Climate Summit for a Living Himalayas
Bhutan 2011

Report on the

High level consultative meeting on: Sacred Himalayas for Water, Livelihoods, and Bio-cultural Heritage

August 18-20, 2010,
Godavari Village Resort, Kathmandu

Meeting Facilitated by ICIMOD

Report prepared by ICIMOD

Summit partners
MacArthur Foundation, ICIMOD, WWF

Chapter 1

Overview

Background and context of the consultative workshop

It is widely acknowledged today that the impacts of climate change are already noticeable, especially in the Himalayas which due to their high fragility are known for being particularly vulnerable to the adverse impacts of climate change. Climate change induced high snow and glacial melting rate, for example, could affect water flows in rivers and have an impact on people depending on water deriving from the Himalayas for their water supply. Nevertheless, the efforts to reach a consensus at a global level to mitigate the impacts of climate change and to agree on a clear commitment to support poor and particularly vulnerable countries in their struggle to adapt to climate change are still continuing. For these reasons, the Royal Government of Bhutan felt an urgent need to take the action and call for a regional effort in meeting the climate change imposed challenges in the region. The Royal Government of Bhutan proposed to bring together leaders, from Governments of four countries lying in the southern slopes of the Himalayas including Bangladesh, India, Nepal and Bhutan, as well as representatives of the civil societies and academia from this region to commonly develop and agree on a road map for adapting to climate change in the southern slope of the Eastern Himalayas, which is to be ratified at the Bhutan Climate Summit for a Living Himalayas in October 2011. The following key areas of proposed actions should be addressed by this road map.

- Securing the natural freshwater systems of the Himalayas;
- Ensuring food security and securing livelihoods;
- Ensuring energy security and enhancing alternate technologies; and
- Securing biodiversity and ensuring its sustainable use

Purpose of High Level Consultative Meeting

The purpose of the present high level consultative meeting organized by ICIMOD at upon the request of the Royal Government of Bhutan for its technical support to the Climate Summit for a Living Himalayas – Bhutan 2011, is to bring together leaders, decision makers and technical experts from the Government agencies as well as research and development organizations in order to identify key issues and priorities with regard to climate change adaptation in the eastern Himalayas, foster partnerships and networking to facilitate sharing of information and experiences and to set the stage for the coming 14 months in preparation to the Bhutan Climate Summit.

Objective of the High Level Consultative Meeting

This is a preparatory meeting for the Climate Summit for a living Himalayas – Bhutan 2011. This event is the kick off meeting that starts a series of meetings to be held in four countries in the southern slope of Eastern Himalayan region namely Bangladesh, Bhutan, India and Nepal.

The International Centre for Integrated Mountain Development (ICIMOD) is providing technical backstopping to the Secretariat of the Climate Summit for a Living Himalayas –Bhutan 2011 by jointly organizing this kick off meeting. With the agreement reached at this high level consultative meeting, it is anticipated that each country will host four technical meetings for each theme (Water, Food Security, Energy and Bio-diversity) and one Regional Technical meeting in June 2011 prior to the Ministerial Level Meeting in August/September 2011.

This consultative meeting aimed at getting the perceptions of the participants on the key issues related to climate change adaptation with regard to water, food and livelihood, energy, and biodiversity in the Eastern Himalayas which should be addressed by the roadmap and in defining roles and responsibilities at regional and local/country level.

The specific objectives of this consultative meeting are to:

- Agreed on the road-map for the Climate Summit for a Living Himalayas – Bhutan 2011 towards the vision of 'Sacred Himalayas for Water, Livelihoods, and Bio-Cultural Heritage' by the high level representatives of the four countries in the Southern Slope of the Eastern Himalayas.
- Identify key issues related to climate change adaptation in the Eastern Himalayas (EH) which should be addressed by the agreed road-map to be implemented over the coming 10 years following the ratification of Bhutan Climate Summit-2011.
- Agree on a strategy and timeline leading to the Climate Summit for a Living Himalayas – Bhutan 2011 which will ratify the elaborated road-map for the Eastern Himalayas
- Assign key responsibilities to national resource institutions and centres for each country
- Agree on host countries for the Regional Expert Group Meetings to be held in June 2011

Outputs of the High Level Consultative Meeting

The following outputs from this technical consultative meeting were achieved relevant to the governments of the four participating countries:

- Agreed upon by the high level representatives of the four countries on the road map for the Climate Summit for a Living Himalayas – Bhutan 2011 towards the vision of 'Sacred Himalayas for Water, Livelihoods, and Bio-Cultural Heritage'.

- Discussed on of key issues related to climate change adaptation in the Eastern Himalayas
- Agreed on detailed road-map and timeline for respective countries leading up to the Bhutan Climate Summit-2011
- Key institutions and research centres from respective countries responsible for the implementation of the agreed road-map and timeline identified
- TORs for lead institutions discussed and remains at the prerogative of lead institution for each country
- Each country agreed to lead one thematic area and also to host the respective Regional Expert Group Meeting.

These outputs are presented as the conclusion of this high level technical meeting, a conclusion jointly reached by the participating representatives of the respective countries.

This report is a documentation of all the speeches, presentations and discussions that took place during the workshop. Materials from this report can be synthesised for making a workshop proceeding. This report can serve as a guidance document for the country level meetings as it contains all the discussion points with respect to the thematic areas.

Chapter 2

Opening remarks of workshop

Welcome by the Host Country

Dr. Jagadish Chandra Pokharel, Vice-chair, National Planning Commission, Government of Nepal & ICIMOD Board member

Dr. Pokharel thanked the Royal Government of Bhutan for taking an initiative for climate change adaptation in the Eastern Himalayas (EH), including selection of very important four thematic areas with a touch of spirituality. He reminded everyone that mountain areas, home to 13% of the global population, cover 25% of the world's land area. The Hindu Kush-Himalayan region – dubbed the Third Pole – alone is home to some 1.3 billion people. Speaking on behalf of Nepal, the country hosting this high level kick-off meeting, he said that Nepal is was pleased to be part of this initiative and thanked ICIMOD for its technical support. Declining water availability was leading to water conflicts in the region and that the EH had little capacity to cope with the adverse impacts of climate change. He emphasized that the Mountain Agenda has not been adequately addressed in the United Nations Framework on Climate Change (UNFCC). And to address this shortcoming, the Prime Minister of Nepal at CoP-15 in Copenhagen had called for a common platform for mountain countries of the world to raise their concerns collectively in the international forums and negotiations. Thus a Mountain Initiative was born. He expressed hope that this consultative meeting will set in motion a process that will not only develop a common climate change adaptation framework for the Eastern Himalayas, with areas of regional focus and cooperation carefully delineated (i.e. the road map) but also issue a Declaration at the end of Bhutan Climate Summit 2011.

