



Disaster Risk Management Strategy

“Safe, Resilient and Happy Bhutan”



Department of Disaster Management
Ministry of Home and Cultural Affairs
Royal Government of Bhutan

List of Acronyms

ADB	Asian Development Bank
ADPC	Asian Disaster Preparedness Center
AI	Avian Influenza
BCCI	Bhutan Chamber of Commerce and Industry
BDA	Bhutan Disaster Assessment
BHU	Basic Health Unit
BSB	Bhutan Standards Bureau
CBDRM	Community-Based Disaster Risk Management
CC	Climate Change
CCA	Climate Change Adaptation
CITES	Convention on International Trade on Endangered Species
CWC	Centre for Water Commission
DDM	Department of Disaster Management
DDMC	<i>Dzongkhag</i> Disaster Management Committee
DES	Department of Engineering Services
DFID	Department for International Development
DGM	Department of Geology and Mines
DGPC	<i>Druk</i> Green Power Corporation
DHMS	Department of Hydro-Met Services
DHS	Department of Human Settlement
DLG	Department of Local Governance
DM	Disaster Management
DMP	Disaster Management Plan
DMS	Department of Medical Services
DoA	Department of Agriculture
DoR	Department of Roads
DoYS	Department of Youth and Sports
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DT	<i>DzongkhagTshogdu</i>
EFRC	Environmental Friendly Road Construction
ESF	Emergency Support Function
EWS	Early Warning System
FYP	Five-Year Plan
GHG	Greenhouse gas
GIS	Geographical Information System
GFDRR	Global Facility for Disaster Reduction and Recovery
GLOF	Glacial Lake Outburst Flood
GNH	Gross National Happiness

GNHC	Gross National Happiness Commission
GPS	Global Positioning System
GT	<i>GewogTshogde</i>
HKH	Hindu Kush Himalayan
HFA	Hyogo Framework for Action
ICIMOD	International Center for Integrated Mountain Development
IFRC	International Federation of Red Cross and Red Crescent Societies
IMTF	Inter-Ministerial Task-Force
INSARAG	International Search & Rescue Advisory Group
JDWNRH	<i>Jigme Dorji Wangchuck National Referral Hospital</i>
JGE	Joint Group of Experts
LDCs	Least Developed Countries
LG	Local Government
MDGs	Millennium Development Goals
MoAF	Ministry of Agriculture and Forests
MoE	Ministry of Education
MoEA	Ministry of Economic Affairs
MoF	Ministry of Finance
MoH	Ministry of Health
MoHCA	Ministry of Home and Cultural Affairs
MoLHR	Ministry of Labor and Human Resources
MoWHS	Ministry of Works and Human Settlement
NAPA	National Adaptation Program of Action
NDMA	National Disaster Management Authority
NEC	National Environment Commission
NEIC	National Earthquake Information Centre
NEOC	National Emergency Operations Centre
NESB	National Environment Strategy of Bhutan
NIPPP	National Influenza Pandemic Preparedness Plan
NRRP	National Recovery and Reconstruction Plan
NSB	National Statistical Bureau
PDNA	Post-Disaster Needs Assessment
RAP	Rural Access Project
RBA	Royal Bhutan Army
RBP	Royal Bhutan Police
RGoB	Royal Government of Bhutan
RICB	Royal Insurance Corporation of Bhutan
RNR	Renewable Natural Resources
RCSC	Royal Civil Service Commission

RUB	Royal University of Bhutan
SAARC	South Asian Association for Regional Cooperation
SITREP	Situation Report
SQCA	Standards and Quality Control Authority
SSI	School Safety Initiative
TDMC	<i>Thromde</i> Disaster Management Committee
UNDP	United Nations Development Programme
UNDAC	United Nations Disaster Assessment and Coordination
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNISDR	United Nations International Strategy for Disaster Reduction
UNOCHA	United Nations Office for Coordination of Humanitarian Affairs
UTEP	University of Texas at El Paso
WB	World Bank
WCDR	World Conference on Disaster Reduction
WFP	World Food Programme
WMO	World Metrological Organization

List of Bhutanese Terms

<i>Chiwog</i>	Administrative Block consisting of a number of households
<i>Chhu</i>	River
<i>Chorten</i>	Stupa
<i>Dasho</i>	<i>referred to persons with red Scarf</i> title awarded by His Majesty
<i>De-Suup</i>	Volunteer
<i>Dratshang Lhentshog</i>	Commission for the Monastic Affairs of Bhutan
<i>Druk Gyalpo</i>	His Majesty the King of Bhutan
<i>Dungkhag</i>	Sub-division of Dzongkhag
<i>Dzong</i>	Fortress or Monastery
<i>Dzongchung</i>	Small <i>Dzong</i>
<i>Dzongda</i>	<i>Dzongkhag</i> / District Governor
<i>Dzongkhag</i>	District
<i>Dzongkhag Tshogdu</i>	District Development Committee
<i>Gewog</i>	Administrative Block (consisting of a number of villages).
<i>Gewog Tshogde</i>	Block Development Committee
<i>Gup</i>	Head of the Gewog
<i>Gyalpoi Zimpon</i>	His Majesty's Office for People's Welfare and Wellbeing
<i>Lhakhang</i>	Temple
<i>Lyonpo</i>	Minister
<i>Thromde</i>	City or township
<i>Tsho</i>	Lake

DISASTER RISK MANAGEMENT STRATEGY

List of Acronyms	2
List of Bhutanese Terms	5
Executive Summary	7
Chapter 1 –Disaster Risk Management Strategy	8
1.1 Background	8
1.2 Purpose	8
1.3 Policy Statement	9
1.4. Policy Drivers	10
1.5 Guiding Principles	10
1.6 Scope	11
1.7 Strategy.....	12
Chapter 2 – Priority Actions	12
2.1 Priority action 1 – Improving the understanding of disaster risks	13
2.1.1 Hazard and Risk Identification and Monitoring.....	13
2.1.2 Knowledge Sharing and optimization of science, technology and innovations	14
2.1.3 Public Awareness and Education	16
2.2. Priority action 2 - Strengthening risk governance system;.....	17
2.2.1 Legislative and Policy Framework.....	18
2.2.2. Mainstreaming DRR.....	19
2.2.3 Institutional Framework	21
2.3. Priority action 3 - Investing in DRR for resilience	22
2.3.1. Resource allocation for disaster risk management	22
2.3.2. Improvement of the construction and maintenance of critical infrastructure and protection of key sectors.....	24
2.3.3. Investment in non-structural measures	26
2.3.4 Risk Transfer Mechanism.....	28
2.4. Priority Action 4- Strengthening disaster management capabilities	29
3.4.1. Integrated resilience programmes	29
2.4.2. Enhancing Early Warning.....	33
2.4.3. Disaster Preparedness and Response.....	34
2.4.4. Post-disaster Recovery and Re-construction.....	37
Annexure 1: Disaster Management Mandated Institutions and Agencies	41
Annexure 2: Financial Arrangements	55
List of References.....	57

Executive Summary

The Disaster Risk Management Strategy, (DMSF) is **formulated** as mandated under clause 11 of the Disaster Management Act of Bhutan 2013 and is guided by the Five Year Planning process. The DMSF is envisioned to serve as reference for disaster management by articulating government policy, principles, expected results, and clearly identifies priorities and focus areas to maximize efficient allocation of limited financial and technical resources. Subsequently, the Strategy outlines all key results that need to be achieved under each of the priorities and indicative activities that need to be carried out to achieve these outcomes.

The objectives of the DMSF are to provide guidance in implementing rules and regulations pertaining to Disaster Risk Management (DRM); recognize and acknowledge the respective roles of agencies and stakeholders; to establish linkages and coherence between DRM, Climate Change Adaptation (CCA) and sustainable development; and to provide the principles, strategies and priorities to guide the development of various plans and programmes for risk prevention and reduction, preparedness, response, recovery and re-construction measures.

The DMSF is designed as strategic derivative of DM Act 2013. It is formulated with long term perspective; thus, well aligned with the four Priority Actions of the Sendai Framework for Disaster Risk Reduction 2015 – 2030. Under each of the priority actions, the issues and gaps, key interventions and expected results are detailed in chapter 2.

It also provides the necessary guidance in the development of medium term disaster management plans, which should be part of development planning process of the Five Year Plan. It outlines the context, rationale, and drivers by summarizing the existing hazards, vulnerabilities, disaster risks and current challenges

The DMSF has been developed through extensive consultative process with relevant national and international stakeholders and the strategic interventions under each priority actions has been discussed and agreed upon. The framework was presented to National Disaster Management Authority on and endorsement was received on

Chapter 1 –Disaster Risk Management Strategy

1.1 Background

Recognizing the importance of disaster risk reduction and the need to enhance preparedness and response capacities to safeguard developmental gains made so far, the adoption of a DRMS assumes great significance.

The DRMS formulation process began in 2012 along with the conceptualization of the DM Act 2013. It began with the identification of challenges and gaps in disaster risk management in Bhutan. Desk review of international best practices and strategies of various countries in the region was conducted. Based on the initial situation analysis, several rounds of consultative workshops were organized over the course of 2012 and 2013, mainly to agree upon priority areas and the implementation plans.

Individual stakeholder meetings were also conducted with several key persons in various Ministries, Departments and partner agencies to enable reflection of sector concerns and priorities. Two final stakeholder meetings were held in October 2014. The finalization process was guided by a core group of members from DDM, UN and other relevant national agencies.

UNESCAP provided technical assistance particularly in the alignment of provisions of national legislation and medium term development plan and the global and regional disaster management frameworks. Particular focus was given on the SFDRR and its regional context in ESCAP Resolution 71/12 on strengthening regional mechanisms for the implementation of the SFDRR in Asia and the Pacific.

It is therefore, timely and appropriate to adopt a comprehensive DRMS as mandated by the DM Act 2013.

1.2 Purpose

The DRMS aims at synthesizing the policy drivers and, progress being made in DRM, emerging issues, challenges and lessons learned from the response and management of recent disaster events.

In this respect, the DRMS presents the “breadth” of actions that need to be undertaken but does not necessarily cover the “depth” of analysis, planning and programming that needs to be undertaken to carry out the DM activities. Respective lead institutions are required to do this for each of the priorities when implementation begins. While the primary responsibility of adopting the DRMS lies with the government, its effective implementation will require active action of “whole society’ including the key national

and local stakeholders. The roles and responsibilities of key national and the local stakeholders, according to each priority areas, have to be defined in the DM Plan.

The DRMS also aims to provide guidance to key ministries, departments and agencies in their disaster risk management planning, coordination and budgeting processes. It ensures that every sector contributes towards promoting disaster resilience in accordance with their mandate, capacity, expertise and strength.

The DRMS will also inform development partners, donors and technical institutions cooperating with the Royal Government of Bhutan (RGoB) on the roles and responsibilities of different government institutions, disaster management priorities and the institutional and financial arrangements.

1.3 Policy Statement

The followings are the articulation of policy of the RGoB regarding disaster risk management:

Government bears the primary responsibility: Disaster management is an expression of government's mandate to protect the welfare of the nation, its people, and their rights. As enshrined in DM Act 2013, the government delegates this responsibility to designated disaster management institutions, as well as agencies and notified private sectors as the duty bearer to deliver products and services.

Disaster management is part of sustainable development: Disaster risk management is one of the national key result areas in the Five Year Plan. Consequently, disaster management is an inseparable part of governance and development policies, plans and programmes.

Add values to problem solving: Measures undertaken towards attaining resilience against risks from disaster and climate change should not limit to those seeking to reduce vulnerability. It should be holistically integrated in and contribute to poverty reduction, environmental conservation, social protection and economic growth.

Comprehensive: Disaster management encompasses all phases and facets of disaster. It seeks to prevent the creation of a new risk by adopting risk-informed growth and development policies that minimize increase in exposure and vulnerability. It also seeks to reduce existing risk through measures that prevent the emergence of risks, mitigate exposure and vulnerability, and also capacitate preparedness, response and recovery/reconstruction.

Protection for the most vulnerable: The most vulnerable among populations and those with special needs are to be provided with the utmost protection and assistance.

They are the hardest hit during times of disasters. Disaster management thus, seeks to actively identify the most vulnerable sections of society and put in place measures to increase their safety against risks from disasters and adverse effects of climate change.

1.4. Policy Drivers

The DRMS is a national strategy developed to guide risk prevention and reduction, preparedness, response, recovery and re-construction activities in the country in line with the DM Act 2013 and SDFRR.

Disaster Management Act of Bhutan 2013: The DM Act 2013 was enacted to establish and strengthen institutional capacity for disaster management, mainstreaming of DRR and to provide for an integrated and coordinated disaster management focusing on community participation. The DM Act mandates - establishment of DM institutions at various levels and their roles and responsibilities, formulation of DM and contingency plans, financial arrangements for disaster management, and the roles of agencies and the private sectors.

Five Year Plan: As a medium term development plan, it provides the broader context for further enhancing the disaster management system. Having an overriding theme of “Prosperity for All”, it sets forth the objective of development, i.e. self-reliance and inclusive green socio-economic development. In this context, “improved disaster resilience and management” is situated among national key result areas of the main thrust towards conservation and sustainable utilization of environment.

