other hand, we have scarcity of resource, i.e. maximization requirement.

- **Procedural:** To implement the noble policies framework, DRM institutions must have very strong procedural base in each step of governance. Basically designing the Standard Operating Procedures is primarily required since long time. Other important part is less-participation of the community in each phase of disaster risk management is also required policy and attitude reform in decision maker as well as the local community.

- **Technology/Methodological:** It has also both dimension of proper utilization of the technological equipment and increasing the modern tools to mitigate the risk. This is also tied with the financial and managerial capacity of the country.

- **Behaviour:** Due to poverty and manipulating the nature but not compensating is very challenging in the context of developing world. Haphazard urbanization, pollution mismanagement are few instances of socio-cultural behaviour that should be changed drastically for the agenda of sustainable development.

8. Way forward:-

Disaster is not always devastating rather creating immense opportunities for sustainable development too. In the context on hot-spot and exiting institutional capacities, obviously there are a lot of intervention required in terms of policies, structures, procedural, methodological and behavioral part. Mainly following way-out are the basics in order to create a disaster resilience Nepalese society:

- Moving forward with vision National Strategy on Disaster Risk Reduction
- Mainstreaming DRR into Development from central to local level policy response
- Prioritization of activities and executing through action plan with clear cut role and responsibilities of all stakeholders.
- Emergency Operation Center establishment and functionable expansion to the lower level.
- Intensifying Preparedness with community empowered measures
- Giving intensive priority on multi-hazard mitigation and multi-sectoral preventive strategy.
- Resource mobilization and maximization to increase the efficiency and effectiveness of DRM.
- Education, sensitization and awareness expansion activities throughout the vulnerable areas and community.
- Overall collaboration, coordination, facilitation and integration into the development efforts.
- Enhancement of nodal agency institutional capacity in order to combat and cope with the hazard challenges.

Precisely, Nepal need to overhaul its disaster risk management system systematically, scientifically in compatible with this cyclical approach:

Source: Swiss Civil Protection (Quoted in Moench and Dixit, 2007), cited from Nepal Disaster Report, 2009, MOHA & DPNET Nepal, p. 37.