



SECOND SUSTAINABLE  
MOUNTAIN DEVELOPMENT  
SUMMIT OF THE



# INDIAN MOUNTAIN INITIATIVE



25th-26th May 2012,  
GANGTOK, SIKKIM







COMING TOGETHER FOR  
THE CAUSE OF THE INDIAN  
HIMALAYAN REGION

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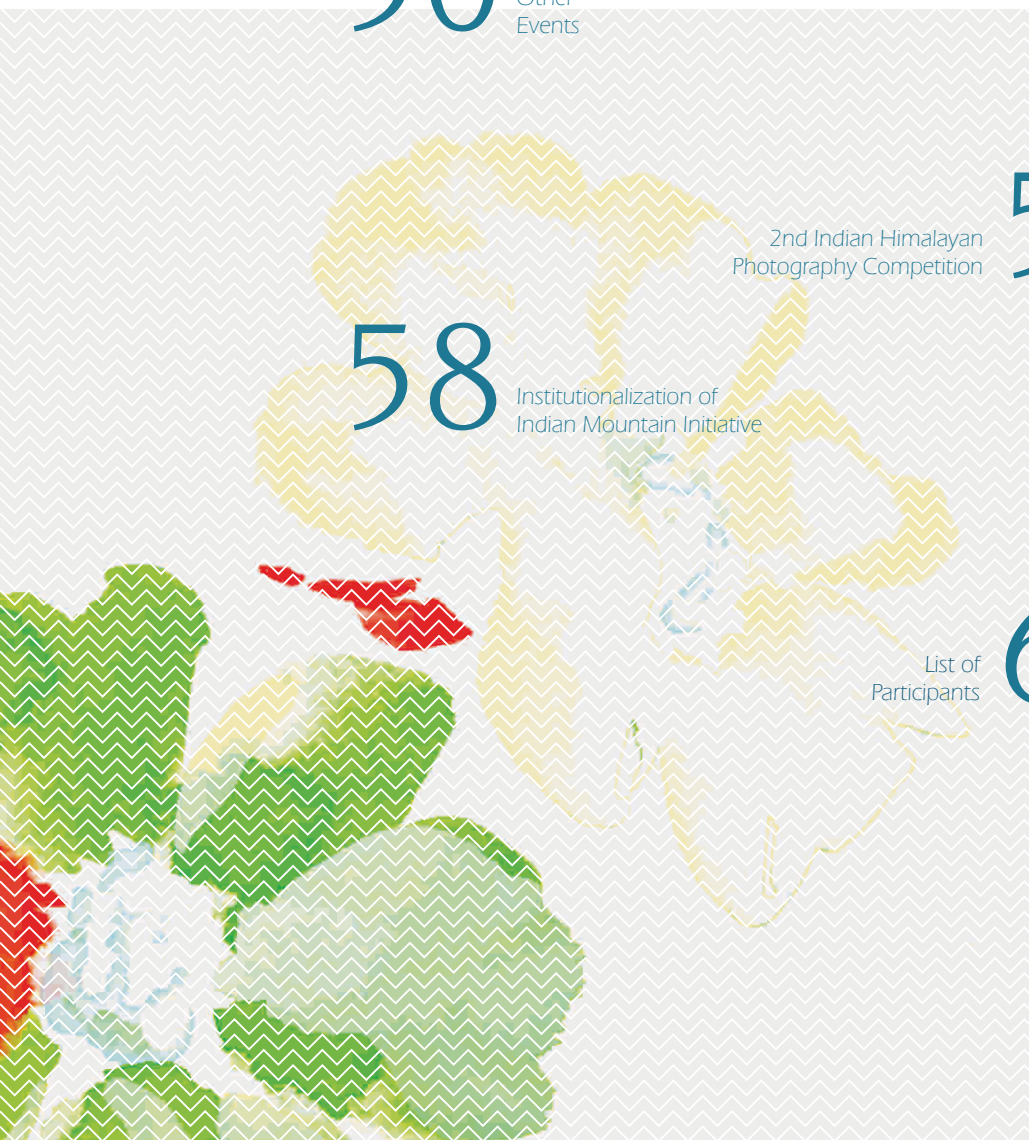
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## ABBREVIATIONS AND ACRONYMS

ATREE	Ashoka Trust for Research in Ecology and Environment
CCA	Community Conserved Area
CDM	Clean Development Mechanism
CEDAR	Centre for Ecology Development and Research
CHEA	Central Himalayan Environment Association
DFID	Department for International Development
DoNER	Ministry of Development of Northeast Region
ECOSS	Ecotourism and Conservation Society of Sikkim
GDP	Green and Digital Prosperity
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICIMOD	International Centre for Integrated Mountain Development
IHCAP	Indian Himalayan Climate Adaptation Programme
IHR	Indian Himalayan Region
IIBM	Indian Institute of Bank Management
IIM	Indian Institute of Management
IMI	Indian Mountain Initiative
IMI-SMDS	Indian Mountain Initiative-Sustainable Mountain Development Summit
NEHU	North-Eastern Hill University
PSI	Peoples' Science Institute
PwC	PricewaterhouseCoopers India
REDD	Reducing Emission from Deforestation and Forest Degradation
RMDD	Rural Management and Development Department
SDC	Swiss Agency for Development and Cooperation
SICB	State Institute of Capacity Building
SMDS2	Second Sustainable Mountain Development Summit
SRI	System of Rice Intensification
VPKS	Vivekananda Parvatiya Krishi Anusandhan Sansthan
WWF	Worldwide Fund for Nature

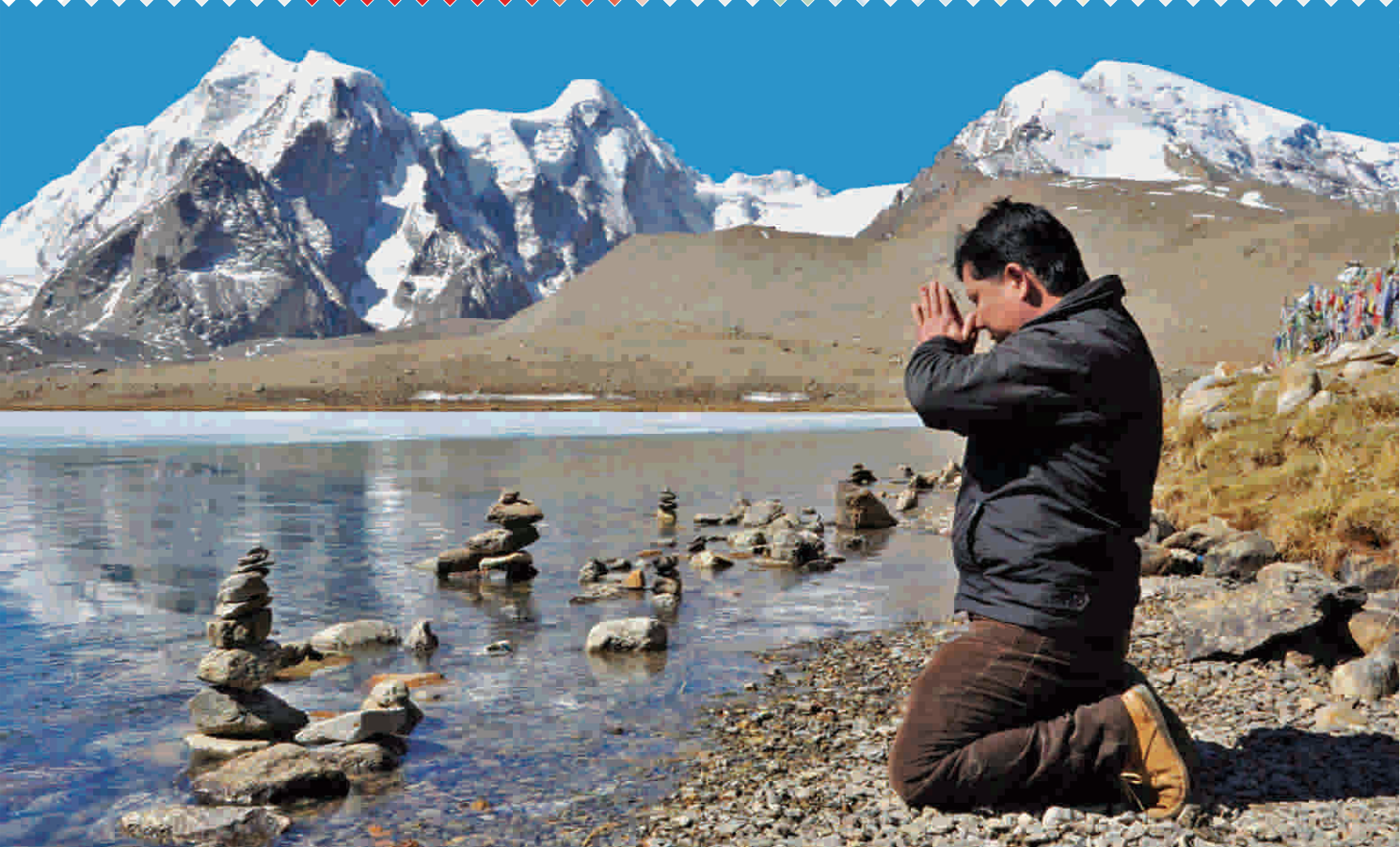


# 1

## INTRODUCTION

The second Sustainable Mountain Development Summit of the Indian Mountain Initiative, IMI-SMDS2 was held in Chintan Bhawan, Gangtok on the 25th-26th May 2012. It was organized by Ecotourism and Conservation Society of Sikkim (ECOSS) and attended by over 250 delegates from the eleven Himalayan states of India and the hill district of Darjeeling.





IMI aims to offer the states of the Indian Himalayan region a platform to discuss issues of concern to the Himalayan region and evolve consensus on how to address these

### Indian Mountain Initiative

The Indian Mountain Initiative (IMI) has been formed with the objective of providing stakeholders from the states of the Indian Himalayan Region (IHR) a platform to come together to discuss issues related to the development of the Himalayan region and communities therein, and evolve consensus on priorities and action plan and recommend the same to the relevant authorities. The most recent Indian Planning Commission Task Force on hill states and hill areas underlined the need for a common platform for the states of the IHR for regular interaction and from therein decide on a common essential plan for the region. Central Himalayan Environment Association (CHEA) in Uttarakhand decided to follow up this timely recommendation of the Task Force by conceptualizing and organizing the IMI.

The Indian Mountain Initiative (IMI) proposes to pioneer a move to catalyze and galvanize scientists, administrators, social workers and development practitioners to collectively reflect on, not only, de-generation of the environment but also on its intrinsic relationship with development. The Sustainable Mountain Development Agenda, the legacy of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992 ("Earth Summit"), must now be discussed more horizontally and vertically, and much more frequently than a few stand-alone seminars and workshops. Accordingly, IMI has chosen to undertake open and continuous dialogue on mountain concerns through Annual Thematic Summits and by encouraging the establishment of Thematic Networks on various mountain themes and concerns

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<sup>1</sup> Indian Himalayan Region extends from J&K in the west to Arunachal Pradesh in the east and includes the eleven Indian Himalayan states and the hill district of West Bengal

## Inaugural Summit, Nainital, 2011

While various activities and networks are envisaged under IMI, one of the key activities planned is the annual Indian Mountain Initiative-Sustainable Mountain Development Summit (IMI-SMDS). This event would bring together stakeholders from various states of the IHR to discuss selected themes that are current and relevant to sustainable development of the IHR and communities therein. The Inaugural IMI-SMDS was organized by Central Himalayan Environment Association (CHEA) in Naini Tal, Uttarakhand on the 21st -22nd May 2011. The themes selected for discussion were:

1. Hydro-Power Projects in Mountain Regions;
2. Adaptation Measures under Climate Change Scenario in Mountain Regions;
3. Rural Tourism in Mountain Regions; and
4. Community Forestry in Mountain Regions

One of the main outcomes of the Inaugural Summit was a Working Group constituted by the Planning Commission of India on 'Mountain eco-systems and challenges faced by the people living in the hilly areas' for formulation of the 12th Five Year Plan.

## Summit Structure

The inaugural session was followed by keynote addresses on the three summit themes and the two crosscutting themes. Together the keynote addresses made the plenary session. On day II of the summit there were three concurrent breakout sessions, one on each theme. Each theme was divided into four sub-themes, covered by means of lead presentations. The presentations were followed by an open house discussion. SMDS2 concluded in a valedictory session where each breakout group presented the key outcomes of the discussion within the group.