Welcome by the Lead Country

Dr. Pema Gyamtsho, Hon'l Minister, Ministry of Agriculture, Royal Government of Bhutan

Dr. Gyamtsho thanked the Government of Nepal for hosting this High Consultative Meeting in Nepal with support from ICIMOD. He called on all presented at the Meeting to come together as citizens of the Eastern Himalayan sub-region to be concerned about climate change and contribute to shaping their collective future destiny. Bangladesh, Bhutan, India and Nepal have many commonalities, including historical, cultural and economic ties, and these should form a basis for regional collaboration. Climate change impacts know no political boundaries, so unless the EH countries come together it is not possible to put together adaptation measures at a regional level. What does reducing average global temperature by 2 degree Celsius by 2050 mean in a day and age when some parts of the world are already experiencing a fluctuation of over 5 degree Celsius around the mean in any given year? What does cutting Green House

Emissions by 20% by 2050 mean to the farmers or herders of the Eastern Himalayas? Not much. He let on that he was happy to note that there was representation of the four countries at the highest level at this consultative meeting. Rather than waiting for international agreements to conclude, he urged the above countries to act decisively both regionally and locally to address climate change as well as to exchange good practices and lessons learned. Community forestry in Bhutan, for example, has grown rapidly in a short span of time, thanks to the experiences and lessons learnt from the India and Nepal. He said that a long journey towards the Bhutan Climate Summit 2011 has begun and urged all "to get started."

Conceptual Background and Outline of the Climate Summit for a Living Himalayas – Bhutan 2011

Nawang Norbu, Director, Ugyen Wangchuk Institute of Environment and Conservation, Ministry of Agriculture and Forests, Royal Government of Bhutan

Mr. Norbu said that climate change is actually happening. While climate science can be debated, its impacts are already observed. As exemplified by CoP-15 in Copenhagen, international agreements are taking long; hence the need to do something at regional and local level to address impacts of climate change. He added that the geographical focus of the Climate Summit for a Living Himalayas – Bhutan 2011, and thereby of this high level consultative kick-off meeting, should be on the southern slope of the Eastern Himalayas: particularly on the four countries (Bangladesh, Bhutan, India and Nepal). The thematic scope should be on the implications of climate change impacts on the following four key areas: water, food security, energy and biodiversity. He clarified that although discussions should revolve around *adaptation to climate change*, he did not rule out mitigation per se, adding that mitigation components should be discussed as they relate to adaptation. He outlined the three-fold objective of the consultative meeting as follows:

- To agree on the roadmap leading up to the proposed Bhutan Climate Summit-2011,
- To agree on the contents of the roadmap, and
- To identify key institutions and people.

Individual countries were encouraged to take the lead in elaborating the four thematic areas – water, food security, energy and biodiversity - and take up issues of common concern regionally. Each country is requested to host an Experts Working Group meeting on one of the thematic areas sometime in 2011. And to take up regionally what has been missing in the National Action Plan of Adaptation (NAPAs) or Himalayan Missions. He urged the countries to come up with a Roadmap through the national and regional consultations on the four thematic areas as seen through the prism of climate change, especially on climate change adaptation. The experts were requested to approve the Road Map before it is presented for discussion at the Ministerial Level Meeting in Bhutan in 2011. He ended his presentation by outlining the following (expected) outcomes of the Climate Summit for a Living Himalayas – Bhutan 2011:

- Adopting and endorsing a 10 year road map for adaptation to climate change in the eastern Himalayas sub-region for ensuring food, water and energy security while maintaining biodiversity and eco-system services.

- Securing all of eastern Himalayas temperate and alpine forests and grasslands.
- Pledges from partner countries and institutions to fund/commitments of work the implementation of such a road map.
- Creating and operationalizing a regional adaptation expert groups

Overview of the Climate change challenges and adaptation needs in the Eastern Himalayan region as the context for the conference

Dr. Madhav Karki, Deputy Director General, ICIMOD

Dr. Karki welcomed all the delegates and participants to the kick-off consultative meeting and plunged into his presentation. He said that due to the rapid glacial melting, the Eastern Himalaya is in a position to provide the best evidence of climate change. For example, the rate of warming in the Himalayas was five times higher (faster) than the global average. Aside from green house gas (GHG) emissions, aerosols and black carbon were also the contributors to climate change in the South Asian context. Referring to a National Aeronautics and Space Administration *(*NASA) finding, he said that there were localized phenomenons at play that need more research. Flooding, including heavy sedimentation, was a major concern. The Intergovernmental Panel on Climate Change (IPCC) portrayed South Asia (the Himalayas) as a data deficit region in its 2007 Report. Not surprisingly given that there has been inconsistency in regional analysis of climate change as well as a dearth of climate change models in the region. The following climate-change induced trends have been observed in the Eastern Himalayas:

- Northward shifting of vegetation;
- Increase of alien invasive species;
- Precipitation and evapo-transpiration rates out of balance/sync;
- Increase in the frequency of high intensity rainfall, resulting in water-induced hazards;
- Failure of food production to keep up with population growth; and
- Falling cereal production.

On the theme of water, Dr. Karki said there was “too much or too little water”. Glacial lakes are forming/ expanding at a faster rate than before, creating potentially dangerous Glacial Lake Outburst Flood (GLOF) situations such as in Tsho Rolpa glacial lake in Nepal. Rainfall intensity (short duration, high volume) is increasing, creating a water hazard such as the flood that alone caused the highest mortality as well as damage in the region. There is very disaster preparedness in the region.

On the theme of food security and livelihoods, he said food production in South Asia ~~is~~ failing to keep up with the population growth, thereby creating a situation of food insecurity. Nutritional insecurity was also on the rise as cereal crop production in the region had fallen down by 18.2% in 1990 to 22.2% in 2010.

On the question of why adaptation, he said: for sustainable livelihoods, for the protection or sustainability of the natural capital, and for climate proofing the big infrastructure such as a hydro-dam. He pointed out that community forestry alone enhances community resilience.

He pointed out the following key points are needed for adaptation:

- New knowledge/research that is applicable, that works in cycle, that leads to adaptation options prioritized according to set criteria, and that is useful for monitoring environmental change over a long period of time, and
- Exchange of good practices and lessons learned.

He said that various water induced risks needs to be prioritized, with (flash) floods ranking at the very top. There is clearly a need to build the capacity of the hydro-meteorological organizations of the four countries as well as form a network for data sharing. Toward this end, sharing of scientific knowledge can reduce so much uncertainty, underscoring the need for a common platform where exchange or meeting can regularly take place.

As part of adaptation to climate change, he outlined the following measures he thought will be increasingly important in the coming days: livelihood diversification, disaster preparedness and climate proofing infrastructure.

Chapter 3

Thematic presentations

There are four thematic areas which the Climate Summit for a Living Himalayas – Bhutan 2011 will focus on namely Fresh Water, Food Security, Energy Security and Biodiversity Conservation. Thematic Experts have made presentation on each of thematic areas as a basis to initiate discussions on the themes. The Thematic Experts will also be providing advice and guidance to the national level thematic group workshops. Below is the summary of the presentations by the Thematic Experts and the notes on the discussions. Where the Thematic Experts have submitted papers, they are also included in the annex.

