



Proceeding

**National Workshop on Sharing of Lessons and Wise Practices for Sustaining Himalayan
Ecosystem
GBPIHED, Almora, Uttarakhand
10-11 August 2011**



INTERNATIONAL UNION FOR CONSERVATION OF NATURE

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INTRODUCTION

Himalayas are a source of several rivers, which house beautiful wetlands and are bestowed with biological resources of immense value. However, the Himalayan ecosystem is one of the most fragile ecosystems of the world faced with many natural problems as well as challenges of developmental processes, deforestation and land use changes. These changes are severely affecting the livelihoods of millions of people, including indigenous communities who reside in the mountains and valleys of the region and whose livelihoods and culture are closely linked to the mountains' ecosystems. The Himalayan ecosystem also faces threats from climate change and as a result, conventional services being provided by the ecosystem are adversely being impacted. Reduced food productivity and water availability, loss of flood regulation, increased cases of natural disasters are all reflections of the loss in ecosystem services.

Himalayan glaciers are the primary source of water to several perennial rivers and also have a profound effect on both the regional and global climate. The communities in these regions are one of the most susceptible to even a slight change in temperature and precipitation. Minimum temperatures are projected to rise by 1°C to 4.5°C and the maximum temperatures may rise by 0.5°C to 2.5°C. Climate change will thus severely impact the Himalayan ecosystem.

Furthermore, there is a great paucity of existing and detailed knowledge on the regions' vulnerability to the impacts of climate change. Absence of information calls for an urgent need to initiate efforts to generate information in order to respond and adapt to the current and future consequences on the natural resource base and climate change in the region.

In order to increase the resilience of the Himalayan ecosystem and reduce the vulnerability of the local communities it is essential to develop guidelines that can ensure sustainable management of the natural resources. This can be possible through implementing the best practices for sustainable development and improving the existing governance structure as well as strengthening the local institutions and participatory planning. It is equally important to develop a strategic, integrated approach for addressing the issues of biodiversity conservation and improve livelihoods in the context of climate change that ultimately ensures the social, economic and cultural well-being of people in the Himalayan region.

The traditional societies in the Himalayan region have over time developed an insight to deal with nature and natural resources in a sustainable and efficient manner. The traditional coping strategies along with the tested ecosystem based solutions can be integrated into policy responses. Engaging the local communities in the dialogue and policy process would make the process participatory and more effective.

In this context, IUCN Water and Nature Initiative (WANI), in collaboration with Nokia, Climate Change and Development, Embassy of Switzerland in India, and G.B Pant Institute of Himalayan Environment & Development organized a workshop on the topic, “Sharing of Lessons and Wise Practices for Sustaining the Himalayan Ecosystem”.

The main goal of the workshop was to discuss and document the wise practices of sustainable development which can be mainstreamed into policy and development initiatives in the Himalayan region. The objectives of the workshop were to:

1. Discuss the wise practices to build resilience, adaptation strategies and sustainable management of the Indian Himalayas.
2. Document the existing knowledge, best practices and knowledge gaps for sustaining the Indian Himalayan ecosystem.
3. Offer a platform for dialogue between researchers, NGOs, communities and policy-makers for providing flexible and adaptive strategies for sustaining the Himalayan ecosystem.

The various sessions of the workshop were planned so that the objectives of the workshop could be met and the key issues, and best practices and future actions to address issues of climate change in Himalayas could be identified.

Day 1: 10 August 2011

INAUGURAL SESSION

HIGHLIGHTS

Welcoming the participants, **Dr. L.M.S. Palni**, discussed the vulnerability of the Himalayan ecosystem and stressed on the need for sharing information and building on experiences for sustaining the fragile ecosystem. He appreciated the fact that the topic of Sustaining the Himalayan Ecosystem which was highly neglected by the international community, is now beginning to come into the forefront as a legitimate issue. The government of India acknowledges the importance of Himalayas and has developed a separate action plan 'National Mission for Sustaining the Himalayan Ecosystem' under the National Action Plan on Climate Change for sustaining and safeguarding the Himalayan glaciers and mountain ecosystems. Emphasizing the need to sustain Himalayan ecosystem, he suggested documentation of the best practices which have proved to be effective for the past many decades. GBPIHED has published a document G-SHE 2009, which highlights some of the best practices for water conservation, food and energy security and techniques such as concept of green roads & development of ideal habitats. Suggesting the need to provide proper acknowledgment to Himalayas for providing numerous ecosystem services and also to the local communities for their contribution in maintaining and conserving these services, Dr Palni stressed on the need to provide some sort of compensation to the local inhabitants. In order to tackle climate change we need to formulate strategies that consider local adaptive measures that have been traditionally used by the communities for the past many decades. He concluded on a positive note saying that the experiences shared during the deliberation will hopefully be adopted by IUCN as a part of a broad adaptation strategy across South East Asia.

Dr. J.S. Rawat provided a brief overview of the workshop and explained the aims, objectives and expected outcomes of the workshop. While highlighting the importance of the fragile Himalayan ecosystems in the services they provide and for all the vulnerable communities supported by it, he stressed the need to develop guidelines with suitable policy interventions for ensuring sustainable management of the natural and biological resources in the region. He emphasized that there is a great need for assessing the vulnerability of the ecosystem to the impacts of climate change and suggested the need to document the learning's from the ground and develop partnerships with various organizations to build resilience in the local communities. He encouraged the delegates to interact during the workshop as it would provide a chance to learn from each other as well as an opportunity to forge and build long term partnerships in tackling the issues of climate change.

Dr. R.S. Tolia, in his inaugural address stressed upon three important points: the need for stock taking of the past work, chapter 13 of Agenda 21 which talks about managing fragile ecosystems, and the identification of opportunities & challenges, especially recognizing the role of stakeholders as contributors. Dr Tolia suggested that economics should be considered when addressing environmental and adaptation concerns as it is integral to conservation and can bring in accountability. He suggested that while planning for the future it is also essential to look at what has worked and produced credible outcomes and also look at things which haven't. He ended by re-iterating Dr Palni's point that the Himalayan ecosystem is hugely neglected by the more developed nations, who attribute more funding towards adaptation measures in coastal ecosystems. Dr Tolia commended IUCN for collaborating with GB Pant Institute and endorsed that now is the time to put the theory into action.