## Side Events

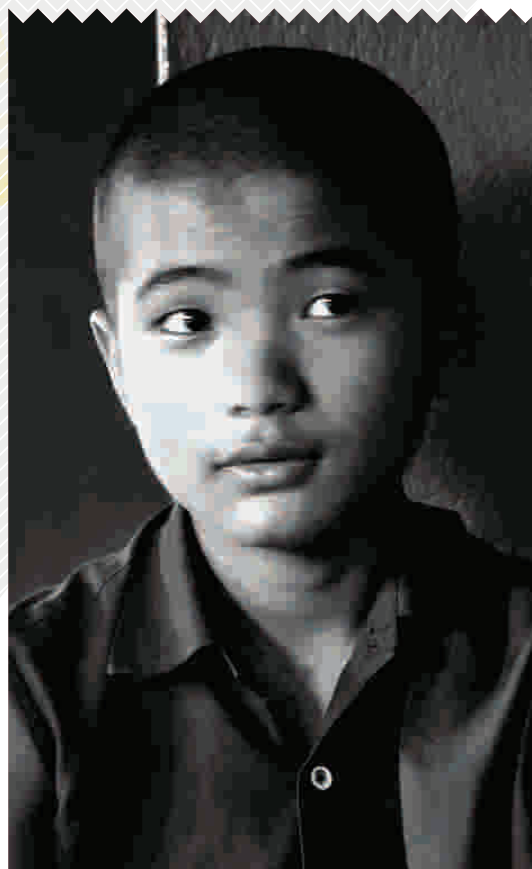
In addition to the Summit, various side-events were also organized. These included the 2nd Himalayan Photography Competition, poster display on the work of participating organisations, demonstration of a low cost hydropower generating device (Hydroger), display of electrical vehicles by Tata Motors, calculation of carbon footprint of the Summit by PwC, Legislators' Meet on Climate Change and Need for Legislation, a conference on mountain cities and challenges facing them, and tree plantations to offset the carbon footprint of SMDS2. In addition a discussion on State Action Plan on Climate Change in the Indian Himalayan States was planned with the support of Indian Himalaya Climate Adaptation Programme (IHCAP) of Swiss Agency for Development and Cooperation (SDC), which took place informally among the interested participants because of time constraint on the final day of SMDS2.

## SMDS2-Objectives and Focus

SMDS2 aimed to build upon the initiative and success of the inaugural summit. It was organized with the following three objectives in mind:

- Examine issues and policies related to the broad themes proposed and suggest key interventions based on field experiences bolstered by academic and intellectual inputs
- Share and disseminate best practices
- Discuss the direction and form envisaged by the stakeholders for the mountain initiative

Appreciation of differences in approaches to hill and mountain development, capturing key issues by themes and establishing thematic networks to continue debate on them, clear public policy inputs, and clearly articulated takeaways for participants were some of the expected outcomes of SMDS2





## 2

## SUMMIT THEMES - SMDS2

The Steering Committee formed to oversee and guide the preparations for SMDS2 chose to focus on three summit themes and two cross cutting themes. The themes were selected on the basis of their relevance of the themes and to build upon and carry forward the debate triggered by the inaugural summit in Naini Tal. Each of the summit themes was further divided into four sub-themes to capture important facets and nuances of the theme.

## WATER

- i. Water hazards in the mountains
- ii. Water ecosystem services
- iii. Water preservation, traditional systems and innovations
- iv. Water rights, policy and governance





## MOUNTAIN LIVELIHOODS

- i. Entrepreneurship development
- ii. Financing mountain livelihoods
- iii. Smart and sustainable agriculture
- iv. Innovations in mountain livelihoods

## COMMUNITIES AND FORESTS

- i. Traditional rights and ownership of communities over forest resources
- ii. Conservation-based incentives for communities and strengthening participation
- iii. Human-Wildlife conflict
- iv. Understanding REDD (Reducing Emissions from Deforestation and Forest Degradation)

The second sustainable mountain development summit (SMDS2) deliberated on water, mountain livelihoods and communities and forests. Climate change and innovation were the crosscutting themes of this summit

### The crosscutting themes included

1. Climate Change and
2. Innovation

All themes are current and have a direct bearing on the mountain regions and various communities living therein. They also have a bearing on millions of people living downstream and dependent on mountains for various goods and services, including ecosystem services. Climate change is one of the most serious challenges facing mankind today. It affects all aspects of human existence. Mountain regions are particularly vulnerable to climate change.

If climate change is a challenge then innovation is an opportunity or resource not only to manage climate change but also to surmount various other challenges facing the mountain regions including poverty, lack of enterprise, isolation, and remoteness.



# 3

## EMERGING CONCERNS: PRE-SUMMIT WORKSHOPS

### WATER

The importance of water to mankind cannot be overestimated. It is essential to the survival of life in any form. While a vital resource on the one hand, water can also be a hazard if not managed carefully. In the case of India, water has been looked through the policy lens largely as a means of hydropower and irrigation. While both are important to the economic growth and well being of the nation, in the more immediate context of the mountain regions the power requirement is rather small and medium and large scale irrigation non-existent. There are, however, other issues related to water, which are of vital importance to those living in the mountain regions.

The issues that are of immediate concern to mountain communities include effective management of water

resources. Himalayan communities suffer from water shortages. This is ironical given the fact that the Himalayas are called the third pole. There are a number of factors responsible for this situation including poor maintenance of water related infrastructure or its absence, theft of water, control over water by water mafia, absence of water rights and, in the northeast, and the presence of armed forces. With increasing urbanization and increase in demand for water coupled with a lack of proportionate increase in access to water resources, the situation is likely to become more difficult. There is a need to look into the water needs of mountain communities and make provisions to meet these needs.





The Himalayas provide a number of water related ecosystem services to the areas downstream. In doing so, they contribute to the prosperity of the areas downstream. These ecosystem services are rendered available as people and communities of the Himalayas have maintained the resource base of these services. In preserving the resource base in question, the Himalayan communities have incurred an opportunity cost, the cost of not using these resources themselves. There is a strong case for compensating the communities for enabling the provision of vital water based ecosystem services.

Local communities and environmentalists have opposed large hydropower projects commissioned to tap into the hydropower potential of the Himalayan region. Hydropower projects disrupt the ecosystem of the mountains; disturb aquifers, central to the socio-economic well being of the Himalayan communities as source of water and lead to disappearance of rivers and wildlife among other things. It is feared that degradation of watersheds has had an impact on agricultural productivity. Diversion of key water resources for other purposes like dams leads to an acute shortage of water for agriculture and other livelihood strategies. This in turn leads to a potential food insecurity scenario in the region.

Hydropower is now being promoted under Clean Development Mechanism (CDM), on account of it being a clean source of energy. This will only lead to more power projects being sanctioned. The communities of the Himalayan region are small. They have neither the skills nor the numbers to supply the workforce needed to tap the hydropower potential of the region. This invariably leads to workforce being brought from other parts of the country. Cultural differences lead to tension and small communities of the Himalayan region run the risk of being

In India water has been looked at through the prism of water and hydropower, neither of which is an overbearing priority in the Himalayan region

overwhelmed by the dominant culture and communities coming from outside the region.

Given the sharp slopes and confined spaces in the mountain regions, the mountain communities are highly vulnerable to water related hazards. These include avalanches, overflows as a result of bursting of the banks of glacial or landslide formed lakes, cloud burst, flash floods, etc. Every so often lives are lost and property destroyed as a result of one water hazard or another. Tackling them and minimizing loss of life and property would require planning, resource allocation, monitoring, information sharing, and advance warning systems. Sadly, they are either missing altogether or terribly inadequate.

In conclusion the issues around water in the Himalayan region are issues of access to water for domestic and agricultural purposes, maintaining watersheds and aquifers, central to mountain agriculture, control over decisions about resource use of water, keeping rivers and streams clean, and how to manage water as a hazard.



MOUNTAIN LIVELIHOODS







Agriculture has been the mainstay of the economy of mountain regions. The Himalayan region is not an exception to this norm. However, increasing population, changing aspirations, and dwindling resource base of agriculture have all conspired to make agriculture less attractive, less productive and remunerative. People in the Himalayan region have traditionally supplemented agricultural income by pursuing a portfolio of livelihood strategies including animal rearing, handicraft, tapping non-timber forest produce, and migrating in search of employment. Tourism has also become important in recent years. However, be it agriculture or small industry, or fruit production, the operations have been hamstrung by scale.

The Himalayan communities are small and remote. There is small local demand and the external markets are too far off. Individual operations are on small scale. The lack of connectivity both physical and virtual, through information networks, poses a serious challenge. There are various other issues such lack of access to credit or financial exclusion, poor skill base, lack of entrepreneurship, and lack of innovation.

Large-scale unemployment, poverty, and lack of opportunities in the Himalayan region are a matter of concern. Not only do they lead to underdevelopment but also to a sense of alienation. This situation needs to be redressed. This would require taking various steps-improve connectivity, build the skill base, and improve access to financial services to name a few. Financial institutions will have to change their criteria of issuing loans. Most mountain communities, especially in the northeast do not have individual ownership of land. Asking for collateral in such circumstances is to put the applicant in an impossible situation. There is tremendous potential in the agricultural sector. Organic farming, herbs and medicinal plants, horticulture, and floriculture could pave the way forward. Of course, this would require innovation and capital. Farming equipment, for example will need to be recalibrated to meet the specific needs of mountain agriculture.

One of the sunrise areas in the Himalayan economy is tourism. With increased prosperity, mobility, and change in lifestyle, more and more tourists from other

The answer to the problem of mountain livelihoods will have to look into improving access and connectivity, building skills, changing norms, innovation, and management

parts of India are visiting the Himalayan region. This has given livelihood opportunities to people. Tourism can be a big part of the solution to the problem of mountain livelihoods but it will have to be managed carefully. Unmanaged tourism has the potential to eat into its very resource base. It can also lead to conflicts. Most hill communities are skill and resource deficient. As a result, their participation in the tourism value chain is at the bottom of the chain. This will also need to be redressed.

In conclusion, the answer to the problem of mountain livelihoods will have to look into improving access and connectivity, building skills, changing norms, innovation, and management.





## COMMUNITIES AND FORESTS



The mountain communities are dependent on forest for their well being. Forest are the basis of mountain agriculture. There can be no mountain agriculture without the nourishing support of forests. Forest are also the source of fuel wood, fodder, building material, herbs and medicine, and raw material for handicraft. They also play an important role in regulating water flow and groundwater recharge.

The forest of eastern Himalayas are largely under the control of communities or private individuals whereas the forests of the western Himalayas are almost exclusively state controlled even though there is the famous institutional arrangement of Van Panchayats in Uttarakhand whereby village forest councils or Van Panchayats manage community forests. What little control communities have over forests and their customary rights are being lost as a result of increasing

state control over forests. Mostly this is in the form of project based interventions, which gradually exclude communities from their forests. In the northeast, there is the problem of lack of management plans for community controlled forests. There is a lack of clarity on land tenure system and access and benefit sharing mechanisms do not exist within communities. Rich individuals in the villages are buying lands which were earlier under community ownership or clan ownership. This leads to a change in the management systems being followed in the villages. The introduction of the Panchayati Raj system in tribal societies, which have existing traditional village council system, also leads to confusion in the villages.

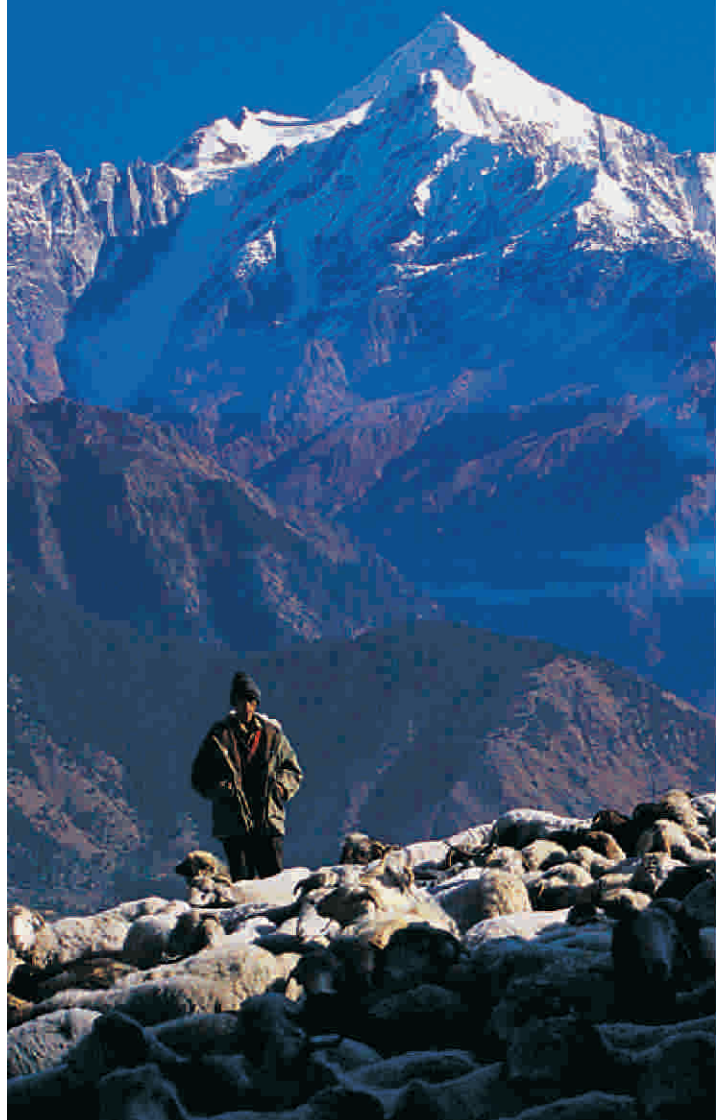
Does provision of alternative livelihoods leads to good conservation practices as intended or is it limited to developmental goals and poverty alleviation? If

alternative livelihood and conservation have to go hand in hand there is a need to have clarity on NTFP usage rights, self regulatory mechanisms for regulating extraction of forest products owned or controlled by communities, and recognition of conservation initiatives of communities by the state. While most organizations in the region work to enhance alternative livelihoods of communities, there is a significant lack of innovation in livelihood as well as in development of products for the market. Weaning communities from their traditional livelihood practices into completely new avenues of livelihood generation may be counterproductive and unsustainable in the long run. Therefore, there is a need for strategies to facilitate sharing of best practices as well as important lessons learnt between different regions of the Himalayas.