3.1 Fresh Water

Title of Presentation: **Securing freshwater in the Himalayas and reducing vulnerabilities to water induced hazards.** Arun Bhakta Shrestha, Pradeep Mool, Mandira Shrestha, Bishnu Bhandari, and Ramesh Ananda Vaidya, ICIMOD

Notes on presentation:

- State of knowledge – data based in regional dataset doesn't exist, presently we rely on global datasets
- Unlike temperature, precipitation doesn't show long term trends
- Future projections are not efficient in quantifying any processes of climate change disasters

Discussions:

- Look at regional hydrological cycle going beyond mountain hydrology – going till the coastal zone
- Look into fog/ mist harvesting as a water harvesting option
- Discussion on water related hazards should go beyond GLOF and include downstream hazards like sedimentation, bank erosion etc
- Quality and composition of water released to downstream is important to consider and also how it affects the riparian countries
- Net water availability may be same in the future but the forms will change, hence we need to think on how water security can be ensured in the changed context
- We need to focus on what needs to be improved and what relevant regional initiatives and actions have to be initiated/ continued?
- Community initiatives have to be appreciated/recognized
- Local evidences and traditional knowledge need to be documented and replicated to tackle the situation of increased rainfall which is replacing snowfall and permanent snow cover.

- Water storage related issues needs to addressed which is guided by water allocation and not by financial allocation
- Clear role of local, national and regional organisations becomes more important
- Capacity building of the local communities would be critical so we need to speak and understand the same language
- Localized precipitation needs more understanding
- Regional early warning mechanisms can save a huge loss in downstream communities/ countries
- Further sub-grouping would be useful to understand the thematic issues more clearly
- Mitigation of water related hazards in one upstream country may have adverse effects in downstream countries; a clear understanding has to be developed to ensure both parties' benefit.
- Water variability, therefore: is water available when it is needed?
- Draining glacial lakes to mitigate risk – is it the right measure? Does the upstream country have the moral authority to take unilateral action that may have impact on downstream?

3.2 Food Security

Title of presentation: **Building Climate Resilience for Food Security and Rural Livelihoods in the Southeast Slope of the Himalayas.** Zhijun Chen, Food and Agriculture Organization (FAO)

Dr. Zhijun Chen from FAO Regional Office for Asia and the Pacific, Bangkok made the presentation. He presented an overview of current status of food security, implications of climate change, major challenges and how climate resilience in the agriculture sector can be built. He elaborated on the issues that need to be addressed in the future, and presented some recommendations as a starter for group discussion and the national level consultations.
The southern slope of the Eastern Himalayas (EH) has a rich ecosystem, ethnic and cultural diversity. Over 70% of populations live on subsistence agriculture, livestock, fisheries, and forestry resources. The human development indices of the EH countries are still among the low ranking countries and the malnutrition level remain high. Majority of rural population lags behind other areas in South Asia in terms of services related to health, education and infrastructure development. There are several challenges such as water constraints, soil erosion, ecosystem degradation, forestry and fishery degradation that crucially affect the food security and livelihoods in the region. Climate change has direct implications on agro-ecosystems affecting all agricultural subsectors. The temperature rise, glacier melt, extreme events (flash floods, floods, and drought), erratic rainfall etc cause changes in the hydrological cycle and soil composition affecting the entire biophysical processes and services associated with agro-ecosystems. Crop and livestock production decrease, forestry and fishery production are affected, together with increased frequency of crop pest and animal disease outbreak.

According to the World Food Summit 1996, "f*ood security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life*" indicating to the four dimensions to food security: Availability, Access, Utilization and Stability. Climate change affects these four dimensions through crop loss, disrupted infrastructure and market linkages, shortage of water and its supply. While proactive understanding of climate change impacts is important to develop carefully targeted responses, it is essential to tap on the "low-hanging fruits" to build resilience of existing agricultural systems. Good practices with regard to crop diversification and adoption of suitable crop and livestock varieties must be captured. There is a need to build on the "win-win" situation in the agricultural sectors such as agro-forestry, use of biogas, conservation farming, agriculture water management, and pastureland or grazing land management. The integrated approach to risk management and comprehensive strategies for adaptation has to be mainstreamed in the development plans. Tailor made capacity building models and materials will be essential that at one hand discuss global issues and on ~~at~~ the other hand tackle impacts at the local level.

It is important to frame our adaptation actions within the umbrella of global initiatives such as UNFCCC, Global Environment Facility Program (GEFP), UNREDD+, and FAO global agriculture adaptation program and technical guidelines. Regionally, there are provisions such as SAARC declaration, Regional Framework on climate change and food security in South Asia; ICIMOD strategy, policy and technical studies and advices; The Bay of Bengal project; National Forestry Management project and the proposed South Asian Regional Food Bank under SAARC. At the national level, NAPAs, NPFS, NMTPF have been formulated and there are

already donor funded, community livelihood and climate change adaptation projects in the countries of the EH.

Dr. Chen, while elaborating on the issues to be discussed further, stressed on inadequate reflection of agricultural sector in the global negotiation text and financial mechanisms, and the importance of highlighting Himalayan agriculture and food security dimension at regional and global frameworks. He mentioned on the need for discussion here is also a need to discuss on sharing of technologies related to climate change modeling, research and development; innovative financing in terms of reward synergies, prioritizing low cost options; governance mechanisms related to land tenure, water rights, and planning; and sub-regional cooperation together with development of cooperation networks

Finally, as recommendations, Dr. Chen emphasized on: i) formulating and mainstreaming sub-regional framework and action plan to coordinate actions among four countries in the EH; ii) raising awareness on Himalayan dimension at regional and global dialogues and networks; iii) supporting agricultural sectors in climate change negotiations; iv) technology development and capacity building tailored to the specific need of individual countries and v) strengthening sub-regional cooperation that could provide effective adaptation mechanisms and to improve the well being of people in the targeted region in the eastern Himalayas.

