

Climate Change Adaptation and Possible Areas of Collaborations in Use of Space Technology in Bhutan



Outline

- Bhutan's Vulnerabilities
- Strategies and Current Status
 - Affiliation with International Organizations
 - NAPA
 - Proposed Adaption Activities
 - Institutional Arrangements
- Possible Areas of Collaboration in Use of Space Applications/Technologies

Bhutan's Vulnerabilities

- Geography
 - Fragile mountainous ecosystem.
 - Landlocked and Least Developed Country
- High dependence on climate sensitive sectors
 - Agriculture and hydropower
- Level of economic development
 - ~ 70% population engaged in subsistence agriculture
 - Low diversification of economy



Current Vulnerabilities

- Glacial Lake Outburst Floods
 - due to temperature rise
- Land Degradation
 - Landslides, erosion due changes in to weather patterns, high intensity rainfall, cyclones
- Flashfloods
 - Intense rainfall periods, cyclones



Current Vulnerabilities

- Droughts
 - Drying water sources due to temperature rise, longer intervals between rains
- Wind and Thunder storms
- Pests and diseases



Current Status

- UNFCCC(1992) Ratified (1995)
- Kyoto Protocol (2002)
- First National Inventory on GHG Emissions
- Climate Screening
- National Adaption Programme of Action (NAPA)
- Guidelines Formulated for mainstreaming Climate Change Adaption Activities in the National Policies, Programs and Plans

National Adaptation Programme of Action (NAPA) for Bhutan

- Highlights adaptation activities to address climate induced hazards impacting vulnerable and vital components of the Bhutanese society such as:
 1. Disaster Management Strategy – Planning for Food Security and Emergency Medicine to Vulnerable Communities
 2. Artificial lowering of Thorthormi lake
 3. Weather Forecasting System to Serve Farmers and Agriculture
 4. Landslide Management & Flood prevention (pilot schemes in critical area)
 5. Flood Protection of Downstream Industrial and Agricultural area
 6. Rainwater Harvesting
 7. GLOF Hazard Zoning (Pilot Scheme- Chamkhar Chu and Basin)
 8. Installation of Early Warning System on the Pho Chhu Basin
 9. Promote Community-based Forest Fire Management and Prevention

Institutional Arrangements

- National Environment Commission
 - acts as High Level Climate Change Committee
 - National Focal Agency for Climate change and UNFCCC
 - Designated National Authority for CDM
- Climate Change Division at NEC Secretariat
- National Technical Level Task Force (MSTFCC)
 - Implementation of sectoral project by respective agencies

Possible areas of Collaborations

- Research and Capacity Development on
 - Climate Change assessment, impact, strategy
 - meteorological and hydrological services
 - collecting and managing climate data and developing climate models and forecasting
- Disaster Management Strategy – early warning systems, mitigation, monitoring system
- Emergency Medicine to Vulnerable Communities
- National Forest Inventory
- Climate Change Adaptation in integrated Water Resource Management.
- Weather Forecasting System
- Initiating Climate Change-related Projects