

Disaster Risk Management Framework (Managing and Reducing Disaster Risks for a Safe and Happy in Bhutan)

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Objectives:

- ❖ To promote a disaster risk management approach instead of an *ad hoc reactive approach* to dealing with disaster.
- ❖ To recognize the respective roles of different organizations and provide possible support within the national framework for disaster risk management.
- ❖ To establish linkages between disaster risk management and development program activities.
- ❖ To build sustainable DM mechanism at National, District, Sub-district, Village blocks and municipal levels.
- ❖ To ensure appropriate and timely welfare for isolated victims of disasters.

Disaster Risks in Bhutan (Hazards)

Earthquakes:

- ❖ Located in one of the most seismically active zones (IV & V)
- ❖ 8 M earthquakes in 1817, 1897, 1905, 1934 and 1950
- ❖ 1980 earthquake of 6.1 M and 5.5 M in 2003
- ❖ February 2006- 5.8 and 5.6 M in eastern Bhutan

Glacial Lake Outburst Flood (GLOF)

- ❖ GLOFs are among the most serious natural hazards potentials in Bhutan
- ❖ GLOF threatens the lives and livelihood of people living in the valleys and low lying river plains.
- ❖ There are 2,674 glacial lakes in Bhutan, of which 562 are associated with glaciers
- ❖ History of GLOF occurrences in the past in 1957 and 1960
- ❖ The 1994 GLOF caused 17 lives and damaged more than 1700 acres of agricultural land.
- ❖ Hazards due to GLOF flash floods and land slides are likely to increase in intensity as a result of impacts of climate change.

1994 GLOF Damages

- ❖ 17 lives lost, 91 households affected,
- ❖ 12 houses damaged, 5 water mills washed away,
- ❖ 816 acres of dry land and 965 acres of pasture land damaged,
- ❖ 16 yaks lost, 36 cowsheds and a full year's manure washed away, 6 tonnes of food grains lost,
- ❖ 4 bridges washed away, 2 temples destroyed, 1 badly damaged.

Floods:

- ❖ Floods are recurrent phenomena in Bhutan
- ❖ The caused 49 lives and destruction to 17 houses.
- ❖ The 2004 monsoon in eastern Districts have killed 9 people, destroyed 29 houses, and 664 acres of agricultural land.
- ❖ The 2000 flash floods of Phuentsholing and Pasakha have killed 49 people, destroyed 17 houses and some roads and bridges, 400 families left homeless

Landslides:

- ❖ **By its terrain Bhutan is highly susceptible to landslides especially in the rainy season.**
- ❖ **Most landslides occur in the eastern and southern foothills where the terrain is steep and rocks underlying the soil cover are highly fractured, allowing easy seepage of water**
- ❖ **Landslides frequently disrupt means of transportation**
- ❖ **Scores of landslides along the Thimphu Phuentsholing national highway, hampering delivery of vital goods and fuel to Thimphu for several weeks.**

Fires on Forest and Human Settlements:

- ❖ **A total of 803 forest fires were recorded from 1994-2004 which damaged 309,181.9 acres of forest**
- ❖ **In 2002, 25 houses in Yangthang village in Haa were burnt down.**
- ❖ **In 2005, 5 houses in Chamkhar town, Bumthang were razed to the ground**
- ❖ **March 2006, forest fire in Bartsham destroyed thousands of acres of forest, 5 houses, killed three people and livestock**

Natural Dam formation and Dam bursts

- ❖ In September 2003, landslides caused a formation of an artificial lake on Tsatichhu river.
- ❖ Such hazards will continue to prevail in Bhutan's rivers placing hydropower plants, farmlands and human settlements at risk.

