Meeting on Forests and Climate Change
Adaptation in Asia

Climate Change Adaptation in Forest Ecosystems of the Himalayas: Challenges and Opportunities

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Kathmandu, Nepal

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Overview

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- Key Impacts expected in HKH
- Key steps in policy and practice for adaptation in forests
- Key actions planned

Key Vulnerabilities: HKH Dimensions

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- Climate sensitivity
- Geological vulnerability
- Geographical isolation
- Economic marginality
- Governance and policy deficits
- Stand-Alones of paradigmatic learning
- Low priority on SFM/or Forest sector
- Feminisation of development
- Disturbing externalities (e.g. Land-use decisions)

Recap: Forest-relevant impacts in NW-Himalayas in India

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- Increased pressure on forests resulting into decline of biodiversity.

- Changes in phenology of species.

- Habitats of many species to move upward or pole ward.

- Invasion of exotics.

- Upward shift of forest vegetation in the Himalayas could reduce the alpine meadows and related vegetation, thus impacting the habitats of several high altitude mammals including wild sheep, goat, antelope and cattle.

- Increase in Net Primary Productivity (NPP) (grams of carbon per square meter per year) of ecosystems except in areas where there is going to be a deficit in rainfall.

National Forest Sector Adaptation Strategies in HKH region

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- NAPAs, NAPCC, National Action Plans
- Convergence: NFSS, ADS, SPCRs
- Rigorous Forest Monitoring (SFRs India, FRA-Nepal)
- Focus of new Donor Programmes and Projects
- Climate Change based R&D
- National Advisory Groups
- Global-linkages

Sub-National strategic initiatives in HKH region

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- Sub-national strategies/plans (State, Local)
- Institutional anchoring (Climate cells)
- Integration of paradigms (CDM, PES)
- Filling data gaps
- Sectoral plan of actions/working plans
- Capacity building packages

Adaptive actions planned in Bhutan

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- Assess impacts of CC on floral and faunal diversity

- Increasing resilience through protection and SFM

- Reducing threats from climate induced invasive species

- Increasing awareness and stakeholder involvement

- Development of comprehensive national forest fire management strategy

- Strengthening CC related institutions and capacity

Actions planned in Himachal Pradesh in India

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- Water Harvesting Structures in the Forest Areas (to improve moisture regime, in situ water retention, Ground water recharge, and improve on-site water availability for Fire Risk Management.

- First A/R CDM Project for Public lands (Forest & Community lands) which will help develop protocols for establishment of Future Domestic Carbon Markets.

- Preventing fragmentation of Forest areas

- Establish Multi species and multi storey plantations for improving food security of communities (supply of food, fodder, fuel wood)

- Diversification of Rural Livelihoods by providing income streams from the Carbon Revenue

- Improving moisture regime and Watersheds through establishment of green cover.

- Establish proto types for future REDD / REDD plus projects.

- Strengthen MRV

The 'no regrets' policies and practices proposed for Uttarakhand State, India

Some examples of are as follows:

- Incorporate climate concern in long-term forest policymaking Process
- Conserve forests and reduce forest fragmentation
- Expand protected areas and link them wherever possible to promote migration
- Promote mixed species forestry to reduce vulnerability
- Undertake anticipatory planting and assist natural migration through transplanting plant species
- Promote *in situ* and *ex situ* gene pool conservation
- Initiate forest fire management strategies
- Bridge forest sector to emerging paradigms (PES, REDD)

Example NE India: Focus of Donor's Forests-related CCA Model (in Biodiversity Hotspots)

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Goal
Climate change coping capacities of the vulnerable rural populations in the program area enhanced

Output 1
•Coherent and convergent participatory LUP systems are developed

Output 2
•Sustainable and climate-proofed NRM models are identified, adapted and implemented (micro-plan based and others)

Output 3
•Village institutions & village governance structures are strengthened

Output 4
•Enabling framework consolidated through learning from tested CCA models

Climate adaptation management actions currently being implemented or recommended for implementation in the Eastern Himalayas

Adaptation action	Capacity building				Biodiversity target						
					System		Level			Range	
Description	Research/monitoring/assessment	Education/extension	Plans/policies	Implementation	Terrestrial	Freshwater	Ecosystem	Species	Genetic	Local	Widespread
Landscape ecosystem approach to biodiversity conservation	O		●		■	□	■	□	□		
Forest fire management	●	●	●	●	■		□	□			□
Sustainable management and use of forest resources	●	●	●	●	■		□	□			□
Shift to green, environmentally friendly technologies	O		O		□		□	□			□
Enhance sinks and reduce sources of GHG emissions	O		O		□	□	□				□
Conserve natural habitats in climatic transition zones	O		O		□		■	□		■	
Restoration of degraded ecosystems	O		O	O	■	□	■	□			□
Formalise traditional knowledge systems			O	O			□	□		■	
Promote community-based ecotourism			●		■		■	□		■	
Shift in social habits in the consumption and use of ecosystem services		O		O	■	■	■	□		□	□
Improve shifting cultivation practices	●	●			■		■			□	

Note: blank cell = not applicable

● Being practiced
O Recommended for future
■ Primary target
□ Secondary benefits

Perception of forest dependent groups on coping with climate change (N=182 Groups)