Plenary Session

Chair: Dr RS Tolia

HIGHLIGHTS

Dr MM Kimothi set the tone for the workshop by discussing the vulnerability of Himalayan Ecosystem in his presentation *Himalayan Ecosystem Vulnerability to Climate Change Himalayas*. The presentation provided a summary of the various issues being faced by the fragile ecosystem and highlighted the major problems such as: glacier retreat, shift in vegetation, natural disasters, food security, water issues & climate change. He also touched on the fact that there are serious impacts on human health prone to adverse impacts of climate change on account of both natural and anthropogenic emissions. He suggested that there is need of utilizing research based approach for finding solutions to these problems. The following actions were suggested by Dr. Kimothi so as to reduce the vulnerability of the Himalayan ecosystem to the impacts of climate change.

- Identification of desirable adaptation policies to improve regional sustainability in snow glacier studies.
- Strengthening regional cooperation through established mechanisms for exchanging information among countries sharing the Himalayan ecology.
- Scientific assessment of likely impacts of climate change on key sectors, in particular water, biodiversity, food security, health and livelihoods.

Mr. Ganesh Pangare gave an overview of IUCN activities, its members, structure and mandate. He further added that IUCNs presence in the region is rather substantial and has the ability to convene support of multi-disciplinary stakeholders in order to scale up policies and provide a platform to exchange knowledge and share information. He gave the example of the Water and Nature Initiative (WANI), IUCNs global project from 2001 – 2011, combining water and its resource needs - water and nature, water for food and water for livelihoods. While explaining the role of the natural environment in building resilience to climate change and reducing vulnerabilities in communities, he stressed on the need to invest in the environment as a ‘critical national natural infrastructure’ integral to climate change adaptation portfolios. He mentioned that river basins and coasts, and their ecosystems, are natural infrastructures for coping with these impacts, as they provide water storage, flood control and coastal defence, all vital for reducing the vulnerabilities of communities and economies to climate change. He

emphasized on the need to manage and conserve water effectively, as water is at the centre of climate change impacts, and at the centre of adaptation policies, planning and action. The key messages were:

- Ecosystem based planning and management should be integrated in future policies for the Himalayan region.
- Resilience and reduced vulnerability to climate change can be achieved through promoting best practice in water and land management in the Himalayan watersheds.
- Increased participation of women in land and water management.

Mr. Shirish Sinha in his presentation on *Indian Himalayas Climate Adaptation Programme*, mentioned that the Swiss cooperation focus has now shifted more towards a programme focused in India on global public goods – looking at environment, energy and development and working at multi-stakeholder level activities and programs. India has the most advanced agenda in terms of climate change and energy to transfer knowledge and in knowledge management. Knowledge management issues like climate change adaptations, energy, disaster risk reduction, food security are to be addressed. Two new adaptation programmes: Indian Himalayas with climate resilience- climate insurance & renewable energy are being taken up. He explained the aim of the Indian Himalayas Climate Adaptation Programme, which is to enhance the resilience of vulnerable communities in the Himalayas and strengthen the knowledge and capacities of research institutions, communities, and decision-makers.

Dr. Shekhar Pathak stressed on the need to resolve questions especially those related to mountain peculiarities; its relation to glaciers & coastal areas. Eco-sensitive zones in the Himalayas are demarcated and have characteristics of low population pressure, high biodiversity & within the biosphere reserves the rights of local natives need to be addressed. Out migration has recently become an important topic of concern, it has been reported that this trend is highest in the Almora and Pauri Districts of Uttarakhand. In the Himalayan context, taking the examples of China & Kanchenjunga, he stated that people here must be actively involved in conservation processes and livelihood opportunities. He also suggested that good practices cannot be replicated in different ecological zones; therefore instead of duplicating them, local actors should modify them to suit their specifications.

SESSION 1: Climate Change Adaptation in Himalayas

Chair: Dr Lalit Pande, UKSN

Co chair: Ms Sonali Bist, INHERE

HIGHLIGHTS

Dr RS Rawal argued that while discussing and understanding the climate change perspective, it is essential to utilize a human centric approach. He stated that adaptation is an evolving process therefore a holistic view should be used to integrate different dimensions of adaptation. He emphasized on the fact that the changing climate had implications, both at species and at ecosystem level. The phenology, endemism, distribution and species pattern in the region has drastically changed over the last few years. Knowledge networks need to be enhanced and ensure that their inputs are based on different aspects of adaptation. He submitted that contribution from researchers needs to be synchronized and a forum of different stakeholders should be present so as to synthesize it all. He suggested the following measures to combat climate change in the Himalayas:

- Enhanced monitoring of Himalayan ecosystem to assess ecosystem health (changes in patterns and processes).
- Establishment of an observational and monitoring network to understand climate hazards and CC impacts to agricultural and socio-economic sectors.
- Establishment of a strong Himalayan biodiversity & climate change knowledge network.
- Draw from diverse sets of best practices performed by indigenous communities – indigenous knowledge systems.
- Design and implement programs of public awareness and capacity building.
- Establish linkages between conservation and economic growth – *recognize bio-resources as a source for sustainable income.*

Ms. Sejuti Basu in her presentation on *Adaptation and Climate change in the High Altitude Himalayas*, shared her experiences on some of the important activities being carried out by *Pragya*. She explained that *Pragya* followed a three pronged approach in tackling climate change issues, which considers local level mitigation to retard effects of climate change on the micro climate regimes, adaptation to climate

change at household, district and regional level and designing climate compatibility development. The model being used by *Pragya* looks at psycho-social adaptation, climate change adaptation and ecological-technical adaptation. She further mentioned that various issues like livelihoods, water issues, energy concerns, food security, health care, sustainable livelihoods & disaster risk reduction are interlinked and therefore Pragya adopts a holistic approach to CC adaptation. Some of the major activities towards building resilience and climate adaptability in the region include:

- Workshops on climate risks and adaptation with community participation, to develop strategies for awareness building.
- Preparing curriculum on climate change for delivery through ALHs and schools.
- Conducting hydrological research and revitalization of natural springs so as to conserve moisture for snow and water storage.
- Solar-Wind Hybrid System in Lossar village, Lahaul & Spiti.

