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Country Presentation on Disaster Management in Bhutan

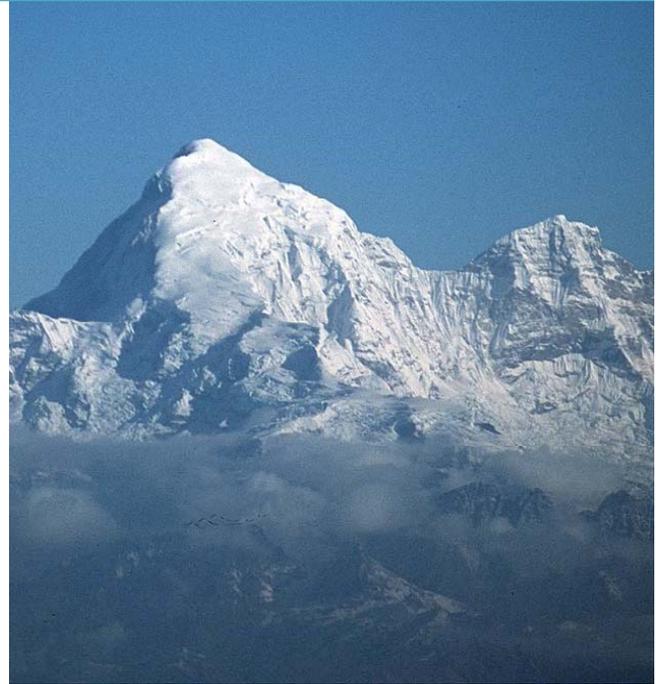


Yeshey Lotay
Department of Disaster Management
Ministry of Home & Cultural affairs
Bhutan

2 February 2015



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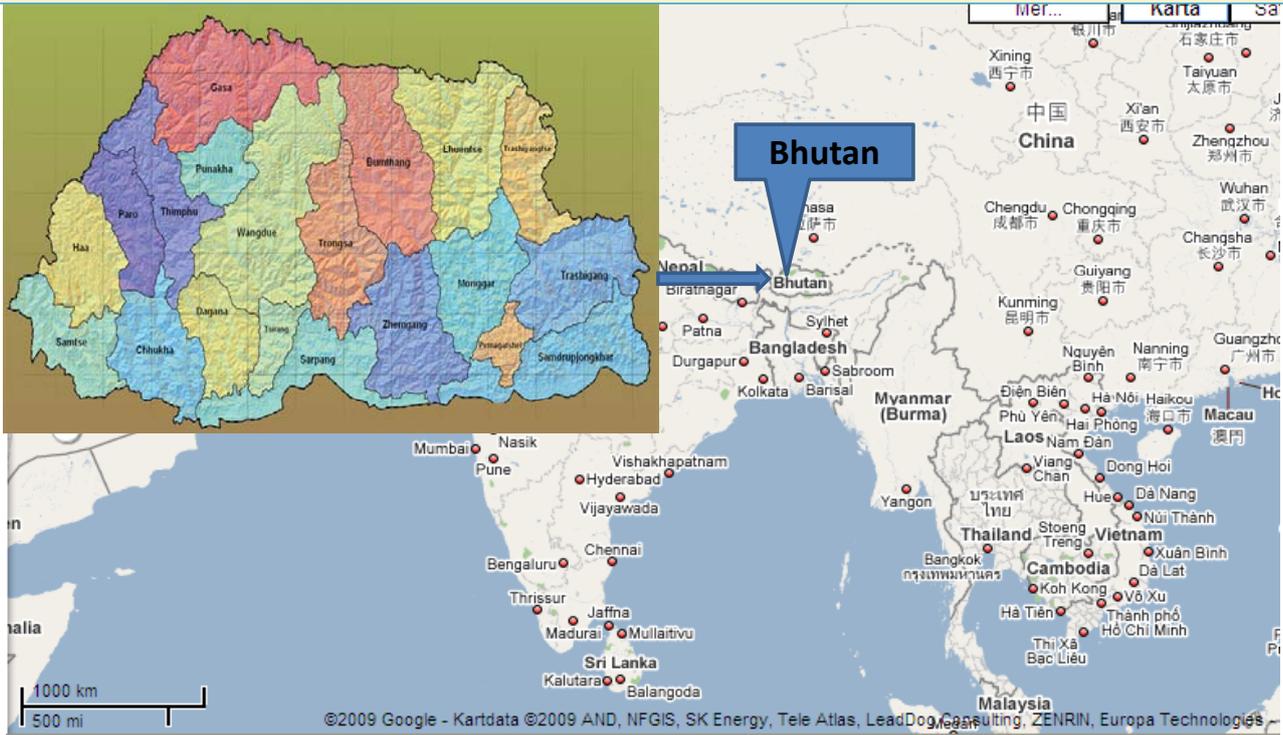
Presentation Outline