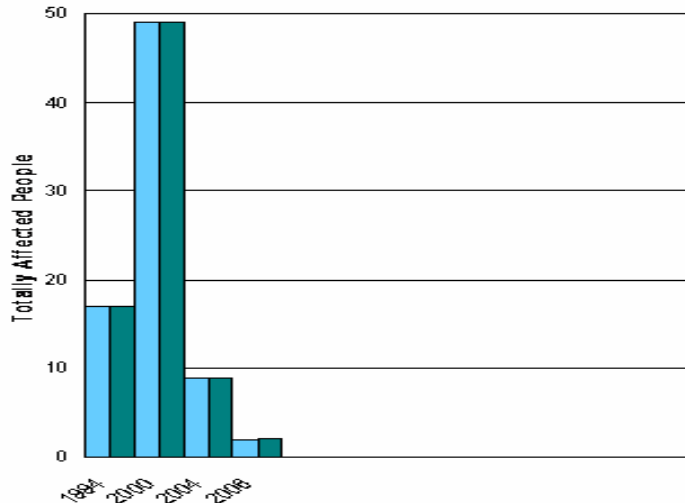
Epidemics, pests and diseases:

- ❖ Avian flu, crops damages by wild animals and other diseases etc.

Underlying Vulnerabilities

- ❖ Pressure on land and settlements
- ❖ Rapid urbanization
- ❖ Unsafe construction practices
- ❖ Insufficient enforcement of building by laws.
- ❖ Socio-economic factors
- ❖ Lack of awareness
- ❖ Environmental degradation
- ❖ Lack of preparedness for disasters

Number of Deaths (1975-2006) due to Disasters in Bhutan

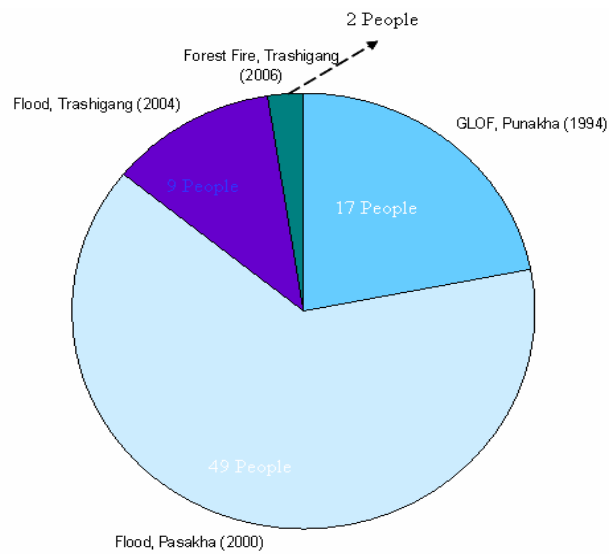


<p>Six eastern Districts of (Trashigang T/Yangtse, S/Jongkhar)</p>	<p>Monsoon Flood of 2004</p>	<ul style="list-style-type: none"> •29 houses completely washed away •26 houses collapsed •107 partially damaged •664 acres of land washed away •39 irrigation channels damaged, 22 • bridges of diff. types damaged or washed away, farm and feeder roads damaged, damage to power facilities, exposed foundation of Vocational Training Institute in Rangjung collapsed •Several Livestock washed away •350 metric tonnes of maize, 126 metric tonnes of paddy, 2000 orange trees, 21 metric tonnes of potatoes lost affecting 1437 households •9 lives lost
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Forest Fire in Trashigang District, 2006

- ❖ 2 people died
- ❖ 6 houses burnt down
- ❖ 13 cattle reported dead
- ❖ 26775 forestry and fodder seedlings of different species destroyed
- ❖ 3720 acres of forest destroyed

Numbers of Deaths in the country (1994 – 2006)