Ms. Kiran Sharma explained Development Alternatives (DA), Community Led Assessment, Awareness, and Advocacy & Action Programme for Environmental Protection (CLAP) initiative in Himachal Pradesh. The main goal of the programme is to mobilize local communities, study altitudinal change and develop Himachal Pradesh into a carbon neutral State. The approach being used by DA uses the 4A viz.: systemic assessment and documentation of environment quality and carbon foot print, generate awareness among communities, decision makers and other stakeholders, establish a network of CBOs, CSOs to promote environmental advocacy for policy change and mobilize communities and panchayats to undertake environment improvement action at the local level. Major activities taken up by Development Alternatives for building adaptation in the communities are as follows:

- Prepared a hotspot list of panchayats to address problems and mahila mandals (community based rural women's' organization), youth clubs and eco clubs for sustainable achievement of goals.
- Assessment and documentation of environment quality and local knowledge, incentivizing efforts, increase capacity building i.e. network of conscious citizens. Generate awareness, advocacy for policy change, mobilization of communities and panchayats to take action at local level.
- Created a State level environment database including all stakeholders right from grassroots to policymakers.

SESSION 2: Climate Change and Water in Himalayas

Chair: Dr Shekhar Pathak, PAHAR

Co chair: Mr. Ganesh Pangare, IUCN

HIGHLIGHTS

Er. Kireet Kumar stated that the science of climate change is different from climate change politics. He said that the primary limitation for the study of climate change is unavailability of data on the Himalayan region.

While mentioning one of his studies on glacier retreat he said that temperature is not the only factor affecting glacier melt. He highlighted some of the issues related to water, including increasing atmospheric water vapor content, changing precipitation patterns, intensity and extremes of natural disasters, reduced snow cover - widespread melting of ice and changes in the runoff. To further emphasize the impacts of climate change on water, he quoted the following projections:

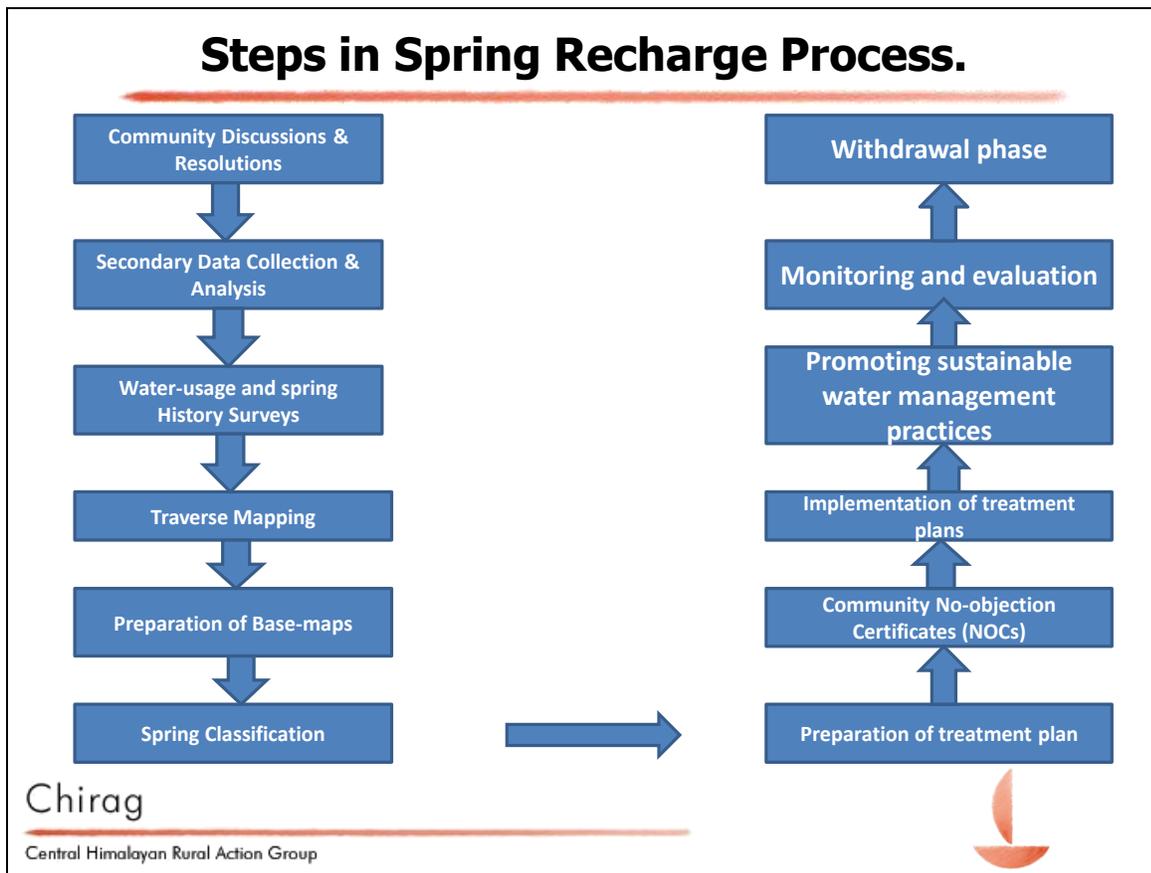
- Significant reduction in monsoonal and annual discharge of the rivers Chenab and Beas (*Bhutiyan et al. 2008a*) and increase in river flow of Satluj and Indus have been observed in past few years (*Rees and Collins 2006 & Singh and Jain 2002*).
- Change in hydrological properties affecting the operation of existing water infrastructure will aggravate the impacts of other stresses, such as population growth, changing economic activity, land-use change and urbanization.
- Increasing low flow of rivers and duration in water catchments will adversely affect livelihoods (water supply systems, irrigated agriculture).

