



**Asia Park Congress**  
**Workshop 1: Natural Disasters and Protected Areas**  
**Sendai, Japan**  
**14-17 November 2013**

**Disasters/ Natural Hazards and Protected Area Management**  
**Challenges and Opportunities in Nepal**

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# Disasters/ Natural Hazards General Belief in Nepal



- **Disasters are a result of God and are beyond our control**
- **Disasters take place when God becomes angry**
- **Disasters are God's punishment**



## Key Message

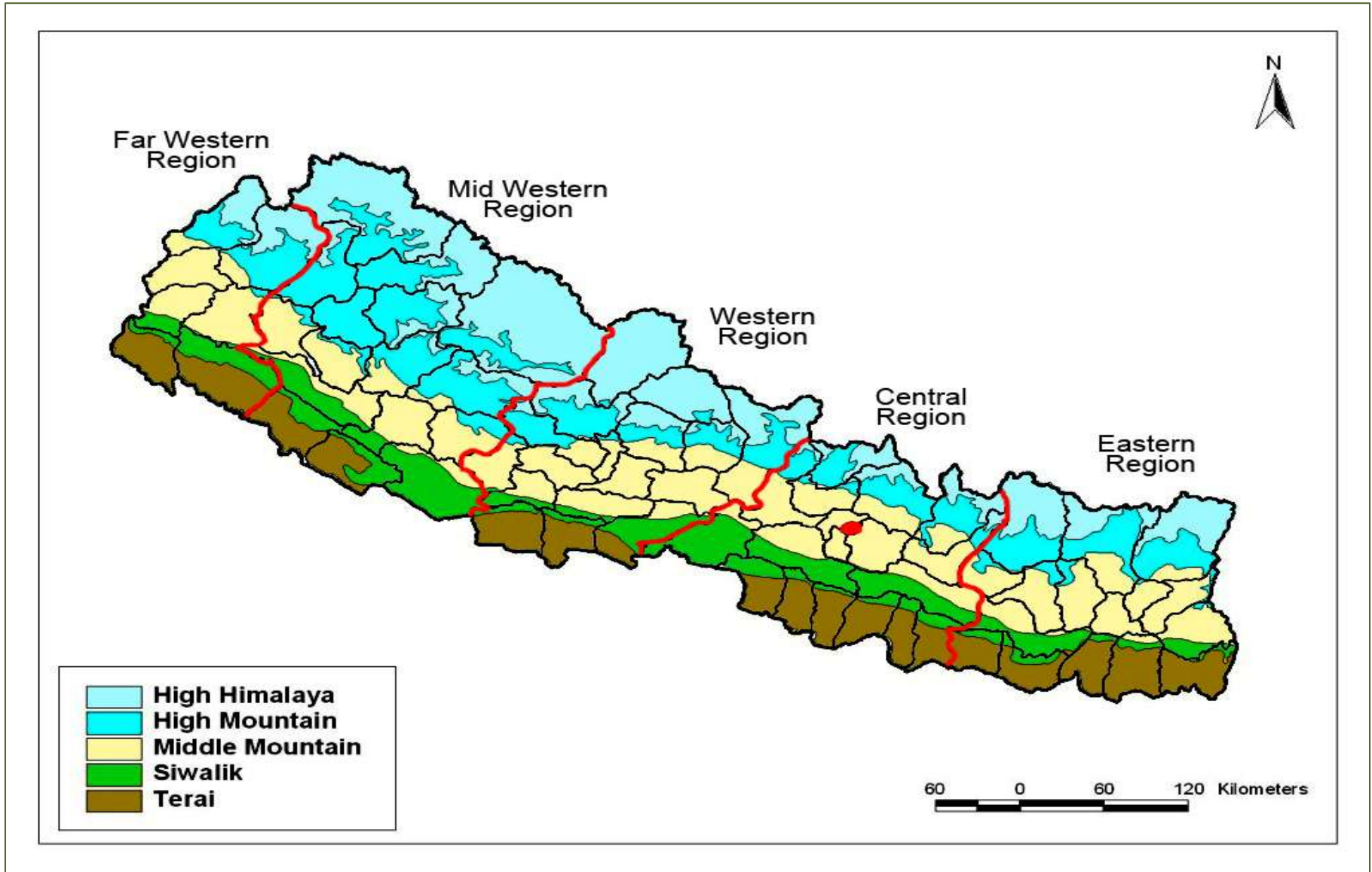
- No attempt to see DRR and PA together – let alone joint program planning and execution
  - One focuses on DRR and the other on biodiversity
- No communications b/w DRR and PA people – let alone with others and educating them on the role of PA in DRR
- Information on DRR outside the PAs – but not so much on DRR inside the PAs
- Presents both challenges and opportunities