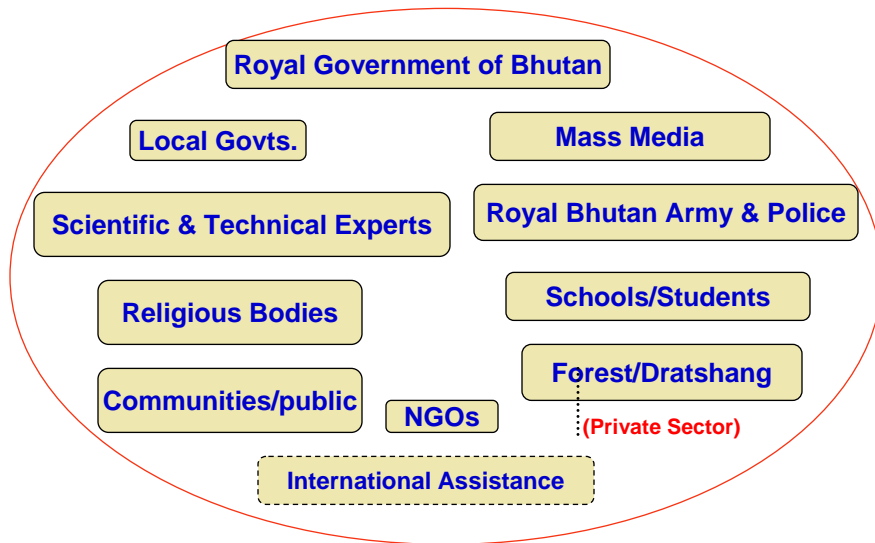
Hyogo Framework for Action -2005-2015(World Conference on Disaster Reduction, Kobe, Hyogo, Japan, 18-22 January 2005)

Priorities for action 2005-2015

National institutional and legislative frameworks

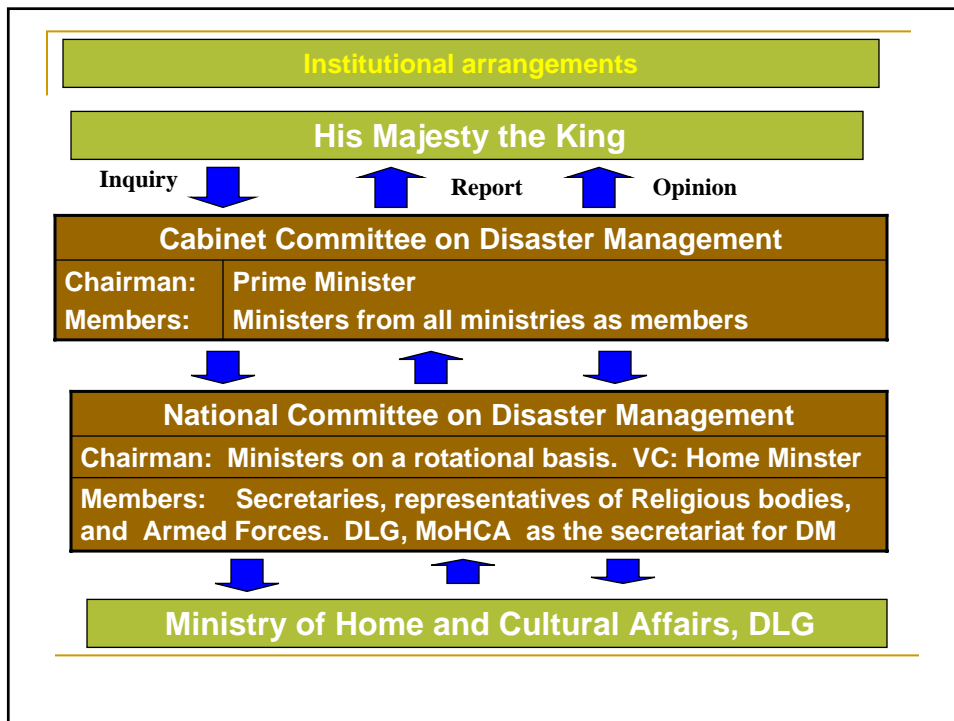
Support the creation and strengthening of national integrated disaster risk reduction mechanisms, such as multi sectoral national platforms, with designated responsibilities at national through to local levels to facilitate coordination across sectors. National platforms should also facilitate coordination across sectors including maintaining a broad based dialogue at national and regional levels for promoting awareness among the relevant sectors.