Sendai Framework for Disaster Risk Reduction 2015 – 2030: The 3rd United Nations World Conference on Disaster Risk Reduction has adopted the SFDRR that serves as a global blue print in disaster risk management in conjunction with the forthcoming sustainable development framework. Subsequently, at regional level, Bhutan together with other member States of ESCAP adopted Resolution 71/12 on strengthening regional mechanisms for the implementation of the SFDRR in Asia and the Pacific.

1.5 Guiding Principles

The DRMS is formulated based on certain principles that are relevant and strategic in the context of Bhutan. All disaster management related activities should be implemented through incorporating and further building on the following guiding principles.

Strengthening Resilience and Sustainability: Bhutan is a small developing country and both its physical development and economy is vulnerable to natural hazards and other stresses. It is, therefore, important to adopt a holistic view of risk reduction and

work to strengthen resilience by incorporating physical, social and economic measures that would enable Bhutan and its people to absorb losses, minimize impact and recover from disasters. In this regard, it is very essential to strengthen local level capacities to enable communities to reduce risks, prepare for and respond to disasters independently. To build resilience, it is necessary to ensure ownership and sustainability of all disaster management activities.

Whole-society approach: As much as the government is primarily responsible for disaster risk management policy and decision making, agencies as well as notified private sectors are charged to deliver disaster management services and products. Other stakeholders including communities, academia, media community etc, should also actively participate in and contribute to disaster management programme/activities.

Protecting Indigenous Knowledge and Cultural Heritage: For sustainability, it is important to develop socially, culturally, economically and environmentally relevant disaster reduction and mitigation techniques and measures. Indigenous knowledge and cultural heritage concerns should be given specific considerations in designing and implementing disaster risk reduction and mitigation measures.

Coherence and coordination: Disaster management is a multi-sectoral undertaking involving numerous institutions and actors at all levels. It is, therefore, crucial that the approach, plan, and programmes, particularly those of disaster risk management and climate change adaptation, are made coherent; and the policies, plans and activities are well harmonized and coordinated to effectively address disaster management gaps and overlaps.

Considering other cross-cutting issues: Disaster risk reduction is a cross-cutting development issue and should be incorporated within all relevant development plans and programs. Similarly, any disaster management program or activity should consciously try to encompass other relevant cross-cutting development issues such as – poverty reduction, environment conservation, gender equality and social inclusion.

1.6 Scope

This DRMS covers all phases and facets of disasters. It also refers to both natural and human-induced disasters.

It covers all the elements of disaster risk management through the following distinct but inter-related priorities:

- Institutional, legislative and policy frameworks;
- Hazard and risk identification and monitoring, and early warning;
- Knowledge, information management, education and awareness;

- Risk prevention, reduction, mitigation and climate risk management; and
- Disaster preparedness, response, rehabilitation and reconstruction.

1.7 Strategy

Mainstreaming : Efforts must be made for all sectors and local governments to actively mainstream DRR into their five year development and annual plans and programs.

Partnerships: Successful implementation of any DRM program requires building partnerships at local, national, regional and international levels. Innovative partnerships with local civil society organizations and religious organizations should be forged to support communities to build sustainable and resilient lives. Partnerships with volunteer groups and the armed forces should also be built to enable smooth coordination of response during emergencies.

Multi-stakeholder Approach: Disaster risk reduction and management is a multi-sectoral issue and requires the capabilities, resources and cooperation of many different stakeholders at all levels. It is therefore imperative to adopt a multi-stakeholder approach to disaster risk management to avoid duplication and ensure unified and efficient use of existing capacities in the country.

Optimizing the effective functioning of DM institutions: Attainment of disaster resilience is founded on the effective functioning of core DM Institutions i.e. NDMA and local level DM committees; and performance of duty-bearer agencies and the notified private sectors. At the nexus of all these actors, Department of Disaster Management will be required to strengthen its capacity to ensure effective coordination and technical backstopping.

Chapter 2 – Priority Actions

The priorities of the DRMS are broadly guided by the four priority actions contained in Sendai Framework.

The Framework has four priority actions:

- Priority action 1 – Improving understanding of disaster risks;
- Priority action 2 - Strengthening risk governance system;
- Priority action 3 - Investing in DRR for resilience; and
- Priority action 4- Strengthening disaster management capabilities

The different priority actions as well as their key outcomes; lead and supporting institutions; baseline and required areas of interventions with priority are formulated

based on the outcomes of discussions with a number of stakeholders, who have different roles in disaster risk management in Bhutan. This Chapter outlines the key priorities and thematic areas of the DRMS.

2.1 Priority action 1 - Improving the understanding of disaster risks

This priority area implies policies, plans and programmes, both that of disaster management and broader development, should be based on a better understanding of hazards, vulnerabilities, capacity gaps, and exposures.

The objective of this priority is –

- 1) to improve access to synthesized information on disaster risks including, but not limited to, risk mapping and hazard zonation, development of baselines, disaster statistics, and losses databases and to facilitate access to such information for policy and decision makers across different sectors and administrative levels;
- 2) to facilitate the better sharing of knowledge, science and technology, and innovations to facilitate better informed decisions on disaster management and to help make the most optimal use of scarce resources;
- 3) to support the intensification of public awareness and education.

2.1.1 Hazard and Risk Identification and Monitoring

Issues and Gaps

- Different departments and agencies are responsible for monitoring and mitigating the impacts of different hazards. There is very little information sharing among the technical agencies and with the DDM, leading to duplication of efforts and sometimes the pursuit of activities that may not be of national DRM priority.
- The DDM has three different disaster management database systems available on its website for different objectives. These systems would require periodic updates. ,
- The need for development of a multi-hazard atlas for Bhutan was identified in the NDRMF 2006 and also in the 10th FYP. However, no strategic plan of action or any coordination mechanism has been put in place for its development.
- There is need to establish a national seismic station network in the country to be able to generate ground information and enable the formulation of a seismic hazard zonation map. Similarly, there is also a need for such ground information for other hazards. There is a lack of hazard, vulnerability and risk assessments and maps. This is due to the lack of managerial, financial and technical skills and also the lack of standard assessment tools and procedures. The lack of hazard and risk information has really hindered the disaster management planning process at all levels.

Interventions

Through collective efforts, various competent authorities should synthesize existing information on hazards, vulnerabilities and risks in such a form that it can be utilized for decision making for disaster risk management.

Vulnerability, hazard and risk assessment tools and methodologies will be standardized and implemented in a strategic manner to formulate easily understandable composite risk assessment reports and hazard maps for Bhutan. Seismic, GLOF, Landslide and Flooding zonation maps for high-risk locations will be developed and disseminated. This will help inform decision makers in various sectors, agencies and local governments and the risk can also be communicated to the concerned vulnerable population.

Some of the key information requirements are database of past disasters, inventory of glaciers, river morphology, fault maps and a seismic, GLOF, flood and landslide zonation maps and risk information. To support these interventions, the institution capacities for hazard and risk assessment and monitoring mechanisms in relevant agencies will be supported.

Database systems such as the Disaster Management Information System (DMIS) and DesInventar shall be reviewed and updated. The objectives and use of these systems will be clarified to establish a comprehensive system that could be both web-based and mobile-based to facilitate efficient data collection and sharing.

To support this priority action, strong and long-term international and regional collaboration with scientific institutions, universities and organizations will be sought to conduct scientific research and for the communication, adaptation and implementation of results.

Results

- Hazard and Risk identification and zonation maps available.
- National inventory and atlas of hazards available in printed and digital form;
- Monitoring of hydrological and geo-hazards ensured;
- Study reports on vulnerability of all hazards available;
- Strengthened existing hazard monitoring mechanisms in place;
- Risk communication materials in place;
- Regional knowledge sharing mechanism/cooperation in place.

2.1.2 Knowledge Sharing and optimization of science, technology and innovations

It is important to improve access to synthesized information on disaster risks for policy and decision makers across different sectors and administrative levels. In addition, this

intervention aims to improve overall public awareness and knowledge through short-term and long-term risk communication and information, education and communication (IEC) strategies and methods. The long-term strategies should include internalizing disaster management as an area of education and research in academic institutions, particularly for engineering colleges to ensure the sharing and optimization of science, technology and innovations.

Issues and Gaps

- The lack of formalized knowledge management and sharing, updating, communication and reporting systems, and procedures and coordination mechanism have resulted in the inability to maintain an up to date inventory of information related to hazards and disaster events.
- Online database and information systems such as the DMIS and DesInventar have been established and are available online. However the , data needs to be up-dated and the system products should be used for DRM decision-making.
- There is a need to synthesize technical information on vulnerabilities, hazards and risks and to translate them into simple risk communication materials to be shared with the public. Hazard and risk information and similarly, information on preparedness, protective actions and response should be made available through various means – websites, TV, radio, newspapers, etc.
- There is a need to establish knowledge and information sharing systems and mechanisms for optimizing science, technology and innovations not only between sectors and between government agencies but with educational and scientific institutions.

Interventions

Collect demographic data, population figures and gender disaggregated data and psychosocial impacts and other pre-disaster data through the Bhutan Disaster Assessment (BDA) tools. This will help in the efficient identification of the need and nature of humanitarian assistance required in the aftermath of a disaster.

Further, strengthen and consolidate existing database and information management systems. The objective and use of the consolidated system will be established and updated, and timely reports will be used to report to the NDMA and DDMC to make DRM related policy and decisions, and for agencies and notified private sectors to implement DRM related measures.

Support the development of knowledge and information sharing mechanisms for science, technology and innovations with various stakeholders and ensure the accessibility of disaster management information and knowledge to the public.

Results

- Formal knowledge and information sharing mechanisms established and functioning between sectors and with educational and scientific institutions and a strong culture of information and knowledge sharing among key stakeholders promoted;
- Up to date inventory of hazard and risk information and other pre-disaster information available and accessible..
- Comprehensive database and information sharing system available and information reports used for DRM decision-making;
- risk communication materials and channels developed and used.
- Mechanisms for the development and sharing of disaster-related science, technology and innovations are in place.

2.1.3 Public Awareness and Education

Issues and Gaps

- Most awareness and education efforts in the past were concentrated in schools, at Dzongkhag level and in pilot communities and groups. There is a need to review the awareness and education programs and come up with a comprehensive awareness and risk communication strategy. This strategy could outline the information needs at various levels, the different means of risk communication and the responsible agencies. The capacity to develop and design proper risk communication materials with easy and clear messages to local communities is key to effective risk communication.
- There is a need to involve various media and build their capacities to enable them collect and disseminate disaster management information and to conduct efficient disaster reporting.
- Incorporation of disaster risk management issues in school, college and technical curricula will facilitate the creation of a generation sensitive to risk reduction, while at the same time resulting in prudent investment for mitigating and managing future risks. There is need to seriously explore the possibilities of incorporating disaster management and risk information into education curriculum at desired levels.
- With rapid urbanization and increasing exposure in the cities, there is a need to urgently raise awareness in the urban areas on disaster risk management and, preparedness and response. Another significant area requiring awareness building is within the religious institutions.

Interventions

Develop a comprehensive awareness and risk communication strategy. This strategy will guide the DDM and relevant stakeholders on awareness and risk communication priorities, strategies and effective risk communication channels. Awareness rising focusing at community level will be highlighted as a priority.

Build partnerships with various media firms and strengthen their capacities to ensure effective disaster information, dissemination and reporting.

Support further incorporation of DRR concerns into school (including non-formal education), college (including technical institutions) and teacher training curriculum. Cross-sectoral partnerships and concerted efforts at disseminating the agenda of disaster management to the younger generation through school curricula and preparedness drills at regular intervals will go a long way in inculcating a culture of disaster safety and risk management among people at large.

Expand the school based disaster management program to religious institutions, Early Childhood Care and Development (ECCD), colleges and other technical institutes.

Results

- Comprehensive public awareness and risk communication strategy/plan developed with appropriate education and awareness materials;
- Partnerships established with media for public awareness generation, early warning, risk communication, emergency response, etc and required capacities built;
- partnerships with national NGOs, volunteer, youth and community organizations developed to generate awareness;
- Incorporation of disaster awareness and risk information in education, technical, non-formal education and teacher training curriculum ensured;
- monastic institutions, colleges, ECCDS, NFE centers and technical institutes included in school based DRM programs;
- Vulnerable group and child sensitive reporting and awareness created;
- Positive attitude among public on disaster risk reduction and mitigation strengthened, and knowledge and motivation on preparedness increased.

2.2. Priority action 2 - Strengthening risk governance system;

As per the requirements in the NDRMF, the Disaster Management Act of Bhutan was enacted in 2013 to provide for institutional development at various levels, capacity building, mainstreaming or integration of disaster management into plans and programs, with specific focus on community participation and defines the roles and responsibilities for agencies involved. The DM Act also provides for financial arrangements, specific disaster management facilities and relief and compensation provisions.

This priority action seeks to put in place good governance mechanisms among NDMA and DDMCs, duty bearer agencies and other stakeholders for better implementation of disaster management mandates.

This priority action would establish, implement and strengthen appropriate institutional and legislative frameworks for disaster risk management in the country. This will help define the mandates and inter-relationships of respective organizations across sectors as well as different administrative levels. This priority action has four key areas: a) legislative and policy frameworks, b) improvement of institutional framework, c) mainstreaming of DRR into governance and development, and d) mechanisms for monitoring and reporting.