Discussion:

- There are positive implications of climate change on agricultural sector such as increased productivity of colder regions in the mountains. There is a need for intensive research towards understanding the net productivity of the agricultural system within the context of climate change
- Lots of efforts have already gone into developing a national adaptation plans such as NAPA and other relevant mechanisms such as UNCDD on desertification and deforestation. It is important to connect these existing mechanisms with this sub-regional effort
- People's livelihoods depend on many other sectors besides agriculture. An integrated understanding of various sectors is required including the implications of natural freshwater infrastructure and functionality. Land access and water security directly relate to food security
- Water conservation is an integral part of maintaining food security
- Interventions are required to properly understand the hard core climate change science to remove the uncertainty. Understand how climate change (cc) is going to affect agro-biodiversity will be a key towards developing adaptation strategies for food security
- Cash crop production and its implication has to be considered including diffusion of irrigation technologies
- Mountain is complex when it comes to farming systems. There are many traditional institutions and varied governance mechanisms operating at different levels. Acknowledging traditional knowledge is must and should form the basis of adaptation measures
- Governance of food is more important than the availability of food. Sometimes food distribution is more important and critical than the food availability

3.3 Energy Security

Title of Presentation: **Energy security and alternative technologies: "Framing the issues"** Martin Krause and Thiyagarajan Velumail, United Nations Development Program (UNDP)

Mr. Velumail's presentation was on energy security. He said that energy security when viewed from the national perspective has a supply side emphasis as it means not only "reliability of supply but also reliability of energy price". However, the focus is better place on "energy security of the people, especially the poor". A great majority of the people living in the Eastern Himalayas depend on ecosystems for energy. This means on biomass for cooking and heating purposes 57.7% of the Bhutanese and 68% of the Nepalese populations, for example, continue to rely on fuel wood.

Although biomass is a very important source of energy especially for the poor, another source that cannot be ignored at all is hydropower. How climate change will impact hydropower and biomass in the coming years will have major implications for the Eastern Himalayas. Hence, 'access to electricity/cooking and heating fuel' is an issue in the context of climate change in the Eastern Himalayas.

There are both positive and negative impacts of climate change. As glaciers melt, new marginal land and new cultivable land will open up, and all this land will potentially be a new source of biomass as well as of new mineral resources (energy?). As global temperature rises, there will be less and less heating requirements. So the overall net effect of climate change on the energy situation in the Eastern Himalayas needs further research.

Based on the 17 good practices collected from the Asia-Pacific region, including a few from India and Pakistan, Mr. Velumail said the following points will become increasingly important:

- Diversifying away from 'biomass toward 'cleaner energy' such as hydropower;
- Development of hybrid energy systems;
- "Climate proofing" critical watersheds and big infrastructure projects;
- Use of targeted smart subsidies to promote Renewable Energy Technologies among the poor;
- Public-Private Partnership concept; and
- "Carbon financing"

Discussion:

The knowns are larger than unknowns in the Energy Sector. However, in the cases of water and food security, there are more unknowns than knowns.

- UNDP seems to focus on "micro energy systems", how about "hydro?"

- The presentation has not touched adequately on hydropower. Hydropower is big or going to be big in the Eastern Himalayas, and if this issue is not handled properly, it is likely to fall into the vortex of negativity. A series of hydro dams are coming up – promoted as “green energy” and also for storing water for irrigation. Hydropower is going to be the growth-requirement for the region. Nothing can stop that. However, we need to make sure that proper protocols are followed and that hydro projects are ‘climate proofed”. We cannot afford to turn a blind eye to the hydropower issue.
- In Bhutan alone, hydro potential is in the vicinity of 30,000 MW. However, there is a need for longer-term policy on energy. Also a need to come up with efficiency measures of electricity use in the context of climate change.
- There is a need to promote the ‘green building” concept. Energy efficient buildings save energy.
- Is hydropower sustainable in the long run? Most of the hydropower plants in the Himalayas are the run-of-the-river type. Climate change will particularly affect this type of plants. In the case of Nepal, “electricity is very expensive”. 1-6% of Nepal’s total hydro-potential has been realized; however, water storage for irrigation and other purposes is minimal. Hydropower will not be sustainable in the long run unless we quantify environmental and social costs that accrue. Because costs are incurred upstream and benefits flow downstream, some kind of mechanism needs to be developed to address this imbalance.
- Energy is not just another technical issue. It is also a way of meeting various development objectives such as poverty alleviation, health, women empowerment, etc. Energy use must protect environment as much as possible while promoting livelihoods. So is access to energy a right or a privilege or an entitlement? In terms of equity, off-grid energy (e.g. biomass) is important, in terms of quantity, hydropower. However how glacial melting will affect hydropower is a big question mark. Impact of climate change will be higher on off grid energy– it will hit the poor the hardest. There is a need to share UNDP’s 10 good practices throughout the region in the context of climate change. Designing future hydropower cannot follow a conventional method based on past water flows. Just having a long term policy on energy is not enough, we need a short term policy, a medium term policy as well as a long term policy.

3.4 Biodiversity Conservation

Title of presentation: **Biodiversity Management in a Changing Climate: Developing a Climate Change Resilient Conservation Strategy for the Eastern Himalayas.** Nakul Chettri (ICIMOD), Eklabya Sharma (ICIMOD and Tariq Aziz (WWF)

Dr. Eklabya Sharma, Programme Manager, Environmental Change and Ecosystem Services (ECES), ICIMOD started his presentation with the explanation of importance of biodiversity as a natural capital and as a main service provider of water, food and energy. The presentation was basically focused on need to develop climate change resilient biodiversity conservation in the Eastern Himalayas. Dr. Sharma briefly explained the significant conservation features of the Eastern Himalayas and ecosystem goods and services it provides to the millions of people in the region. The region has 25 important eco-regions of which 4 are globally significant and 3 global hotspots. The diverse vegetation and ecosystems with high endemism of the Eastern Himalaya is a unique element. The region also has flagship species like Snow Leopard, Tiger, Red Panda and others. At the same time, the region faces diverse conservation challenges with some direct threats to biodiversity. He thoroughly explained the land use change, deforestation, globalization and economic growth, socio-economic and demographic change and most importantly the climate change as the main drivers of threats to biodiversity and their loss in the region.

Taking into account the vulnerability of the region to the impacts of climate change, Dr. Sharma gave insights on vulnerability assessment of the region. The Brahmaputra valley, segments of lower Gangetic Plain, Terai Duar-tract from Nepal to the Eastern Bhutan, and the wetland systems of the region are most vulnerable in the Eastern Himalayas. Then he put forward specific conservation questions to the participants on varying capacity for research and management effectiveness of protected areas, how to link conservation with development, upstream and downstream linkages and steps required for conservation of identified eco-regions. With these questions, he shared some of the best conservation measure practices of the region. He talked about the paradigm shift in conservation as how we shifted from the species conservation approach to landscape/ecosystem approach and became participatory from protectionist followed by some successful examples. The examples included increase in coverage of protected areas in the Eastern Himalayas, trans-boundary landscape level conservation in the Kanchenjunga Landscape, Bhutan Biodiversity Conservation Complex and the Sacred Himalayan Landscape.

Based on issues and conservation measures in the region, Dr. Sharma suggested a regional framework with short and medium term actions for biodiversity conservation and management. The medium term actions included an action of developing Climate Change Resilient Conservation Strategy and Implementation Plan and institutional mechanisms for implementation. The short term action was focused on developing a regional Vision Document for the proposed strategy by 2011. With recommendations, he then opened the floor for the plenary discussion.