The human wildlife conflict in mountains varies from Plains. Smaller landholdings in mountains are more vulnerable to serious economic losses from wildlife depredation. The animals involved in conflict are different from those in the plains and do not always have significant conservation value. The problem animals in higher mountain areas are different from those in lower mountains; different strategies and policy intervention are needed to address the problem of human wildlife conflict in higher mountains. Aspects that need to be considered include compensation mechanism, other measures such as population studies, carrying capacity assessment, and possibly culling plans, crop insurance, and study of the likely impact of climate change on human-wildlife conflict.

Finally, forests are central to climate change mitigation strategies being formulated. They act as carbon sinks. The Himalayan region is rich in forest. These forests are a source of various ecosystem services. The region can benefit from various measures being adopted to combat deforestation, forest degradation, and climate change. REDD+ is one such mechanism. However, as of now there is little understanding of REDD+. This underlines the need to improve understanding of REDD+ and its mechanisms, especially their implications for the Indian Himalayan Region.

The human wildlife conflict in mountains varies from the similar conflict in the plains. Smaller landholdings in mountains are more vulnerable to serious economic losses from wildlife depredation. The animals involved in conflict are different from those in the plains and do not always have significant conservation value.







# 4

## INAUGURAL SESSION



*"Mountains are important not only to mountain communities, but also to millions living down stream... It is important that mountains are considered in local, regional and global terms"-*

Mr. KT Gyaltsen, Hon'able Speaker Sikkim Legislative Assembly



*"The agenda of sustainable mountain development is central to the vision of the Government of Sikkim and the very cornerstone of the cultural ethos of the State"-*

Mr. Karma Gyatso, Chief Secretary, Government of Sikkim

### Welcome Address

SMDS2 was inaugurated by Mr. KT Gyaltsen, Hon'able Speaker State Legislative Assembly, Sikkim, by lighting the inaugural lamp. In his welcome address, Mr. Karma Gyatso, Chief Secretary, Government of Sikkim, welcomed the Hon'able Chief Guest, Hon'able Cabinet Ministers of the Government of Sikkim and the Government of Arunachal Pradesh, Hon'able Members of Parliament and State Legislative Assemblies, keynote speaker, Dr. David Molden, Director General ICIMOD and other distinguished delegates. Mr. Gyatso congratulated Ecotourism and Conservation Society of Sikkim (ECOSS), the organizer of the Summit, and Mr. PD Rai, Hon'able MP (Lok Sabha) Sikkim and the convener of IMI-SMDS2, for organizing the second sustainable mountain development summit in Sikkim. He noted that the agenda of sustainable mountain development was central to the vision of the Government of Sikkim and was the very cornerstone of the cultural ethos of the State. Mr. Gyatso observed that for these reasons events like SMDS2 were

considered very important by Sikkim because they helped the state build on the existing knowledge base and take forward its work on sustainable mountain development.

### Address of the Convener SMDS2

Mr. PD Rai began his address by thanking Mr. Pawan Chamling, Hon'able Chief Minister of Sikkim, for his unflinching support to SMDS2. Mr. Rai reminded the delegates that the concept of GDP -meaning Green and Digital Prosperity - had originated in the state of Sikkim under the leadership of Mr. Chamling. He informed the Summit that one of the revolutionary ideas of the Chief Minister of Sikkim, of giving ten minutes each year to mother earth collectively, had worked wonders in the state and had been successfully institutionalized. This idea was now ready for scale up at the national level. Mr. Rai also recognized the contribution of Mr. Paban Ghatobar, Union Minister of State (Independent Charge) of the Ministry of DoNER, Government of India for the



*"IMI is not a new concept; all those who have been concerned about mountain development have carried bits and pieces of IMI with them"-*

Mr. PD Rai, Convener SMDS2



*"Ten major rivers originate in the Himalayan region. They are highly important for global energy and food security. 1.2 billion people are dependent on water coming from these mountains"-*

Dr. David Molden, DG ICIMOD

financial support extended by the Ministry to SMDS2. He also thanked the Governments of Nagaland and Arunachal Pradesh for their financial support. Mr. Rai thanked GIZ, DFID, ICIMOD, SDC, ATREE, WWF, Maple Orgtech, Sheila Foam, PwC India and Tata Motors for their generous support to SMDS2 on various fronts.

Mr. Rai noted that IMI was not a new concept, that all those concerned about mountain development carried bits and pieces of IMI with them. This renewed concern about protecting the mountain ecosystems and communities and, at the same time, a nagging lack of a forum from where mountain communities could voice their concerns to policy makers led to the formalization of IMI. Mr. Rai lauded the role of the Central Himalayan Environment Association (CHEA) and its chairman, Dr. RS Tolia, in taking the lead in the formation of IMI. Mr. Rai underlined the need for IMI to be a democratic institution where many voices could be heard.

## Keynote Address

The keynote address delivered by Dr. David Molden, Director General ICIMOD, focused on mountains and water. Dr. Molden began by asking whether mountains could meet our future water needs. To answer this question, one would need to know how much water would be needed in the years to come. Human beings underestimate their daily water requirement, often considering only drinking water, and in some cases domestic water usage. It is, therefore, often shocking to learn that 1kg of rice production needs between 500 to 3000 liters of water; 1kg of meat would need anything between 5000 to 20,000 liters of water. As urbanization increases and consumption patterns of people change, people tend to lean towards water intensive diets. Dr. Molden observed that the need for future food is dominating the water supply equation.

Water scarcity is of two types - one where all water resource has been used, and the other where water is available but not accessible (economic water scarcity).





Mr. KT Gyaltsen, Honorable speaker of State Legislative assembly, Sikkim

Most rivers coming out of the Himalayas are closed river basins. In other words all possible water has been used. It is hard to do another irrigation network in these river basins. There is also groundwater overdraft in the region. In short the region is in trouble with its water resources. Future projections suggest that whereas population would increase from 7 billion to 9 billion between now and 2050, food requirements would increase by 70-100%. In simple terms, this would mean doubling of the current water consumption. There just is not enough water for that to happen. The next logical question then is, if there is not going to be enough water, is it possible to reduce demand? There is reason for optimism here. Current research suggests that reduction in water demand is possible by optimum utilization of water resources. This would need innovation and technology, more work on rain fed agriculture and rationalizing water usage amongst other things.

One of the major challenges facing mankind today is the challenge of climate change. Climate change will also affect the water resources of the mountain regions. Ten major rivers originate in the Himalayan region. They are highly important for global energy and food security. 1.2 billion people are dependent on water coming from these mountains. Today it is known that the glaciers in the region are retreating. The rate of temperature rise in the region is faster than the global average and increases with altitude. This scenario would have less impact on rivers that are less dependent on glaciers but it would affect all rivers in the region. In addition, there would be ever increasing threat from glacial lake overflows or glacial lake bank bursts.

Black carbon, a product of incomplete combustion of biofuels is a major cause of accelerated snow and glacial melt and rise in temperature. It gets deposited on snow covers thereby reducing their ability to reflect back sunlight causing the temperature to rise and snow to melt faster. Black carbon is an area that requires critical intervention, but this is an area where to technology and resources to be able to mount effective interventions are available, provided there is a will to do so.

Another critical area is timing and variability of water flows, causing floods and droughts. Flood events in the greater Himalayan region are on the rise. Increase in the incidence of flooding coupled with the fact that ever-increasing numbers of people inhabit the flood plains makes timing and variability of water flows a critical area of monitoring and intervention.

Dr. Molden concluded the key note address by listing points of action, which included: work towards reducing vulnerability to floods and droughts which would include monitoring and sharing of information not only within countries but across borders, and work on water storage systems both natural and man made. Community based water management systems, of which there have been many successful examples in the Himalayan region, need to be revived and strengthened. Dr. Molden emphasized the need to think of food, energy and water together and not in isolation. This would require better and integrated land and water management. This would also require bridging information gaps and improved knowledge sharing. Finally, Dr. Molden underlined the need to put mountain issues on the national and global agenda.



Mr. Loday Chungyalpa, Chairman, ECOSS

## Address of the Chief Guest

Mr. KT Gyaltsen, Hon'able Speaker Sikkim Legislative Assembly and chief guest, welcomed the delegates on behalf of the Hon'able Chief Minister of Sikkim. Mr. Gyaltsen noted that the 11 Himalayan States constituted 20% of the country's land mass and accounted for 4% of the country's population. He noted that the mountains are important not only to mountain communities, but also to millions living down stream. Therefore it is important that mountains are considered in local, regional and global terms. Climate change, disasters, food and energy crises, population growth and water shortages are some of the challenges facing mankind. In our desire to move forward we neglect the very resource based that it vital to our survival. This has to change. Mr. Gyaltsen expressed the hope that the outcome of the Summit would contribute to sound policies and strategies.

Mr. Gyaltsen noted that the framers of the Constitution sincerely believed in the spirit of the Constitution, but that this sincerity is missing today. He felt that there is a need to instill commitment in the mind of citizens towards conservation of natural resources. This involves knowledge, discipline and a sense of duty. Chief Minister's campaign '10 minutes to Earth' aims at instilling this commitment to Earth. If this could be implemented at the national level, it would do great things for the country. In his concluding remarks, the chief guest noted that mountain states face challenges in adopting the agenda of sustainable mountain development. They have been encumbered by slow economic growth and isolation associated with poverty and economic under development. The development needs of mountains are often overlooked, leaving them further behind. A collective

voice of mountain communities was needed and IMI has made attempts to address this need. The chief guest congratulated IMI for the initiative and extended his good wishes to the civil society movement.

## Vote of Thanks

In his vote of thanks the Chairman of ECOSS, Mr. Loday Chungyalpa, thanked the chief guest, Cabinet Ministers, Members of Parliament, Members of State Legislative Assemblies, Chief Secretary Government of Sikkim, Director General of ICIMOD and delegates for contributing to the sustainable mountain development agenda.

Mr. Chungyalpa stressed that given the important role that mountains play in the world order, it is natural that the health of mountains and mountain ecosystems should be of concern. However, this was not always the case. The issue of mountains was raised for the first time in a global forum at the Earth Summit, Rio 1992. He noted that while the mountain agenda has come a long way since then, a lot more needs to be done. IMI and SMDS are steps in that direction.



5

COMMUNITIES AND FORESTS







*"For efficient management of forests, the role of government and forest department needs to change from that of a regulator to the one of a facilitator" -*

Mr. Amandeep Singh Bhatia, IAS,  
Department of Forest and Environment,  
Government of Nagaland

## Keynote Address-Communities and Forest

The keynote address on communities and forests was delivered by Mr. Amandeep Singh Bhatia, IAS, Commissioner-cum-Secretary Department of Forest and Environment, Government of Nagaland. In his keynote address, Mr. Bhatia focused on his experience of forest management in the state of Nagaland. In his opening remarks Mr. Bhatia observed that communities can and do play an important role in forest conservation and management, but that this role is circumscribed by the state.

Mountains have good forest cover and the North East is especially blessed. 80% of the land in Nagaland is under forest. However, closer scrutiny reveals that the situation is not as positive as it appears on casual observation. Thus in the case of Nagaland, while 80% of the land is under forest, only 7-8% of the land is under dense forest - pointing to widespread degradation. It is widely believed that forest degradation that happened at an accelerated rate over the last four decades is a byproduct of felling and afforestation regime perpetuated through government structures, especially the forest department, with an emphasis on timber extraction. Greater integration of Nagaland with the rest of the country also played a role in the accelerated degradation of forests.