Objectives of this priority action are to:

- mainstream disaster management plans and programmes as part of national, sectoral and local development
- ensure the effective functioning of DM institutions at all levels including agencies and notified private sector.
- optimise MoHCA as the key agency of disaster management and strengthen Department of Disaster Management to provide coordination and technical backstopping
- designate, provide resources, and hold accountable duty-bearing agencies according to their functions, roles and responsibilities
- foster multi-sectoral partnership, and
- establish mechanisms for monitoring and reporting

2.2.1 Legislative and Policy Framework

Following the enactment of the DM Act 2013, several legislative and policy documents have been initiated. These include the Disaster Management Rules and Regulations 2014 and Disaster Management (DM) and contingency Planning Guidelines.

Issues and Gaps:

- With the enactment of the DM Act 2013, there is a need to put in place the mandated procedures, policies, guidelines and standards.
- The absence of a clear policy framework has led to compartmentalized administration of DRM issues on an ad-hoc basis and resulted in lack of clarity on roles and responsibilities, particularly at departmental and local levels.
- There is a need for clear policy directives to prevent the development of new risk and accumulating more risks, such as putting in place land use policy in hazard prone areas.
- The absence of strong multi-sectoral platforms has impeded coordination and the development of policies and procedures for disaster risk management.
- The DM Act 2013 lacks gender sensitiveness in terms of language and provisions although there is an inherent reference under the Relief and Compensation clauses. Similarly there is need to strengthen legislative and policy linkages between DRR and CCA and other cross-cutting issues.

Interventions

Formulate DM policy documents, by-laws, guidelines, standard operating procedures mandated by the DM Act, 2013.

Focus on some of the key areas requiring legislative and policy interventions under the various aspects of disaster management, i.e.

- risk prevention (land use and human settlement planning, EIA, mainstreaming);
- risk reduction (prescribing actions for mitigation, enforcement of building codes, DM planning);
- preparedness, response and relief (emergency assessment, communication/EOC procedures, standards for relief and compensation, contingency planning, response system, risk transfer);
- Rehabilitation and reconstruction (resource mobilization strategy, recovery and reconstruction plan, building back better).
- Produce policy documents mandated by the DM Act 2013 that require formulation, i.e.: Guidelines for mainstreaming DRR into plans, policies, programs, projects;
- Emergency communication plan;
- Financial guidelines Post-disaster assessment framework and guidelines;
- Procedures for receiving and managing international disaster response and relief;;
- Standard Operating Procedure for Emergency Operation Center;
- Resource mobilization strategy;
- Standards for Relief and Compensation;
- Risk Transfer mechanism

Results

- Key DM policies, standards, procedures, guidelines supporting the implementation of the DM Act 2013 are in place.

2.2.2. Mainstreaming DRR

Disasters pose serious threats to the hard earned developmental and economic gains, momentum and to the goal of sustainable development. Recognizing the fact that issue of disaster risks is cross-cutting and inextricably linked to the overall developmental process, it is imperative to be addressed systematically. The DM Act 2013 also enshrines the need to mainstream disaster risk reduction into development. Thus, it is important for the disaster risk reduction to be included in the planning and budgeting right at the outset rather than being reactive to disasters. This has been clearly envisaged in the 11th Five Year Planning Guidelines wherein 'improved disaster resilience and management' has been identified as one of the Sixteen National Key Result Areas, Strategically, incorporation of DRR as a criterion in the GNH Checklist for

Planning Tool in the Local Development Planning Manual and inclusion of DRR as a cross-cutting issue in the Protocol for Policy Formulation is a major initiative.

Issues and Gaps

- Though the DM Act 2013 mandates mainstreaming DRR into development, lack of guidelines and mechanisms have posed significant challenge in mainstreaming the DDR adequately.
- Mainstreaming of DRR into development plans and programs have also suffered because of the cost escalation and lack of dedicated funds for risk reduction, competing development priorities and the lack of technical skills, knowledge and tools to identify, formulate and implement risk reduction measures.
- There is insufficient understanding among stakeholders on the inter-linkages between disaster risk reduction, climate change adaptation and sustainable development.

Interventions

Facilitate the integration of DRR considerations into existing tools, guidelines, frameworks and processes used for development planning at all levels. Integrate DRR in policy formulation, screening tools and guidelines.

There is need for clear mainstreaming guidelines with suggested list of actions/projects formulated and made available to all local governments and key sectors to enable them to integrate DRR into their annual and five year development plans and programs.

Include DRR considerations into budgeting and financing tools and guidelines for development planning, as well as integrating methodologies and tools for DRR mainstreaming into existing training programs on development planning at national and sub-national levels will be explored and established on a prioritized basis.

Sensitizing sectors and local governments on the need to mainstream DRR and on the use of mainstreaming tools and procedures will be continued with renewed focus. Achievement of mainstreaming in identified key sectors and development areas will be pursued in a strategic manner.

Results

- Clearer understanding and knowledge on the importance and need to mainstream DRR into development plans and programs in Sectors and local governments;
- National capacity to mainstream DRR into development policies, plans and programmes built at GNHC, DDM and in sectors and Dzongkhags through disaster focal persons.;
- Mainstreaming tools for various development phases formulated.

2.2.3 Institutional Framework

This priority action gives premium to the functioning of National Disaster Management Authority (NDMA), the Dzongkhag Disaster Management Committees, duty-bearing sectoral agencies and the Inter-Ministerial Task Force (IMTF), as well as to the Dzongkhag Disaster Management Officers.

Issues and Gaps

- There is a need to appoint Dzongkhag DM Officers and establish DM Units in agencies and notified private sectors as per clause 63 and 66 respectively of the DM Act 2013.
- Emergency Operation Centers (NEOC) both at national and local level need to be established to enable better coordination and communication during emergencies.
- Due to lack of clear coordination, monitoring and reporting mechanisms there is inadequate facilitation of DM programs at local levels and a lack of coordinated incorporation of DRR concerns and priorities in sector plans and programs.
- The lack of clear and institutionalized sector focal persons and Dzongkhag disaster management officers has led to poor monitoring and facilitation of DRM programs and activities thus weakening the institutional and local capacity to administer and manage DRM activities.

Interventions

Establish DM institutions both at national and local levels, as mandated by the DM Act 2013, to enhance DRM related decision-making and coordinated direction. Cornerstone of this priority is to situate NDMA and DDMCs as the backbone of Bhutan DM system; to position all agencies and notified private sector as duty-bearers that are mandated to deliver DM services and products, and DDM as technical authority with specific mandates to be a secretariat and executive arm of the NDMA as well as facilitating coordinator to the interagency DM plans and activities.

Set up critical DM facilities, beginning with the NEOC to ensure unified and coordinated response and communication system. Setting up a network of prioritized Dzongkhag EOCs will also be initiated.

Develop clear terms of reference and formal identification and establishment of sector level DM units and Dzongkhag DM officers will be pursued to ensure efficient facilitation, monitoring and recording of DRM activities.

Establish effective communication and coordination mechanisms including vertical communication between all levels of government as well as horizontal communication between different stakeholders.

Strengthen the capacity of MoHCA and DDM as the core administrative and technical agencies respectively in disaster risk management; pursue establishment of various institutions, mechanisms and human resource (IMTF, DDMCs, DDMOs) mandated in the DM Act and formulate related procedures, rules, guidelines and standards.

Consolidate and strengthen institutional arrangements at national and local levels, and providing them with adequate training as well as financial and material resources

Results

- DM institutions such as the NDMA and DDMCs as well as IMTF established and functioning;
- Functional NEOC in place and initiation of prioritized network of DEOCs;
- Clear implementation, monitoring and reporting procedures in place including that of mandate agencies and notified private sector;
- Dzonkhag DM officer and Sector DM Units in place and functioning with clear terms of reference.

2.3. Priority action 3 - Investing in DRR for resilience

Financial arrangements for disaster management need to be put in place along with the formulation and adoption of various rules, procedures, mechanisms, standards, procedures and plans as mandated by the Act. To that end, this priority action aims to adequately finance structural and non-structural measures to enhance resilience as drivers for poverty reduction, job creation, and economic growth.

To this end, this priority action's objectives are to:

- To allocate government development budget for disaster risk management through the integration of disaster risk management in the economic development including to protect livelihood and incorporate poverty reduction as well as to mobilize private sector and development partners' contributions in disaster risk management
- To improve the construction and maintenance of critical infrastructure to be more resilient and improve the resilience of key sectors including heritage, tourism, etc.
- To invest in non-structural measures including community awareness, spatial planning, enforcement of safety building standards, facilitate and promote private sector business resilience particularly SMEs

2.3.1. Resource allocation for disaster risk management

There is national commitment to create financial mechanisms within the policy framework to support scaling up of the program within recurrent DM budget for capacity building, facility and infrastructure development, equipment procurement, restoration,

response and relief. However, there are no financial provisions for risk reduction programs, although the Act mandates local governments and sectors to mainstream risk reduction programs into their development plans and programs.

There is strategic window provided by the 11th FYP to mainstream “disaster management and resilience” into sector and Dzongkhag development plans. DDM should proactively support and facilitate Dzongkhags and sectors by providing sensitization, knowledge, tools, guidelines, etc. to incorporate elements of disaster resilience into their activities, projects and programs. This thematic area, therefore, seeks to mobilize government public funds, private sector investments, as well as international development partnership funds Under GNH pillar of Conservation & Sustainable Utilization and Management of Environment.

Issues and gaps

- There is no operational financial mechanism except for His Majesty’s Relief Fund, which is beyond the purview of DDM. In addition, there are numerous technical and financial restrictions and challenges that impede the integration of DRR programs into local government and sector development agenda.
- DM Act 2013 contains provisions regarding the financing of disaster risk management that includes budget for National Disaster Management Activities for immediate restoration of essential public infrastructure and service centers; budget for Department of Disaster Management for capacity building; establishing and maintaining critical disaster management facility, and other activities required to strengthen preparedness; response and relief expenditure in the annual budget of the Dzongkhag; and emergency procurement to cover emergency requirements that are otherwise not reflected in the annual quotation of the Dzongkhag/agency; and recovery and re-construction funds to be recommended by NDMA for release to sectors concerned.
- Fragmentation of government’s disaster risk management financing. Though the DM Act 2013 contains risk reductions as one of its main objectives, there are no specific financial provisions for NDMA, Dzongkhags’ committee and sectoral agencies to carry out related activities in a comprehensive manner.
- At present, the implementation of these provisions is reactive – depending on contingencies of disaster occurrence, and is fragmented at the different levels and sectors with limited mechanisms to monitor and control the budget performance against disaster risk management- related target indicators.
- The remit of disaster risk management is too narrowly defined. The bulk of current provisions are focusing on preparedness, response, and recovery with little room to expand and or account the various activities in the mainstream development sectors.

Interventions

Under an overarching principle that accessibility, usage and reporting procedures with regard to the funds and budget specified in the DM Act 2013, are further detailed out in the DM Rules and Regulations and the financial procedures drafted by the DDM in coordination with the Ministry of Finance, the following measures should be implemented:

- Clarify financial modalities as mandated in the DM Act 2013 and take into consideration changes within the financial/budget system
- Adopt a budget for disaster management that is developed based on a comprehensive disaster management plan outlining the financial outlay for programmes and activities at national, Dzongkhag and agency levels. Whereas the budget is allocated to each of competent authorities under the overall Five Year Plans, its allocation heads and lines which are aligned with the disaster management plans and should be tagged as disaster management budget.
- Put in place disaster management financing under NDMA, such as disaster management financing committee, to monitor on periodical basis the allocation and performance of the budget by the competent authorities.
- Pool all assistance and contribution made towards disaster risk management and resilient under one financing code to make it easier for allocation of funds and for effective monitoring and reporting of activities and expenditures

Results

- Establishment of funding and budgeting mechanisms for risk reduction and mitigation measures;
- A national disaster management financing portfolios that cover budget allocation and expenditures of the overall disaster management requirements national, Dzongkhag and agency levels, that are accounted at initially up to 5% of the overall national budget and gradually to reach 10% by the end of 12th Five Year Plan.
- A Committee on disaster management financing under NDMA is in place and functioning to monitor the performance of the overall disaster management portfolio

2.3.2. Improvement of the construction and maintenance of critical infrastructure and protection of key sectors

Key infrastructures and facilities such as health centers, schools, disaster management facilities and key public and administrative buildings need to be disaster resilient to ensure their functionality during emergencies. Performance of schools and health facilities were unsatisfactory during the past disaster events.

While detailed and comprehensive seismic zoning of Bhutan is unavailable, its proximity to the north eastern parts of India, which are in the 'most active' seismic Zone V (according to Bureau of Indian Standards), indicates that the majority of Bhutan is either in Zone IV or V. The 2015 Nepal earthquake more than ever heightens the need for strengthening of infrastructures to be able to withstand such hazard.