1. Brief Introduction about Bhutan
2. Natural Hazards in Bhutan
3. Recent Major Disaster Events
4. Overview of Disaster Management Policy and System in Bhutan
5. Budget for the Department of Disaster Management
6. Progress of the Implementation of HFA 1
7. Recent Major Projects on DRR
8. Challenges
9. Way forward
10. Research plan



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About Bhutan: Location



Geographic coordinates: latitudes 26° 40'N & 28° 15'N
longitudes 88° 45'E & 92° 10'E.



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Facts About Bhutan

- Location** :Tibet(China)in the north and India in the East West and South
- Area** : 38,394 sq. Km
- Population** : 745,153 (NSB, 2014)
- Altitude** : Varies from 150m to 7553m above sea level
- Capital** : Thimphu
- District(Province)** : 20 Numbers
- National Language** : Dzongkha
- Currency** : Ngultrum(100Yen = 53Ngultrum)
- Religion** : Mahayana Buddhism and Hinduism
- Political System** : King is Head of State and Government is elected by the Parliament for five year term
- Climate** : Four seasons (Spring, summer, Autumn & **Winter**)
- National Tree** : Cypress



National Bird : Raven

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Facts About Bhutan

- National Animal** : Takin
National Flower : Blue Poppy
National Day : 17th December (Every year)
National Game : Archery
National Dress : Gho for Men and Kira for Women
National Dish : Red Rice and Ema Datshi (Cheese and Chilles)
National Flag : Upper Half yellow and lower half Orange color with Dragon in the middle.
National Emblem : contained in a circle, is composed of a double diamond thunderbolt placed above a lotus.



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Natural Hazards in Bhutan



Earthquakes

Bhutan is located in one of the most active seismic zones (Zones IV &V)

Past earthquakes – September 2009 and 2011

Lives lost and major damage to property and infrastructure



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Natural Hazards in Bhutan



Glacial Lake Outburst Flood (GLOF) (Mountain Tsunami)

- ❖ GLOFs: 25 lakes potentially dangerous
- ❖ 2794 glacial lakes in Bhutan, 562 are associated with glaciers
- ❖ GLOF flash flood hazards likely to increase in intensity with the impacts of climate change
- ❖ Major GLOF incidences - 1957, 1960, 1994
- ❖ Big threat to lives & livelihood of people in valleys and low lying river plains



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Natural Hazards in Bhutan



Fires: Forest/structures

June 2012 Wangduephodrang Dzong lost to fire

Many forest fires during the dry season

Chamkhar town burnt down in three consecutive fires



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Natural Hazards in Bhutan



Fires: Forest/structures (BEFORE)

June 2012 Wangduephodrang
Dzong lost to fire

Many forest fires during the
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Chamkhar town burnt down
in three consecutive fires



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Natural Hazards in Bhutan



Windstorm

2011 Windstorm and 2013
Windstorm damaged
thousands of rural home roofs



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Natural Hazards in Bhutan



Landslides

Steep terrain and due to the road construction, Bhutan experiences many landslides during the rainy season



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Natural Hazards in Bhutan



Floods

❖ Recurrent phenomena in Bhutan

❖ 2004 monsoon in Eastern Bhutan caused loss: 9 lives, 29 houses and 664 acres of land washed away



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Natural Hazards in Bhutan



Epidemics, Pests and Diseases

- ❖ Avian flu and other pandemic
- ❖ Pests,
- ❖ Damages to crops by wild animals etc
- ❖ Drought



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Recent Major Disaster Events

Events

Flash Flood (precipitated by Cyclone Aila) May 2009

Earthquake - 21st September, 2009

Wamrong town Fire, October 2009

Chamkhar Town Fires (1st – 26th Oct. 2010), 2nd – 18th Feb, 2011 & 3rd – 27th May, 2011

Windstorm (2010 – 2011)

Earthquake – 18th September, 2011

Wangdue Dzong Fire (24th June 2012)