These changes have brought into focus the good forest management practices that existed in Nagaland,



and the need to build on them. Strong traditional and customary systems and institutions have existed, as 90% of the forests are owned either by the community or individuals in the state. It is the strategy of the state government to strengthen these further through various projects and programs and to use the social capital of these institutions to deliver the development goals of the state. Traditionally each village in Nagaland has a forest that is left untouched for reasons of the role it plays in water management, non-timber forest produce supply and biodiversity conservation. In addition, the Government of Nagaland has instituted community-conserved areas (CCA) to reverse timber extraction and forest degradation. In all 776 CCA exist in four districts of eastern Nagaland. There are also efforts to join isolated CCA through forest corridors. In the formation of most CCAs resolutions have been passed by local people and there has hardly been any resource transfer from Government. People are aware of the benefits of forests and would like to conserve them. At the same time, they also want to be able to use the resource that they are conserving. The role of the Government is to facilitate systems that regulate the exploitation of forest resources.

Mr. Bhatia also touched on jhum cultivation in his keynote address. Mr. Bhatia observed that the widespread belief is that jhum cultivation is primitive, damaging and unsustainable. He felt that this is not so. Jhum is management of a total ecosystem, jhum helps preserve biodiversity and is not carbon intensive. It may be a net positive gain to the environment and steps are being taken to study this aspect and prepare jhum based CDM project proposals. It is true that Jhum leads to soil erosion, and this is one of the negative effects of jhum conservation; however, system such as contour networks have been developed to minimize soil erosion. There is also a need to supplement current knowledge on jhum farming practices and techniques through research and development. For this to happen it is important to respect diversity and the fact that different parts of the country have different systems that have developed over a period of time and which are best suited to their particular circumstances.

Mr. Bhatia summed up his keynote address by flagging six concluded points:

1. There is no single ideal solution
2. Social capital needs to be facilitated
3. Role of government needs to change from that of being a regulator to a facilitator
4. Processes within departments need to change to support the transition from regulation to facilitation
5. There is a need to have rigorous baseline data and effective monitoring systems in place
6. Jhum can be a sustainable agricultural management practice.



jhum cultivation



## Breakout Session



The breakout session on communities and forests was chaired by Mr. BMS Rathore, Joint Secretary, Ministry of Environment and Forest, Government of India and facilitated by Dr. Dipankar Ghose, Director - Species and Landscapes, WWF- India. The breakout focused on conservation based incentives and strengthening community participation, traditional rights and ownership of communities, human wildlife conflict in the mountains, and REDD.

It is possible to link conservation of natural resources to economic incentives provided there is innovative thinking and support system to convert innovative thinking into a commercially viable exercise. Mithun rearing in Nagaland is a good example of conservation based economic incentives. Mithun or Indian bison is an indigenous species of the region, the community rearing and conservation of which led to conservation of primary forests and at the same time provided cash incentives to the communities involved. Dense and moist forests are the habitat of Mithun. To rear them one would need extensive tracts of dense forests, clearly demarcated and fenced. But once reared, one 5 years old Mithun could fetch as much as Rs. 60,000/-. Entrepreneurs' Associate, in collaboration with Sir Ratan Tata Trust encouraged local farmers to start rearing Mithuns. The farmers were provided loans and other business development services. Soon the forest cover increased and improved, Mithun population increased, and more farmers started to adopt Mithun rearing. This design has also since been replicated in Manipur and Arunachal Pradesh <sup>2</sup>.

<sup>2</sup> Neichuie Doble (Entrepreneurs' Associate): Community rearing of Mithun for profitable livelihood and forest communities



One of the reasons as to why initiatives such as Mithun rearing, which require extensive tracts of forests, can be undertaken successfully in states like Nagaland is that most of the forest are owned privately or by community. Indeed, this is true for most of the northeast. The community owned and managed forests are of various types like village forest, village reserves, bamboo forests, fuel wood reserves, sacred forests, community conserved forests and jhum lands. However, today there is a communication gap between institutions that legislate and the ones that manage the forests on the ground resulting in ever diminishing control on traditional resources, and ambiguity in community initiatives. Ambiguity around unclassified state forests, and the ownership therein, has always been a contentious issue between the communities and states. Non-recognition of existing land management plans and increasing concentration of land with a few are some of the other areas of concern. It is important to recognise and capitalise on the strengths of existing system of community management of resources and adopt them in the management plans. It is equally important to involve communities in policy-making processes and learn from their experiences<sup>3</sup>.

Increased anthropogenic pressure, decrease in wildlife habitat, and policy gaps in wildlife conservation and management have led to an increase in human wildlife conflict. This is a serious issue in the Himalayan region, which threatens both lives and livelihoods. The human wildlife conflict in the mountain region is largely confined to macaque, porcupine, barking deer, wild deer, wild boars and bears, which inflict serious damage on crops. The preventive measures used commonly include scarecrows, pits, fencing, rattling tins, and catapults. The following points are important in the case of human wildlife conflict in the region: most animals with the exception of wild boar are small and not endangered, subsistence farmers are the most affected with many abandoning agriculture altogether, and compensation /ex gratia provisions are either non-existent or weak and time consuming. There are few

instances of retaliatory measures. However, in the interest of conservation it is important that human wildlife conflict in the mountains caused by small animals gets due recognition and acknowledgement and the concerns of forest communities are heard and addressed<sup>4</sup>.

Wildlife is not the only threat that subsistence agriculture of the Himalayan region is facing; climate change and global warming also pose a major threat to mountain agriculture. Global warming is a direct consequence of increased concentration of greenhouse gases in the atmosphere. Though there is little recognition of this, deforestation and degradation of forests are a major source of greenhouse gases. If left intact and allowed to proliferate, they form important carbon sink. Programs such as REDD and REDD+ aim to promote forest conservation. This gives multiple benefits. In Himalayan region forest are intensively used by the local communities. Some of the lush forests of the Himalayas occur within the altitudes 1000-2500 m zone, which incidentally is the preferred zone for permanent habitation and agricultural based livelihoods and is, therefore, the zone where maximum extraction of biomass from the forest takes place. This degrades forests. Degradation is not sufficiently acknowledged; there is also the inability in quantifying the degree of degradation. The process of REDD and its mechanism are still at a preliminary stage, with only 6 pilot sites where it is being implemented. Benefits would eventually flow and like every other project there would be chances of misuse. Therefore civil society and NGOs should come forward and make sure that the benefits reach the communities and their livelihoods do not suffer. While there is a lot of talk about conservation, not much is talked about the livelihood of the local people who are protecting the natural resource base and assets<sup>5</sup>.

<sup>2</sup> Neichute Doulo (Entrepreneurs' Associate): Community rearing of Mithun for profitable livelihood and forest communities

<sup>3</sup> Amba Jamir (The Missing Link): Traditional Rights and Ownership of Communities

<sup>4</sup> Roshan Rai (DLR-Prerna / WWF - India): Human Wildlife Conflict: Challenges for Conservation & Livelihood security in Sikkim & Darjeeling

<sup>5</sup> Rajesh Thadani (CEDAR): Opportunities for Sustainable Management of Community Forests



## 6

## WATER

**Keynote Address-Water**

The keynote address on water was delivered by Dr. Ravi Chopra, Director, Peoples' Science Institute (PSI), Dehradun. Dr. Chopra started his address by pointing out that even though rainfall in the Himalayan region decreases from east to west and south to north, all states in the region other than Jammu and Kashmir receive more than the average national rainfall, and yet, most states in the region face water stress. There is scarcity in the midst of plenty. Localized water problems in rain shadow and deforested areas are well known and documented. Springs are drying up and areas such as south Sikkim are drought prone. There is a symbiotic relationship between water and forest, especially forests and springs. Decreasing forest cover, especially of oak, has hindered spring recharge. This has impacted rural water supply where most households do not receive the prescribed 40 liters per capita per day through piped supply. They meet their requirements from traditional sources. Urban areas in the mountains have their own water problems on

*"Water conservation should precede water exploitation. Such an approach should also focus on multiple sources of water"*

Dr. Ravi Chopra, Peoples' Science Institute

account of aging water supply networks, leakages, lack of coverage in the face of urban expansion, and disruption of catchment areas of water resources due to urban sprawl. Pollution of water resources through urbanization and mining are additional challenges.

Mountain irrigation systems are minor in nature, community devised and community managed. They were made possible by autonomy and control over water resources. However, this control over water resources was disrupted after the arrival of the British. The government of Independent India has only accelerated the erosion of autonomy over local natural resources. Agriculture has received little attention, old systems have decayed and separation of forest, water and land has undermined the vital resource base of the mountain economy.

Hydropower is the most contested issue in the mountain regions today. 70% of India's hydroelectric power potential is in the Himalayan states. Every state is trying to tap into this potential. In every state other than Assam and Tripura planned hydroelectric power capacity far exceeds projected demand within the state. There is then a clear plan to sell excess power and earn state revenue. These hydro-electric power projects, also called run of the river power projects, are built by diverting rivers through tunnels thus killing these rivers and their ecosystems by paying little regard to the concept of minimum flows. Construction of dams disturbs aquifers leading to drying up of springs, land slides and land subsidence, thereby jeopardizing the agrarian systems and consequently mountain economies.

As a result of climate change temperatures are increasing. Winters have become drier; more winter precipitation is in the form of rain resulting in reduced recharge. Glaciers are receding; water shortage is threatening agriculture and extreme weather events are threatening life and property.

In the light of the above, the utilization of water resources needs to be re-examined. Water conservation should precede water exploitation. Such an approach should also focus on multiple sources of water. The Himalayan region has a strong tradition of resource conservation and this should be built upon, not undermined. This would require autonomy in resource governance and watershed and springshed protection. River flows are threatened on account of deforestation, glacial retreat, dams etc. Minimum flow standards need to be laid down. Rivers need to be protected, if necessary, through legislation. **There is a need for the establishment of a Himalayan Rivers Commission to prepare a river conservation and hydropower policy with focus not on hydroelectric power conservation but on demand management and alternate power sources.**





## Breakout Session

The breakout session on water was chaired by Mrs. Anita Paul of Grassroots and facilitated by Dr. Sarla Khaling of ATREE. The session focused the discussion on ecosystem services, water security, water induced hazards, and water rights and governance.



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Water as a forest ecosystem service is important not only for people living in the Himalayan region but for over a billion people living downstream of the region. The productivity and carrying capacity of these lands can be directly linked to the ecosystem services originating in the mountains. In addition, water is also a regulation service, which needs to be understood better. Such understanding could be the basis for developing a system for the payment of ecosystem

services originating in the mountains. Payment for ecosystem services is a methodologically difficult area but one that needs to be accounted for in national and regional planning. As it is, spring extinction, death of rivers, shrinking glaciers and permafrost cover, and pollution of streams and rivers are threatening the very basis of the flow of ecosystem services within the region and downstream<sup>6</sup>.

The Himalayan water resources are under increasing threat from environmental and land use changes. Fluctuating availability and threats from environmental changes increase the challenges of managing water resources. While most sources of water in the Himalayan region are under threat, there is a greater

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<sup>6</sup> S.P. Singh (CEDAR): Water as a Forest Ecosystem Service in the Himalayas



*"While most sources of water in the Himalayan region are under threat, there is a greater focus on glaciers and rivers, which is a lowland perspective, and less focus on springs and streams, which are crucial to mountain communities" -*

Dr. Sandeep Tambe, IFS, RMDD, Government of Sikkim

focus on glaciers and rivers, which is a lowland perspective, and less focus on springs and streams, which are crucial to mountain communities. The Government of Sikkim has responded to the water crisis and initiated the revival of critical springs, streams and lakes through its Dhara Vikas programme. The interventions focus on enhancing artificial ground water recharge, using cultural forces for protection and reviving dying water sources, restoration planting, undertaking vulnerability assessments, developing village spring atlas, building capacities in geo-hydrology, and sharing the lessons learnt. The next logical steps would be developing upstream-downstream institutional agreements, and more research on spring hydrology. The best research is being conducted outside India but can be used to study all the 27 major watersheds in the region, especially to understand how the water crisis is affecting people in the mountain areas. At the Gram Parishad level, it would help to develop water security plans based on availability, stress and vulnerability assessments. It would also help to create a cadre of para-hydrologists ("barefoot hydrologists") who can carry out monitoring and research work <sup>7</sup>.

While water is a resource, it can also cause widespread destruction of life and property. There is an upward trend in hydro meteorological and geophysical disasters. There are various possible reasons for this; climate change and increase in the frequency and intensity of extreme weather events, improper land use, increased population, and the disruptions to natural flows due to unplanned infrastructure development among others. As mountain regions are among the most vulnerable to water induced natural disaster, there is an urgent need for risk identification and vulnerability studies in mountain regions. Also needed are monitoring and early warning and adaptation measures. The need becomes pressing

given the fact that climate changes will increase the possibilities of such hazards. There is also a need for priority risk reduction initiatives in areas at high risk but this would require hazard mapping. Additional advantages of such mapping would include informed land use and planning. There is also a greater need for user education and awareness in terms of weather literacy. Support for natural disaster reduction is an issue of sustainable development and environmental justice. An integrated approach at national and regional levels and transfer of knowledge and expertise at the international level can help in risk reduction and management <sup>8</sup>.