Issues and gaps

- The 11th Five Year Plan already provides for the improvement of infrastructure to be disaster resilient. It contains key result area that all newly constructed infrastructures will be eco-efficient & disaster resilient. Similarly in Construction sector under the GNH pillar of Conservation & sustainable Utilization and Management, it is targeted that half of all constructions are environment eco-friendly/disaster resilient, innovative and good quality. However, there is yet an established appropriate set of indicator to measure the principles of being eco-efficient & disaster resilient.
- Formidable development investment in improving the construction infrastructure are not accompanied with sufficient rules, regulations and budget allocation for inspection and maintenance in order to ensure that they are indeed eco-efficient and disaster resilient.
- Some key sectors such as power generation, tourism and economic productions are prone to the adverse impact of disasters. There is yet policy, plans, and budget allocations to ensure that such sectors could withstand the assault of disaster impacts.
- Nepal 2015 earthquake brings the realization that there is need to urgently protect cultural heritage sites and monuments from disaster risks. Safety and disaster resilience of such heritage buildings and monuments more importantly their irreplaceable content are not ensured.

Interventions

- Develop a set of appropriate indicators are endorsed by NDMA to measure the performance of budget allocated for the construction of eco-efficient and disaster-resilient infrastructure based on hazard risk assessments as important component of any investment project so that mitigation measures are put in place to reduce losses from a disaster.
- Allocate budget for regular inspection and maintenance of critical infrastructure
- Allocate budget for the protection of key sectors against disaster risks
- Finance risk reduction measures based in vulnerability assessments of key facilities including critical disaster management and telecommunication facilities to enable systematic and mandatory incorporation of seismic resistant and other hazard resilient features particularly for schools, hospitals and other health centers.
- Undertake urgently vulnerability and risk assessments for heritage sites as well as tourism sectors' assets and facilities and to put in place structural and non-

structural mitigation measures as well as fire safety, emergency evacuation and communication plans.

Results

- A set of appropriate indicators are endorsed by NDMA to measure the performance of budget allocated for the construction of eco-efficient and disaster-resilient infrastructure
- Budget provisions are put in place to ensure the regular inspection and maintenance of critical infrastructure in order to make them up to standard with regard to being eco-friendly and disaster resilient
- Budget allocation for the protection of key sectors against disaster risks

2.3.3. Investment in non-structural measures

Investment in structural measures would need to be complemented with the appropriate non-structural measures. Community awareness, spatial planning, enforcement of safety building standards, facilitate and promote private sector business resilience particularly SMEs are examples of such non-structural measures.

Issues and gaps

- There is an inadequate financial resource to implement no-structural risk reduction and adaptation activities prioritized by local governments and national agencies.
- Lack of tools, required information and capacities to monitor and assess such risk reduction measures has also hindered integration and implementation of risk reduction/adaptation activities into the mainstream development plans and programmes
- The existing building code is based on engineering studies and seismic hazard estimation with the assumption that the largest event is of lower magnitude. The 2015 Nepal earthquake indicates that seismic hazard is significantly higher than previously thought. As the time of earthquakes cannot be predicted, there is a need to update guidelines on how to build houses and enforce their application more vigorously than before. There should be more local studies to gather more data so the code can be updated accordingly.
- Vulnerability was also believed to be caused by lack of awareness regarding floods and earthquakes, and by deforestation regarding floods and landslides.
- There is yet clearly defined roles, responsibilities of and budget allocation for agencies involved at national and local levels regarding the conduct of awareness-raising activities in relation to different types of natural hazards
- There is also a need to review available instruments such as the environment impact assessment, vulnerability assessment checklists, and planning guidelines and building codes and standards to facilitate integration at the national and local levels

- There is need to reassess awareness programs and strategies and refocus on communities.
- There is lack coordinated efforts towards the multi-hazard risk assessment to promote risk sensitive development and land use planning.
- The Bhutan Building Codes, 2003 mandates inclusion of earthquake-resistant design features in engineering structures but there are no codes yet for non-engineered constructions like rural homes, and community built structures.
- While the DM Act 2013 contains provisions regarding the role of notified private sector, little has been developed to promote the resilience of business sector themselves and their contribution towards attaining the resilience of society at large.

Interventions

- Increase budget allocation for education and public awareness on disaster risk management through financing the inclusion in educational programmes for specific disaster risks at all levels, public awareness and information campaigns, the use of the medias, and community training programmes;
- Allocate resources to develop a comprehensive awareness and education strategy that would include the necessary risk information, safety messages, protective actions to take, target audience, and appropriate risk communication channels and mediums. Awareness programme should also be provided to communities/ families on preparing family preparedness plans and on taking care of children/people with special needs.
- Leverage the linkages between disaster management authorities and religious and other community institutions/NGOs for awareness generation, to enhance communication between government and local communities, as well as to promote community awareness and preparedness
- Establish partnerships with the print and broad cast media for delivery of public awareness generation programmes forging partnerships with various media to create and disseminate advocacy and safety programs for the public through public-private partnership.
- Finance the generation of maps and accumulation of risk information to enhance development plans and land use planning to inform mitigation and preparedness plans of local governments and different sectors/agencies.
- Finance the development of codes for non-engineered constructions like rural homes, and community built structures, research and consolidation of indigenous knowledge related to traditional structures to strengthen and conserve traditional construction practices.
- Develop resource mobilization plan to promote the roles and responsibilities of private sector in disaster risk management

Results

- Budget allocation for education and public awareness on disaster risk management that includes the necessary risk information, safety messages, protective actions to take, target audience, and appropriate risk communication channels and mediums.
- Integrated programmes involving disaster management authorities and religious and other community institutions/NGOs for disaster awareness building
- Risk – informed development plans and land use planning
- Codes for non-engineered constructions to strengthen and conserve traditional construction practices.
- Public-private partnership programmes in disaster risk management

2.3.4 Risk Transfer Mechanism

Issues and Gaps

- The impacts of recent earthquakes, fires and windstorms have resulted in considerable economic loss to society and individual households. Compensation was provided through the Rural Housing Insurance Scheme (RHIS), which is a highly subsidized government program, and the government also provided re-construction materials to support affected people. However, this mechanism is not sustainable on a long-term and there is a need to develop a variety of mechanisms for risk-transfer and risk insurance.
- The existing damage assessment methods for insurance compensation for the RHIS need to be re-considered reflecting actual damage and needs of the affected population.
- There is also need to seriously consider insuring government infrastructure, buildings and other assets against damages caused by hazards.
- There is a general lack of awareness of the importance of insurance among the public, particularly on livestock and crop insurance schemes.

Interventions

Support the establishment of risk-transfer and insurance schemes (including insurance schemes for livestock and agriculture produce) and mechanism for losses caused the occurrence of hazards to reduce socio-economic vulnerability of affected families and enhance their ability to recover from and re-construct after a disaster.

Explore possibilities of insuring government infrastructure to reduce financial burden on the government in terms of restoration and re-construction of government facilities and services after a disaster.

Sensitize and raise awareness of the public on the importance of risk transfer and the role of insurance in strengthening resilience in the aftermath of a disaster.

Results

- Mechanisms and variety of schemes for risk-transfer and risk insurance developed;
- Existing damage assessment method and mandatory rural housing insurance products reviewed to reflect actual damage and needs of the affected population;
- Increased awareness on the importance of insurance among the public, in particular livestock and crop insurance schemes.

2.4. Priority Action 4- Strengthening disaster management capabilities

This priority action aims at strengthening the capacities of core DM institutions, i.e. NDMA and DDMCs, duty-bearing sectoral agencies, and DDM through technical inputs, human resource development, and equipment supply to ensure the ability to respond to disaster emergencies.

The objectives of this priority action are to

- Implement an integrated resilience programmes encompassing both climate change and disaster risk reduction
- Improve the multi-hazard early warning system
- Establish emergency operation centers at national and Dzongkhags along with the establishment of pools and network of trained and qualified disaster responders and optimizing partnership in emergency response and relief at sub-regional and international levels

3.4.1. Integrated resilience programmes

The objective of this priority is to reduce loss of life and property in the event of potential hazard occurrences through planned and well-designed risk reduction and mitigation activities. In addition, it aims to reduce vulnerabilities through mainstreaming disaster risk reduction into development plans and activities to reduce damage and economic losses. Furthermore, the priority focuses on vulnerability reduction with diversified income generation options and risk-sharing mechanisms.

2.4.1.1. Climate Risk Management

Issues and Gaps

- There is a need to highlight the importance of climate change impacts on natural hazards, risks and vulnerabilities in Bhutan and the inevitable potential frequencies and impacts of such hazards in future. Climate change adaptation fundamentally relates to reducing and managing climate-related risks. In this context there is a strong need for integration of DRR and CCA efforts and to

have environmental and natural resource management approaches as part of DRR strategies.

- There is a need to study and recognize climate related risks, apart from GLOF and identify both structural (engineered structures, dams etc.) and non-structural measures (policies, awareness, knowledge) to reduce risk and enhance resilience.
- CCA-DRR involves cross-sectoral engagement, commitment and resources at higher level. Therefore, the incorporation of CCA and DRR linkages and risk reduction activities in all development plans and policies is a must. To facilitate this there is need to develop a common framework for CCA and DRR in the context of sustainable development and formulate mainstreaming tools that for all phases of development.

Interventions

Assess the further linkages between CCA and DRR and develop a common framework for the two in the context of sustainable development. This is to be undertaken based on Bhutan's far-sighted policies on environment protection and nature conservation. Among others, the policies also recognize the negative impacts of climate change and the need to address the same through mitigation and adaptation measures. Similarly building disaster resilience has been identified as a key result area in the current 11th FYP.

Support the implementation of climate change induced risk reduction, mitigation and preparedness projects and activities.

Study and develop the mainstreaming tools for DRR and climate risk and made them available to the relevant and vulnerable sectors and to local governments for incorporation in their annual and development plans.

Results

- Clear DRR and CCA linkages established with an agreed common framework within the context of sustainable development;
- Studies conducted to recognize and establish climate related risks and identification of structural and non-structural mitigation/ adaptation measures;
- Implementation of prioritized mitigation and risk reduction activities and projects to reduce climate-change induced risks, especially supporting the NAPA process;
- Reduced vulnerability and exposure to climate-induced hazards and risks;
- Mainstreaming tools developed for the integration of DRR and climate risk concerns into annual and five year plans of all relevant sectors, agencies and local governments.

2.4.1.2. Disaster Prevention and Mitigation Measures

Develop, maintain, and put in place implementation capabilities for the various disaster prevention and mitigation measures including national and Dzongkhag disaster management plans, contingency plans, response plans, and rehabilitation and reconstruction guidelines and plans.

Issues and Gaps

- GLOF mitigation measures have been developed and implemented in some of the most vulnerable locations with support from the UN and bilateral donors. Similarly, landslide and flood mitigation measures are being implemented by different agencies such as the Department of Roads (DoR), Department of Engineering Services (DES) and the Department of Agriculture. However, there is a need to identify and agree on high risks areas, including critical public infrastructure, in terms of high-frequency and high-impact hazards such as floods, landslides, earthquake, windstorms and jointly determine key/ priority disaster prevention and risk reduction/ mitigation measures.
- There is a need to prevent or minimize the development of new risks which would require the development of hazard zonation maps and the reflection of this concern in the land use and human settlement plans and policies. This would also require the incorporation of DRR concerns in existing tools such as the Environment Impact Assessments.
- There is also a need to reduce existing risks by conducting vulnerability assessments of existing infrastructure and strengthening structures, put in place measures (structural and non-structural) or take other recommended measures that would reduce risk. This needs to be done urgently for important structures such as schools, health facilities and other critical structures.
- Though the Community Based Disaster Risk Management (CBDRM) program has been initiated in almost all Dzongkhags, the process has not been able to culminate in a Dzongkhag Disaster Management Plan. Similarly there is need to develop a National Disaster Management Plan and Sector DM plans as mandated by the DM Act 2013.
- The lack of proper guidelines, poor enforcement mechanism, limited knowledge and skills of engineers and artisans and limited awareness among public on safe construction practices all contribute to vulnerabilities in the built form. There is a need to adopt strong measures to ensure enforcement of building codes.

Interventions

Support the development of Disaster Management Plans at National, Dzongkhag and Sector/ agency levels as per the DM Act 2013. Identify in the National Disaster Management Plan the high risks areas and critical public infrastructure and prevention and mitigation measures to be undertaken at the broader level.

Facilitate sectors/agencies that may be notified, as per the DM Act 2013, to develop their DM plans, are Agriculture, Health, Education, Economic Affairs, Works and Human Settlement, Transportation and Communication, Culture and Labor. The sector/agency and Dzongkhag disaster management plans should include specific mitigation/risk reduction and prevention measures to be adopted and also measures that would build resilience of the affected communities. For facilitation of Dzongkhag level DM plans, the CBDRM process will be continued with renewed focus and in a strategic manner.

Support the prevention or minimization of new risks through the development of hazard zonation maps and incorporation of the findings in land use and human settlement plans and policies and the up gradation of building standards and codes. New risk creation will also be prevented through the adoption of DRR concerns into existing planning and decision-making tools such as the Environment Impact Assessments.

Train engineers from ministries / sector agencies in the use of vulnerability assessment checklist/tool for schools and basic health units.

Identify weaknesses of critical infrastructure such as schools, health facilities and other key facilities in vulnerability assessments and recommend measures for strengthening and risk reduction, which would be implemented on a priority basis and in a phased manner.

Establish proper guidelines, building codes and standards enforcement mechanisms to reduce vulnerabilities in the built environment. Facilitate capacity building of engineers and local artisans, along with the sensitization of public, particularly home-owners on the importance of adopting safe construction practices.