Windstorm (15th December, 2013)



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Disaster Relief and Recovery Coordination

Events	Type of Relief Provided	Remarks
Flash flood (precipitated by Cyclone Aila), May 2009	✓ Nu. 34,665,000 (cash compensation)	Mobilized from ACO for crop & Livestock loss and repair of Irrigation & schools
Earthquake – 21 st September, 2009	<ul style="list-style-type: none"> ✓ 32,953 CGI Sheets ✓ 9,268 Tarpaulin sheets ✓ school in a tent ✓ 5,688 standing trees ✓ 3,000 Family Kits ✓ Insurance claims 	Nu. 562,728,000 mobilized through various Donors
Wamrong town Fire, October 2009	<ul style="list-style-type: none"> ✓ Nu. 3,600,000 for reconstruction ✓ Nu. 179,000 for immediate relief ✓ Insurance claims 	
Chamkhar Town Fires (1 st – 26 th October, 2010))	<ul style="list-style-type: none"> ✓ Restoration of water supply & Sanitation ✓ Family kits ✓ Insurance 	Nu. 32,06,406 mobilized for the work (IFRC) Full reconstruction by HM Secretariat and RGOB USD 80,000 (UNDP) for CGI sheets



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Disaster Relief and Recovery Coordination

Events	Type of Relief Provided	Remarks
2 nd and 3 rd Chamkhar Town Fires (18th Feb & 27 th May 2011 resp.)	<ul style="list-style-type: none"> ✓ Royalty free timber and insurance ✓ Family kits 	
Windstorm (2010 – 2011)	<ul style="list-style-type: none"> ✓ 31,126 CGI Sheets ✓ 2,979 Tarpaulin sheets 	USD 50,000 (UNOCHA) for 2010 windstorm and insurance claims
Earthquake – 18 th September, 2011	<ul style="list-style-type: none"> ✓ 49,528 CGI Sheets ✓ 2,050 Dignity Kits ✓ 5,000 Emergency kits ✓ 100 school in a tent ✓ Royalty free timber ✓ Insurance claims 	USD 825,500 + Nu 11,609,000 mobilized through various Donors
Wangdue Dzong Fire (24 th June 2012)	✓ USD 50,000	UN-OCHA
Windstorm (15 th Dec. 2013)	✓ USD 50,000	UNOCHA



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Disaster Management System in Bhutan

1. About the Department of Disaster Management and administrative system
2. Legal system and Framework
3. Structure of Disaster management in Bhutan



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About Department of Disaster Management (DDM)

-Created in 2005 as a small Division under the Department of Local Governance

-Upgraded to full fledged Department in August 2008

Vision

Promote a Safe and Happy Bhutan through Disaster Risk Reduction Initiatives in line with the Royal Government of Bhutan's policy of Gross National Happiness(GNH)

Mission

- Raise awareness on disaster risks and their mitigation/prevention at all levels.
- Facilitate pro-active & decentralized disaster management at all levels.
- Enhance and strengthen capacities of disaster management authorities/committees at all levels.

The Department of Disaster Management is the National Coordinating Agency for disaster management in the Country.



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Function of Department of Disaster Management(DDM)