He suggested that both anticipatory (conservation of water catchment areas, use of recycled water, flood control etc.) and reactive strategies (ground and rain water harvesting, alternate sources, management and maintenance of water supply systems, etc.) should be considered for adaptation.

Mr. Sachidanand Bharti argued that climate change is considered as a recent phenomenon but in truth historically it was considered as a fight for ones rights (*Hak Hakook*). He quoted that *Chipko Andolan* started because of the realization of the impacts of climate change. According to the local people, in previous years *Chaul, Khal* and *Naula* functioned and water was ample. Currently development for infrastructure & subsequent disruptions has led to an unstable environment. He suggested that both the local people & science have to work together to achieve sustainable development.

He shared his experience in which trees of Baanj (Oak/ Querecus), Kaafal (*Myrica esculenta*), Chir (*Pinus roxburghii*), Aonwla (*Embllica officinalis*) were planted in villages to recharge ground water. He also encouraged the villagers to dig small pits (*Jal Tarais*) in the forests of Gaadkhark, where the impact was immediate and evidently inspiring. A number a small nallahs (drains) have become perennial, which culminate into a big nallah known as *gaadgang* through his interventions. He endorsed that there was a need to integrate water conservation with land and forest conservation.

Mr. Vikram Kaushal in his presentation on *The Kumaun Spring Recharge Initiative*, shared *CHIRAGs* experiences on spring revival. He explained that many springs have dried in the last few years and how *CHIRAG* conducted a study on about 30 springs in 3 districts in *Kumaon*. Plantations, soil & water conservation, sustainable agriculture and catchment area protection were taken up by *CHIRAG* to recharge the drying springs. Technical scientific knowledge is being accumulated to assess the results of the interventions. The major steps undertaken to recharge springs is given in box 1.



Box 1. Steps in Spring Recharge Process 1

Session 3: Livelihoods and Food Security in the Context of Climate Change

Chair: Dr LMS Palni, GBPIHED

Co chair: Mr. BK Bhatt, MNRE

HIGHLIGHTS

Dr. A.K. Srivastava, talked about the Himalayan Agro–Eco system and discussed how factors such as: extreme variation in growing conditions, human and livestock population, remoteness & inaccessibility to good quality seeds, add to stress. He emphasized on the need to be conscious of our activities on resources carrying capacity and also to take into consideration local fluxes. Aspects like multiple use of harvested water, (combined with) community participation, economy generation activities e.g. fish cultivation, transfer of technology, use of polyhouse- were applied. Stressing on the need of conducting research and collecting information, he said that agriculture is also like any other industry, problems need to be looked at a deeper level. To manage agriculture sustainably in the context of climate change he suggested the following steps.

- Climate change analysis for enhanced production of existing cropping and developing suitable adaptation, mitigation and avoidance mechanism.
- Natural resource conservation, including water, perennial vegetation, soil and improved management of traditional farming.
- Rain water and nutrient management and efficient agronomic management including high yielding varieties and loss prevention.
- Integrated diversified farming, protected cultivation and secondary agriculture at farm families, village communities and micro-water shed level.
- Appropriate farm machinery specific to time management.
- Skill, community, intelligence, policy, market and infrastructure.

Dr. Y.K. Rai in his presentation *Sustainable Livelihood Enhancement their Technologies Intervention at Some Poverty Pockets in Sikkim Himalaya* talked about his experiences of improving livelihoods in Sikkim. As 46% of Sikkim’s land is under forest cover, the main question that arises is communities’ survival with little or no land for agriculture. Some of the interventions that have successfully been carried out in the State to improve livelihoods and food security are as follows:

1. Environmentally sound biofuel production in Sikkim, through the use of bioglobules, which are almost zero-cost, easy to handle, store, and transport and can be used for cooking and heating.
2. Promotion of apiary for a ready market and enhancing pollinator populations.
3. Framing options like polyhouses, poly tunnels and poly pits for higher yields and cropping beyond normal season.
4. Large cardamom agro-forestry to reduce fuel wood consumption and also to improve the quality of cardamom.

He concluded by stating that a large number of pockets in Sikkim are still poor and although Government agencies provide respite but permanent solutions still remains elusive. He suggested that to overcome the problem of poverty, technological interventions need to be proactively implemented.

Documentary on The Valley of Flowers: Trail Management experiment was shown which showcased how a 19 km route from Govindghat to Hemkund flooded with about 400 shops, hotels till 2002 was littered with a large amount of garbage and how collective efforts of the communities not only helped in managing the trail by clearing and segregating the waste, but also improved their livelihoods.

Session 4: Disaster Risk Reduction in Himalayas

Chair: Mr Vinay Tandon, PCCF, HP

Co chair: Dr M.M.Kimothi, USAC

HIGHLIGHTS

Dr. P.D. Mathur presented some of the activities taken up for Disaster Risk Reduction (DRR) in Uttarakhand. Factors enhancing vulnerability are that of unplanned growth, tectonic weakness, lack of land use policy and awareness, concentration of population and blatant disregard to regulations. He discussed some of the major disasters that occurred in the recent past in the State of Uttarakhand. Some of the activities undertaken by Disaster Mitigation & Management Centre are extending research facilities from different universities and institutions, publication of large number of books, reports, manuals, booklets, pamphlets, posters, calendars, painting books, short stories prepared for disaster awareness, GIS based inventory of resources and infrastructure prepared, and detailed seismic vulnerability assessment of four important buildings of Nainital. They have also incorporated Disaster management into the school

curriculum as well as setting up multi disciplinary institutions. He concluded by inviting departments and dignitaries to suggest any improvements that would help the efficiency of the DRR in Uttarakhand.