Involvement and Cooperation of All Stakeholders



Existing Institutional Arrangements in Bhutan

- ❖ Personal involvement of His Majesty the King in the welfare and rehabilitation of the affected people during the times of disaster.
- ❖ The Ministry of Home and Cultural Affairs (MoHCA) is the nodal agency at the national level
 - ❖ as it has established line of communication and
 - ❖ coordination with the districts, sub-districts and village blocks and municipalities in time of emergencies is convenient.
- ❖ Various sectors are involved in risk reduction and preventive activities.
- ❖ Relevant sectors to contribute towards promoting disaster resilience.



District Disaster Management Committee
Chairman: District Administrator

Members of the Committee:

- Superintendent of Police
- Sectoral Heads
- District Medical Officer
- Heads of Schools
- Municipal Representatives
- Royal Bhutan Army (if located)
- Religious Bodies
- Civil Societies/NGOs

City Disaster Management Committee

**City/Municipal Disaster Management
Committee**

Chairman : City Administrator/Mayor

Members : As proposed by the City

The Cabinet

- ❖ **The Cabinet shall be the highest decision-making body.**
- ❖ **It shall take a holistic view of the disaster management scenario in the country.**
- ❖ **It shall lay down appropriate institutional, legislative and policy mechanisms addressing the entire gamut of issues relating to disaster prevention, mitigation, preparedness and response.**
- ❖ **The Cabinet shall set-up the requisite funding mechanism for disaster risk management and establish His Majesty's Relief Fund**

The Cabinet

- ❖ **It shall decide the corpus for the National Disaster Mitigation and Preparedness Budget**
- ❖ **Strengthen the response capabilities at all administrative levels, including the community**
- ❖ **Provide succor to the affected people through appropriate relief, recovery, rehabilitation and reconstruction efforts in the aftermath of any disaster.**

The Cabinet

- ❖ **It shall report to His Majesty the King for directions during times of disasters**
- ❖ **It shall declare the National Disaster based on the magnitude of disaster**
- ❖ **In the event of major national disaster it shall take over the entire management and also coordinate with international agencies in the event of major disaster**

National Committee on Disaster Management

- **The Committee shall supervise/ assess various disaster risk reduction initiatives and oversee effectiveness of response mechanism.**
- **Deliberate on important matters pertaining to disaster management according to requests from the Ministry of Home & Cultural Affairs, Department of Local Governance**
- **Submit important matters on disaster management to the Prime Minister or the Ministry of Home & Cultural Affairs by the Department of Local Governance**
- **Approve different sectoral DM schemes and give directions to the ministries/agencies for mobilisation of resources & manpower.**
- **Ensure requisite steps to be taken at the national, districts & municipality levels to meet exigencies of a situation as may be deemed necessary.**

Ministry of Home and Cultural Affairs

- ❖ Under the direction of the Cabinet and NCDM the MoHCA shall:
- ❖ Function as the nodal agency for all disasters at the national level.
- ❖ Districts and Municipalities report all cases related to disasters to the MoHCA. DLG, MoHCA shall maintain a detailed database on all disaster.
- ❖ Detailed report of disaster shall be prepared on each case and submitted to His Majesty the King and NCDM
- ❖ On the approval of His Majesty the King the ministry shall mobilise "HM Relief Fund" for victims
- ❖ Coordinate prevention, mitigation, response, relief, rehabilitation, activities with the local governments and relevant sectors

Emergency Operation Centers (EOCs)