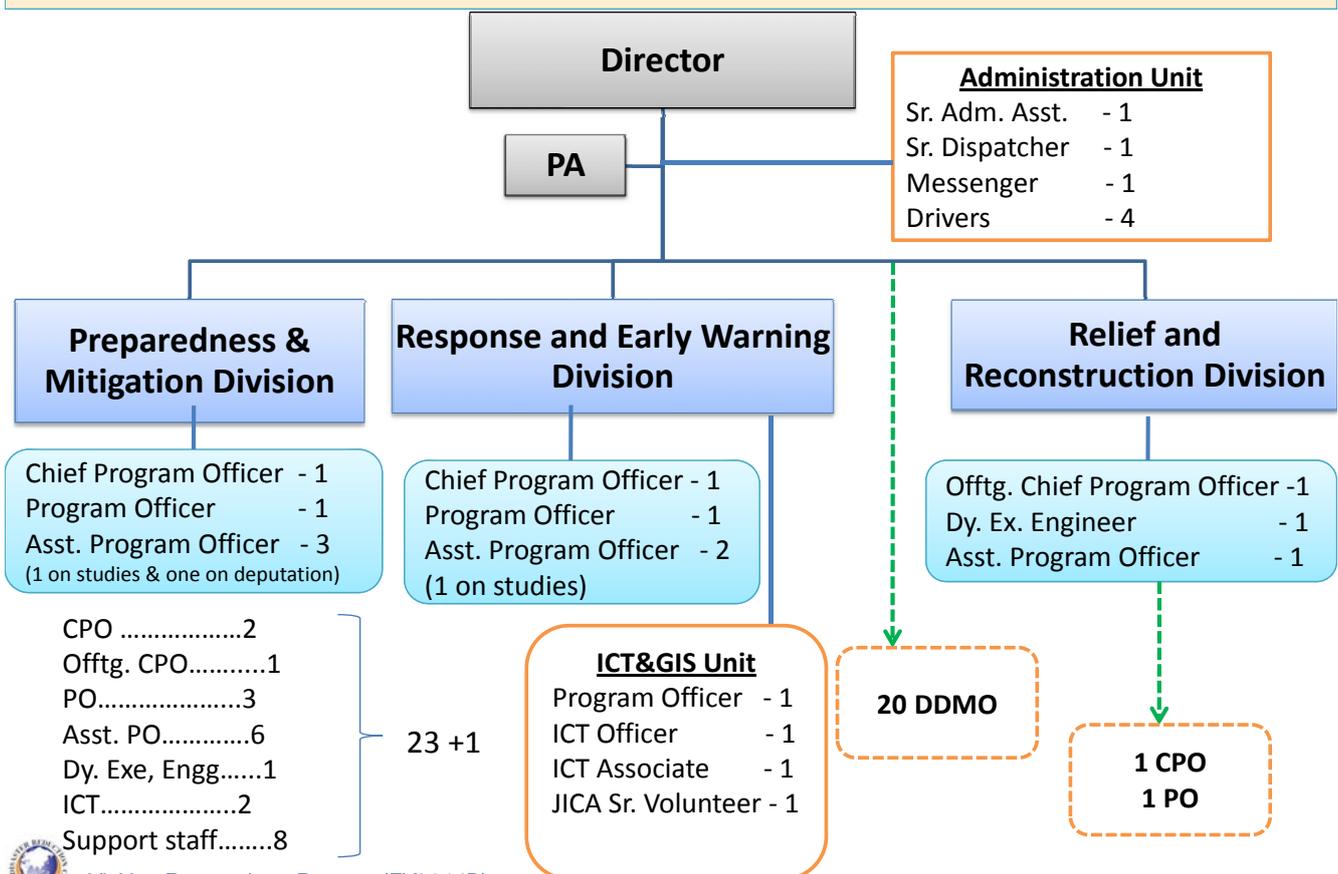
Major Functions

- ❖ Lay down the disaster management strategic policy framework.
- ❖ Ensure that agencies mainstream disaster risk reduction into their development plans, policies, programs and projects.
- ❖ Prepare the National Plan, formulate National Standards, Guidelines and Standard Operating Procedures for disaster management, in coordination with relevant Agencies;
- ❖ Facilitate preparation and implementation of Disaster Management and Contingency Plans at all levels;
- ❖ Facilitate and coordinate setting up of Disaster Management Institutions and Critical Disaster Management Facilities and ensure their functioning,
- ❖ Collaborate with Government of other countries, legitimate International organizations, International Non-governmental organizations, Business establishments or Volunteer groups identified by the National Disaster Management Authority;
- ❖ Facilitate and coordinate International disaster response, relief and recovery assistance;
- ❖ Coordinate and support Dzongkhag Disaster Management Committees during disaster response and relief operations, including recovery and reconstruction



Visiting Researchers Program(FY2014B)

Organization Chart of Department of Disaster Management



Visiting Researchers Program(FY2014B)

Preparedness or Capacity Development Program

1. Community Based Disaster Risk Management (CBDRM) Training
2. Workshop on Disaster Preparedness and Response for Safe School and conduct of Mock Drills
3. Mainstreaming DRR into Plan, Policy and Development Activities (section 69-72 of DM Act)
4. Disaster Preparedness and Sensitization Training Program on Dzong Fire Safety.
5. Training on Good Construction Practices
6. Formulation of National Recovery and Reconstruction Plans (aftermath of 2009 and 2011 earthquake)
7. Search and Rescue training
8. Equipment (section 114 of DM Act)
9. Incident Command System Training
10. International and Regional Trainings/Workshops organized Advocacy, Awareness and Information Management Observation of International Day for Disaster Risk Reduction
11. Development and distribution of Information, Education and Communication materials (IEC)