Dr. Abdhesh Gangwar talked on the *International resource Centre for Education for Sustainable Development*. He stated that the frequency and intensity of climate change related disasters will increase therefore preparedness is needed by looking at the vulnerabilities and carbon footprint of the various areas. The loss of human lives, houses, assets and socio- psychological losses; are pressing issues as they have been more frequent than in previous years. Due to this increase, he advocated the importance of education, awareness raising, capacity building and participation and community training.

The area on carbon limits is of high significance since our current carbon limit is 25% beyond the planets' carrying capacity. There is a need to cut C footprints and increase "hand prints" i.e. to strike a balance between the two. ESD is an important tool to reduce C foot prints and consequently, initiatives are being carried out to advocate and mainstream ESD into policy and reform processes.

For the entire Himalayan system there are gaps in areas of technology, data and research which need to be resolved. He shared the case study on the Kashmir Earthquake and discussed some of the activities undertaken like shelter support, water and sanitation and rehabilitation.

Dr. Arun Chandan stated that disasters not only upset normal day to day life but also wreak havoc on the lives and livelihoods of the people. The government's response in these situations tends to be focused on providing relief, rescue and rehabilitation, primarily in the initial phases. However, there is a lack of an appropriate long term approach to disaster risk reduction.

With the increase in frequency of disasters, it is imperative that long term planning with regard to risk reduction be undertaken. Disaster risk reduction plans should be thoroughly integrated with the development plans at different levels. He said that Mountain Forum Himalayas (MFH) facilitates dialogue between different stakeholders for a people-centered Disaster Management Policy in the State and also focuses its efforts and initiated strategies to promote community preparedness for disaster management.

Ms. Arpita J. Chhatrapati in her presentation *Cloud Burst 2010: Community led Recovery to Sustain Himalayan Ecosystem* stated that All India Disaster Mitigation Institute (AIDMIs) targeted community recovery through an ecology support approach and strengthening of local governance for Disaster Risk Reduction (DRR). Direct & indirect benefits like potable water & ecology based livelihoods were provided to the affected community for instance, reconstruction of the canal with the support of the community. In all the activities undertaken, damage & need assessments were performed by the locals.

She said that ecological support can help local farmers and labourers to ensure economic sustainability as well as, in the long term, reduce their vulnerability.. She stressed on the need to provide trainings to the community and related stakeholders including government officials on disaster preparedness for reducing disaster impacts.

Day 2: 11 August 2011

Session 5: Role of Forests and Biodiversity for Sustaining Himalayas

Chair: Dr RS Tolia , Uttarakhand

Co Chair: Dr JS Rawat, IUCN India

HIGHLIGHTS

Mr. Vinay Tandon in his presentation *Role of Forests and Biodiversity for Sustaining Himalayas* stated that a 12 Five Year Plan will provide more funding, especially for water resources. In the Himalayan context, water is critical and this factor makes forests important, since fresh water is essentially a forest product. There is a need to compensate these ecosystem service providers upstream for their conservation efforts. He then gave a brief overview of the Bio Carbon (BC) Project, which aims to sequester Green House Gases (GHG) by expanding forestry plantations on mostly degraded lands; apart from creating a carbon sink it also fulfills global and national environmental objectives. BC Project provides multiple benefits to the poor farmers through meeting their needs of timber, pulpwood, firewood; minor forest produce along with carbon credits (as cash incentive). He further added that the BC project is instrumental in mobilizing farmers, who were earlier reluctant to take part in Forest Department driven afforestation work due to lack of incentives.

Dr VRS Rawat talked on **REDD +**implementation and said that it is an iterative process, requiring regular appraisals and improvements at local level (i.e., REDD projects) via international (i.e., UNFCCC) ones. Involving and passing financial incentives to local communities can make the REDD + a success at local (sub-national) and national level. Forest dwelling communities in India have been successful in transforming the deteriorating condition of their natural forests through sustainable management, thereby avoiding deforestation and the subsequent release of CO₂ emissions into the atmosphere. He further said that in Uttarakhand; 5,449.6 sq km (15.73% of total forest cover) is under Van Panchayats and there is excellent scope and opportunity for integrating the REDD + initiative within the community managed forest and JFM activities. For this purpose, methodologies and modalities for a procedural framework will need to be worked out to ensure people's participation and sharing of the benefits accruing from REDD + incentives.

Dr. Pushkin Phartiyal in his presentation on *Van Panchayat Institutional Governance for Green Economy & Biodiversity Conservation* discussed some of the important aspects of the obsolete institution.

VPs have to be strengthened for livelihood & biodiversity conservation. It was advised by Dr Tolia that 16% of forest in each State should be under VP and each village should have its own VP chosen in regular periodic elections. There are many shortcomings being observed in the management of the Van Panchayats (VP), for instance; no timely elections, lack of financial resources, lack of sensitivity about VP significance, shortage of skilled & well oriented human resources, less attention on delineating the boundaries/dealing with encroachment of VPS, non-availability of official documents, inadequate representation of women, etc. He stated that green economy is possible through VP by utilizing fodder banks, organic farming, resin tapping, ecotourism, energy production from Chir, improving water mechanism etc. Minimum area of VP in context to dependent population should be delineated & there is a need for policy intervention work on forest as C sinks, Incentivize community members on management, conservation-reduction of carbon also, there should be consensus on timely election for VP throughout State on a given time frame.

Mr. Pijush K Dutta shared WWFs experiences on community based conservation in Arunachal Pradesh. He mentioned that the State is bestowed with rich flora & fauna; however there has been a change in the relationship of the community with its forest resources. In the past there was less demand & requirements but at present, pressure on forests' resources has increased. Some of the activities taken up by WWF to promote conservation are follows:

- Community planning and mobilization through a series of discussions, baseline survey and feasibility study.
- Capacity development for management of the community conserved areas through training on management and finance issues.
- Capacity building of villagers on basic survey techniques, management of various CBT services for the selected villagers.
- Development of facilities for income generation like high altitude camping material, home stay and restaurants, solar water heater facility etc.