Results

- Identification of key/ priority disaster prevention and risk reduction/ mitigation measures for high-frequency and high-impact hazards such as floods, landslides, earthquake, windstorms in major settlements, high risks areas and for critical public infrastructures;
- Hazard and risk information used to inform land use and human settlement plans and policies;
- Development of functional DM plans at national, Dzongkhag and sectors levels.
- Incorporation of DRR concerns in existing tools such as the Environment Impact Assessments;
- Vulnerability assessments conducted for existing infrastructure, especially for schools, health facilities and other critical structures and recommended measures implemented in a phased manner;
- Knowledge and skills of engineers and local artisans enhanced to under prevention and mitigation measures;

- Strong measures to ensure enforcement and monitoring of building codes adopted;
- Building standards and codes revised to reflect current and updated state of hazard and risk information, including for construction of roads, bridges and protection walls;
- Disaster prevention, preparedness and response plan for key cultural heritage sites and enhanced technical capacity in rebuilding cultural heritage and infrastructure;

2.4.2. Enhancing Early Warning

There is an urgent need to develop technical capacities of concerned agencies in weather, climate and hydrology for providing appropriate hydrological, meteorological, flood, glaciers and related forecasts, hazard information and effective early warning services.

Issues and Gaps

- Except for the GLOF EWS in the Punatsangchu river basin there are no other EWS established. GLOF EWSs for the Mangdechu and Chhamkhar river basins are currently being established. There is need to also establish EWS for other impending hazards such as landslides, flooding and windstorms, that effect parts of Bhutan on a recurrent basis.
- For the weather and flood forecasting agencies, such as the Department of Hydro-met services to be able to give out real time weather information, there is need to upgrade the existing weather and rainfall stations in the country and establish a National Weather Forecasting Station. Only then will it be possible to analyze weather information and provide reliable forecasts in time to generate early warnings.
- There is a need to develop standard systems and procedures for communicating early warning information at the national level and to the concerned local governments and vulnerable areas. This would also require establishment of an emergency communication network in a phased manner.
- There is a strong need for greater community engagement in the development and implementation of EWS.

Interventions

Support the strengthening of the main technical institution, the DHMS. The modernization and institutionalization of the DHMS and the weather stations will be facilitated to enable the provision of real time weather information and to enhance their capacities to provide weather forecasts that would ultimately translate into reliable early warning information.

Establish and integrate early warning systems for GLOF, landslides, flooding and windstorms in end-to-end early warning systems and with specific arrangements to involve at-risk communities in the formulation, monitoring and implementation of the systems. Reinforce the involvement of local communities in all stages of EWS through promotion of public understanding of the whole range of risks they face thus strengthening the desired preparedness actions and warning response.

Enhance Hydrological Network for Water Resources Assessment and Improve Flood Information/GLOF Early Warning networks and stations to reduce the risks of climate change induced disasters like floods, landslide, and droughts as contained in the 11th Five Year Plan, Sustainable and Equitable Socio- Economic Development pillar; with the aim of improving hydrological and meteorological observing and monitoring network and services with good national coverage, enhancement of weather forecasting days 1 to 3 days; and improvement of river flow forecasting from 0 to 1 day, establishing at least three glacier Mass Balance Monitoring stations, and increasing the basin-wise multi-hazard early warning systems from the current 1 to 2.

Results

- Modernized and upgraded nation-wide hydro-meteorological system functional and providing real time weather information;
- Early warning systems in place for various identified hazards in the most at-risk areas, with strong community participation;
- Partnerships established with regional EW systems and mechanisms for cooperation in place.

2.4.3. Disaster Preparedness and Response

The objective of this priority is to ensure that preparedness and response systems, plans and procedures are in place at all levels. As the coordinating agency, DDM shall ensure that development and institutionalization of response capacities and systems and facilitate the formulation and endorsement of contingency plans at the national, sector and Dzongkhag levels, as mandated by the DM Act 2013.

Issues and Gaps

- There is a need to finalize the contingency plans and the national response mechanism, which shall include clear roles and responsibilities of different agencies during response, communication flow and procedures and the integration and adoption of the Incident Command System (ICS) for coordinated response, to facilitate the development and finalization of contingency plans at various levels as mandated by the DM Act 2013.

- For effective coordination of response activities and facilitate emergency communication, there is a need to establish the National EOC with standard operating procedures. A network of EOCs in priority/vulnerable Dzongkhags also needs to be established.
- The National Search and Rescue Team (NaSaRT) was constituted in 2011 and a number of basic search and rescue trainings have been provided at national, regional and Dzongkhag level. The DDM is in the process of training dzongkhag SAR teams. However, there is a need to accelerate the formation and capacity building (skills, equipment) of SAR teams at various levels given the accessibility and communication difficulties in Bhutan.
- There is also the need to build capacities (skills, manpower, and equipment) of other emergency response agencies such as the emergency medical services and the fire services division at both national and local levels.
- There is a need for clear procedures and agreed post-disaster assistance mechanisms to incorporate any support from the UN, other international agencies, humanitarian groups, emergency organizations and other countries. The response system should have clear procedures and mechanisms for any post-disaster assistance required. For example, UN and other development partners collaborate through the existing RGoB-UNEDMT Group and use the cluster/sector-based response and assistance mechanism.

Interventions

Identify and implement risk reduction and mitigation measures by putting in place preparedness measures such as pre-agreements, stockpiling, drills; and response plans that encompasses emergency communication, assessment and search and rescue arrangements. This priority will therefore support the facilitation and adoption and disaster preparedness and contingency plans at all levels.

Support and facilitate the formulation of sectoral contingency plans / Business Continuity Plans (BCPs) for critical social and economic sectors and infrastructure, in a prioritized manner. Contingency plans, starting with those focusing on earthquake, will also be developed at national and local levels. The National Contingency Plan will include procedures for managing and coordinating relief and response actions, conducting multi-sector damage and needs assessment, standard relief management, establish emergency stock-piling facilities in key locations and stockpile essential items and develop and disseminate guidelines for distribution by *Dzongkhags/Gewogs*.

Establish on a priority basis NEOC and Dzongkhag EOCs and putting in place an emergency communication network with a view to enhancing emergency and early warning communication. This would include the development of standard operating and communicating protocols between DHMS and DDM/NEOC, with other sectors as relevant, with the local governments and with the vulnerable areas.

Clearly articulate roles and responsibilities in the form of guidelines and standard operating procedures for effective communication, response and delivery of relief support. The RGoB will establish a unified national command, control and communication system (Incident Command System) and an inter-connected and well-equipped network of Emergency Operation Centers (EOCs) at national and priority *Dzongkhag* levels.

Strengthen response capacities of the NaSART and *Dzongkhag* and community level SAR teams and establish links with the armed forces, other emergency agencies and volunteers groups for coordinated response to emergencies.

Review and strengthen the capacities of emergency service agencies such as the emergency medical services and the fire services division, including exploring the establishment of an independent fire services department to coordinate and implement emergency response activities. Establish fire brigades in each district particularly designed for search and rescue and fire-fighting to meet emergency response requirements at the local levels.

Support the Health Help Center's (HHC) objectives, capacities and requirements will to ensure a coordinated emergency medical response; develop emergency medical response capacities – trauma management, mass casualty management, hospital emergency preparedness plan etc. - at the health facilities (hospitals and BHUs) to meet emergency medical requirements during disasters and emergencies.

Formalize international assistance mechanisms, such as use of International SAR teams, alternative transport and communication means during emergencies to ensure efficient deployment of surge capacities and additional resources during emergencies beyond coping capacity of the country. Register Bhutan as a member of the International Search and Rescue Group (INSARAG), sign the UN customs facilitation agreement and ratified the SAARC Rapid Response Agreement.

Results

- Finalization of required guidelines and the development and endorsement of DM and contingency plans at various levels as mandated by the DM Act 2013;
- Finalization and endorsement of the standards for relief and compensation;
- NEOC established with standard procedures in place for emergency information and early warning communication;
- Emergency communication network set up in a phased manner;
- Establishment of National EOC with standard operating procedures;
- Institutionalization of *Dzongkhag* and *Thromde* SAR teams with required capacities (skills, equipment);

- Strengthened emergency medical services and the establishment of a Department of Fire Services, including the establishment of Fire stations in all 20 Dzongkhags;
- Establishment of national response system, including mechanism for receiving disaster humanitarian assistance from outside;
- Fully operational BDA tool and mechanism and cluster/sector group coordination in place;
- Clear policy and guideline on utilization of funds specified in the Disaster Management Act;
- MoUs with neighboring countries, regional, international and UN organizations on provisions of immediate assistance and transport facilitation during disasters in place.

2.4.4. Post-disaster Recovery and Re-construction

Issues and Gaps

- Recovery and re-construction processes/ activities undertaken after the 2009 and 2011 earthquake events have demonstrated numerous challenges and lessons. There were challenges not only in terms of immediate response but also in the sequencing and conduct of various damage/rapid assessments. Immediate post disaster information gathering and assessment efforts have a bearing on the ability to mobilize resources and raise funds for recovery and re-construction. It is therefore important to have in place a post-disaster assessment framework for Bhutan.
- In the case of past events, damage assessments were carried out by the Dzongkhag administrations and it was a challenge standardizing damage assessment tools and reporting procedures. Joint post-disaster needs assessments were conducted jointly with UN and WB, based on which the National Recovery and Re-construction Plans (NRRP) were formulated. The implementation of NRRPs required extensive prioritization within the sector and Dzongkhag budgets and many planned activities were foregone to accommodate recovery and re-construction activities. Mobilizing resources for the NRRPs have been difficult and many activities under 2011 NRRP still remain unimplemented due to lack of funds.
- Both the NRRPs have highlighted the need to “build back better”, however the opportunity for risk reduction and making structures safer and more resilient during the re-construction process has been overlooked. This may be due to financial reasons however it would be extremely cost effective to make structures more resilient during the re-construction period rather than having to wait for similar losses during future disasters or trying to strengthen structures after completion.

- At present, the Rural Housing Insurance Scheme (RHIS), a highly subsidized government program implemented through the Royal Insurance Corporation of Bhutan (RICB) is an excellent example of social insurance. Rural homes are insured on a mandatory basis and this provides them with some finances to recover from disaster events.

Interventions

Develop a post-disaster assessment framework that would clearly identify the sequence of various assessments, objectives of each assessment, the type of information that would be generated, responsible agency, flow of assessment information and finally how the assessment information will be used. Support the review of existing post-disaster assessment guidelines/ tools, formulate new standard tools if required and build capacities of assessment teams at various levels.

Formalize the process to formulate NRRP after a disaster to include processes to prioritize activities in relevant sectors and Dzongkhags and clearly articulate the process for accessing funds for re-construction activities. Highlight in the NRRP formulation guidelines the importance of “build back better” and use the recovery and re-construction processes to reduce risk and make structures safer and more resilient. Utilize post-disaster recovery and rehabilitation processes to build capacities for risk reduction and preparedness, especially at the community level.

Design risk- financing program to enable meeting post-disaster funding needs to avoid major economic disruptions from post-disaster major budget reallocations, additional taxation, or external borrowing and to facilitate families to have the means to rebuild after a disaster.

Results

- Effective post-disaster assessment framework and the relevant tools and capacities for the various assessments in place.
- NRRP formulation processes include risk reduction and resilience building activities.
- Safer and more disaster-resilient structures re-constructed.
- Improved national and local awareness and capacity on disaster risk reduction after recovery.
- Post disaster recovery risk financing is in place

Chapter 4- Means of Implementation

In order to ensure the highest attainment of the objectives set forth in this DRMS, it is important that the following means of implementation are in place:

Partnership: Implementation of disaster risk reduction in Bhutan requires an all-of-society engagement and partnership within and across government sectors as well as

with civil society organisations and communities at all levels. This will necessitate the full engagement of public and private stakeholders, including business and academia, as well as improvement of organized voluntary work of citizens, to ensure mutual outreach, complementarily, and holding one another accountable against the agreed goals and objectives.

Bhutan is also committed to international partnership through various disaster risk reduction platforms such as bilateral and multilateral channels at South Asia, Asia – Pacific and global level to augment its national resources and capabilities. These ensure adequate, sustainable, and timely implementation encompassing capacity-building, financial and technical assistance, and technology transfer.

Capacity Development: Stakeholders both at national and local levels deserve to be provided with appropriate supports to enhance the performance of their roles and responsibilities in disaster management. To this end, they require adequate, sustainable and timely provision of support, including through finance, training, and guidance from the mandated agencies. International organisations and civil society organisations are expected to particularly support in the implementation of local and national plans and strategies; contribute to and support public awareness, promote a culture of prevention and education on disaster risk; and advocate for resilient communities. DDM is responsible to develop normative standards and to provide technical backstopping in terms of providing specific knowledge and pragmatic guidance in the context of the development and implementation of national/and local plans and activities for disaster risk reduction.

Accountability: Effective implementation of disaster risk management requires a clear articulation of responsibilities and accountability mechanisms among all institutions, agencies and private sectors, as well as civil society organisations and religious organizations. With regard to result-oriented accountability, it is necessary that DDM strengthens baseline and provides the necessary technical backstopping for agencies to periodically assess disaster risks, vulnerability, capacity, exposure and hazard characteristics.