As water is a critical resource, there is a need to address issues of water rights, policy and governance. This will help protect user rights and facilitate sustainable planning and conservation of the resource. In the context of the above, there is a need to re-examine the National Water Policy, especially such aspects of the policy as governance, ecological flows and the idea of river linking. The water policy should focus not on river linking but on the concept of sustainable management regimes in diverse hydro-climatic and agro-ecological regions. Water governance should take care of nested hierarchical nature of hydrological fluxes from headwaters to deltas. National Water Policy currently does not deal with hydrological fluxes and upstream downstream linkages. Obsolete ideas of minimum flows need to be replaced by a better understanding of ecosystem functions and ecological flows. There is also a need to move away from minimum flows to distribution of flows in different seasons. The current energy policy is driving the push for hydropower; this is being helped by the international climate discourse that sees dams as a clean development mechanism. Stress on single source, large projects for water supply are undermining local water governance and management. Water scarcity would also give rise to conflicts at various levels; between sectors, rural and urban, between states, and between countries to name some fault lines. Conflict resolution mechanisms will become increasingly important in such circumstances and will have to work at local, regional, and international levels <sup>9</sup>.

<sup>7</sup> Sandeep Tambe (RMDD): Environmental Change, Water Security, and Adaptation Initiatives in Sikkim Himalayas

<sup>8</sup> Devesh Walia (NEHU): Water Induced Hazards in Mountains: A case study of the Leh Cloud burst

<sup>9</sup> Sumit Sen (ATREE): Water Rights, Policy, and Governance





*"The water policy should focus not on river linking but on the concept of sustainable management regimes in diverse hydro-climatic and agro-ecological regions."*

- Dr. Sumit Sen, ATREE



## 7

## MOUNTAIN LIVELIHOODS

**Keynote Address-  
Mountain Livelihoods**

The keynote address on mountain livelihoods was delivered by Mr. Vijay Mahajan, CEO and Chairman of BASIX. Mr. Mahajan started by talking about the massive growth in population in the 20th century and attempts to improve the living standards of mankind. He noted that if everyone wanted to improve their standard of living to that in the developed world, the resource base of earth would be damaged beyond redemption. On the other hand, when one thinks of the large percentage of population in the developing world who live in abject poverty, the argument for improving livelihoods assumes precedence and the concern for environment is relegated to the background. However, the dichotomy between environment and livelihoods is now beginning to fade. It does not necessarily have to be one or the other any longer.



Mr. Vijay Mahajan, CEO and Chairman, BASIX

Mr. Mahjan reminded the delegates about the importance of the Himalayan region. He observed that presentation after presentation had dwelled on the importance of the Himalayan region to the wellbeing of a large proportion of humanity. This is reason enough for ensuring that the Himalayan ecosystem continues to stay in good health, which in turn makes sustainable mountain livelihoods indispensable. There are enough environmental technologies waiting to be scaled up. The only way to address the issue of livelihoods in the mountains is 'green and digital' leading to Green and Digital Prosperity (GDP). For example two thirds of the households in the region are engaged in agriculture, but agriculture has been stagnant for a long time. To give a new lease of life to the agricultural sector, new techniques and technologies are needed. And they are available. SRI is very well suited to hills and mountains. It reduces the inputs required and increases productivity by two to three times, and there are several similar examples. Why should these successful techniques be confined to







a few experimental plots or to a particular crop? **SRI now stands for System of Root Intensification** and there is no reason why it cannot be taken beyond rice to other crops. Reviving the agricultural sector would require focus on high value agriculture such as organic farming, which would require a revival of forests, training a skilled workforce such as para-vets, tissue culture, medicinal and aromatic plants, composting and so on.

In spite of various efforts made by government, manufacturing, other than small and micro-enterprises, rarely moved beyond the foothills. If a significant transportation of material up and down is required, then it is probably best to leave manufacturing aside. There are jobs in the service sector in the mountains, especially in public administration and tourism. But there are hardly any new generation service jobs or digital service jobs in the mountains. There is incessant talk about alternative power such as solar power, wind or micro-hydel power. While it is all very good, does the region have a work force to do a turnkey job in any one of these? It is little wonder then that higher or more complex skills such as those needed to structure a project for CDM or REDD+ are rarely available. It is important to recognize that the region is deficient in skill base, and not only for technical high end jobs but also for such simple things as waste collection, processing and recycling, in rangers and even in trained tourist guides.

Fortunately in today's world, computers and information technology have made possible an extensive workplace. There are today, a number of jobs that can be done remotely. Call centres and business process outsourcing are well known to most people. There are also higher end jobs that require digital skills such as animation, digital filmmaking, design, media, tele-monitoring, knowledge archival, data mining and so on. All of this and much more can be done from a

distance. And if it can be done from a distance, it can also be done from the mountains.

In order to get going there would be certain prerequisites. To join the digital economy the region would require an enhanced skill set. Institutions would be needed for this, including higher education and research institutions - ecosystem for knowledge generation and innovation. Physical infrastructure would also be needed especially reliable power supply and high bandwidth information gateways. All this in turn would require investment; financial services with the ability to convert ideas into marketable proposals funded by global capital.

This will not be easy. There will be many constraints to this transition, the biggest being the mindset. The aspirations of the youth of the region are confined to jobs that they have seen their parents and grandparents do. There is little aspiration to acquire cutting edge skills and move up the workforce. The aspirations of the youth are also hindered by a lack of entrepreneurial culture and near absence of role model enterprises in the region. In conclusion therefore, **human capital is one of the biggest constraints to successful transition to a green and digital economy.** Development is seen narrowly in terms of material gains. But development actually requires a change in behavioral pattern governed by a set of norms. Individual brilliance is not enough; people need to be able to work together. This requires norms for interaction and transactions. This is a slow process but it has to be gone through. It is the process of institutional development and social capital development, without which change is not possible.



Availability of new technology and research are opening new avenues for livelihoods. Increase in tourism has made it possible to develop a synergetic relationship between tourism and handicraft. Specific attention should be given to the Himalayan natural fibers, especially nettle. **Forest laws need to be made flexible to allow harvest of raw material<sup>10</sup>**. Tapping into new opportunities would also require enterprise development <sup>11</sup>.

## Breakout Session

The breakout session on mountain livelihoods was chaired by Mr. Vijay Mahajan, CEO and Chairman of BASIX and facilitated by Dr. Sanjeeb Kakoty of IIM, Shillong. The breakout session discussed innovation, capacity building, sustainability, financial inclusion, enterprise development, and productivity gains.

In the context of the Himalayan region social justice and social capital are necessary to create value through enterprise. Self help groups (SHGs) and women are the corner stone of enterprise development design in the mountains. They do not work in isolation or achieve everything by themselves. Like any other enterprise design this too needs backward and forward linkages. In this case the backward linkages are provided by NGOs and the forward linkages by businesses. In the end community is energized by creating livelihoods through social development .


Irrespective of the enterprise model chosen, the need for skilled workforce and financial support cannot be ignored. The Himalayan region is deficient in both skilled workforce and financial platforms. Various efforts

<sup>10</sup> Usha Prajapati (Due North): Innovation and Mountain Livelihoods

<sup>11</sup> Kalyan Paul (Grassroots): Enterprise Development for Sustainable Mountain Livelihoods







*"The dichotomy between environment and livelihoods is now beginning to fade. It does not necessarily have to be one or the other any longer"*

Mr. Vijay Mahajan, BASIX

are being made to redress the situation. Government of Sikkim has given highest priority to skill enhancement of the workforce. The Government of Sikkim undertakes capacity building through various line departments under an autonomous directorate. Livelihoods schools have been set up in remote towns where course content developed by experts is taught by trained teachers. In addition there are tie-ups with such institutions as BASIX and Be-Able for funding and skills development. There is also active placement support for students<sup>12</sup>.

The Himalayan region continues to suffer a high degree of financial exclusion in spite of it being a mainstream agenda of the government. One of the reasons for the prevailing situation is that mountain specificities have not been considered while designing policies to promote financial inclusion. Accessibility is a very important factor in the Himalayan region.

Financial inclusion efforts have to move to sparsely populated areas. The government policy of opening a bank branch in every village with a population of 2000 or more excludes most villages in the Himalayan region. Government facilitation of private sector to improve outreach of banking services in the region is one possible way forward. Inclusion policies should work on adopting cluster approach accompanied by investment subsidy for VSAT technology. It should also leverage social institutions of the region<sup>13</sup>.

The discussion captured in the above paragraphs is also relevant to the agricultural sector. Agriculture supports over two-thirds of the households in the Himalayan region. It is the backbone of the regional economy. Therefore sustainability of mountain agriculture is central to the sustainability of the region on the whole. Soil is the basis of agriculture. Even though the Himalayan region is very rich in biodiversity,



The Himalayan region continues to suffer a high degree of financial exclusion in spite of it being a mainstream agenda of the government.

it suffers low levels of soil fertility and soil degradation. The challenge is to increase farm productivity while conserving the environment and the resource base of the agricultural system. A number of problems facing agriculture in the plains are a direct outcome of the resource intensive agricultural system adopted post green revolution. Enhancing productivity while preserving the environment would require adopting agricultural system based on organic farming <sup>14</sup>.

Enhancing farm productivity would also require creating ecosystem for sustainable farming by integrating forest ecosystem with community owned and privately owned land. Management of non-arable land is crucial to the revival of agricultural productivity. For example such land could be used to grow fodder and fuel. Currently, little attention is being paid to this category of land. Diversification by introducing fruit and vegetable cultivation and animal husbandry along

with collaborative research are key to enhancing farm productivity <sup>15</sup>.

Irrigation would play a central role in bringing various other initiatives to fruition.

<sup>14</sup> S.D. Dhakal (SICB): Mountain Livelihoods and Capacity Building

<sup>15</sup> Abhijit Sharma and Priyatham Anurag (IIBM): Building Mountain Specificity in Financial Inclusion Policy

<sup>16</sup> Prof. Sangakkara (Maple Orgtech): Sustainability in the Hills

<sup>17</sup> A.K. Srivastva (VPKS, Almora): Enhancing Farm Productivity



## 8

## CROSSCUTTING THEMES

**Keynote Address-Innovations**

The keynote address on innovations was delivered by Mrs. Bharti Gupta Ramola, Market Leader, PricewaterhouseCoopers, India. She began by pointing out that Himalayan region has many instances of innovation. These include work in the area of natural resource management, water, agriculture and tourism among others.. However, most innovations are limited in scope and localized. There is little evidence of scale ups. In other words, there are few innovations that can be replicated and customized across the region. There are also few examples of innovation clusters, commercially saleable ideas and of innovations that have a trigger effect in the sense that they lead to multiple innovations.

When considering the Himalayan region, two things are apparent. The per capita income of the region is marginally below the national average. At the same time the region on the whole performs significantly above the national average in human development index. If used intelligently, the latter could be a source of strength in the field of innovation and, as a result, in the economic advancement of the region.

As a country, India lags behind world leaders in innovation. Its weakness in the field of innovation stems from its universities, poor connection between academic institutions and industry, weak and poorly endowed research and development sector, weak financial framework and uncertainty in the business environment. These multiple weaknesses notwithstanding, the international perception of Indian innovation environment is average. India in spite of its weak innovation ecosystem scores high in innovation reputation. This is the outcome of the success of various Indian initiatives both within the country and internationally in recent years.

Mountainous terrain is not necessarily a hindrance to innovation. Switzerland, Sweden and Finland are leaders in the fields of innovation - even though they are mountainous. In the case of the Himalayan region though, limitations imposed by terrain are multiplied by various hurdles to innovation that are pan-national. These include weak human capital, poor infrastructure, limited enterprise development, limited financial framework, governance challenges, challenges around policy coordination mechanisms and a weak patent regime. Creating a strong innovation ecosystem would require surmounting these hurdles and not one or two, but all of them collectively. The state has to take the lead, but there is also a large public-private space for intervention.



Mountain areas that are known for innovation include Silicon Valley, which has been a world leader in innovation for the last 30 years. The primary reason for the success of Silicon Valley is a dense network of relationships between entrepreneurs, capitalists, university researchers and a highly skilled workforce. German Alps, another successful innovation hub has based its success on innovation in science and technology. Another area is the North American Rockies both in the United States and Canada, where innovation has been nurtured by rigorous review processes for industry and residential areas. One thing that is clear from these examples is that assets alone are not enough to foster growth and innovation – networks are critical. The critical question then is: how can networks be fostered?

Clustering of social and economic processes is important. There is also a need to adopt competition collaboration paradigm. While the Central Government has to take the policy initiatives in the right direction, it is also important that there is local leadership on innovation. There is a need for mountain specific innovations for sustainable mountain livelihoods. Some

*"Mountainous terrain is not necessarily a hindrance to innovation. Switzerland, Sweden and Finland are leaders in the fields of innovation...the primary reason for their success is a dense network of relationships between entrepreneurs, capitalists, university researchers and a highly skilled workforce"*

Ms. Bharti Gupta Ramola, PwC, India (page 34)

of the areas where innovation could play a vital role in generating sustainable mountain livelihoods include tourism, education, food processing, quality of life, biotechnology and other high-end research. There will also be a need for financial platforms to turn ideas into business projects, and investment in research and development, not only from the State, but from private players as well.