He then stated that the project has been successful in improving conservation status in the villages as there is a ban on hunting and collection of medicinal plants by herders during summer grazing. Control measures such as the provision of penalties and the ban on collection of firewood for commercial purposes, makes the villagers feel a sense pride and ownership in their wild life. New livelihood opportunities are created, for instance a yak dung briquette unit has been installed with raw materials of

oak and pine leaves. WWF is planning to strengthen the project and will capacitate local indigenous communities in Arunachal Pradesh to sustainably manage 1.5 million ha of high altitude areas under their traditional ownership for long-term ecological and economic benefits.

Session 6: Renewable and Ecosystem based Energy

Chair: Mr AR Sinha, APCCF Uttarakhand

Co chair: Mr Shirish Sinha, Embassy of Switzerland

HIGHLIGHTS

Dr. B.K. Bhatt stated that Himalayas can be considered as an ideal niche for the deployment of renewable energy technologies e.g. solar, biomass & hydro, as it has a large renewable natural resource base. Most of the remote villages have not been electrified and only the more accessible villages have been connected with grid electricity, however they are of poor quality with high voltage fluctuations and often left for long hours (and days) with no supplies. Emphasizing on the gender dimension, he said that since women have traditionally shouldered the responsibility for procuring fuel wood for their homes, they also are regularly exposed to harmful indoor air pollution which leads to health risks, and increased mortality rates. He mentioned that renewable energy has huge potential in meeting the basic needs of the mountain community for cooking and space heating along with sustaining and supporting economic activities. To realize the potential the action plan should be systematic and include the following:

- Renewable energy must be seen as economically viable and an essential ingredient in the energy planning of the region and should not remain a marginal consideration.
- Assessment of baseline scenario: knowledge of present energy consumption patterns at the micro level.
- Renewable energy technology packages: Compile information about specific technology packages suitable for the region, particularly at the household level for livelihood activities.

Er. Yogeshwar Kumar, in sharing his experiences on community owned micro hydropower; said that in a modern context there has always been a quest for low cost renewable energy. Micro hydro power has the potential for improving quality of life, supplementing traditional livelihoods, opening new avenues of employment and conserving the forest and the environment. He then provided an overview of the basic

requirements for community owned and managed hydropower schemes which include: a local organization with a strong core/anchor group, appropriate technology, capacity building and high plant load factor. Throughout the year water is available for eight months in all villages and thus the Government can save power from the grid by using micro hydro power. He concluded by saying that capacity building is the biggest challenge in making community owned micro hydropower sustainable.

Mr. Jagdish Bhandari shared his organizations' experience in biogas plants in the hills by showing documentary/ film on bio gas plants. Bio gas plants can reduce GHGs like methane etc, as well as usage of wood, reducing drudgery of women in collecting fuel wood. Arguably biogas production is reduced during the winter on the hills yet specific measures adopted by beneficiaries can overcome this limitation. Use of biogas is especially useful for farmers who are engaged in rearing cattle for their livelihood.

Session 7: Strengthening Local Institutions and Building Capacities of Local Women

Chair: Dr PP Dhyani, GBPIHED

Co chair: Mr Abdhesh Gangwar

HIGHLIGHTS

Dr. S.K. Upadhyay in his presentation, *Watershed Development through a Decentralized Approach*, stressed on the need to effectively involve local institutions and communities in development activities. He stated that the involvement of local communities develops a sense of ownership and thus allows the local communities to take responsibility in managing their resources. He shared the objective of *GRAMYA*, which is to improve the productive potential of natural resources and increase incomes of rural inhabitants in selected watersheds through socially inclusive, institutionally and environmentally sustainable approaches. Traditionally sustainable development of rural areas was carried out in a top down manner driven by supply. Nowadays focus is based on decentralized options, a down up & demand driven approach.

In the hills 49% of total populations are women with 60% literacy which is impaired by their drudgery. Panchayati Raj initiative takes a decentralized approach when it selects beneficiaries and implements processes. Women take initiative in sharing their ideas and views in Aam sabhas where valuable group funds are raised, participatory monitoring and evaluation is performed, initiatives towards fuel switch are made and also agribusiness and livelihood initiatives are taken up.

Mr. A.K. Banerjee shared successful case studies of involving local communities in conservation and improving livelihoods in his presentation *Self-Supported Community Based Models for Sustaining Himalayan Environment*. He stated that human beings are the best and greatest form of natural resources and therefore offer long lasting public support through initiatives that improve their income as well as conserve nature, e.g. an eco-fee for women who upkeep treks for tourists can make the programmes successful. Sharing case studies on Nanda Devi biosphere reserve, he said the *Van Mahila Mangal Dal* was made for eco-tourism and ever since 2003 to 2009 the income stakeholders is rising. There are regulation committees in villages, wool carding machine for women, competitions and other activities are organized, women who worked with them are recognized by honoring them. Waste management is a huge issue therefore certain initiatives have been carried out by the community i.e. toys are made out of garbage as a part of capacity building. He also shared UFDs experiences in the Valley of Flowers and in Dhanulti where the local communities are efficiently supporting conservation and waste management.

Ms. Sonali Bist stressed on the need to strengthen local institutions and in building capacities of local women for sustainable growth and development of the Himalayan States. Sustaining the Himalayan ecosystem is the responsibility of a range of actors from policymakers to community members and local institutions and its members. Women, in particular, have a major role and responsibility, for which they need to be prepared and their competence needs to be upgraded on an ongoing basis. She shared INHEREs work in developing skills of the local people in the field of organic agriculture, agro biodiversity, mixed forestation, soil and water conservation, protection from forest fires, etc. Stressing on the need to take up soil and water conservation measures, she said that this can be carried out through community based watershed management following a ridge to valley approach. Women self-help groups, youth groups, Van Panchayats have a special responsibility for fire prevention and protection measures.

Ms. Sunita Kashyap presented a documentary film on the role of village women in income generation & capacity building. Through raising awareness for women and their involvement in income generating activities like pickle & preservatives, grains selling and woolens with their brand names, this group of women has been registered as a producer company in 2009.