## Discussion Points

- Disasters/ natural hazards
- PAs in Nepal
- Policy/regulation for DRR and PA in Nepal
- Institutional provisions for DRR and PAs
- Role of PAs in DRR
- Challenges of DRR/PA management
- Opportunity/way forward

# Nepal's Physiographic Regions





# Basic Features of Nepal's Physiographic Regions

Region	Area (km <sup>2</sup> )	Altitude (m)	Population (no)
Himalayas	35433.13 (24%)	>5000	1,781,792 (7%)
High Mountains	43151.14 (29%)	2000-5000	2,896,576 (11%)
Middle Hills	30177.19 (20%)	1000-2000	7,272,636 (27%)
Churia/ Siwalik	19019.69 (13%)	200-1300	5,654,674 (21%)
Lowland (Inner Tarai & Tarai)	20245.56 (14%)	60-200	8,888,835 (34%)
<b>Nepal</b>	<b>147,181 (100%)</b>	<b>60-8848</b>	<b>26,494,504 (100%)</b>



# Disasters/ Natural Hazards in Nepal

- Nepal's ranking in the world
  - 11<sup>th</sup> in relative vulnerability to earthquakes among the most at risk countries (UNDP/BCPR, 2004)
  - 30<sup>th</sup> with respect to floods
  - 6<sup>th</sup> in an informal climate change risk study
- A '**global hot-spot**' for disasters/ natural hazards (World Bank, 2005)
- High Mountains, Middle Hills and Churia/ Siwaliks: **landslides** in monsoon; **droughts** in summer
- Lowland: **floods** in monsoon; **droughts** in summer
- Himalaya: **avalanches and lake outbursts** in summer



# Major Disasters/ Natural Hazards Risks in Nepal

Region	Flood	Drought	Landslide Avalanche	Forest Fire	GLOF	Invasive Species	Epidemic
Himalayas	-	-	High	-	High	-	-
High Mountain	-	Low	High	Low	High	Medium	Low
Middle Hills	Low	Medium	Medium	High	Low	High	Medium
Churia/ Siwaliks	Medium	Medium	High	High	Low	High	High
Lowland	High	High	Low	High	Low	High	High

[Source: Adapted from Nepal Hazard Assessment/ EMDAT]





# IUCN Disaster/Natural Hazard Impacts: 1990-2009

Reports every year on casualties and loss of human lives and properties during 1990-2009

Events/Causes/Effects	Numbers
Events (data-cards)	15,388
Loss of human lives	27,256
Population affected	4,926,562
Buildings damaged / destroyed	345,923



[Source: Nepal Hazard Assessment/EMDAT]



# **IUCN Factors for Disasters/ Natural Hazards in Nepal**

- **Topography**
  - Fragile Himalayan geology
  - Steep mountainous topography
  - Settlements in ecologically fragile areas
- **Unsustainable management of natural resources**
  - High dependency on forest resources
  - Expansion of agricultural activities in steep slopes
  - Over exploitation of forest/tree resources
  - Forest fires (intentional & unintentional)
- **Climate change - temperature rise, melting of snow, glacial lake outburst, reduced winter period, longer droughts**
  - High rainfall in monsoon and droughts in summer
- **Poor coordination among sectoral agencies**
  - Unplanned infrastructure development
  - Priority on sectoral agenda (less for cross-cutting/shared agenda)
- **Undermining disaster/environment safeguard measures**