Perceptions about coping with climate change

Action required	Percentage of respondents
Intensify afforestation and reforestation programmes	12
Find alternatives to forest products	14
Awareness campaign and multi-media education	8
Land and water management	8
Local participation to mitigate effects of hazards	8
Recycling of waste materials	14
Reduction in settlement expansion	10
Reduction in use of firewood	6
Partnership, cooperation, and collaboration to combat climate change	20

Building on universal future measures

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- Development of scientific programmes for climate change monitoring

- Downscaling of regional climate models (RCMs)

- Research on Himalayan precipitation processes

- Coupling of climate and hydrological models for the Himalayan streams

- Long-term studies on biodiversity elements of forest and alpine ecosystems

- Study of micro-organisms in relation to the effect of climate

Promote Research and Development and CB

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The following are the areas for immediate research:

- Evaluation RS-GIS analysis of total carbon stocks for the forest

- Monitoring the carbon fluxes of forests in various ecological and altitudinal zones.

- Ex-situ conservation of the genetic diversity of both flora and fauna.

- Documentation of bio-diversity of various ecosystems and its monitoring.

- Development of appropriate silvicultural techniques with climate change considerations.

- Management of forest fires.

- Population dynamics and movement of wildlife.

Future measures: regional perspective in HKH

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- Consolidation of *regional policy and strategic frameworks*, and commitment and actions for implementing sustainable management of forests and associated capacity development systems;

- *Awareness-building* and enhancement of the contribution of forests to the achievement of the internationally agreed development goals, including the <u>Millennium Development Goals</u>;

- Improved framework for interstate and *transboundary cooperation for actions* on good forest governance; Improve knowledge on climate change induced changes in forest ecosystems and policy, action research and practice actions needed to counter these; and

- Enhance cooperation with the regional countries *in sharing the good practices of forestry, and promote regional exchange* of knowledge among the partners with facilitative role of regional institutions such as ICIMOD.

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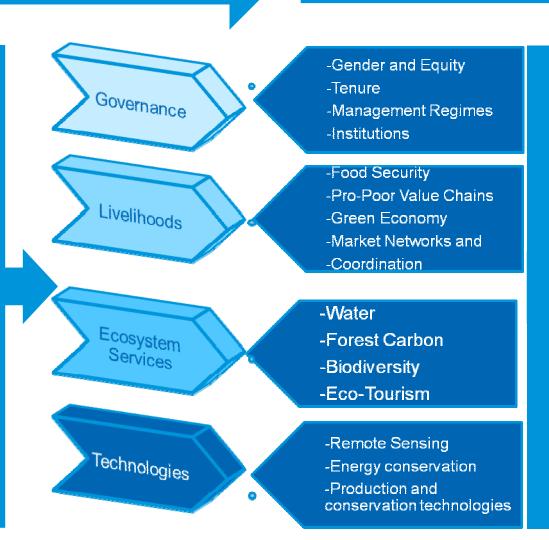|	Scientific Uncertainty	Adaptation	Mitigation	Public engagement
State	Regional cooperation Support long-term Research. Engage in research processes	Inter-sectoral collaboration, support for poverty alleviation and environmental conservation	Commitment to international treaties, developing good policies	Transparency in information and support for public debates
Market	Partnership in research, new hardware and software for monitoring	New technology, support for community development and local education	Self-regulating and reducing greenhouse gas emissions	Green certification, support for civil society
Civil society	Participatory vulnerability analysis, linking local to global, facilitating knowledge learning	Community preparedness, facilitating local leaning and adaptation	Social auditing, green watch, and monitoring	Access to information, awareness campaigns, social inclusion, inter-cultural dialogue
Local community	Local indicators and monitoring, local knowledge, innovations, and practices	Improved land/resource management, preparedness for surprises	Renewable energy, alternative livelihoods, and migration	Representation in dialogues and decision-making
ICIMOD's role	Impact assessment, knowledge synthesis, regional database, forecasting, monitoring Downscaled modeling matching with community perceptions	Capacity building, support for mountain policies, pilot demonstration, optimising land-use patterns and livelihoods in mountain 'niches'	Facilitating the clean Development Mechanism (CDM) and Carbon market place, Designing payments for environmental services	Regional dialogue, debate in international forums, channelling funding support, Multistakeholder dialogue, Transboundary Cooperation framework

ICIMOD's Focus: Scoping for Adaptive Forest Ecosystems in HKH

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Building on Knowledge and Past Experience →

Focusing on Key Areas →

Innovation, Consolidation and Communication of Credible Knowledge

Governance
- Gender and Equity
- Tenure
- Management Regimes
- Institutions

Livelihoods
- Food Security
- Pro-Poor Value Chains
- Green Economy
- Market Networks and
- Coordination

Ecosystem Services
- Water
- Forest Carbon
- Biodiversity
- Eco-Tourism

Technologies
- Remote Sensing
- Energy conservation
- Production and conservation technologies

Influencing Regional Policies and Strategies

Goal: Securing and Sustaining Forest Ecosystems in HKH for Inclusive Provision of Goods and Services and Climate Resilience

Thank you

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