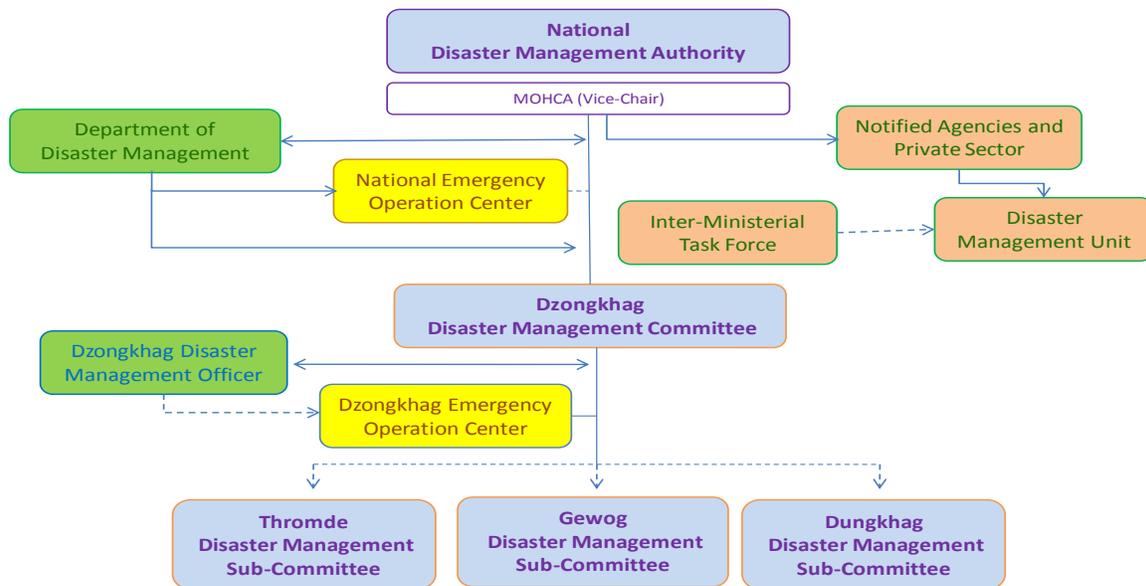
In order to enhance monitoring for accountability, it is important to develop disaster registry and recording methodologies and tools. It is vital to establish disaster-related statistics on disaster occurrence and impacts to systematically evaluate record, share and publicly account for disaster losses and understand the economic, social, health, education, environmental and cultural heritage impacts.

Resources: NDMA, DDMCs as well as sectoral duty bearers would require adequate and appropriate competencies and expertise. More importantly, financing from public and private sources as well as improved access to reliable, affordable, appropriate and environmentally sound technologies should be arranged. In conjunction with the post-2015 development agenda, the 11th Five Year Plan provides a unique opportunity to enhance the establishment of coherent and coordinated resource framework across development, climate change and disaster risk reduction.

In this regard, it is crucial to ensure that disaster risk reduction is mainstreamed into development plans and programmes within and across all sectors, as appropriate. The resources for disaster risk reduction measures are incorporated in poverty reduction, sustainable development, natural resource management, environment, urban development and adaptation to climate change.

Annexure 1: Disaster Management Mandated Institutions and Agencies

Policy and decision making institutions:



National Disaster Management Authority:

Clause 7 of the DM Act 2013 established the National Disaster Management Authority (NDMA), as the highest decision making body on disaster management in Bhutan.

The NDMA comprises of:

1. The Prime Minister, as the ex-officio Chairperson;
2. The Minister for Home and Cultural Affairs, ex-officio Vice Chairperson;
3. The Finance Minister;
4. The Secretaries of all Ministries;
5. Gyalpoi Zimpon;
6. Head of the National Environment Commission;
7. President, Bhutan Chamber of Commerce and Industry;
8. Head, Department of Disaster Management as Member Secretary; and
9. Such other member as may be co-opted in accordance with rules framed under the Act.

The NDMA is responsible for approving - national DM strategies, policies; the national DM and Contingency Plan; vulnerability and hazard zonation maps; structural and non-structural measures, national standards, guidelines and procedures. The NDMA is also responsible for allocation of DM related funds; directing agencies to mainstream

disaster risk reduction into their development plans, policies, programmes and projects; and ensuring the establishment of an Inter-Ministerial Task Force.

In addition, the NDMA has the power to direct any agency including private sector on disaster management; establish/commission research, develop and provide training in the field of disaster management; direct the Department of Disaster Management, *Dzongkhag* Disaster Management Committees and agencies including the private sector as may be necessary for the effective implementation of the Act; or perform such other function as may be prescribed under the Act or any law in force.

Dzongkhag Disaster Management Committee:

Clause 24 of the DM Act 2013 mandates every Dzongkhag Administration to constitute a *Dzongkhag* Disaster Management Committee (DDMC) under the Chairmanship of the *Dzongdag*.

The DDMC will comprise of:

1. The Dzongda, as Chairperson;
2. A Dzongkhag Welfare Officer from the Druk Gyalpo's Office of People's Welfare, if any;
3. Chairperson of Dzongkhag Tshogdu;
4. All Gups;
5. All Thrompons/ Thromde Thuemi;
6. Superintendent of Police or Officer-In-Charge, Royal Bhutan Police;
7. Drungchen, Zhung Dratshang or Dzongkhag Rabdey;
8. Dzongkhag Disaster Management Officer as Member Secretary; and
9. Such other member as may be co-opted in accordance with the DM Act 2013.

The DDMC is responsible for – Preparing and implementing the *Dzongkhag* Disaster Management and Contingency Plan; monitoring and evaluating measures for prevention, mitigation, preparedness, response and capacity building taken up by sectors in the *Dzongkhag*; ensuring establishment and functioning of Critical Disaster Management Facility; ensuring mainstreaming of disaster risk reduction into the local development plan and programs; ensuring compliance of approved hazard zonation and vulnerability maps; ensuring the enforcement of structural and non-structural measures; ensuring communication of hazard/disaster events to the DDM and NDMA; ensure assessments and monitoring reports; ensure promotion of education, awareness, capacity building at dzongkhag and community level; conduct regular mock drills; report on the progress of implementation of the Disaster Management and Contingency Plan; direct *Dzungkhag*, *Thromde* and *Gewog* Disaster Management subcommittees, if any; and perform such other functions as prescribed under the Act by the NDMA.

DDMC Subcommittee:

The DDMC may, if it considers necessary, constitute subcommittees at the *Dzongkhag*, *Thromde* and *Gewog* levels to assist the DDMC. All *Gups*, *Thrompons* are members of the DDMC and are responsible for preparing the *Dzongkhag* Disaster Management and Contingency Plan; ensuring mainstreaming of disaster risk reduction into *Gewog* and *Thromde* plan, policy, programme and project; reporting to the DDMC on the measures taken by each sector on awareness, prevention, mitigation, preparedness, response and capacity building; reporting on a quarterly basis to the *Dzongkhag* Disaster Management Committee on the implementation of *Dzongkhag* Disaster Management and Contingency Plan or *Gewog* or *Thromde* Disaster Management and Contingency Plan, if any; educating and raising awareness and supporting community capacity building; conducting regular mock drills; facilitating efficient functioning of Critical Disaster Management Facilities; ensuring adherence to hazard zonation and vulnerability map and implementation of structural and non-structural measures; ensuring communication of disaster information to DDMC; conducting disaster response, relief and recovery operation under the direction and supervision of the DDMC; and identifying and mobilizing local resources for response and relief operations.

National Response System:

The DM Act, 2013 classifies disasters in three categories:

- A disaster is classified Type I, if it can be managed with available resources and is within the coping capacity of the *Gewog* / *Thromde* concerned.
- A disaster is Type II, if it can be managed with available resources and is within the coping capacity of the *Dzongkhag* concerned.
- A disaster shall be classified Type III, if the severity and magnitude is so great that it is beyond the available resources and coping capacity of the *Dzongkhag* concerned.

The NDMA has the authority to reclassify disaster types in accordance with the DM Act 2013 – Rules and Regulations. The chairperson of the DDMC, subject to approval of the NDMA, may declare Type I and II disaster in accordance with the DM Act – Rules and regulations. The authority to proclaim Type III disaster rests with the *Druk Gyalpo*, on written advice of the Prime Minister.

The National Emergency Operations Centre (NEOC) shall be the hub for maintaining a constant vigil on the emerging disaster situation and coordination of response endeavors. It shall maintain regular contact with *Dzongkhag* Emergency Operation Centers (DEOCs) and Early Warning and Emergency Operation Centers of different sectors/agencies, to receive regular updates, continuously assess and monitor the

situation and provide regular situation reports to the NDMA. The various EoCs will provide early warning, advisory or alerts on any impending disaster situation to the vulnerable population. The NDMA will direct relevant agencies to put in place EWS as a monitoring and advisory tool to identify hazard and notify all vulnerable population and responding agencies of threatening disaster situation or disaster.

The DDM shall formulate and agree upon a national disaster response coordination system/mechanism and establish the National Contingency Plan with advise from the IMTF and in collaboration with the relevant sectors and agencies.

Multi-sector cluster coordination mechanism shall be instituted for coordination of response at the national level. The number of required clusters such as – the Shelter Cluster, the Education cluster etc. should be established in advance. Cluster leads should be appointed in accordance with the sector's functions and expertise, for eg. the cluster for medical response, health and sanitation should be led by the Ministry of Health. Incident Command System shall be adopted formally as the mechanism for on-site incident management. The response mechanism should allow the participation of UN and other international agencies in the country and should also have provisions for receiving and coordinating response and relief assistance from outside the country, as required.

Specialized Institutions

Department of Disaster Management:

The Department of Disaster Management (DDM) is designated as the Secretariat and executive arm of the NDMA as per clause 59 of the DM Act 2013. As the nodal National Coordinating Agency for disaster management, the DDM is responsible for - laying down strategies, policies for disaster management; ensuring that agencies mainstream DRR; preparing the National Plan in coordination with relevant Agencies; formulating national standards, guidelines and procedures for disaster management; developing and implementing public education, awareness and capacity building programme; developing standard training module and curriculum on disaster management; developing and maintaining Disaster Management Information System; and ensuring implementation of Disaster Management and Contingency Plans.

DDM is also responsible for facilitating - the constitution and functioning of DM Committees; the formulation of hazard zonation and vulnerability maps by relevant agencies; the set up and functioning of Critical Disaster Management Facilities (establish NEOC/ DEOC and maintain emergency communication network, and facilitate the development of EWSs); the establishment/commissioning of research, development and training in the field of disaster management; collaboration with other

countries, organizations, non-governmental organizations, business establishments; and coordination of international disaster response, relief and recovery assistance.

Inter-Ministerial Task Force:

The constitution of the Inter-Ministerial Task Force (IMTF) is mandated by Clause 49 of the DM Act 2013. The IMTF comprises of technical experts from relevant agencies and will consist of such number of members as prescribed by the NDMA. The Head of the DDM is the ex-officio chairperson of the IMTF.

The IMTF is responsible for review of – hazard zonation and vulnerability maps; structural and non-structural measures; risk reduction activities; national standards, guidelines and operating procedures. The IMTF will also provide technical assistance in the preparation of the National DM and contingency plan and advice the set up of critical disaster management facilities.

Mandated Agencies and Private Sector:

Clause 66 of the DM Act 2013 mandates every agency, including private sector, notified by the NDMA to institute a disaster management unit in its organization. A notified agency (Ministry, sector, organization) is responsible for - preparing and implementing disaster management and contingency plans; putting in place measures to ensure continuity of critical services in the event of a disaster; hazard zonation and vulnerability maps; developing and compliance of structural and non-structural measures; ensuring the establishment and functioning of critical disaster management facilities; providing assistance to DDMCs as and when required and perform other functions as directed by the NDMA.

Similarly, the notified private sector agencies are also responsible for preparing and implementing DM and contingency plans, ensure continuity of critical facilities, provide assistance whenever required and perform other functions as prescribed under the DM Act 2013.

Mandated agencies

DEPARTMENT OF GEOLOGY AND MINES (DGM), MINISTRY OF ECONOMIC AFFAIRS (MoEA):

The main roles of the Department of Geology and Mines include geological mapping, exploring mineral resources, providing engineering geological services and ensuring environment friendly exploitation of economic mineral resources. DGM is also responsible for carrying out scientific studies and monitoring of natural hazards like Glacial Lake Outburst Flood (GLOF), earthquakes and landslides, which are prevalent

in Bhutan. The Department also acts as crucial link between Bhutan and the geological organizations of other countries for exchange of information and technology.

DEPARTMENT OF HYDRO-MET SERVICES (DHMS), MINISTRY OF ECONOMIC AFFAIRS (MoEA):

The Department of Hydro-Met Services (DHMS) is a key technical department in the country providing weather, water, and climate data, services and forecasts for sustainable planning and development and facilitating early warning systems for GLOFs, floods, landslides, droughts and other climate related hazards. DHMS provides weather, water, climate and related environmental services to a wide range of sectors to help them reduce risks from the associated conditions. The department is responsible in 1) providing daily forecasts of temperature, humidity and weather outlook and severe weather warnings, which is important for planning and implementing programs and services; 2) providing early warnings and alerts of extreme events including Glacier Lake outburst Floods (GLOF); 3) agro-meteorological services to the agricultural community to help improve production and reduce risks and losses; 4) providing forecasts and warnings of floods and related information both within the country and to neighboring states; and 5) hydro-meteorological data for the country to all interested agencies for planning, development and monitoring.