Dr. Ranjan Joshi talked about the issues concerning tourism in Sikkim in his presentation on *Climate Change- Experience Sharing for Adaptation in Tourism Management in Sikkim Himlaya*. While discussing the implications of climate change on tourism he stated that climate change would enhance the prospects of tourism in Himalayas, hence there is a need to understand the impacts of this possible influx and how we can adapt. Growth of tourism depends on the physical, social and biological carrying capacity of destinations and therefore needs to be sustainable.

He further added that general trends of warming will lead to a spurt in tourist inflow and also proliferation of tourist seasons, and expansion & enhanced scope of tourism during winters. Stressing on the need to manage tourism sustainably he said that due weightage should be given to cultural and environment concerns, and community interests/ welfare of the destination areas. He also suggested that to ensure sustainability of tourism, suitable adaptations in policy, institution governance, and conservation management should be made.

Mr. Rahul Kumar, in his presentation on, *Management and marketing of NTFP based on value chain assessment-Tejpat*, shared his experiences on the value chain assessment of bay leaf(*Cinnamomum tamala*), carried out in Chamoli district of Uttarakhand through village level orientation including SHGs. He explained that the project aims at developing a knowledge bank on bay leaf and various practices related to different aspects of bay leaf chain; an initiative implemented in Nizmoola Valley, Chamoli District, Uttarakhand.

He stated that a pro-poor value chain development provides maximum benefits to the targeted poor collectors in accordance with social, economic and ecological sustainability. Stressing on the fact that the bay leaf chain is very much unorganized and secretive for the upstream chain actors, maximum benefit is vested with the wholesalers and mediators. He said that the Forest Department has a key role in identifying the potential patches and giving permission for the harvest. The Forest Department undertook capacity building and strengthening of village level institutions and a bay leaf value chain study through market practices. Future aspirations are to provide more training in harvesting and packaging and value addition by conversion of bay leaves into powder and oil form.

SESSION SUMMARY and DISCUSSION POINTS

Mr Ganesh Pangare summarized the various sessions and mentioned the following points

- There is an urgent need to strengthen dialogue between local communities and multi-stakeholder groups, , and to work with the local communities to integrate new technologies which cannot be under estimated or ignored.
- The economical aspect of environmental conservation cannot be neglected, incentives are needed which leads to livelihoods and strengthens community conservation.
- Adaptation strategies should be developed for the vulnerable communities to cope with climate change and issues related to migration.

- Women are the backbone of conservation and they have an integral role in the mountain culture and economy and thus they should have equal participation in decision making and planning.
- The Food-Water-Energy nexus is a key philosophy to integrate the various issues together instead of looking at them in isolation.
- Existing successful interventions need to be scaled up across the region and suitable guidelines should be in place to include these in Government policies and action plans.

DISCUSSION POINTS

The various points discussed during the course of various sessions are given below.

- Ecological limits need to be defined and the role of organizations such as IUCN and governmental bodies is to come up with these limits.
- Migration needs to be promoted to build capacities and not all issues related to migration are necessarily negative.
- Adaptation has to be highly local – Himalayan States need to approach the Ministry nodal offices directly.
- Climate change impacts on water quality are poorly understood, and serious gaps lie in existing knowledge and projections in terms of observations and research needs related to climate change.
- An integrated water resources management strategy needs to be implemented at different levels, right from domestic water supply and usage, to watersheds, river basins and catchments.
- Develop a suitable platform for cooperation and collaboration between institutes across the nation and regions, to develop strategies to enhance coping capabilities of individuals and communities to climate variability.

Panel discussion: Mainstreaming and up scaling of Best Practices into Policies for Sustaining the Himalayan Ecosystem

Chair: Dr R S Tolia; Co chair: Dr J S Rawat

Panelists: Mr Vinay Tandon, Ms. Sonali Bisht, Dr LMS Palni, Mr Joydeep Gupta. The following points emerged during the course of the discussion

- Multi stakeholder dialogue is needed with participation of NGOs, community and government expertise to sustain and to scale up the processes.
- Ecosystem resilience has a limit that needs to be addressed. Ecosystem based planning and management needs to be integrated in future policies for the Himalayan region.
- Case studies can be compiled with all the clippings in a web portal. Water and energy are important issues, funds on energy in terms of human resource development should be raised and cultural diversity should be conserved even in hamlets.
- Indigenous practices should be documented and scientifically validated.
- Climate change should be included in curriculum at all levels of education.
- Community based water conservation and initiatives should be given recognition and be included in adaptation policies and guidelines.
- Ecosystem based planning should be present with the forest management code or manual based on changing needs and change in working plans with a climate change perspective.

The event ended with a vote of thanks by Er. Kireet Kumar. The workshop was considered a success by all towards increasing awareness regarding the existing best practices in the Himalayas and a positive step towards the documentation of knowledge for sustaining the Himalayan ecosystem.