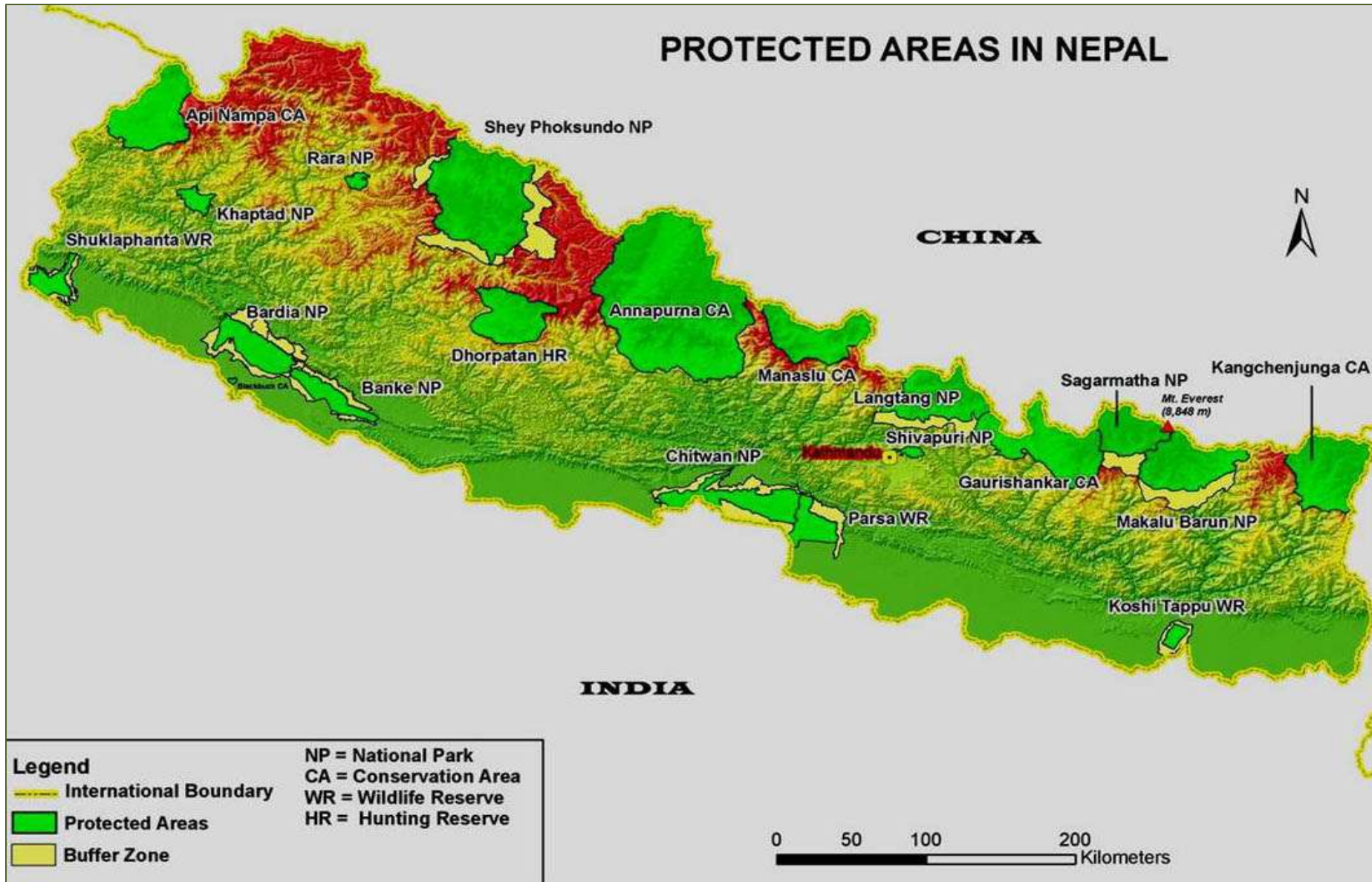
# Protected Areas in Nepal

## Definition, Number, Type, Area and Global Significance

- **DNPWC uses the following definition of PA**
  - **‘land dedicated to protection and maintenance of biological diversity, natural and cultural resources’**
- **Number, Types and Area of PAs**
  - In 2010: total PAs - 20
    - National Parks - 10
    - Wildlife Reserves – 3; Hunting Reserve - 1
    - Conservation Areas - 6
  - Covering 23.2% of the country’s total land (147,181 sq. km)
- **Global Significance of Nepal’s Protected Areas**
  - World Heritage Sites: Sagarmatha NP and Chitwan NP
  - Ramsar Sites: Inside the PAs - 6 and Outside the PAs - 3



# Distribution of Protected Areas in Nepal





# Protected Areas by Physiographic Regions

## Number and Area

Physiographic Region	No. of PAs	Area of PAs (sq. km)	Buffer Zone Area (sq. km)
Himalayas	NA	NA	NA
High Mountains	12	24,978	2,078
Middle Hills	1	159	NA
Churia/ Siwaliks	NA	NA	NA
Lowland (Tarai/ Inner Tarai)	7	3,446	2,314



# Disasters/ Natural Hazards in/around Protected Areas

- PAs are prone to natural hazards
  - Fires
  - Floods
  - Landslides
  - Glacier lake outbursts
  - Invasive species
  - Habitat fragmentation
- Adverse impact on both
  - B-diversity/ wildlife habitat
  - Local peoples livelihoods