DEPARTMENT OF ENGINEERING SERVICES (DES), MINISTRY OF WORKS AND HUMAN SETTLEMENT (MoWHS):

Due to rapid socio-economic development and pressing challenges related to establishment and expansion of settlements, former Department of Urban Development and Engineering Services (DUDES) were bifurcated into two new Departments in 2011: Department of Engineering Services (DES) and Department of Human Settlement (DHS).

The DES is mandated for i) architecture designs, landscape designs and structural designs; ii) survey and design of urban infrastructures when required; iii) repairs and rehabilitation of distressed structures when directed; iv) design of electrical, plumbing, mechanical services, etc; v) construction technology application and development; vi) monitoring of construction and quality; vii) disaster risk prevention and mitigation measures; viii) enforcement of development control regulations; ix) parenting of *dzongkhag* engineering sector; and x) coordination of donor aided projects for infrastructure.

The Engineering Adaptation and Risk Reduction Division (EARRD) and the Flood Risk Mitigation Division (FRMD) were created under the Department of Engineering Services (DES) to look after disaster risk reduction and mitigation activities. The EARRD is a focal

in the technical division of the MoWHS dealing with all engineering aspects involved in the disaster prevention and mitigation strategies and its promotions.

DEPARTMENT OF HUMAN SETTLEMENT (DHS), MINISTRY OF WORKS AND HUMAN SETTLEMENT (MoWHS):

The DHS specializes in and focus on preparation of polices, strategies and development plans for settlements and coordinate developments both at the regional and the national level.

The DHS mandated to i) prepare human settlement policies and strategies, ii). carry out research, studies and analyses to identify potential growth centers and draft proposals for development, iii) co-ordinate preparation of national spatial plan, regional plans and land use plans, iv) prepare urban design guidelines, v) carry out plans to address construction, safety and disasters, vi) prepare physical and infrastructure development plans and local area plans along with the development control regulations, vii) draft legislation, regulations, guidelines and standards related to human settlement, viii) strict implementation of Development Control Regulations, ix) implementation of land use, planning of adherence to precinct, x) government agency constructing buildings not comparable with traditional architecture, xi) construction of slopes, xii) promotion of low height buildings, xiii) assess development applications for compliance with the approved development plans and/or relevant development objectives, xiv) carry out planning audit and review of development plans and the DCRs, and xv) carry out detailed topographic survey of specific areas/regions for preparation of settlement development plans.

DEPARTMENT OF ROADS (DoR), MINISTRY OF WORKS AND HUMAN SETTLEMENT (MoWHS):

The Department of Roads (DoR) is responsible for planning, execution and management of all road infrastructures development in Bhutan. So far Bhutan has 8,381¹ Km of road network. All district headquarters and some *Gewogs* are accessible by road. The country's fragile terrain, high ridges and deep gorges, scattered settlement and low population density are some of the constraints, which hinder the development of road network in Bhutan. Every monsoon, there are many landslides, roadblocks and flashfloods in most parts of the country. Roads and bridges have been washed away and some damaged due to landslides and flashfloods. The Royal Government also spends considerable resources in the monsoon damage restoration works such as rebuilding protection walls, culverts, and drainage system and in some cases realignment of the entire road.

¹ Annual Information Bulletin 2011, Ministry of Works and Human Settlement

The Department's main goals are 1) to improve quality of life of rural population through improved access to socioeconomic facilities and to markets, health and education facilities, etc. and 2) to enhance reliability and safety of road transport through reduced road user costs, travel time, accidents and transportation costs of goods and services.

DEPARTMENT OF CULTURE (DoC), MINISTRY OF HOME AND CULTURAL AFFAIRS:

Department of Culture (DoC) is a central agency for realization of a harmonious and progressive society through preservation, protection, development and promotion of the shared ideals & values and the unique cultural identity and its expressions. Its main responsibilities are to inventor and document cultural heritage; frame proper and relevant legislation and its management for conservation and protection of cultural heritage; promote cultural industries and vitalization of communities for poverty alleviation; conserve, develop and promote performing arts; train communities to create awareness, appreciation and practice of culture; preserve and promote national language, dialects and literature; promote cultural tourism to ensure the safeguard of the country's cultural heritage; classify and map cultural sites and heritage; promote and develop traditional architectural designs for use & commercialization and provide museum services.

DEPARTMENT OF LOCAL GOVERNANCE (DLG), MINISTRY OF HOME AND CULTURAL AFFAIRS:

Department of Local Governance (DLG) promotes supports and facilitates local governments to achieve their development objectives, in line with the Royal Government's policy of Gross National Happiness. The Department in overall enhances capacities of local government functionaries and institutions, supports poverty alleviation through Royal Kidu Grant Program, provide legal support/advice to the local administrations, supports disaster risk management at the national and local levels in coordination with relevant agencies, ensures implementation of the policy of decentralization and builds capacities of local government functionaries and institutions, their knowledge, skills and attitude.

NATIONAL ENVIRONMENT COMMISSION (NEC):

The National Environment Commission is a high-level autonomous agency of the Royal Government of Bhutan and is mandated to look after all issues related to environment in Bhutan. Its high-level commission ensures that it will have the authority to call for assistance it will need from other government bodies. The Commission also monitors the impact of development on the environment and aims to put in place the necessary controls, regulations and incentives to the private/public sectors to achieve sustainable development through the judicious use of natural resources. The coordination of inter-

sectoral programmes, the implementation of policies and legislation with regard to the environment is also another important mandate of the Commission.

The NEC Secretariat plays a key role in promoting sound environmental policies and investments. This Secretariat is responsible for ensuring that Bhutan follows a sustainable development path and that all projects be it public or private, take into consideration environmental aspects

DEPARTMENT OF AGRICULTURE (DoA), MINISTRY OF AGRICULTURE AND FORESTS (MoAF):

The Ministry of Agriculture plays an important role in increasing food production, raising rural income and improving the livelihood of the nation's large rural population while preserving the pristine natural environment and conserving the rich natural resources of land, water, forests, flora and fauna for future generations.

The Department of Agriculture provides technical expertise and provides measures to control the outbreak of pests and diseases in the agricultural fields. If the situation becomes worse and if there is severe food shortages then the Department also provides direct food aid to the affected group of people for a limited duration as a temporary measure. The *Dzongkhags* also provide small amounts of free inputs such as seeds and fertilizers to the affected farmers. The DoA is also responsible to liaise with Insurance Companies and relevant agencies to institute crop Insurance schemes and explore assistance in collaboration with relevant agencies at times a major catastrophes.

DEPARTMENT OF FORESTS AND PARK SERVICES (DoFPS), MINISTRY OF AGRICULTURE AND FORESTS (MoAF):

The Department of Forests and Park Services (DoFPS) mandated to ensure the maintenance of a minimum of 60 per cent of the country's geographical area under forest cover for all times according to the Constitution of Bhutan. The Forest Protection & Enforcement Division (FPED) under the Department looks after forest protection, sustainable management & utilization of land and forest resources. The Division manages forest fires in the country through designing and implementing a nationally coordinated forest fire awareness program and enhancing people's awareness about forest fire, analyzing data on forest fire of the country and proposing appropriate measures to minimize forest fire incidence, developing a National Fire Prevention Strategy, providing technical backstopping to the *Dzongkhag* Forestry Sector & Divisions/Parks for effective forest fire management, conducting training programmes for field staff, developing technical manuals of forest fire management, procurement and distribution of basic forest fire fighting equipments & demonstrating their application to

field staffs, and ensuring training modules & impart training on forest fire fighting for armed force personnel and forest fire volunteers.

**BHUTAN AGRICULTURE AND FOOD REGULATORY AUTHORITY (BAFRA),
MINISTRY OF AGRICULTURE AND FORESTS (MoAF):**

BAFRA is mandated to contribute towards the national goal of food self sufficiency by safeguarding the farming system of the country from exotic pests and diseases and ensuring quality farming inputs through effective enforcement of standards and regulations. One of key activity of the Agency is to implement sanitary and phytosanitary measures effectively to protect the health and life of humans, plants and animals including the environment from risks of entry, establishment and spread of exotic pests and diseases.

NATIONAL SOIL SERVICES CENTER (NSSC) (MoAF):

The NSSC was created in the 8th FYP period and reports directly to the Department of Agriculture (DoA). The aim of the center is to coordinate soil/land management research activities of the RNR sector. There are four units/section – Soil and Plan Analytical Laboratory (SPAL), Soil Survey Unit (SSU), Soil Microbiology Unit (SMU) and Soil Fertility Unit (SFU). The center has two ongoing projects - the WB/GEF Sustainable Land Management Project and UNDP/GEF Building Capacity and Mainstreaming Sustainable Land Management in Bhutan Project.

DEPARTMENT OF MEDICAL SERVICES (DMS), MINISTRY OF HEALTH (MoH):

The Department of Medical Services (DMS) under the Ministry of Health is responsible in provision of health care services at all levels, including emergency health services.

In August 2010, *Health Sector Emergency/Disaster Contingency Plan* (HSEDCP) was developed by the Department to establish an integrated health sector emergency preparedness and response mechanism within the MoH. In addition the plan aims to enhance the capacity of health sector for an effective disaster and emergency response.

The Department also looks after addressing all types of trauma relating to both natural and manmade disasters such as earthquakes, flashfloods, land slides, road traffic accidents, occupational/ industrial injuries, blast injuries, etc. Hospitals along the highways and *Dzongkhags* are being scaled up in terms of facilities for trauma care.

DEPARTMENT OF BUDGET & ACCOUNTS (DNB), MINISTRY OF FINANCE (MoF):

The Department of National Budget (DNB) is the central agency for national financial resources and management of the government. The DNB has linkages with all the budgetary agencies (Ministries, *Dzongkhags*, *Gewogs*, Autonomous agencies) in the government. The responsibility and functions of DNB in relation to disaster risk management will be on the aspects of financial management in accordance with financial provisions in DM Act 2013 and Financial Guidelines.

ROYAL BHUTAN POLICE (RBP):

The primary function of Royal Bhutan Police (RBP) is the prevention and detection of crime and maintaining law and order in the country. It also provides fire and rescue services. According to new Royal Bhutan Police Act, 2009, the following will be the roles and responsibilities of the RBP during disasters:

- i) assisting in the protection and rescue of life and property during fire hazards and other natural calamities,
- ii) Protecting public property from loss and destruction.
- iii) Rendering necessary assistance to safeguard lives and properties during disasters.
- iv) Superintendents of police/officer commanding/officer in-charges shall work under the supervision of respective *Dzongdas/Dungpas* in times of disasters and natural calamities.
- v) Constituting a Fire Services Division with required units in Division Headquarter and Fire Stations in the *Dzongkhags* and municipal areas to provide professionalized fire and rescue services.

International Partners and Donors

United Nations System:

The United Nations and its agencies, Funds and Programmes are crucial partners in disaster risk management. In cooperation with national and other stakeholders, the UN works to improve disaster risk management systems, support effective national policies and strengthen institutions. Within the context of the “**One UN**” system, it is expected that all UN agencies, Funds and Programmes, will work in close harmony with RGoB and continue to provide financial and technical assistance on disaster risk management, preparedness and capacity development in addition to responding to humanitarian crises.

Other International/ Regional Organizations and Development Partners

Multi-lateral donors, such as the World Bank (WB), the Asian Development Bank (ADB), SAARC and bilateral donors such as the Governments of Japan, Denmark, India and Austria are major financial supporters for disaster risk management initiatives in Bhutan.

Regional disaster management centers and institutions such as the Asian Disaster Reduction Center (ADRC), Asian Disaster Preparedness Center (ADPC), SAARC DM center also play an important role by providing technical support and assisting in the implementation of disaster reduction activities.

Implementation Arrangement:

Recognizing the cross-cutting nature of disaster risk management, a harmonized approach will be adopted to facilitate ownership and responsibility of DRM issues across a range of ministries and departments rather than having a single agency focus and recognizing DRM as a development issue rather than merely a crisis management issue.

A harmonized approach will include:

- Creating opportunities for the involvement of all strategic partners in a collaborative approach to risk management;
- Ensuring disaster risks emanating from all major natural hazards – hydro-meteorological as well as geophysical – are addressed;
- Ensuring DRM programmes meet the needs of rural areas as well as the needs of urban settlements;
- Enhancing coordination and information sharing across priority activities that may be anchored in different ministries and departments;
- Maximum usage of scarce RGoB resources and support from international, bilateral and multilateral development partners and avoiding duplication of efforts.

Based on lessons learnt from past disasters, all key stakeholders agree that it is essential to create a mechanism for supervising, monitoring and evaluating the efficacy and proper implementation of the DRMS. A Joint Steering Committee (JSC) composed of the IMTF members and key resident development partners, supporting DRM activities in Bhutan, such as UNDP, UNICEF, WBGFDRR, ADB and JICA shall be formed to guide the implementation process.