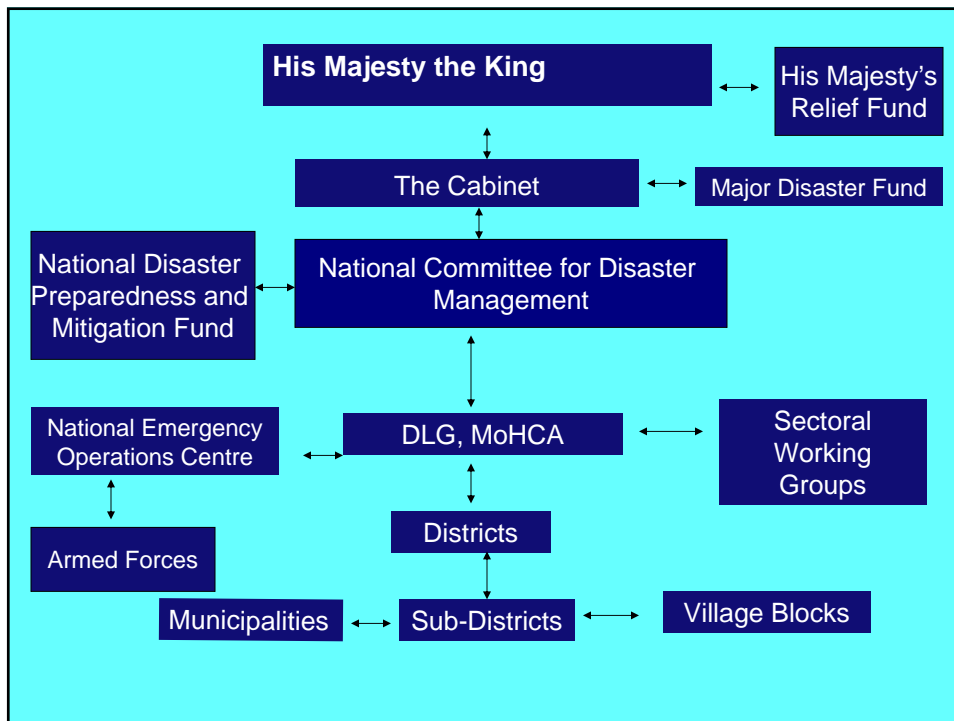
- ❖ Shall maintain continuous disaster surveillance and ensure timely warning disseminations.
 - ❖ Shall keep NCDM and the Cabinet informed regularly.
 - ❖ Shall requisition resources, manpower and assistance from ministries/ agencies emergency
 - ❖ Shall give directions to local administrations and monitor disaster response.
 - ❖ This shall be instituted at all levels
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Financial Arrangements

- **Disaster Mitigation, Prevention and Preparedness Budget**
 - ❖ The budget shall finance risk mitigation programmes
 - ❖ Provide Financial assistance to Dzongkhag, Gewogs and Thromdes

- **His Majesty's Relief Fund**
 - ❖ Emergency Fund to address relief, rehabilitation and reconstruction for isolated and small disasters

- **Major Disaster Fund (Emergency)**
 - ❖ To finance response and relief operations in the event of major disasters
 - ❖ The corpus of the fund will be decided by the Cabinet



The National Strategies

- ❖ Institutional, Legislative and Policy Frameworks
- ❖ Hazard, Vulnerability and Risk Assessments
- ❖ Disaster Management System
- ❖ Early Warning Systems
- ❖ Disaster Preparedness Plans
- ❖ Mitigation & Integration of Disaster Risk Reduction in Development Sectors
- ❖ Public Awareness and Education
- ❖ Capacity Development
- ❖ Communication and Transportation

1) Institutional, Legislative and Policy Frameworks

- ❖ Institutional framework finalized through a consultative process
- ❖ Building upon already approved allocations, financial arrangements for disaster response and risk reductions
- ❖ Disaster Risk Management Act enacted to support the new institutional framework/ financial arrangements
- ❖ Capacities of the nodal institution(s) strengthened
- ❖ Articulate government's policies on different aspects of disaster risk management (e.g. rehabilitation, recovery, enforcement of codes, guidelines for relief)

2) Hazard, Vulnerability and Risk Assessment

- Preliminary synthesis of existing information on all hazards produced in the form of a hazards atlas
- Hazard maps for all hazards (landslides, floods, GLOFS, earthquakes, forest fires) developed further in a prioritized manner
- A geo-referenced (at Gewog level) national database of all disaster events and their impacts established
- Multi-hazard maps developed as an input to the development of new townships and expansion of the existing ones
- A seismic monitoring network established