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Preparedness or Capacity Development Program



CBDRM in Lunana



Basic Search and Rescue training



Good Construction Practice



GLOF Early warning/mitigation in Lunana



Visiting Researchers Program(FY2014B)

Disaster Management Institution as per DM Act, 2013)



Visiting Researchers Program(FY2014B)

Classification of Disaster as per DM Act, 2013

The Disaster Management Act of Bhutan 2013 classifies disasters into three types:

Type I- A disaster shall be classified as Type I, if it can be managed with available resources and is within the coping capacity of the Gewog/ City concerned.

Type II- A disaster shall be classified as Type II, if it can be managed with available resources and is within the coping capacity of the Dzongkhag concerned.

Type III- A disaster shall be classified as Type III, if severity and magnitude is so great that it is beyond available resources and the coping capacity of the Dzongkhag concerned.



Visiting Researchers Program(FY2014B)

Regulations and Policy Strategies

1. *Disaster Management Act 2013*

- ❖ Enactment of the Disaster Management Act of the Kingdom of Bhutan on 27th February 2013 during the 10th Session of the First Parliament.

2. *Disaster Management Planning and Contingency Guidelines (Chapter 7 of DM Act)*

- ❖ As per the DM Act 2013, DM Planning Guidelines are completed recently to assist and guide the Dzongkhags and other relevant agencies/sectors.

3. *School Disaster Management Planning Guideline*

- ❖ In collaboration with Department of School Education, the Planning guideline for the formulation of the School DM Plan has been developed and distributed.

4. *Disaster Management Strategic Policy Framework*

- ❖ National Disaster Risk Management Framework 2006 is being reviewed and revised, in line with the DM Act.



Visiting Researchers Program(FY2014B)

Budget for the Department

Annual Budget for the Department of Disaster Management

Fiscal Year	Total Amount (Million)	Remarks
2010-2011	57.261	USD 0.95 million
2011-2012	78.815	USD 1.3 million
2012-2013	34.157	USD 0.57 million
2013-2014	20.56	USD 0.34 million
2014-2015	35.372	USD 0.59 million

- capacity building, establishing
- maintaining Critical Disaster Management Facility including purchase of equipment



Visiting Researchers Program(FY2014B)

Progress of the implementation of HFA 1

HFA 1 Priorities for action

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.
2. Identify, assess and monitor disaster risks and enhance early warning.
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
4. Reduce the underlying risk factors.
5. Strengthen disaster preparedness for effective response at all levels.



Visiting Researchers Program(FY2014B)

Progress of the implementation of HFA in Bhutan

1. Ensure DRR is a National and Local Priority with Strong Institutional Basis for Implementation

- National Policy and legal framework for DRR - NDRMF 2006- First comprehensive multi-stakeholders strategy.
 - Enactment of Disaster Management Act 2013.
- Decentralized DM activities
- Empower nodal institutions at all levels with legal status.
- Constitution of Bhutan outlines to maintain 60% of the country under forest coverage for all times to come.
- Climate Change Council
 - to mitigate and adapt to the adverse impacts of climate change in the country
- National Climate Change Policy and National Adaptation Program of Action (NAPA) are being formulated (NAPA-I Completed and NAPA-II started)



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Progress of the implementation of HFA in Bhutan

2. Identify, Assess and Monitor Disaster Risks and enhance Early Warning

• Hazard, Vulnerability and Risk Assessment

- GLOF Hazard Zonation Map
- Punatsangchu basin and Chamkharchhu (Identification of Safe GLOF evacuation area and Safe evacuation site for settlements for those who falls under red zone and near the boundary of red and yellow zone).
- Earth quake hazard and Vulnerability analysis in major Municipalities
- ERRRP (SAARC regional project).
- CBDRM HVC Assessment - Preparedness Planning (ongoing)



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Progress of the implementation of HFA in Bhutan

•EWS & other system are in place to monitor, archive and disseminate data on key hazards and Vulnerability

- DIMS/ Disaster Database
- Inventory of Glacier lakes
- Mitigation of Glacier lake (Thorthomi lake) and GLOF Early Warning System
- Established flood warning and flood preventions (10 hydrological stations and 33 rainfall stations)
- Community Based EWS
- Streamlining chain of command and information