The JSC will be responsible for - reviewing and ensuring the effective implementation of priority activities against specified performance indicators and as per the agreed timelines; guiding DRM related program and project proposals as per the Framework; providing progress reports to the NDMA and seeking their direction as required; advising on the mobilization and channeling of required resources; and share

information and knowledge among all stakeholders, particularly implementing partners, international and regional development partners, donors and policy makers.

The JSC will convene a forum called “National Consultative Meeting on Disaster Risk Management” once a year around November for national, regional, international, multilateral and bilateral stakeholders, partners and donors. The main agenda of the consultative meeting will be reporting on progress and discussing the following issues:

- a) Progress made on the DRMS by each priority;
- b) DRM activities implemented by key stakeholders;
- c) Cooperation on DRM with development partners;
- d) Available resources and support by donors; and
- e) Recommendations and way forward

The DDM shall be responsible for providing coordination, monitoring and reporting support with regard to the implementation of the DRMS.

International Mechanisms:

Technical Assistance and Resources for DRR and Disaster Management Programmes

- **United Nations (UN):**

The United Nations System is a crucial partner in disaster risk management. As outlined in chapter 3.1.1, UN agencies focus on different aspects and areas of disaster risk management in relevance to their mandates and support different programmes and projects related to DRR. UNDP, UNISDR and OCHA have specific mandates to provide technical assistance to government on formulation of policy, development of institutions and plans for disaster risk reduction, develop capacity of government agencies and departments on disaster risk reduction, implement programmes on disaster risk reduction and coordinate relief, rehabilitation and recovery initiatives after a disaster.

- **The World Bank Group:**

The Global Facility for Disaster Reduction and Recovery (GFDRR) provides global knowledge and good practices, technical and financial assistance to high-risk low and middle-income countries based on a business model of ex-ante support to high risk countries to mainstream disaster risk reduction in national development strategies and investments, and ex post disaster assistance for sustainable recovery. The partnership’s mission is to mainstream disaster risk reduction (DRR) and climate change adaptation (CCA) in country development strategies by supporting a country-led and managed implementation of the Hyogo Framework for Action (HFA).

- **EU DIPECHO:**

The European Commission's Humanitarian aid and Civil Protection Directorate General (ECHO) provides rapid and effective support to the victims of disasters beyond the European Union's borders. DIPECHO projects will typically emphasize training, capacity-building, awareness-raising, establishment or improvement of local early-warning systems and contingency-planning.

- **Bilateral Donors:**

Bilateral donors can directly engage and fund DRR and DRM projects with the RGoB. The focus of such support can be DRM capacity building, DRR identification, assessment and research. They can either channel the resources directly or through their development agencies and NGOs. In the past, JICA, DANIDA, Gol, etc. have played a key role in areas of DRM.

International Emergency Funding Instruments for Disaster Response, Relief and Recovery

- **Emergency Cash Grant (ECG)(Administered by UN OCHA):**

- Grant of US\$50,000 (in some cases it may extend to max US\$100,000) that can be disbursed immediately for purchasing relief items, delivery and distribution.

- **Central Emergency Response Fund (CERF))(Administered by UN OCHA):**US\$450 million grant/US\$50 million loan

- For rapid response and under-funded emergencies.
- Within 72 hours for life-saving activities.

- **Consolidated Appeal Processes (CAPs)/ Flash Appeals**

- The flash appeal is a tool for structuring a coordinated humanitarian response for the first 3-6 months of an emergency.
- Flash appeals present an early strategic response plan and specific projects within 5-7 days of the emergency's onset.
- If major uncertainty exists about the evolution of the crisis, the appeal presents the most likely scenario and the response strategy for each.
- A Consolidated Appeal is a longer version of a Flash Appeal (usually 12 months), for longer-term crises, offering more analysis and detail. It links with recovery activities.

Existing DRR-CCA Funds:

Through DRR-CCA linkages, mitigation activities for climate-related disaster risks can receive support from the Global Environment Facility (GEF) Trust Fund. The Global Environment Facility Trust Fund supports the implementation of multilateral environmental agreements, and serves as a financial mechanism of the UN Framework

Convention on Climate Change. It is the longest standing dedicated public climate change fund. Climate Change is one of the six focal areas supported by the GEF Trust Fund. The GEF also administers several funds established under the UNFCCC including the Least Developed Countries Trust Fund (LDCF), the Special Climate Change Trust Fund (SCCF) and is interim secretariat for the Adaptation Fund. In the past, Bhutan benefitted from both funds available under GEF.

Annexure 2: Financial Arrangements

In order to support national and sectoral initiatives on disaster risk management and response, it is essential that appropriate funding mechanisms be created to sustain the activities.

National Mechanisms:

The following funding mechanisms have been identified as per the DM Act 2013.

a) Response and Relief Expenditure

The *Dzongkhag* Disaster Management Committee shall, as an emergency measure, meet the expenses for response and relief operation from the annual budget of the *Dzongkhag* in accordance with the Operation Guidelines for the Administration of Financial Arrangements under the Disaster Management Act of Bhutan, 2013.

b) Budget for National Disaster Management Activities

There shall be a separate budget for national DM activities, managed by DNB, MoF and shall be used for immediate restoration of essential public infrastructure and service centers.

c) Budget for Department of Disaster Management

A separate budget head called the Department of Disaster Management Budget shall be used for capacity building; establishing and maintaining critical disaster management facility, including purchase of equipment; and other activities required to strengthen preparedness.

d) Recovery and Re-construction

The DDMC shall, for the purpose of recovery and re-construction, undertake damage assessment of public assets and infrastructure as per Operation Guidelines for the Administration of Financial Arrangement under the DM Act, 2013 and submit the assessment along with the work programme and cost estimate to the DDM for review and onward submission to the NDMA for further submission to MoF. The NDMA shall recommend to the government for release of fund to sectors concerned.

e) Emergency Procurement

Where the disaster situation demands, the emergency procurement for relief and response not reflected in the annual quotation of the Dzongkhag/agency may be exempt from the standard procedures specified in the Procurement Rules and Regulations. Except for procurement of immediate relief activities, the rest of the procurement shall follow the normal RGoB Procurement Rules and Regulations.

The accessibility, usage and reporting procedures with regard to the funds and budget specified in the DM Act 2013, are further detailed out in the DM Rules and Regulations and the financial procedures drafted by the DDM in coordination with the Ministry of Finance.

In addition to the financial mechanisms specified in the DM Act 2013, as per past experience, a key mechanism, especially in terms of supporting recovery and reconstruction of rural homes, has been the compensation provided through the Rural Housing Insurance Scheme, a government subsidized insurance program managed by the Royal Insurance Corporation of Bhutan (RICB). Therefore, NDMA shall support the development of more and varied risk transfer and insurance schemes and encourage individuals, families and businesses to insure property and life against disasters, where practicable. The DDMCs shall expedite the timely issuance of insurance compensation to affected families.

Over the years, His Majesty the King has been personally attending to the welfare of the affected individuals and families in times of disasters. The *Druk Gyalpo's Relief Fund Act* was adopted by the Parliament in 2012 and His Majesty grants relief, recovery and reconstruction support to affected families.

List of References

1. Asian Disaster Preparedness Center. (2011). *PIP Study Report on Mainstreaming in the Education and Road Sector*
2. UNDP. (2011). *Outcome-level evaluation; A Companion Guide to the Handbook on Planning Monitoring and Evaluating for Development Results for Programme Units and Evaluators.*
3. UNISDR. *Hyogo Framework for Action 2005-2015; Building the Resilience of Nations and Communities to Disasters.*
4. United Nations Development Group. *Results-based Management Handbook; Strengthening RBM harmonization for improved development results.*
5. United Nations Systems in Bhutan. (2005). *Disaster Management Analysis in Bhutan.* United Nations Disaster Management Team.
6. Centre for Research Initiatives. *Assessment of Awareness, Preparedness and Response Capacities related to Climate Change induced Risks and Vulnerabilities, Final Report.*
7. Department of Disaster Management, M. (2011). *Achievements and Progress Made by the Department of Management .*
8. Department of Disaster Management, MOHCA. (2012). *Achievement and Progress made by the Department of Disaster Management.*
9. Department of Disaster Management, MOHCA. (2010). *Achievements and Progress made by the Department of Disaster Management.*
10. Gunawardena, C. *UNDAF OUTCOME 5: Environmental Sustainability, Disaster Management, Energy and Bio-diversity Conservation . UN System in Bhutan.* UN system in Bhutan.
11. Gross National Happiness Commission, RGOB. (2013). *Eleventh Five Year Plan; 2013-2018 Vol. I: Main Document.*
12. Gross National Happiness Commission, RGOB. *Eleventh Five Year Plan 2013-2018; Vol. II Programme Profile.* Gross National Happiness Commission. RGOB.
13. Gross National Happiness Commission, RGOB. (2010). *Population Perspective Plan Bhutan 2010.*

14. Gross National Happiness Commission, RGOB. (2009). *Tenth Five Year Plan 2008-2013; Vol. 2 Programme Profile*. Gross National Happiness Commission. GNHC.
15. IEG, IBRD. (2012). *Designing a Results Framework for Achieving Results: A How-To Guide*.
16. *National Disaster Risk Management Framework*. Ministry of Home and Cultural Affairs; RGOB, Department of Local Governance.
17. Save the Children . (2012). *External Evaluation of the Project - Child Centered Disaster Risk Reduction Bhutan*.
18. RGOB. (2013). *Disaster Management Act of Bhutan 2013*.
19. RGOB, UNDP. (2012). *Terminal Evaluation of the Bhutan Recovery and Reconstruction Project*.
20. Bhutan Observer (2010), “*BO Focus: Disasters in Bhutan, Vol. III, Issue X, Friday, October 8 – 15, 2010*,” Thimphu, Bhutan
21. GNHC (2008), “*Tenth Five-Year Plan (2008-2013)*”, RGoB, Thimphu, Bhutan.
22. Levaque L. (2005), “*Disaster Management Analysis in Bhutan*”, UNDMT, Thimphu, Bhutan
23. MoHCA (2005), “*National Report on Bhutan for World Conference on Disaster Reduction (Kobe, Japan 18-22 January 2005)*”
24. MoHCA (2006): “*National Disaster Risk Management Framework - Reducing Disaster Risks for a Safe and Happy Bhutan*”, RGoB, Thimphu, Bhutan.
25. MoHCA (2006): “*Strengthening Disaster Risk Management Capacities in Bhutan: Programme of the Royal Government of Bhutan*”. RGoB, Thimphu, Bhutan.
26. MoHCA (2009), “*National Recovery and Re-Construction Plan “Building back better”(September 21, 2009 Earthquake), Implementation Period: 2009-2013*”, RGoB, Thimphu, Bhutan
27. MoHCA (2010), “*National progress report on the implementation of the Hyogo Framework for Action (2009-2011) – interim*”, Thimphu, Bhutan
28. MoHCA (2011), “*Proceedings of the International Conference on Disaster Risk Reduction and Cultural Heritage “Living in Harmony with the Four Elements” December 2010*”, RGoB, Thimphu, Bhutan
29. MoHCA and UN System in Bhutan (2012), “*Learning From Natural Disasters: Lessons Learned from Bhutan*”, Thimphu, Bhutan
MoHCA (2012), “*National Recovery and Re-Construction Plan (September 18, 2011 Earthquake), Implementation Period: 2011-2016*”, RGoB, Thimphu, Bhutan

30. NEC (2006): *"Bhutan National Adaptation Programme of Action to Climate Change"*, RGoB, Thimphu, Bhutan.
31. NEC (2008): *"Climate Change Screening of Danish Development cooperation with Bhutan"*, RGoB, Thimphu, Bhutan.
32. NEC (2011): *"Second National Communication to the UNFCCC"*, RGoB, Bhutan.
33. NEC and UNEP (2009), *"Strategizing Climate Change for Bhutan"*, RGoB, Thimphu, Bhutan
34. Planning Commission (1999), *"Bhutan 2020: A Vision for Peace, Prosperity and Happiness"* RGoB, Thimphu, Bhutan.
35. RGoB-UN-WB (2009), *"Bhutan Earthquake September 21, 2009. Joint Rapid Assessment for Recovery, Reconstruction and Risk Reduction"*, Thimphu, Bhutan.
36. RGoB-UN-WB (2011), *"Bhutan Earthquake September 18, 2011. Joint Rapid Assessment for Recovery, Reconstruction and Risk Reduction"*, Thimphu, Bhutan.
37. RGoB (2011), *"Disaster Management Bill of the Kingdom of Bhutan"*, RGoB, Thimphu, Bhutan.
8. RGoB-UN (2011) *"Bhutan Human Development Report 2011: Sustaining the progress: Rising to the Climate Challenge"*, Thimphu, Bhutan.
9. RGoB-UN (2011), *Bhutan Disaster Assessment Tool (BDA) PDNA Tool*, Thimphu, Bhutan.
10. UN (2009), *"UNISDR Terminology on Disaster Risk Reduction"*, Geneva, Switzerland.
11. UNISDR (2005), *"Hyogo Framework for Action 2005-2015: Building Resilience of Nations and Communities to Disasters"*. Kobe, Japan.
12. UN OCHA (2009), *"UNDAC Response Preparedness Mission Report, 29 March - 12 April 2008, Bhutan"* Thimphu, Bhutan.