Saving Shangri-la: Bhutan in the Wake of Climate Change and Disasters

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Video Presentation: Bhutan in the Wake of Climate Change and Disasters

Bhutan: Climate Change and Disasters

Building Disaster and Climate Change Resilience

Towards a Mountain Countries Cooperation
Country Profile

- Total land area: 38,816 sq km
- Location: South East Asia (Eastern Himalayas)
- Topography: Mountainous terrain (200 – 7000 meters)
- Forest cover: 72.5% of the total land area
- Total population: approximately 700,000
- Development philosophy: Gross National Happiness
- Main economy: Hydropower & Agriculture
Bhutan: One of the Most Vulnerable Countries to Climate Change and its impacts

- High dependence on climate sensitive sectors, 
  - Agriculture and hydropower
- Level of economic development
  - ~ 70% population engaged in subsistence agriculture
- Geography
  - Fragile mountain ecosystem.
  - Earthquake (seismic zone 4 and 5)
  - Increased risk of disasters (GLOF and flash floods, drought, forest fires, landslides)
Potential Impacts of Climate Change

**Agriculture:**
80% of the Bhutanese practice subsistence farming. Climate Change can cause changes in temperature and precipitation patterns and increase the vulnerability of a large group of this population.

**Forests & Biodiversity:**
Increasing temperatures may cause species and ecosystems to shift and species at higher elevations and other species unable to migrate to become extinct.

**Water Resources:**
Changes in the hydrological cycle such as lower winter flows in streams and intense monsoon rains may affect drinking water and supplies as well as hydropower generation.

**Natural Disasters:**
Rapidly retreating alpine glaciers is increasing the risk of “glacial lake outburst floods” endangering life and property downstream. Increasing flash floods may also be caused by intensifying.

**Human Health:**
Rising Temperatures may cause the spread of tropical diseases and heat stress into higher altitudes.
Impacts of Climate Change: forest & biodiversity

- Species and ecosystems shift to higher elevation (JDNP 4200m)
- Occurrence of pests, diseases and fire
- Agriculture biodiversity change

Alas! if my friend could understand that, I don’t have any choice either!

How can we live in harmony, if Your Excellency keeps on pushing north?

The march to higher ground!
Impacts of Climate Change: Water resources

- Accelerated melting of glaciers
- Formation of Glacial Lakes and GLOF
- Changes in hydrological cycle
- Extreme Climate: flooding and dry spells
- Impacts on Hydropower
• Total of 2,794 glacial lakes
• 25 potentially dangerous
Repeat photography

Northern side of Rinchen-zoe La

- In 1984, no water body
- After the formation of Lake, rapid retreat observed

- Roughly 500m retreat in 25 years (high retreat rate)
Building Resilience to Disasters and Climate Change
Bhutan's Development Philosophy

- Gross National Happiness:
  - "Middle Path" Development Philosophy
  - "Balancing economic returns with conservation of environment & Cultural heritages"

Characterized: Conservation of Environment, and Preservation of Culture and tradition as two of the four pillar of GNH

- Constitution mandates:
  - "60% forest cover for all times to come"
Total Forest Cover: 72.5% of Total Area
Total % of protected area: 51.44%
Ban on export of timber in early 1990’s
• Glacial lake Mitigation *(artificial lowering of water level in Thorthormi lake)*

• Hazard zonation & Identification of Evacuation Sites

• Installation of Automatic Early Warning System

• Awareness and Advocacy *(vulnerable communities)*
Building Resilience to Disasters and CC (contd..)

- Landslide Management & Flood Prevention (*Pilot Schemes in Critical Areas*)
- Rainwater Harvesting
- Community-based Forest/Fire Management
- Improving Nomad Livelihoods (*Brokpa Program*)
- Focus on Clean Development Mechanisms (*hydropower, wind energy, solar energy*)
- Commitment to remain Carbon neutral for all times to come (*COP 15*)
- Establishment of Department of Disaster Management (2008)
- International Conference on Disaster Management and Cultural Heritage
Regional Action

Summit for a Living Himalayas

Political commitment at the highest level for cooperation within the sub-region highlighted in a Summit Declaration for:

- Securing biodiversity and ensuring its sustainable use
- Ensuring food security and securing livelihoods;
- Securing the Natural Freshwater Systems of the Himalayas; and
- Ensuring energy security and enhancing alternate technologies

Led By Royal Government of Bhutan
Partners: MacArthur, ICIMOD, WWF, IFAD, DANIDA
A Bridge Across the Rooftops: Towards Mountain Cooperation

Key Focus Area:
- Knowledge sharing
- Technology Transfer

What Bhutan can offer to the cooperation:
- Forest and biodiversity conservation: Experiences and best practices
- Culture and Environment:
- Local Best Practices on sustainable land management practices
Benefits from the Cooperation

- Clean development technologies (Renewable Energy)
- Archiving of Traditional Knowledge on CC
- Community based disaster management practices
- Scientific knowledge on Glaciers and GLOF
- Capacity building on Climate Change mitigation and adaptation
“Reducing Disaster Risks for Safe and Happy Bhutan”

TASHI DELEK (THANK YOU)