List of abbreviations

IUCN: International Union for Conservation of Nature

VP: Van Panchayat

RE: Renewable Energy

CC: Climate Change

NGO: Non Government Organization

CSO: Civil Society Organization

UFD: Uttarakhand Forest Department

C: Carbon

REDD: Reducing Emissions from Deforestation and Degradation

JFM: Joint Forest Management

GIS: Geographic Information System

ESD: Education for Sustainable Development

DRR: Disaster Risk Reduction

BC: Bio Carbon

GHG: Green House Gas

Annex 2- Agenda

| National Workshop on Sharing of Lessons and Wise Practices for Sustaining Himalayan Ecosystem GBPIHED, Almora 10-11 August, 2011 Agenda | |
|--|---|
| Time | Programme |
| DAY 1, 10th August, 2011 | |
| 9.30 – 10.00 | Registration and Tea |
| 10.00 – 10.30 | Inaugural Session Opening Remarks - Dr LMS Palni, GBPIHED Workshop Introduction - Dr JS Rawat, IUCN India Inaugural Address - Dr RS Tolia, Chairman, CHEA & CInI (Former Chief Information Commissioner & Chief Secretary, Uttarakhand) |
| 10.30 – 11.30 | Plenary Session <i>Chair: Dr RS Tolia Chairman, CHEA & CInI</i> Himalayan Ecosystem Vulnerability to Climate Change Dr MM Kimothi, U-SAC Indian Himalayas Climate Adaptation Programme Mr Shirish Sinha, Embassy of Switzerland IUCN Water and Nature Initiative Mr Ganesh Pangare, IUCN Sustaining the Himalayan Ecosystem- Experience from field Dr Shekhar Pathak, PAHAR |
| Session 1 11.30 – 12.30 | <i>Chair: Dr Lalit Pande, UKSN</i> <i>Co chair: Ms Sonali Bist, INHERE</i> 1. Climate Change Adaptation in Himalayas - Dr R S Rawal, GBPIHED <i>1.1 Lessons and experiences from field:</i> Ms Sejuti Basu, PRAGYA Ms Kiran Sharma, Development Alternative |
| 12.30 – 12.40 | Refreshment Break |

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| <p>Session 2 12.40 – 13.40</p> | <p><i>Chair: Dr Shekhar Pathak, PAHAR</i> <i>Co chair: Mr Ganesh Pangare, IUCN</i></p> <p>2. Climate Change and Water in Himalayas – Er Kireet Kumar, GBPIHED</p> <p><i>2.1 Lessons and experiences from field:</i> Mr Sachidanand Bharti, State Planning Commission, Uttarakhand Mr Vikram Kaushal, CHIRAG</p> |
| <p>13.40 – 14.30</p> | <p>Lunch</p> |
| <p>Session 3 14.30 – 15.30</p> | <p><i>Chair: Dr LMS Palni, GBPIHED</i> <i>Co chair: Mr BK Bhatt, MNRE</i></p> <p>3. Livelihoods and Food Security in the Context of Climate Change - Dr AK Srivastava, VPKAS</p> <p><i>3.1 Lessons and experiences from field:</i> Dr YKRai, GBPIHED Movie on Valley of Flower, Uttarakhand Forest Department</p> |
| <p>Session 4 15.30 – 16.30</p> | <p><i>Chair: Mr Vinay Tandon, PCCF, HP</i> <i>Co chair: Dr MM.Kimothi, USAC</i></p> <p>4. Disaster Risk Reduction in Himalayas – Mr P D Mathur, UNDP Dehradun</p> <p><i>4.1 Lessons and experiences from field:</i> Dr Abdhesh Gangwar, CEE Dr Arun Chandan, Mountain Forum Himalayas Ms Arpita J. Chhatrapati, AIDMI</p> |
| <p>16.30 – 17.30</p> | <p>Discussion</p> |
| <p>19.00 – 20.15</p> | <p>Cultural Evening</p> |
| <p>20.30</p> | <p>Dinner at Guest House</p> |

| DAY 2, 11th August 2011 | |
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| Session 5 9.30 – 10.30 | <p><i>Chair: Mr Sachidanand Bharti, State Planning Commission, Uttarakhand</i></p> <p><i>Co chair: Dr JS Rawat, IUCN India</i></p> <p>5. Role of Forests and Biodiversity for Sustaining Himalayas - Mr Vinay Tandon, PCCF, HP</p> <p><i>5.1 Lessons and experiences from field:</i></p> <p>Dr VRS Rawat, ICFRE</p> <p>Dr Pushkin Phartyal, CHEA</p> <p>Mr Pijush Kumar Dutta, WWF</p> |
| Session 6 10.30 – 11.30 | <p><i>Chair: Mr AR Sinha, APCCF Uttarakhand</i></p> <p><i>Co chair: Mr Shirish Sinha, Embassy of Switzerland</i></p> <p>6. Renewable and Ecosystem based Energy - Dr B.K.Bhat, MNRE, GoI</p> <p><i>6.1 Lessons and experiences from field:</i></p> <p>Er Yogeshwar Kumar, New Delhi</p> <p>Mr Jagdish Bhandari , Pan Himalayan Grassroots Development Foundation</p> |
| 11.30 – 11.45 | Refreshment break |
| Session 7 11.45 – 12.45 | <p><i>Chair: Dr PP Dhyani, GBPIHED</i></p> <p><i>Co chair: Mr Abdhesh Gangwar</i></p> <p>7. Strengthening Local Institutions and Building Capacities of Local Women – Dr SK Upadhyay, UWMD</p> <p><i>7.1 Lessons and experiences from field:</i></p> <p>Ms Sonali Bist, INHERE</p> <p>Ms Sunita Kashyap, Pan Himalayan Grassroots Development Foundation</p> <p>Sh. Ranjan Joshi GBPIHED</p> <p>Mr A K Banerjee, UKFD</p> <p>Mr Rahul, UKFD</p> |
| 12.45 – 13.45 | Lunch |
| 13.45 – 14.00 | Sessions Summary : Mr Ganesh Pangare, IUCN |
| 14.00 – 15.20 | <p>Panel discussion: <i>Chair Dr R S Tolia; Co chair: Dr J S Rawat</i></p> <p>Mainstreaming and up scaling of Best Practices into Policies for Sustaining the Himalayan Ecosystem</p> |

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| | <p>Mr Vinay Tandon</p> <p>Ms Sonali Bist</p> <p>Dr LMS Palni</p> <p>Mr Joydeep Gupta</p> |
| 15.20 – 15.30 | <p>Vote of thanks: Er Kireet Kumar, GBPIHED</p> <p>Rapporteurs - Sonam Rabgye, IUCN ARO and Upasana Joshi, IUCN India</p> |
| 17.30 | High Tea |

Annex 3- Photographs



Photo 1: Dr LMS Palni, Dr JS Rawat, Dr RS Tolia and Dr Pathak during the inaugural session



Photo 2: Dr JS Rawat, Dr RS Tolia, Dr LMS Palni and Dr Pathak during a session



Photo 3: A section of the participants

Annex 4: List of participants

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