Discussion:

The comprehensive presentation by Dr. Sharma and Dr. Aziz was appreciated by all of the participants followed by fruitful discussion and feedback. Some of the remarks and recommendations were:

- A policy framework and institutional mechanisms for indigenous community and civil society should be developed;
- The Ecosystem based approach in a multidisciplinary way should be adopted for climate change adaptation in the region;
- Collection of good practices and learning from it could be one of the best options for implementing conservation practices in the region. For instance, research findings and knowledge base developed by Critical Ecosystem Partnership Fund (CEPF) and the Ashoka Trust for Research in Ecology and the Environment (ATREE) could be tapped and considered;
- The planned actions for biodiversity management should be merged with other thematic areas and implemented accordingly;
- The rich traditional knowledge and practices of the region should be conserved and shared;
- The Regional Adaptation Plan of Action should be developed with regards to biodiversity, water, energy and food and should be implemented in the region;
- The protected areas approach should be revisited. For instance, the trans-boundary approach focusing on prioritization of conservation areas in the region should be promoted;
- Conservation strategy should also focus on ways to balance the national and local interests, and the community efforts for conservation should be considered in the strategy;
- Management actions should be implemented taking into account the social dimensions;
- There should be upstream and downstream linkages; and
- Building ~~of~~ regional knowledge networks, application of ecosystem based applied-research, monitoring and evaluation mechanisms, and governance mechanisms are important for successful biodiversity management activities.

Chapter 4

Building a Regional Road Map

Following the thematic presentation, there were group works arranged by thematic areas to identify regional level issues pertaining to the thematic areas followed by country wise group work to identify lead institutions to work in the thematic areas.

In the thematic areas, major guiding question were:

- What are the key issues with regard to CC adaptation in the Eastern Himalayas that should be addressed by the agreed road-map?
- Which issues are of highest priority?
- Where are the gaps?
- Which issues call for trans-boundary collaboration?

The output of this sessions leading towards the Regional Road-Map were:

- Key issues for Eastern Himalaya region identified linking the national level issues with regional level
- Agreed on a standard process towards regional level framework/road map to be implemented for each thematic area
- Time line for the activities agreed

4.1 Fresh Water

Group Members

G. Karma Chhopel	Bhutan
Sanjay Dhungel	Nepal
Pradeep Mool	ICIMOD
Arun Shrestha	ICIMOD
Tek Jung Mahat	ICIMOD
Suresh Raj Uprety	Nepal/WECS
Salamuddin N. Choudhury	Bangladesh
Karma Tsering	Bhutan
Chanan Mahanta	India
Anne E. Larsen	UNDP Bhutan
Kabir Uddin	ICIMOD

The group discussion took place in three stages; first, listing national concerns; second, identifying regional linkages and commonalities; and third, prioritising them. At the end Standard Process towards Regional Level Framework/Road-map was described.

First stage: issues listing

Participants from each country, namely Bangladesh, Bhutan, India and Nepal were asked to share water related issues in their countries which have some linkages to climate change. This discussion attracted a wide range of issues starting from ice and glacier retreat, formation of glacial lakes, glacial lake outburst floods and related hazards to high intensity rainfall, shorter monsoon period , seasonal and temporal fluctuation in surface runoff and irrigation, ground water recharge, flash floods, flood and droughts and ground water contamination to sea level rise and salinity intrusion. Participants also touched water based tourism and transport, biodiversity, economic losses due to uncertainty (fluctuation) in river flow, issues related reservoirs/impoundment and acute water shortage and evaporation loss. Similarly ecological flow and habitat loss, urban water supply, water related diseases and water treatment were other important issues heated the group discussion.

The issues were broadly categorized as:

- Water-induced hazards
- Water availability
- Hydropower
- Environmental flow and biodiversity
- Water quality and health security

Second stage: identifying commonalities

Participants tried to find commonalities among EH countries, so the relevant issues can be included in the priority list.

Third stage: prioritising

Issues of highest Priority:

- Glacier melting and retreat
- Intensified extremes (floods, droughts, cyclones)
- Reduced water availability
- Water quality
    - Physical - sediment load,
    - Biochemical - Increased disease burden
- Data sharing, forecasting and early warning mechanism
- Sea level rise, salinity intrusion

Gaps:

- Data availability and access
- Inadequate scientific understanding
- Lack of awareness
- Poor institutional mechanisms
- Poor integration of existing knowledge and practices
- Lack of integrated management approach

Need for trans-boundary collaboration:

- Assurance of good quality, adequate flow for downstream uses
- Cooperation in Flood warning and forecasting
- Hydrological data sharing
- Upstream – downstream cooperation

Standard Process towards Regional Level Framework/Roadmap:

- Establishment of a focal institution in the respective government
- Formation of a national task force
- Formation of a regional thematic expert group
- Establish linkage with parallel national focal institutions and expert groups
- The working modality to be designed by the respective groups

Road-map:

- Objectives
- Describe current status and data availability
- Outline activities to
    - Address issues of highest priority and trans-boundary issues
    - Fill the gaps identified
- Draw up work plans for the institutional mechanisms
- Log-frame and Budget requirement to address specific activities of highest priority

4.2 Food Security

Group Members

Md. Ataur Rahman	Bangladesh
Chencho	Bhutan
Norbu	Bhutan
Karma Rapten	Bhutan
Suman Rai	India
Pushkin Phartiyal	India
Ram P. Sah	Nepal

Purushottam Ghimire	Nepal
Bhaskar Singh Karky	ICIMOD
Bandana Shakya	ICIMOD
Zhijun Chen	FAO

Key issues with regard to climate change adaptation in the EH:

Reduced per capita agricultural land, land degradation, decreased productivity, loss of local crop genetic resources, water scarcity and loss of traditional farming technologies were regarded as major issues. Table below lists the country wise issues elaborated by the group members.

Country wise list of key issues on food security with regard to climate change adaptation	
Issues	**Remarks**
Bangladesh	
Loss of agricultural land	Happening as a result of natural disasters such as floods/ flash floods/drought/tidal surge/ cyclone / river bank erosion
Decrease in the productivity of land	Depletion of natural surface water and ground water; increased sedimentation
Decrease in fishery production (shrimp cultivation)	Coastal regions especially Mangroves are severely affected by cyclones
Decreased Jute production (an important cash crops)	Scarcity of water for processing of jute fibers/ affects the market produce
Bhutan	
Lack of awareness about Climate change and food security issues	Climate change and implications on food security not properly communicated especially with regard to technological innovations and productive farming techniques
Water scarcity	For cultivation of staple crops
Lack of crop insurance scheme	During time of food stress/ damage/ loss of food crops
Loss of local genetic resources	Introduction of exotic crop species
Minimal investment for agriculture/ crop, livestock improvement research	Several unproductive breeds of livestock/ Scientific research on genetic makeup of crop plants
Baseline information lacking on vulnerabilities of farming communities	Critical to identify where those vulnerable communities are
Loss of prime agricultural land	Urbanization and industrialization
Lack of proper food distribution mechanism	During the time of stress and food scarcity
Land degradation / soil erosion	Top soil erosion taking place on sloping agriculture lands, increased sediment loads/ decreasing productivity
India	
Water scarcity and the productivity of the rain-fed agriculture	Inadequate return / uncertainty over cropping pattern
Access to food distribution system	Needs to be reviewed
Availability of cost effective	Capacity of farmers need to be built to cope with climate