## Keynote Address-Climate Change



The keynote address on climate change titled "Impact, vulnerability and adaptation to climate change in the Hindu-Kush Himalayan Region" was delivered by Dr. Eklabya Sharma, Director Operations, ICIMOD. Dr. Sharma observed that even though climate change is a global issue, its impact is felt at regional and local levels and it is at these levels that climate change has to be managed.

Outlining the importance of the Hindu-Kush Himalayan Region, Dr. Sharma underlined that a large proportion of humanity depends on various ecosystem services provided by the Hindu-Kush Himalayan Region. Areas bordering this region are among the most irrigated in the world because of river systems originating in this region. It is no surprise that they are also amongst the most densely populated in the world. The water that supports the river basins comes from various sources including glaciers, permafrost, wetlands and precipitation. There is a concern that climate change would adversely affect the water resources of the region.

Climate change is not new. There is evidence to suggest that the climate of the world has changed many times in the past. What is worrying is the rate of change. In other words, change appears to be taking place at an ever-accelerating rate. High temperatures, more precipitation in summers, increased aridity in winters and milder winters at higher altitudes are some of the characteristics of the changes taking place in the climate of the region. But this is an aggregate picture. The Hindu-Kush Himalayan region has a lot of complexity on account of latitudinal, longitudinal and altitudinal

variations. There are also issues of aspect and slope. What is needed is the ability to be able to comprehend changes in climate at the river basin level.

Having said this, temperature rise is a distinct phenomenon and the rate of increase in temperature increases with altitude. The spells of warm days and nights are getting longer as are dry spells. Glaciers are retreating and getting converted into glacial lakes. This has consequences for fresh water storage and discharge. The glacial lake mapping carried out by ICIMOD clearly brings out that the eastern Himalayas have more glacial lakes than western Himalayas, probably a consequence of the two being in different climate regimes, but also an indication of warming.

These changes have consequences for ecosystems, established lifestyles, and livelihoods. Pastures in Tibet are being converted to settled agriculture changing land use pattern. Similarly, wetlands in high altitude areas are drying up and becoming grazing lands. Climate change is likely to affect food security, both through long-term changes and extreme weather phenomena. Warming, apart from being a cause of morbidity in itself, will also introduce hitherto unknown diseases for which the local population is neither prepared nor has the immunity against.

The Hindu-Kush Himalayan region is extremely rich in biodiversity. **Of the 34 global biodiversity hotspots four are in this region.** Climate change will affect biodiversity. There is already evidence of species shifting to higher altitudes as a result of change in climate and forest structure.

There is a need to prepare better to cope with climate change. This would require mitigating measures. But before such measures can be instituted, it is important to know what is happening and what would be the likely impact. There is need for good data to be able to do so. At the moment such data is missing; there is very little baseline data on the Hindu-Kush Himalayan region. The approach to river management will also need to change from the current approach to a river basin approach with transnational cooperation.

Whereas there is a need to improve water availability given there is a cap on supply, it is equally important that the use of water is rationalized. Drip irrigation, sprinklers, systems of rice intensification (SRI), are some of the successful examples of improving the efficiency of water usage. But more needs to be done. **Whereas CDM and REDD+ are important, in the context of mountains there is a need to move to REDD+ +, in other words there is a need to move beyond just carbon sequestration. There is a need to explore and**

**"Climate change is not new...what is worrying is the rate and complexity of change... what is needed is the ability to...comprehend changes in climate at the river basin level"**

- Dr. Eklaabya Sharma, ICIMOD

**understand this area more and to be alive to possibilities of benefits to the region through these approaches to climate change management.**

ICIMOD on its part is working to understand and map climate change in the region and to prepare the region better to adapt to and mitigate climate change. For example, the Hindu-Kush Himalayan region is generally considered to be a data gap region when it comes to climate change, ICIMOD now has data for all glaciers in the region. Snow cover change detection is carried out on a weekly basis and data on it is now available for the last ten years. ICIMOD recently compiled a report on the status of climate change in the Hindu-Kush Himalayan region, which was released in Durban at the Conference of Parties to the UNFCCC.

ICIMOD is also attempting to promote transnational cooperation in the region. The Kailash landscape project involves China, India and Nepal, in managing 30,000 square kilometers. This area is the source of important rivers such as the Indus and Brahmaputra. It was noted earlier that the Hindu-Kush Himalayan region is very rich in biodiversity. In the face of climate change, and with the migration of species, corridors to help in migration would be needed. The Kanchenjunga landscape project, which brings together Nepal, India and Bhutan in a region that has 17 protected areas, aims at providing corridors to connect these protected areas to facilitate the migration of species. The Himalayan climate change and adaptation program works at the sub-river basin level and focuses on water availability and demand in the sub-basin, ecosystem services, food security and gender segregated approach to climate change adaptation. ICIMOD is working through pilot projects to understand better CDM and REDD+ so that impact and procedures can be understood, established and shared with stakeholders to enable them to benefit from such programs.



## 9

## EMERGING PRIORITIES

**Communities and Forest**

There is a need to re-examine the existing forest management systems and trends in them. The dominant management system favours state control; state control of forests has increased even in states where it was insignificant. The exclusion of people from their forest is one of the main causes of degradation. It is important that the traditional systems of management and management practices are recognised and revived. Documentation of traditional management systems and practices could be a starting point in this direction.

Human wild life conflict in the mountains is threatening livelihoods of local communities. The compensation regime is either non-existent or weak. This conflict is different in nature from human wildlife conflict in the plains. The conflict in the mountains involves small animals such as porcupine and barking deer. There has been little retaliation against animals so far but this may change if complaints are not redressed. It is important to establish awareness of the nature of human wildlife conflict in the mountains and have effective complaint handling mechanisms in

place. Furthermore, carrying capacity and the likely impact of climate change on human wildlife conflict should be studied and documented as part of solution.

Various programs such as CDM and REDD could be of benefit to mountain communities and help in the conservation of resource base. Various other direct and indirect benefits would also flow to local communities on account of improved health of resource base. However, there is limited understanding of such programs. REDD for example has only six pilot sites and there is little community involvement. There is also a paucity of people who understand programs such as REDD and can help train communities and prepare projects. There is a pressing need to understand these programs better, especially their fit with the mountain context, how communities can be trained to be involved (move beyond civil society organisations and NGOs), how to prevent leakages of benefits, and how to ensure that there is a robust benefit sharing mechanism.

## Water

In spite of living in what is a water abundant region the Himalayan communities face acute water shortages. In most states the prescribed norm in rural areas is 40L/person/day. Even this is not available to people. They have to rely on traditional sources of water. **There is a need to lobby governments to increase this limit to at least 70L/person/day and this quota should be supplied to homes.** Himachal Pradesh has taken steps in this direction and other states need to follow suit.

There are limits to growth and water is no exception to this rule. But utilization of water is an area where efforts can bring about positive changes. There is a need to give precedence to resource conservation over resource exploitation. Water resource conservation through spring revival, a project of Government of Sikkim is just that. Attempts should be made to study this project and explore possibilities of replication in other Himalayan states. Irrigation is vital if agricultural productivity is to be increased and here too optimization of resource use and adaptation to the context is the key.

Hydroelectric power in the Himalayan region continues to be a contested area. There are sound arguments on both sides. But there is no resolution. Perhaps this is so because in spite of sound arguments, there are no easy solutions. Much of the debate on hydropower is conducted in a manner where reason gives way to passion. There is a need to have a dedicated seminar, if needed rounds of seminars, where all issues are treated threadbare by experts and various stakeholders with the help of ground experience, both national and international, as well as scientific understanding. The outcome of seminar(s) could be a policy paper on hydroelectric power development by IMI.







## Mountain Livelihoods

Given the resource base of the Himalayan region, green and digital livelihoods are the only way to sustainable livelihoods. These require change in mindset, skill enhancement, innovation and adaptation, and infrastructure. The infrastructure for IT enabled service is very poor in the Himalayan region. This is a major bottleneck to these services taking off in the region. IMI should lobby governments to ensure that this issue is addressed

The Himalayan region is not only deficient in infrastructure it is also deficient in skills. Skill enhancement of the workforce should be a top priority. Once again the State Institute of Capacity Building in Sikkim seems to be a good initiative. It should be

studied and if found suitable, IMI could promote the idea of building such institutes in other states.

Developing enterprise and improving livelihoods requires investment and access to financial services. Once again, the Himalayan region suffers a high degree of financial exclusion, in spite of efforts by the central government to improve access to financial services across the country. This is because the current financial inclusion policies do not take into consideration mountain specificities. A thorough review of this policy with the aim to propose changes that address the specific needs of mountains is suggested



## Innovations

Some of the mountain areas of the world are leaders in innovation. The Himalayan region too has quite a few examples of innovations in the areas such as natural resource management, agriculture, and institutions among others. One problem with innovations in the mountain is of scale and replication. SRI is a good example. In spite of the fact that SRI increases yields by 2-3 times, it has not moved beyond experimental plots and beyond rice. There is a need to make an inventory of such innovations, examine the reasons for their inability to scale up, and take up remedial measures with the relevant authorities.

While innovation will ultimately have to be pushed by the central government by providing the right policy and support and conducive environment, there is space for local leadership to capitalize on such initiatives. What is needed is leadership with vision and understanding of the context and needs of the Himalayan region. Good quality of life is a big advantage that the Himalayan region enjoys and this could be build upon. On its part IMI could provide the regional leadership platform by sharing its vision with the leadership of the Himalayan region and by nurturing this leadership.

## Climate Change

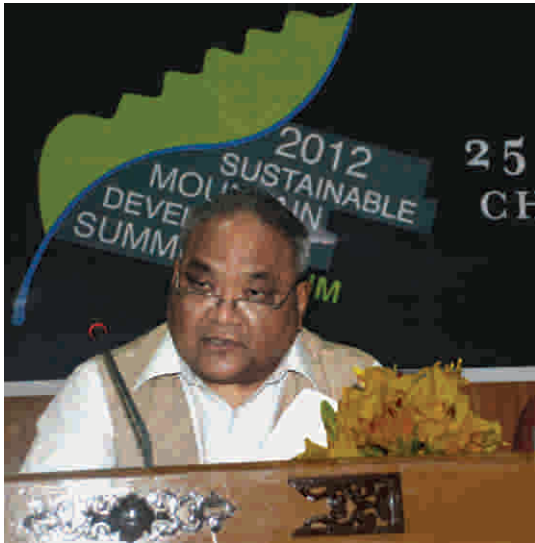
As climate change continues so does adaptation of communities to climate change. However, some studies on adaptation notwithstanding, very little is known about how communities are adapting to climate change in the Himalayan region. This documentation is essential for improvement in adaptation techniques, identification of gaps, dissemination and replication of best practices, and monitoring.

The Himalayan region is among the most vulnerable to climate change. It is well known now that with climate change, there would be an increase in the frequency and intensity of extreme weather events. Such weather events do and will unleash with increasing frequency natural hazards. To prevent hazards from turning into disaster as in the case of Uttarkashi recently, it is necessary to do hazard mapping and disaster management planning. IMI could take up disaster zone mapping with respective state governments and could consider getting involved in disaster management planning.



# 10

## VALEDICTORY SESSION



*"While we would welcome nothing more than enthusiastic adoption of IMI and SMDS by partner states, especially in the Northeast, CHEA and Uttarakhand would always be the default home of SMDS" -*  
Dr. RS Tolia, CHEA

The valedictory session brought together all delegates in the second half of day II. Chairs and facilitators of breakout sessions presented recaps of the discussion in the groups on the three themes. There was an open house in which the way forward and issues were discussed. This was followed by two delegates from each Himalayan state and the hill district of Darjeeling volunteering to commit themselves to promote the vision and work of IMI in their respective states.

Dr. RS Tolia, Chairman CHEA congratulated the organising committee and convener SMDS2 for organising a very successful summit. He also lauded the role of the Government of Sikkim and the civil society of Sikkim in supporting SMDS2. Dr. Tolia, while appreciating the lead taken by Sikkim in organising SMDS2 and hoping that other states in the northeast would also show similar spirit of involvement, informed the delegates that CHEA and Uttarakhand would always be the default home of SMDS. Dr. Pushkin Phartiyal, Executive Director, CHEA and Dr. PP Dhyani of CHEA Council felicitated Mr. PD Rai, Convener SMDS2 and Mr. RP Gurung, Chief Executive Officer, ECOSS.

Mr. Alemtemshi Jamir, IAS, Additional Chief Secretary cum Development Commissioner, Government of Nagaland addressed the delegates via a video link. Mr.