# IUCN DRR and PA Policy/ Legislative Provisions in Nepal

- **DRR Related – Generic (applicable to all sectors)**
  - Natural Calamity Relief Act 2039 (1982)
  - Nepal Environmental Policy and Action Plan (NEPAP), 1993
  - Local Self Governance Act (LSGA), 1998
  - Water induced Disaster Management Policy, 2006
  - Draft Disaster Management Act (DMA), 2008
  - National Strategy for Disaster Risk Management, 2009
  - National Adaptation Programme of Action (NAPA), 2010
  - Climate change Policy, 2011
  - Local Adaptation Plans of Action (LAPA), 2011
  - Three Year Plan (2010/11 - 2013/14)
- **Protected Area Related (forestry & allied sectors)**
  - National Park and Wildlife Conservation Act, 1973
  - Soil Conservation and Watershed Management Act, 1986
  - Forest Act, 1993
  - Buffer Zone Management Regulation, 1996 and Guideline, 1999
  - National Biodiversity Strategy, 2002



# IUCN DRR and PA Management Plans/Programs in Nepal

- **DRR Plans/ Programs**

- Local bodies and sub-sectoral agencies small scale programmes
- District Preparedness and Action Plan
- Community Level Flood Management Program
- Community Level Preparedness Plan for Glacier Lake Outburst Flood (GLOF)
- Community Level Preparedness Plan for Earthquake

- **PA Plans/ Programs**

- Biodiversity Conservation Plan
- Buffer Zone Management Plan





# Institutional Provisions for DRR & PA Management

- **Disaster Risks Reduction**

- Ministries of Home Affairs, Federal Affairs & Local Development, Physical Planning & Works, and Science, Technology & Environment.
- Department of Water Induced Disaster Risk Reduction
  - National Disaster Relief Committee
  - Regional Disaster Relief Committee
- Chief District Office and District Development Committee
  - District Natural Calamity Relief Committees (DNCRCs)
- Village Development Committee
  - Local Natural Calamity Relief Committee
- Various national & international NGOs

- **Protected Area Management**

- National Park & Wildlife Conservation Dept/ Ministry of Forest & Soil Cons.
- Field offices of N/Parks W/Reserves & CAs
- Buffer Zone Management Council
- National Trust for Nature Conservation
- Various national & international NGOs



# **IUCN Role of Protected Areas in Disaster Risks Reduction**

- **Flooding**

- Provide space for floodwater
- Absorb impacts of floods with natural vegetation

- **Landslides and Avalanches**

- Retain natural vegetation that helps to stabilize soil
- Tree crowns reduce the built up of snow that triggers slippage
- Slow the movement and extent of damage once the slippage is underway

- **Drought and desertification**

- Reduce pressure (esp. grazing) on land thus reduce/ slow down desert formation
- Maintain populations of drought resistant plants/ serve as emergency food during droughts



# **IUCN Role of Protected Areas in Disaster Risks Reduction**

- **Fire**

- Limit human encroachment into the most fire-prone areas
- Maintain traditional ecologically sound safe fire use and wild animal control system

- **Earthquakes**

- Prevent/ mitigate against associated hazards especially landslides, rock falls
- Provide zoning control to prevent settlements in the most earthquake prone areas

- **Climate Change**

- Mitigate C/Change induced hazards and other extreme events – e.g. more intense flooding, droughts, wildfires, and worsening storm surges

- **Social and Economic Wellbeing**

- Support local livelihoods: some 1 million people live in and around PAs and depend on resource for living



## **IUCN Challenges Facing DRR & PA Management in Nepal**

- Lack of provisions for DRR in PA management policies, legislation and programs
- Lack of consideration of PAs and their roles in DRR programs and plans
- Lack of coordination between institutions responsible for DRR and PA management
- Inadequate capacity within the DNPWC for DRR work
- Limited resources (human, finance & materials) for disaster/ natural hazard management with the DNPWC



## Opportunity/Way Forward

- Joint program planning and execution – mainstreaming DRR in PA and PA in DRR
- Research / action research – establish better understanding of DRR and PA relationship – case studies, assist in developing methodology, management tools and techniques
  - Ways PAs can reduce disasters
  - Recovery after a disaster in the PAs
- Education/ awareness raising and capacity building programs
  - Strengthening capacities of PA institutions and staff on DRR and DRR institutions and staff on the PAs
  - Youth, media groups, other concerned stakeholders and general public



## Opportunity/ Way Forward

- Information dissemination and knowledge management (integrating DRR & PA management)
- Policy and Legal Measures
  - Ensure that PA Policy and Act have provisions for DRR
  - Similarly, ensure that DRR policy and Act have provisions to include PA in their programs and activities – including disaster preparedness and response in PA management
- Institutional Measures
  - DRR and PA committees at national, regional, district and local levels
  - Ensure representation of one another
  - Ensure relevant activities are planned and executed jointly



# Thank You

[www.iucn.org/nepal](http://www.iucn.org/nepal)