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Progress of the implementation of HFA in Bhutan

3. Use Knowledge, Innovation, Education to Build a Culture of Safety and Resilience at all Levels

- **Public Awareness and Education**

- Campaign through various media
- Awareness at all levels
- CBDRM - Safe school campaign
- First responder training, mock drill
- GLOF awareness & fire safety program

- **Capacity Development**

- Capacity enhancement at all levels (Technical, resources, manpower, equipment)
- Regional partnerships
- Building a culture of safety and resilience (communities and within sectors)



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Progress of the implementation of HFA in Bhutan

4. Reduce the Underlying Risk Factors

- **Mitigation and Integration of DRR in development sectors**
- **Reviewed Environment Assessment Act 2000 and Environmental Clearance of project 2002**
- **Reduce underlying risk factors**
 - Enforcement and compliance of standards building codes
 - Retrofitting of weak structures
 - Appropriate standard and guidelines for Rural housing
 - Developed guidelines for burning debris
- **Insurance (property & life)**
- **Investing in drainage infrastructure in flood prone areas**
- **Slope stabilization (SLMP)**



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Progress of the implementation of HFA in Bhutan

5. Strengthen Disaster Preparedness for Effective Response at all levels

- **Policy, Technical and Institutional capacities and mechanisms for DRR**

- National Search and Rescue Team (NaSART) formed in 2012 - Equipments – SAR

- School Safety and mock drill

- Formation of SAR Team at District and Municipal level (ongoing)

- District Disaster management Committee formed in many dist.

- **Disaster Preparedness plans**

- DM Planning Guidelines and Contingency Guidelines formulated

- Emergency Safety and First Aid Handbook

- CBDRM Curriculum (draft)

- CBDRM Training (covered 16 of 20 districts)



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Recent Major Projects on DRR in Bhutan

Name of the Project	Duration	Amount (Million)	Funding	Implementing agencies	Status
Japan Policy and Human Resource Development (PHRD) Technical Assistance Program to support disaster reduction and recovery project "Improving Resilience to Seismic Risk in Bhutan"	2013 - 2017	USD 1.2855	Japan through World Bank	DES, DDM, DGM & DoC	On-going
Climatic Risk management through Enhanced national, local and community-level resistance	Jan 2014 - Dec 2014	USD 0.3	UNDP	DDM, DES (Flood Engineering Management Division)	Completed
Bhutan National Adaptation Programme of Action (NAPA -II)	2014 - 2017	USD 0.6	UNDP	DDM	On-going



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Challenges

- ❖ Disaster management being a new discipline and multi sectoral in nature, there is a need to create adequate awareness and advocacy on disaster management issues at all levels.
- ❖ Absence of National Emergency Operation Centre (National Emergency Communication Network)
- ❖ Absence of full time DM officer at Dzongkhag level
- ❖ Lack of disaster information/data, multi-hazard zonation and vulnerability maps which are pre-requisite for planning DRR activities
- ❖ Inadequate technical capacity of DDM



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Way Forward

- i. Formulation of Bye-Laws, Rules and Regulations, SOPs, minimum Standards, Guidelines as per the DM Act 2013.
- ii. Approval of National Disaster Risk Management Strategy document (draft).
- iii. Approval for the Emergency Tele-communication Network Master Plan and setting up of the NEOC.
- iv. Strengthening and expanding the existing NaSART.
- v. Formation of SAR teams at local levels; training and equipping them.
- vi. Procurement of advanced SAR equipment.
- vii. Setting up of SAR Training Institute or tie up with the existing RBP/RBA training institutes.
- viii. Proposal for delinking and upgrading Fire Service Division, RBP.
- ix. Involvement of CSO/NGO/Religious Institutions in DM.
- x. Inclusion of DM module into School and College curriculum/syllabus
- xi. Recruitment of 20 Dzongkhag Disaster Management Officers .



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Research plan

Title : Comparative Study on Windstorm damages on the rural homes in Bhutan and Japan

Main Objective

- To assess the damage caused by windstorm on rural home roofs in Bhutan and comparing with the Japanese roof

Sub Focus

- Identify ways to improve the existing rural homes roof to reduce the future windstorm damage
- What are main failure in roof structures based on the existing rural roof configuration and how to mitigate the roof taking the good examples of Japan



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THANK YOU

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KADIN CHE LA

ありがとうございます

7/12/2010