Jamir congratulated the delegates on the very successful deliberations and conclusion of the summit. He, on behalf of Nagaland, offered to host the third Sustainable Mountain Development Summit in Kohima. While expressing the hope that the decision making body in IMI would consider his request and offer favourably, Mr. Jamir said that he looked forward to welcoming the delegates to Nagaland next year.

Mr. PD Rai, Convener IMI-SMDS2 presented to the delegates the Gangtok Declaration. This detailed document was both an institutionalization plan to take IMI forward as well as a vision statement for the Himalayan region. The declaration concluded by noting that "the mountain States in India have not received the attention due to them and we recommend that greater focus and emphasis be given to the Sustainable Mountain Development agenda

without delay and continued for the next 20 years".

The second Sustainable Mountain Development Summit concluded with Mr. PD Rai once again thanking various organizations and individuals who had contributed to the successful organisation of the summit. It may also be mentioned here that Mr. Alemtemshi Jamir's offer of hosting the next sustainable mountain development summit in Kohima was accepted.

## 11

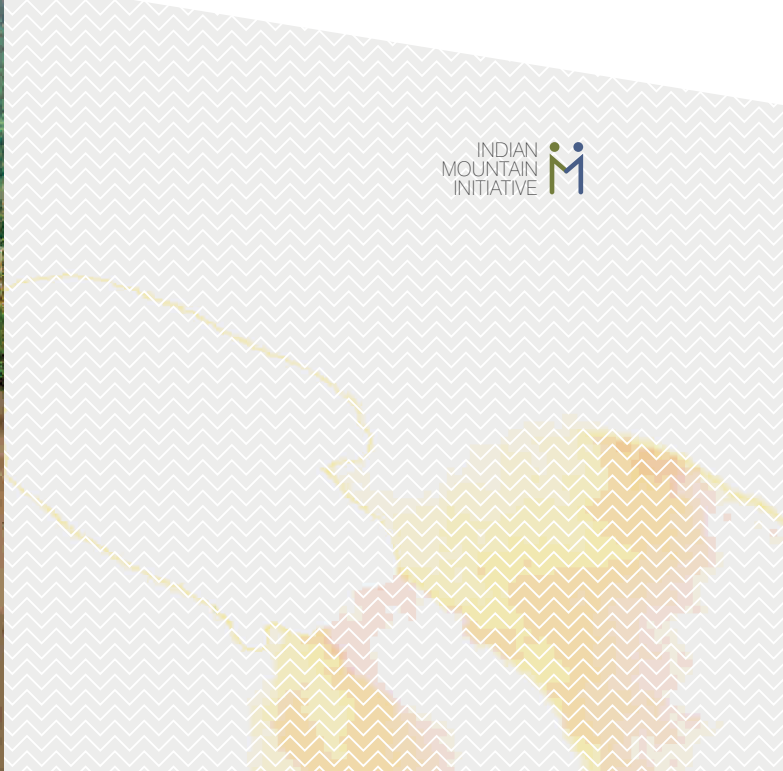
## GANGTOK DECLARATION

The emerging stakeholders of Indian Mountain Initiative, having met under the aegis of Central Himalayan Environment Association in Nainital on 21st and 22nd May 2011 and under the aegis of Ecotourism Society of Sikkim in Gangtok, on 25th and 26th May, 2012, are, seeking to implement the vision and mission of IMI for sustainable mountain development for the 11 hill and mountain states and 1 hill district of West Bengal in India, with the goal of bringing equity and sustainable development for the mountains and their people through the commitment of all the stakeholders such as the planning commission, legislators, government, academic and other facilitating institutions, civil society organisations and committed individuals.

#### Declare that:

1. IMI is a Civil Society initiative which shall work towards building the cooperation and commitment of all stakeholders to bring sustainable development in the mountains through advocacy, facilitation and support.
2. Hill and mountain people are at the centre of concerns for sustainable development. They are entitled to improved livelihoods in harmony with the environment.
3. In order to achieve sustainable development, environmental issues of protection and adaptation shall constitute an integral part of the development process and cannot be considered in isolation.
4. IMI shall work through long term partnerships with multiple stakeholders and at different levels, which include local, regional, national and global. The partners and collaborators of IMI may have their own charter, which may be broader than the mission of IMI, yet they will adopt policies and plans to build a common yet differentiated agenda in achieving the goals.
5. Unique needs and aspirations of each state, mountain region and their people will be taken into account by IMI in an inclusive way with the aim of making fundamental shifts in their understanding and behaviour.





6. The partners and collaborators in each state and region shall cooperate to build awareness, improve scientific and social understanding of issues, build capacity for action on adaptation, diffusion and transfer of technologies and practices for development.

7. An appropriate institutionalisation mechanism shall be developed under democratic principles to build the movement and momentum towards achieving the goals of IMI through an inclusive organisation structure, network, systems and processes.

8. In the mountain areas, women play a vital role in the livelihood generation and protection of the environment and therefore are impacted significantly by the outcomes of the plans and action. Women's participation will therefore be essential to achieve sustainable development.

9. The role of communities and their traditions shall be recognised and supported in order to enhance their impact on sustainable development. Similarly, the youth shall be enrolled and given a role to sustain the initiative.

10. All stakeholders shall cooperate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and avoid bringing their individual or bilateral issue or concerns, which are not core to the IMI agenda.

And specifically for the Rio + 20 meet in June, 2012, IMI adopts the following resolution:

"We resolve that the mountain states in India have not received the attention due to them and the sustainable mountain development agenda is far from even being conceptualized, though several frameworks and mechanisms have been promulgated at the national level. We recommend that greater focus and emphasis be given to the Sustainable Mountain Development agenda without delay and continued for the next 20 years."

# 12

## OTHER EVENTS

### Mountain Cities





The discussion on mountain cities was chaired by Mr. K.N. Topgay, the Mayor of Sikkim. In his opening remarks Mr. Topgay highlighted the challenges of solid waste management, drainage, and transport. He stressed the need to build civic awareness for which schools and communities are the right starting points.



The keynote speaker Dr. K.C. Sivaramakrishnan, Chairman Centre for Policy Research noted that in addition to being saddled by problems that are generic to urban settlements in India, mountain cities have many issues that are unique to them, a byproduct of such features as topography, slope, altitude, restricted space, etc. There is little recognition of the unique challenges faced by mountain cities in the policymaking circles. This is best reflected in City Development Plans and how similar they are irrespective of the urban location/site in question. The guidelines of the Ministry of Urban Development as listed in Jawaharlal Nehru National Urban Renewable Mission which have been framed with cities in the plains in mind, do not distinguish between mountain cities and cities in the plains. In other words, there are no guidelines or standards for planning and development of mountain cities.

Paucity of space and opportunities has resulted in pockets of urban concentration in mountain regions. In the case of Sikkim, population, investment, and traffic, to name a few variables, are concentrated in Gangtok and the East District. Such imbalance could be corrected through better definition of road hierarchy, by focusing on transport issues, forming region-based tourism circuits, by curtailing rural-urban and urban-urban migration, and through egalitarian distribution of resources. The focus of urban intervention should also be on such soft aspects as urban governance and capacity building. In the area of urban governance there is a need for revising bye laws, developing e-governance, creating municipal act to form a 3-tier urban mechanism, and developing public-private partnership mechanisms. Approaches such as city branding also allows for a strategic vision to be implemented. As funding is seen as a fundamental bottleneck there is a need to find multiple sources of funding based on assets, central resources, subsidies, etc., especially to sustain the development of smaller urban centres.



## Legislators' Meet on Climate Change and the Need for Legislation



On the sidelines of SMDS2, Parliamentarians and legislators from Sikkim, Arunachal Pradesh, Uttarakhand, and Meghalaya and experts from different organizations deliberated on the theme 'Climate Change and the need for Legislation'. Sikkim Legislative Assembly Speaker Mr. K.T. Gyaltsen chaired the meet. The broad objective of the theme was to examine India's performance against national and state level action plans on climate change and to assess the status of legislation on climate change.

The consensus was that NAPCC makes little sense until the SAPCC for all states have been framed. But that alone will not be enough. Around 18 - 19 states have their SAPCC plans in place. However, there are major questions that remain to be answered such as, **where will the money to implement these plans come from and how will the changes be brought about. The implementation structure to operationalize SAPCC is not in place.**

Some states in India are emitting carbon more heavily than other states. Himalayan states are the "sinks" that are carbon positive whereas other states that have no or little forests such as, Haryana (less than 7% forests) are carbon negative while at the same time have more elbow room for development than the Himalayan region. Therefore, understanding legislation around climate change is particularly important for legislators from this region. The critical questions then are the following

- How to reward the protector? How should we compensate carbon sink states for the ecosystem resources they provide? Research needs to be

done on this and legislators must insist on coming up with a system to do this

- How to penalize the polluters? - This is all work in progress, there is currently no framework through which we can scientifically penalize polluters
- Within states or within regions the discussion can be narrowed down to the local level and we can talk about concerns regarding conservation and preservation

Mr. Sanjay Wadvani, the British Deputy High Commissioner joined the group via teleconferencing. Mr. Wadvani said that the UK is looking for a collaborative partnership with India and hopes to learn from the practical work being done in India. Mr. Wadvani mentioned that the UK has issued white paper on climate change and would be happy to continue dialog with legislators in India regarding the issue.

The Indian chapter of Global Legislators' Organization for Balanced Environment (GLOBE), an institution that looks at climate change legislation around the world, has been constituted recently. The meet agreed that state level chapters would be the next step in taking the GLOBE agenda forward and recommended that the Speaker start the first state chapter of GLOBE in India in the state of Sikkim. Mr. K.T. Gyaltsen accepted the role of chair of the Sikkim chapter of GLOBE and agreed to take the GLOBE agenda forward.



## Carbon Footprint

The way we live can reduce the impact of climate change on our planet. The organisers of SMDS2 wanted to bring awareness among the participants about making this event go green. This was done by calculating the carbon footprint of the event and by identifying the methods to offset the carbon dioxide emissions.

The event calculator took into account three different sources of emissions

- Emissions from attendee travel both External and Internal (Road, Air, Rail)
- Energy use in hotel rooms
- Energy use for the event itself

The total carbon footprint based on the identified emission sources for organizing IMI summit with a total of 160 participants is calculated as ~ 35 t CO<sub>2</sub> which translates to 0.22 t CO<sub>2</sub> per participant. This is the equivalent of running a split AC for 7 hours a day for a month or 45 round trips to work. Travel accounted for 98.5% of the emission. Within the category travel, air travel accounted for 58 % of the emission, road travel accounted for 33% of the emission, and train travel accounted for 9% of the emission.

SMDS2 attempted to minimize carbon footprint of the summit by encouraging people to consume as little as possible of such commodities as bottled water. Detailed guidelines on how they could reduce their carbon footprint were sent to participants in advance. The venue and accommodation of participants were selected with the aim to minimize local travel.

Finally, participants were encouraged to plant saplings in Gangtok and at their respective places of residence to offset their carbon footprint. A site for plantation was selected and readied with the help of the Forest Department of Sikkim. Participants visited the site and planted saplings on both days of the summit.

## Hydroger

Hydroger, a small and low cost hydropower generator developed by Nagaland Empowerment of People through Energy Development (NEPeD), was set up besides Hazam stream in Lower Martam for a demonstration. NEPeD in association with Ecotourism & Conservation Society of Sikkim (ECOSS) and Lower Martam gram panchayat unit organized the demonstration as a side event of the '2nd Sustainable Mountain Development Summit. Mr. PD Rai, Member of Parliament (Lok Sabha), Sikkim and Convener SMDS2 inaugurated the demonstration.

Hydroger consists of a cylindrical cast iron casing housing an alternator, which is connected to the turbine through the shaft. Hydropower is used to turn the turbine and generate energy. A tiny 5 KW Hydroger unit is capable of meeting the local electricity requirement of a small village.

The technology will be useful and beneficial for the far-flung and remote areas as it generates 3 KW with simple installation. It is not easy to reach power to the remotest pockets by means of grid networks and transmission lines but hydroger does not share their handicaps in serving remote areas. Hydroger is one solution for achieving improved social and economic options for rural people and could play an important role in the Himalayan region.

The Lower Martam Hydroger demonstration unit was subsequently handed over to the local panchayat to use for purposes that the Panchayat deemed fit. It will also act as a model unit for the state of Sikkim.

Hydroger technology was initially started five years ago and around 250 units have been installed in different parts of Nagaland so far.



## 13

2<sup>nd</sup> INDIAN HIMALAYAN  
PHOTOGRAPHY COMPETITION

The 2nd Indian Himalayan Photography Competition was organised alongside SMDS2. It is the aim of IMI to develop this competition into an annual event to be held along with sustainable mountain development summit and showcasing the chosen facets of the Himalayan region and communities.

The themes for the 2nd Indian Himalayan Photography Competition were the same as the themes for SMDS2- water, mountain livelihoods, and communities and forest. Entries could be sent under the category general. The first prize was Rs. 50,000..