technology to the farmers / Outbreak of diseases and pest	uncertainty / Lack of awareness on use of proper composting practices and related technologies
Decreased interest in farming	Big investment in terms of farmers effort and input but low local returns
Loss of traditional farming technologies	Shift from subsistence farming to production/ market based farming- cash crop production / monetary needs of farmers increasing
Loss of agro-biodiversity as a whole	Farmers are at a crossroad in absence of adequate returns and appropriate extension services
Nepal	
Low productivity for most cereal crops	Farmers are opting to cultivation of other crops/ cash crops
Low incentive for farming/ produce marginalization in the market	High input cost and less return/ not valued in competitive market (Products are often cheaper across border)
Lack of enabling policy measures for agricultural innovations	Lack of sectoral subsidies
Agricultural research mainly restricted to cereals	Other crops given less importance
Institutional mechanism lacking for food distribution	Government supplies only 5%
Minimal investment by government on farming technology, innovations and services	Only 2.4 % of national budget comes to agricultural sector
NAPA- adaptation measures (101 projects identified)	Needs piloting

Issues of highest priority:

There was quite an overlap on the key issues among the four participating countries. The group members came up with the following priority points that would help address the key issues related to food security in the EH:

- Development of early warning system and weather forecasting system at the community level
- Access to and availability of adaptive crop varieties that give better yield.
- Provisions of extension services for capacity building of farming communities
- Access to /sharing of enabling technologies related to integrated water management, sustainable land management
- Development of crop insurance scheme, for example, for protection against wildlife damages, disease infestation, as well as infrastructural support for the affected communities
- Conservation and management of traditional crop plants and associated farming technologies
- Adequate resource allocation by government for agro-ecosystem research and development, especially towards mapping of the vulnerable region and community with regard to food security
- Development of institutional mechanism for food distribution

The gaps:

- Data availability and access of information
- Inadequate scientific understanding at the regional and sub-regional levels
- Lack of institutional mechanisms for food distribution
- Inadequate national level investment on agricultural sectors
- Lack of enabling policy measures for agricultural innovations

Which issues calls for regional collaboration?

- Regional mapping or taking stock of institution, program, projects, groups, networks, individual working on climate change issues with regard to food security and other thematic issues in the entire Himalayan region
- Collaborative research on climate change modeling to understand climate trends and impact projections at the regional and sub-regional level; and on applied agricultural science.
- Establishment of regional mechanism for exchange of elite germplasm and adaptive varieties of crop plants.
- Regional cooperation for capacity building (identification, dissemination of suitable farming technologies/ policy innovation)
- Implementation of regional and trans-boundary natural resources management including sustainable land management and socio-economic development (peoples' movement and migration), and transfer of resource conservation technologies.
- Regional Forecasting Mechanisms for trans-boundary pest and diseases control, hazard management

4.3 Energy Security

Group Members

Sabita Thapa	SEI
Karma Chopel	Bhutan
Mirjam Mache	ICIMOD
Ujol Sherchan	ICIMOD
Narayan Pd. Chaulagain	Nepal
Madhav Karki,	ICIMOD
Thiyagarajan Velumai	UNDP

Group Discussions:

Issues:

"Energy poverty" is an issue. This energy poverty will further deepen as the population grows in the region. However, there is very little research on the extent of energy needs and resources in the upstream part of the region, including how it differs from those that prevail downstream. The key issue is how to diversify away from biomass and move up the energy ladder: away from climate unfriendly energy toward climate friendly energy. One way to do that would be to promote renewable energy technologies in the region as their use not only helps with climate change mitigation to some extent but is also a means of climate change adaptation. As climate change is no longer a concern of environmentalists only, how to bring the private sector (e.g. energy giants) on board the climate change bandwagon becomes an issue also. Promoting the private public partnership (PPP) concept holds a key. Hydro power is an issue because it is one of the most important drivers of development in the region or is going to be. Although many hydropower projects have come about, local communities have not benefitted as much as they should, so how do we ensure that a certain % of revenues from big hydropower is plowed back into the community, thereby creating a "win win" situation for both the community and the hydropower project? Fluctuation of water flows does not bode well for hydro power generation; moreover, flows may not be adequate in future, therefore there is a need to “climate proof “big hydro projects. How to do that? How does one manage access to energy, distribution, affordability and sustainability? The decentralized energy system is but one mechanism. Resource planning is an issue (e.g. financial resource, technical knowhow, human resource, institutional) because capacity is a constraint, therefore, capacity building needed in the region. Last but not least, how to link energy security with development goals – livelihoods, income generation, reduction of drudgery, education, health, environmental sustainability, gender equity, etc.

Gaps:

Lack of information on the consumption patterns of energy, including energy demand and supply is an issue. Moreover, climate change has not been (adequately) mainstreamed in energy planning/policy. For example, Nepal’s energy policy doesn't mention climate change. Moreover, formulating a national climate change policy takes time. There is a lack of energy systems designed to address community needs taking into account of climatic and geographic factors. For example, above 2000 m sea level in Arunachal, metal cooking stoves fare better

than mud brick cooking stoves, especially for space heating purpose. Also there is a lack of knowledge about how the entire energy sector is being affected (or going to be affected) by climate change, so much so uncertainty out there.

Trans-boundary issue:

There is a need for a platform/mechanism for exchanging information, technologies, good practices as well as having dialog and sharing experience at a regional level.

4.4 Biodiversity Conservation

Group Members

Mohammed Solaiman Haider	Bangladesh
Tashi Yangzom	Bhutan
Nawang Norbu	UWICE, Bhutan
Krishna Acharya	Nepal
Tariq Aziz	WWF Nepal
Eklabya Sharma	ICIMOD
Sunita Chaudhary	ICIMOD

Key issues, gaps and priorities on climate change adaptation at regional level:

Before discussion on key issues, the group gave a theme '*Biodiversity and Sustainable use for Ecosystem Services'* and vision on '*Developing a regional climate change resilient conservation for the Eastern Himalayas*' for building a regional road-map. The group also discussed that the mission of the regional road-map should focus on the intrinsic and extrinsic values of biodiversity for ecosystem services. Then the key issues and gaps were discussed and prioritized as follows:

Key prioritized issues	Existing gaps
1. Threats to biodiversity from environmental change and climate change	Need for harmonization in conservation practices among the countries of Eastern Himalayas
2. Adaptation strategy of biodiversity components are not clear	
3. Lack of coordinated efforts for trans-boundary issues on biodiversity conservation	Inadequate data and information
4. Long term monitoring is not in place	
5. Lack of convergence of policy and practice to conservation	Limited incentives for conservation
6. Lack of adequate capacity and information sharing	Varying capacities on conservation of Eastern Himalayan countries
7. The community needs in terms of Access and Benefit Sharing and Traditional Knowledge	Need for coordination and synergy for

protection are not build in the region	trans-boundary biodiversity management
8. Balancing conservation with development	
9. Isolation of protected areas	

Need for trans-boundary/regional collaboration:

After discussing the key issues and gaps for biodiversity conservation and management in the region, the group proposed a regional program with the following components to facilitate in-country preparation:

- Secure natural freshwater infrastructure across the Eastern Himalayas for ecosystem services ;
- Manage trans-boundary landscapes focusing on connectivity, corridors and cross-border conservation; and
- Design and implement monitoring mechanisms and build capacity of the EH countries.