3) Disaster Management Systems

- ❖ Development of a holistic approach designed to manage disasters
- ❖ Plans, programmes and procedures relating to disasters to be institutionalized
- ❖ Disaster preparedness and response systems to be built into all government, public, private, corporate sectors and civil societies' developmental plans

4) Early Warning Systems (EWS)

- ❖ An end-to-end flash flood/ GLOF early warning system designed (and implemented in a phased manner) for the most vulnerable flood basins taking into account the local contexts and capacities
- ❖ GLOF monitoring capacities enhanced
- ❖ Landslides monitoring capacities enhanced
- ❖ *District, sub-Districts, village blocks and municipality* level officials trained in warning dissemination (and related response preparedness) to the local levels
- ❖ Capacities of the meteorological services enhanced
- ❖ Hydrological network enhanced in a prioritized manner

5) Disaster preparedness plans

- Disaster preparedness plans developed at the *District, Village Blocks, Sub-Districts, and Municipality levels* and where applicable *Dungkhag* levels starting with the most vulnerable areas
- National preparedness plan developed to deal with large-scale disasters
- A national emergency operations centre (building on existing capacities) designed and established
- An geo-referenced inventory of disaster response resources developed

6) Mitigation & Integration of DRR in Development Sectors

- ❖ Mechanisms (such as mandatory risk assessments) developed to incorporate disaster risk concerns (mitigation measures) in all development projects
- ❖ Building codes for earthquake resistant construction developed and enforcement mechanisms put in place
- ❖ Hazard-specific (landslide, flood, GLOF) mitigation measures developed and implemented at specific locations in a prioritized manner
- ❖ Local level disaster mitigation plans developed and implemented in a prioritized manner

7) Public Awareness and Education

- ❖ Public awareness and education programmes developed for specific disaster risks
- ❖ Partnerships established with the print and broad cast media for delivery of public awareness generation programmes
- ❖ Partnerships developed with religious and other community institutions/NGOs for awareness generation
- ❖ Incorporation of disaster risk education materials in school and tertiary institutes etc

8) Capacity Building

- ❖ **Capacities and needs assessment (across key sectors) carried out at the National, Districts, village blocks and Municipal levels**
- ❖ **A prioritized, multi-year capacity building programme developed**
- ❖ **Partnerships developed with the national, regional and international institutions for capacity building support**

9) Communication and Transportation

- ❖ **Disaster communications network (with adequate back-ups) designed and implemented in a phased manner**
- ❖ **Protocols developed and implemented for emergency communications**
- ❖ **Emergency transportation arrangements developed taking into account in-country assets as well as other assets that might be available from the neighboring countries as well as international agencies (e.g. UN Joint Logistics Centre)**

Cultural Heritage and Disaster Management

- ❖ **Major buildings housing arts, artifacts and other materials of cultural importance shall have a comprehensive disaster prevention, preparedness and response plan.**
- ❖ **An inventory of cultural properties followed by activating mitigation and protection measures against disasters**
- ❖ **Non-structural mitigation measures as an important step to safeguarding many important artifacts.**
- ❖ **Importance of religious prayers in disaster prevention.**

Next Steps

- ❖ **Work with relevant partners to develop specific programmes for the implementation of the Framework**
- ❖ **Resource mobilization from national and international sources**
- ❖ **Constitution of the programme implementation team**
- ❖ **Programme commencement**

CHALLENGES

- ❖ Lack of resources
- ❖ Competing developmental priorities.
- ❖ Lack of multi-sectoral coordination.
- ❖ Low technical and organizational capacity across the sectors.
- ❖ Poor access to synthesized information on disaster risks and disaster risk management options for policy and decision makers
- ❖ Disaster risk management process continues to be largely disconnected from the development process