Personal invites were sent to 254 photographers. Of these photographers, 67 participated in the competition. In all the competition received 198 entries across the three competition themes. The preliminary

selection of photographs was carried out on the basis of the rules and regulations of the competition. These were widely disseminated including through the SMDS2 website. 60 photographs fulfilled the criteria for the final exhibition and competition. The photographs were displayed at the Star Hall in MG Road, Gangtok with exhibition systems and layout specially designed for the summit.

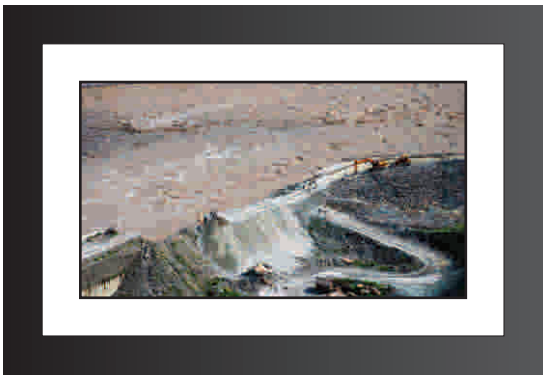
The photographs which qualified for the competition were judged by a mixed group of judges comprising of Mr. Arthur Pazo, a well known international photographer, Mr. Pankaj Thapa, Professor at Sikkim Government College, Mr. Praful Rao, an internationally recognised photographer and an environmentalist who runs a NGO called Save the Hills and Mr. Passang





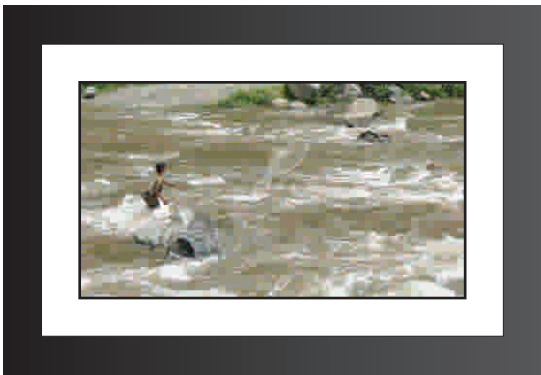
1ST PRIZE

**Name:** Arif Siddiqui  
**Theme:** Communities & Forests  
**Title :** Stuff of Life  
(Children collecting Bamboo for daily use)



2ND PRIZE

**Name:** Chinlop Fudong Lepcha  
**Theme:** Water  
**Title:** Nature's Fury



CONSOLATION PRIZE

**Name:** Romong Lepcha  
**Theme:** Mountain Livelihood  
**Title:** Fisherman

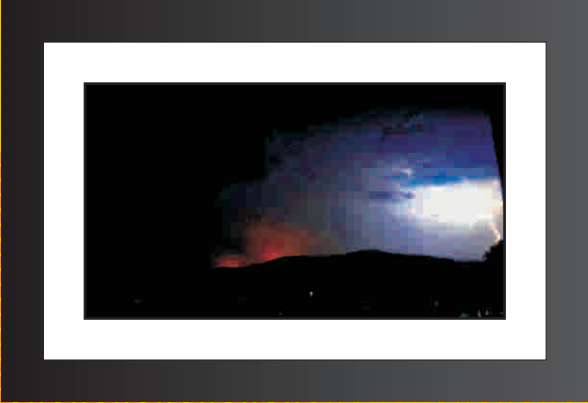
Dorjee, an artist-cum-textile designer-entrepreneur (DoCo textiles). The first prize was awarded to Mr. Arif Siddiqui for his entry 'stuff of life' under the theme communities and forest. Mr. Chinlop Fudong Lepcha's entry 'nature's fury' under the theme water was adjudged second. Mr. Romong Lepcha and Mr. Anup Sah were awarded consolation prizes in the category mountain livelihood.

CONSOLATION PRIZE

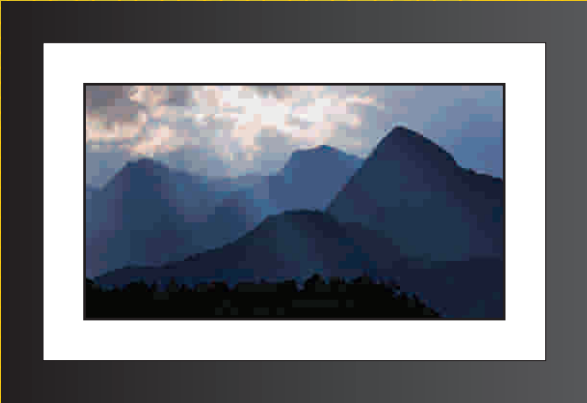
**Name:** Anup Sah  
**Theme:** Mountain Livelihood  
**Title:** Village Life in Someshwar Valley



Swaraj Chettri



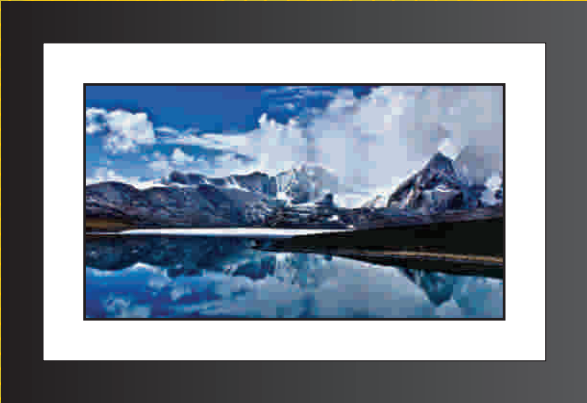
Sonam Wangchuk Lepcha



Chetan Kapoor



Sonam Pinto





Anup Shah



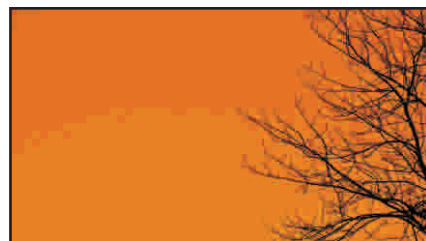
Arif Siddiqui



Chandan Dutta gupta



Dipesh pradhan



## 14

INSTITUTIONALIZATION OF  
INDIAN MOUNTAIN INITIATIVE

A meeting to take forward the Indian Mountain Initiative in an institutionalised manner was held in Gangtok on the sidelines of SMDS2. Mr. P.D. Rai chaired the meeting while Mr. Sushil Ramola facilitated it. The meeting discussed how IMI should go forward, explored the complex questions around organisational and operational structures, and deliberated on the challenges of building an institutional and a shared vision. Institutionalization is important for achieving tangible results and for continuity and quality control.

The meeting sought the input of participants on the vision and mission statement of IMI. There was a consensus that IMI's Vision has to be rooted in the perspective of the past and a clear dream of the future of at least the next 20 yrs. The mission statement should clearly identify stakeholders, highlight the need to bring the states in the Himalayan region closer to one another, and underline the need to champion the mountain agenda. It should bring out the need to reevaluate established concepts such as equity and sustainable development.

The following questions were considered important in determining the institutional structure

- (a) Who claims ownership?
- (b) What are the proposed activities?
- (c) What is the impact?

IMI would be headed by an Apex body that would follow a low cost and efficient model focusing on key strategic areas and administration. The National body and State bodies would follow a hub and spoke design with a two-way flow of exchange of ideas. The linkages would be maintained horizontally across the Indian Himalayan Region. The institution would run on a robust core, loosely linked at various levels to retain the inclusive character of the movement.

The meeting concluded with the decision to hold a workshop for the core committee of IMI to decide on future course of action, come up with a time bound action plan, and chalk out strategies to evolve as a think tank on mountain issues. It was also agreed that IMI would commission a research study before the third sustainable mountain development summit to broaden understanding of key identified issues.

## ORGANISERS OF SMDS2

### CHEA

The Central Himalayan Environment Association, CHEA in short, was founded on October 2, 1981, on a day that has special significance for India. CHEA is one of the earliest societies founded in Northern India with mountain environment as the focus of its concern. The leaf of the Oak tree is the emblem of CHEA. This species is found between 1000-3000 meters above sea level and occupies nearly 20,000 square km area in Uttarakhand. The oak forests are associated with water, humidity, biodiversity, in short with life, in the mountains of the state. It is the tree of masses and is the lifeline of village communities. In more ways than one, the emblem of CHEA embodies what the organization stands for, 'environment and livelihoods of people in the Himalayas'. Fulfilment of basic human needs, active participation of women, provision of and access to infrastructure services, human rights, democratic institutions, and good governance, focus on youth, and participatory decision making on resource use are some of the areas that concern CHEA.

### ECOSS

The Ecotourism and Conservation Society of Sikkim (ECOSS) is a registered NGO and operates out of Gangtok, Sikkim. Founded in 2001, it prides itself in being a home grown initiative to understand and advocate proper ecotourism practices. ECOSS seeks to combine the strengths of rural communities with the experience and knowledge of experts for process driven innovation and advocacy. ECOSS believes in conservation of biodiversity, local culture, and promotion of sustainable livelihoods through community mobilisation and empowerment.

#### Steering Committee

Mr. P.D. Rai, MP LS (Sikkim) – Convener  
 Dr. R.S. Tolia (Uttarakhand)  
 Mr. Sushil Ramola (Uttarakhand)  
 Mr. Toki Blah (Meghalaya)  
 Mr. Satyadeep S. Chhetri (Sikkim)  
 Mr. P. Ringu (Arunachal Pradesh)  
 Mrs. Fanny Jaswal (Arunachal Pradesh)  
 Mr. Neichute Doulo (Nagaland)  
 Mr. Amba Jamir (Nagaland/Assam)

#### Executive Committee

Mr. Rajendra P. Gurung (Co-ordinator) ECOSS  
 Dr. Pushkin Phartiyal (CHEA)  
 Dr. Rabin Kumar Chhetri (ECOSS)  
 Ms. Priyadarshinee Shrestha (WWF-India)  
 Mr. Sonam T. Gyalsten (EHOSTREAM)  
 Dr. Sarala Khaling (ATREE)



INDIAN MOUNTAIN INITIATIVE SUSTAINABLE  
MOUNTAIN DEVELOPMENT SUMMIT 2,  
GANGTOK SIKKIM MAY 25-26 2012

LIST OF PARTICIPANTS

SI No.	Name	Title	Designation	Organization
1	A.K. Singh	Mr.	Director, Tourism	Department of Tourism, Govt. of Arunachal Pradesh
2	A. K. Srivastava	Dr.	Former Director, VPKAS, Almora	ICAR
3	Abhijit Sharma	Dr.	Associate Professor	Indian Institute of Bank Management, Guwahati
4	Abhimanyu Dhakal	Mr.	Student	
5	Achintya Kumar Sinha	Mr.	IFS ( RETD )	
6	Ayong Chang	Ms	Member, Project Operations Unit	NEPED
7	Adrian Marbaniang	Mr.	Director,	M&E, NERCORMP (IFAD)
8	Amar Lamichaney	Mr.	Asst. Town Planner III	Urban Development & Housing Department
9	Amardeep Singh Bhatia	Mr.	IAS, Secretary Commissioner & Team Leader NEPeD projects	NEPeD
10	Amba Jamir	Mr.	Director,	The Missing Link (TML India), Guwahati, Assam
11	Ambar Gurung	Mr.	Reporter	Himalay Darpan
12	Anirban Ghose	Mr.	Programme Director	PRADAN
13	Anita Paul	Ms.	Director Community Initiatives Development Foundaton.	Pan Himalayan Grass Roots
14	Anup Sah	Mr.	Photographer, CHEA Council Member	CHEA
15	Arson Subba	Mr.	Assisant Town Planner	Urban Development & Housing Department GoS
16	Aruna Pradhan	Ms	Programme Coordinator	Ecotourism & Conservation Society of Sikkim
17	Ashes Rai	Mr.	Office Coordinator	DLR Prema, Darjeeling
18	Ashi Sonam	Ms.	Assistant Architect	Urban Development & Housing Department GoS
19	Ashok Kumar Sharma	Mr.	Faculty	Disaster Management Cell GoS
20	Avabadha Das	Mr.	Divisional Manager	Maple Orgtech
21	B. B. Rai	Dr.	Executive Director	Voluntary Health Organisation of Sikkim
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24	B.S. Burfal	Dr.	Chairman	Uttarakhand Biodiversity Board, Dehradun
25	Babbu Tamang	Mr.	Editor	Nayuma TV
26	Balaram Pandey	Mr.	Assistant Professor	Sikkim Govt College, Gangtok
27	Barna Baibhaba Panda	Mr.	Consultant, ex-Faculty Member	The Livelihood School
28	Barsha Gurung	Ms	Assisant Town Planner	Urban Development & Housing Department GoS
29	Basundhara Chettri	Dr.	Assistant Professor	Department of Zoology Sikkim Govt College
30	Bharati	Ms	CCF	Forest Environment & Wildlife Management Department GoS
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