The group also agreed on a process towards the regional level framework/road-map to be implemented and provided a format of work for in-country outputs:

- Referring to the outcome of the theme discussion, the issues, gaps and proposed regional actions should be discussed, analyzed and thus a proposal should be drafted accordingly;
- The proposed regional program at the country level should be discussed and agreed if possible;
- Synthesize National Actions from the regional program;
- Outline in-country implementation process and plan of actions; and
- Outline timeline and budget.

4.5 Focal Points, Coordinating Institutions, and Timeline

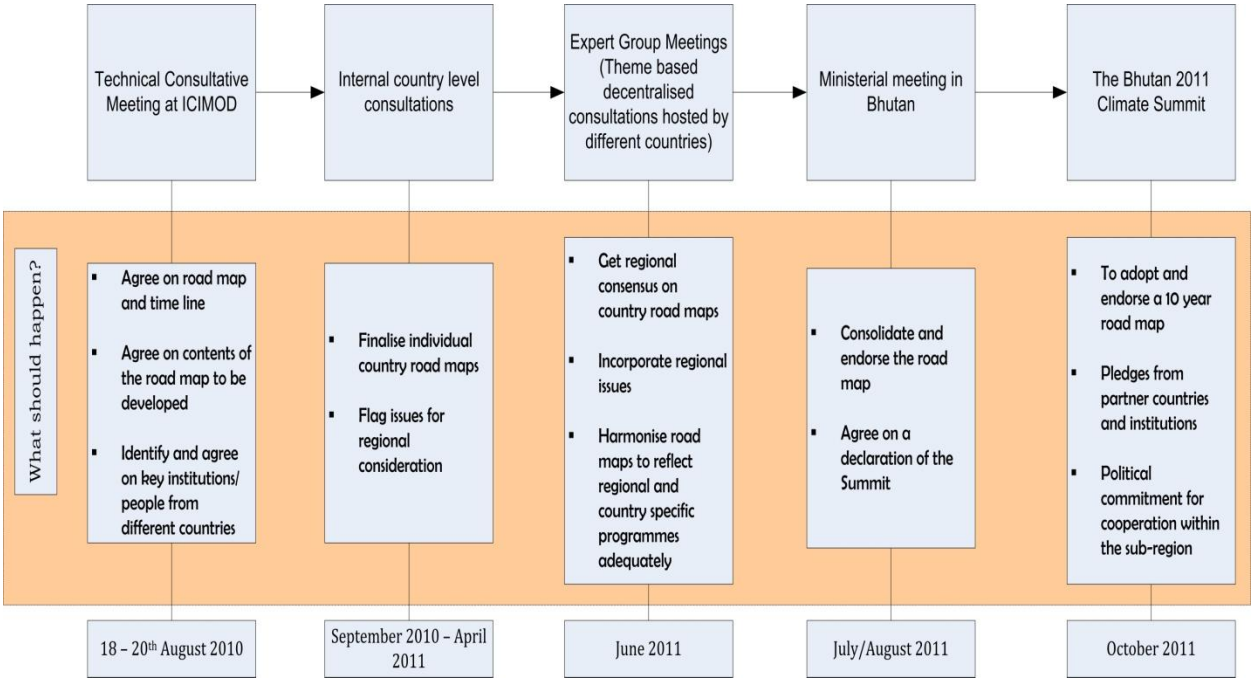
a. Focal Point in the four countries:

Countries	**Institution**	**Focal point**
Bangladesh	Ministry of Environment and Forests	Joint Secretary
Bhutan	Ugyan Wangchuk Institute for Conservation and Environment	Director
India	Ministry of Environment and Forest	Joint Secretary
Nepal	Ministry of Environment	Joint Secretary Mr. Purushottam Ghimire

b. Coordinating institution for each theme by country:

Theme / Country	Water	Food security	Energy	Biodiversity
Bangladesh	Ministry of Water Resources	Ministry of Food and Disaster Management	Ministry of Energy and Mineral resources	Department of Environment and Forests
Bhutan	Water Division under NEC	Department of Agriculture	Department of Energy	Agro-biodiversity Centre
India	Ministry of Environment and Forest (upon discussion with the MoEF, will designate the respective thematic focal institutions)			
Nepal	Water and Energy Commission Secretariat	Ministry of Agriculture and Cooperatives	Ministry of Energy	Ministry of Forests and Soil Conservation

c. Time line:



Chapter 5

Conclusion

5.1 The Conclusion of this workshop

Based on the two day discussions, the workshop participants jointly agreed on a conclusion that reflects the views of the governments of the respective countries. The conclusion presented below was also presented to the Ministers on the last day.

Conclusion of the High-level Consultative Meeting; 18- 20 August, 2010, Kathmandu

The high-level Consultative Meeting concluded on 20th August 2010 in the preparation of a road-map leading up to the proposed Climate Summit for a Living Himalayas - Bhutan 2011' towards the vision of 'Sacred Himalayas for Water, Livelihoods, and Bio-Cultural Heritage'.

The delegates expressed appreciation and pledged support for the initiative by the Royal Govt. of Bhutan to highlight the impact of climate change on Eastern Himalaya.

The participants of this meeting included the Hon. State Minister for Environment and Forest of Bangladesh Dr. Hasan Mahmud, MP; the Hon. Minister of Agriculture and Forest of Bhutan, Dr. Pema Gyamtsho; the Hon. Minister of Environment of Nepal, Mr. Thakur Prasad Sharma and the Additional Secretary, Ministry of Environment and Forests, GOI, and senior government delegates, experts from different government ministries, departments and international agencies. Participants also came from civil society, academia and research centers in the four countries comprising the southern slope of the Eastern Himalayan region namely Bangladesh, Bhutan, India and Nepal.

This High-level Technical Consultative Meeting was inaugurated by the Vice-chair of the National Planning Commission of Nepal Hon. Dr. Jagadish Chandra Pokharel. This was followed by the presentation of the outlines on the four thematic papers: 1) Securing Fresh Water Systems in the Himalayas and Reducing Vulnerabilities to Water Induced Hazards, 2) Building Climate Resilience for Food Security and Rural Livelihood, 3) Ensuring Energy Security and Enhancing Alternative Technologies and 4) Biodiversity Management in a Changing Climate.

The expert papers provided an overview of emerging issues, gaps and challenges and suggested a way forward for each of the countries to carry out thematic group discussions as well as expert consultation. The Group discussions highlighted and summarized key issues under each theme, both at national level as reflected in the National Adaptation Program of

Action (NAPAs) and National Action Plan on Climate Change (NAPCC) and those at regional level.

The meeting nominated provisional Focal Points for coordinating the work of all the thematic areas leading up to the regional expert consultation in June 2011.The high level meeting recommended to the governments of the four countries as follow:

- To work together towards the proposed Bhutan Climate Summit 2011 within national and regional adaptation frameworks
- To work for drawing up a national road-map on each of the four thematic areas – Water, Food security, Energy and Biodiversity
- To approve the names of lead agencies and/or institutions to take the process forward in their respective countries
- That each country should serve as a lead country in one of the four themes as follows:
    - Bangladesh - Water
    - Bhutan - Biodiversity
    - India - Food Security
    - Nepal - Energy
- That the Secretariat in consultation with Focal Points will develop a standardized terms-of-reference (TOR) for the work to be done in each of the four thematic areas in each of the countries; it will also facilitate the inter-thematic coordination and information sharing to avoid duplication and address overlaps
- That the focal points on each of the four themes may be finalized by 15th September 2010 to kick off the meeting of the national focal institutions using the standard TOR provided by the Secretariat. The process of national consultation could begin by October, 2010 and end by July 15, 2011
- That the resource requirements to move forward the process, it was communicated that while Secretariat will try to mobilize external resources to cover the critical aspects of the process, countries are requested to mobilize resources internally as much as possible. Particularly, the national consultation should be funded through the national resources and for expert consultation a joint efforts would be made

The meeting thanked ICIMOD, and the Royal Govt. of Bhutan for organizing the consultative meeting successfully and also acknowledged the experts' contribution in the form of thematic papers prepared and presented by ICIMOD, UNDP, FAO and WWF.

5.2 Closing session with ministers

Chaired by Minister of Environment of Nepal, Mr. Thakur Prasad Sharma supported by Acting Director General of ICIMOD, Dr. Madhav Karki, the closing session of the technical consultative meeting was attended by State Minister for Environment and Forest of Bangladesh, Dr. Hasan Mahmud; Minister of Agriculture and Forest of Bhutan, Dr. Pema Gyamtsho; and Additional Secretary, Ministry of Environment and Forests, India, Mr. Jayant Mauskar. Senior government delegates, experts from government and civil society organizations, and representatives of international agencies including ICIMOD, UNDP, FAO and WWF also attended the meeting.

Honourable Mr. Sharma opened the session welcoming all the distinguished guests from EH countries and emphasized on need of partnership among countries in the region and at similar countries in other parts of the world global level to cope the challenges climate change has brought and enhance position of mountainous countries in UNFCCC meetings. He invited all the participating countries to join the Mountain Alliance Initiative (MAI), initiated by the Government of Nepal. He added, the meeting outputs are the building blocks for success of the Bhutan Summit that is going to be held in 2011.

Dr. Madhav Karki of ICIMOD gave an overview of the 2-days consultative meeting, shared findings of the exercise and put forward proposition of the delegates for approval from the Ministers and the head of the Delegation. Giving brief picture of geo-environmental situations of the EH region and illustrating new challenges climate change has posed, he urged the EH countries to work together and reiterated ICIMOD's commitment to foster regional and trans-boundary cooperation.

Mr. Nawang Norbu, convener of the 'Climate Summit for a Living Himalayas – Bhutan 2011', shared the objectives and activities planned for the summit next year and expressed warm welcome to all the delegates to Bhutan in 2011.

Honourable Dr. Hasan Mahmud, addressing the session said South Asia's contribution to the climate change is negligible but we are suffering the most from this global phenomenon. Increased rate of glacier melt, salinity and salt intrusion, cycles etc. are some impacts of this phenomena. Emphasizing the need of regional cooperation knowledge exchange, he added low-carbon technology will promote sustainable development in the region. He hoped that the Bhutan Summit-2011 will refresh our efforts to tackle climate change in the region. Bangladesh is committed to work together for this cause and we already have plans in place to work for biodiversity and climate change. Himalayan rivers are the lifeline for Bangladesh, but the change in flow pattern and uncertainty in precipitation have resulted to 'too much and too little of water'. This goes even worse when river width exceeds 17 km with the increased runoff and shrinking river areas. He urged for cooperation between upstream and downstream countries and smooth information exchange to minimise the loss from climate changed exaggerated natural disasters. He said economy is rooted to ecology and to maximize sustainable benefit from it we need regional cooperation. He added economic prosperity is directly rooted to energy, for which, we must foster partnership and plan to use this prosperity. He also suggested to correlating population increase with climate change, which has direct implications, regionally and globally.

Mr. Jayant Mauskar, Ministry of Environment & Forest, Government of India, presented climate change as the last stress which has been made in the Himalayas and suggested to develop holistic approach, mix of top-down and bottom-up approach for better understanding of the situations and to solve the problems. He added, unless traditional knowledge, science and technology, economics and governance are in right order, nothing works well. Over the years many perennial rivers have become seasonal and same applies in other sectors too and as a result, now we need second green revolution to meet our food requirements. He emphasised that the need of smart communication for success of the event and assured necessary help from his government's side.

H.E. Lyonpo Dr. Pema Gyamtsho thanked all the governments for their support, encouragement, wisdom, which eventually motivated and helped Bhutanese government to aim for 'Climate Summit for a Living Himalayas – Bhutan 2011'. He added there are challenges for

sure but we also have chances to work together to solve these problems. ‘Thimpu Declaration on Climate Change’ issued during the recent SAARC meeting in Bhutan was a success coming from excellent leadership of all the head of the governments in the region, this high level participation from all the countries show solidarity for this cause. The Mountain Initiative would be good opportunity to talk about our common concern whereas this meeting is an approach to take actions in the region as we share many common problems in wider sense. Our sub-region can provide a model to countries in other parts of the world where they have common problems like ours. This collective effort will help to seed many sub-groups to tackle similar issues in other regions in future. Indicating risk associated, he said the cost of doing nothing is far higher than starting this kind of activities, which will help us to solve these problems in near future. It is a mission. We will have the satisfaction that at least we tried, we all may not reach there but will have something for sure.

The programme was formally closed with the vote of thanks from Dr. Bhaskar Singh Karky of ICIMOD.

Annex 1

Papers by Thematic Experts
(ICIMOD to send 2 papers)

Annex 2

List of participants

S.N.	Name	Organization	Country	Mailing Address	Contact Details
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Annex 3

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