

Consultation Workshop Report

Expert Consultation on
Transboundary Biodiversity
Management in Kangchenjunga
Landscape

Gangtok, Sikkim, India
16–18 August 2012

Organised by

International Centre for Integrated Mountain Development (ICIMOD) and
G.B. Pant Institute of Himalayan Environment and Development, Sikkim Unit, Sikkim
with support from Department of Forest, Sikkim and West Bengal

ICIMOD
30

THREE DECADES
FOR MOUNTAINS AND PEOPLE



About ICIMOD

The International Centre for Integrated Mountain Development, ICIMOD, is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush Himalayas – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and based in Kathmandu, Nepal. Globalization and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities, while addressing upstream-downstream issues. We support regional transboundary programmes through partnership with regional partner institutions, facilitate the exchange of experience, and serve as a regional knowledge hub. We strengthen networking among regional and global centres of excellence. Overall, we are working to develop an economically and environmentally sound mountain ecosystem to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now, and for the future.



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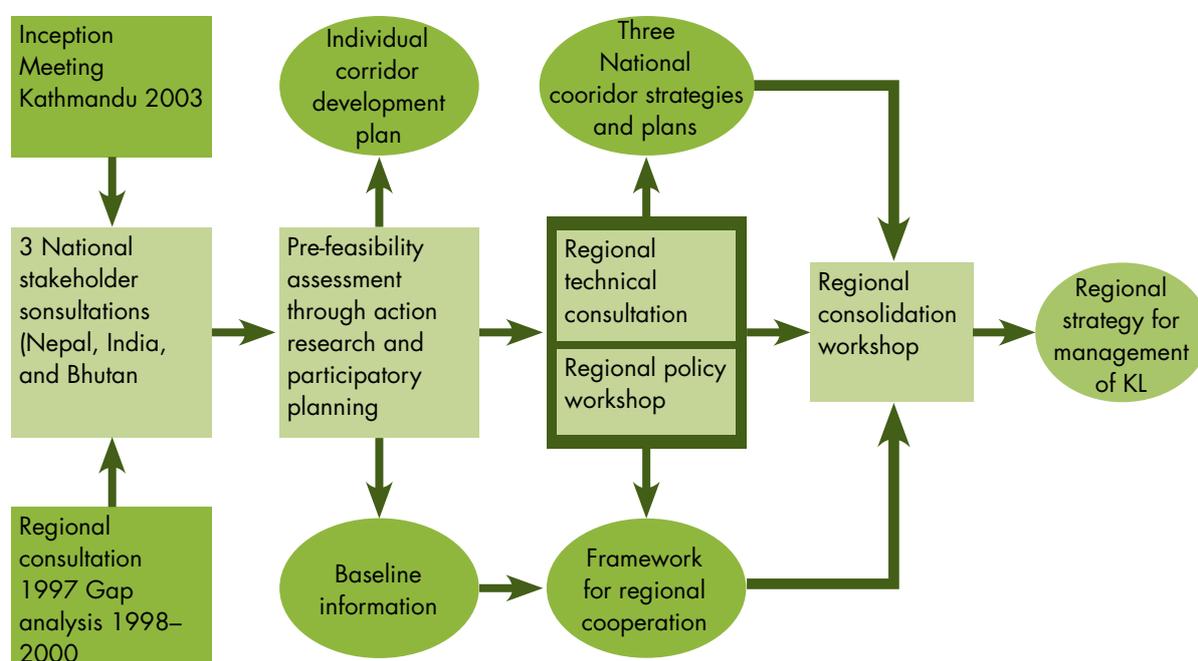
Background

The Hindu Kush Himalayan (HKH) region forms one of the most fragile mountain chains of the world. The region is endowed with diverse ecosystems that provide numerous goods and services to the millions of people within and outside its geographical boundaries. However, population growth and increasing anthropogenic pressures on these resources are increasingly besieging the irreplaceable biodiversity of the region. The HKH region has four of the 34 global “Biodiversity Hotspots” harboring the largest number of endemic and endangered species that are subject to acute human pressure. On account of its conservation importance, about 39% of its geographical area has been brought under protected areas (PAs) network. Many of these PAs are transboundary in nature and are important for more than one country in terms of conservation values.

The International Centre for Integrated Mountain Development (ICIMOD), being an intergovernmental, regional knowledge centre, has been engaged in developing transboundary landscapes applying ecosystem approach in the HKH since the last fifteen years. For this purpose, seven transboundary landscapes have been identified in the HKH region, and one of which is the Kangchenjunga landscape (KL hereafter). The KL is an important biodiversity and culturally rich landscape in the eastern Himalayas, shared by Bhutan, India and Nepal. The three nations, being the signatories of the CBD, have given significant attention towards conserving biodiversity in the landscape, setting aside 42% of the KL as protected areas. However, there are several challenges that have limited the effectiveness of the PAs for conserving biodiversity, thereby hindering effective biodiversity management in the landscape. Habitat loss and fragmentation, combined with unsustainable use of natural resources, continue to place high pressure on ecosystems and services derived from them.

The conservation and management of biodiversity at a transboundary landscape level in KL started in 1997. Since then, many stakeholders have participated in the process, seeking to develop effective framework for actions in the KL. In 2002, ICIMOD along with its key partners initiated the participatory planning and baseline development process which lead to a technical regional workshop in 2006 in Bhutan to establish a regional framework of cooperation for implementing the CBD in the KL and to create a blueprint for cooperation between countries. The stakeholders included government agencies, regional environmental organizations, international foundations, and academic institutions. Prior to this regional workshop, there were a series of meetings at all levels, ranging from village level discussions to national and regional consultations that helped formulate the “Framework for implementation of the Convention on Biological Diversity in the KL”. Substantial work also went into delineating six potential ‘conservation corridors’ are linking nine of the existing 15 PAs in the KL. The identified corridors covered an additional 11% of the land area in the KL, which if taken under formal protection would increase the area coverage under protection to 53%. Unlike the core protected areas, however, corridors in the KL are meant for promoting both biodiversity conservation as well as sustainable use by local communities. The detailed process of consultations, research and planning for KL since 2009 is summarised in Figure 1.

Figure 1: A schematic overview of participatory process for KL initiatives since 1997



Based on the progress made till date, an **Expert Consultation on Transboundary Biodiversity Management in Kangchenjunga Landscape** was organized by ICIMOD and hosted by the GB Pant Institute of Himalayan Environment and Development (GBPIHED) in India, with support from the Forest Departments of Sikkim and West Bengal. The objectives and the outputs of the consultation meeting are briefly described in the following section.

Objectives of the Consultation

The overall objective of the consultation was to provide a common platform to share the progress made so far in the KL, to discuss key challenges and agree on future course of action to implement the Kangchenjunga Landscape initiative for biodiversity management and climate change adaptation. The specific objectives were:

- to provide an update on the current status and overall progress of programme activities at regional and national levels
- to discuss the steps to develop Feasibility Assessment Report, Comprehensive Environmental Monitoring Strategy, Conservation Strategy, and the elements of Regional Cooperation Framework, and
- to develop and agree upon a common approach and timeline.

Organization of the Consultation

About 40 participants representing academic and research institutes; state and national Governments; local, regional and international organisations; and ICIMOD gathered for the consultation (Annex 1-list of participants) in Sikkim, Gangtok, India. The regional consultation was organized into three sessions: inaugural, technical and concluding sessions (Annex 2-detailed programme structure).

The inaugural session was graced by Mr Bhim Prasad Dhungel, Minister of Tourism, Forests, Environment, and Wildlife Management of the Government of Sikkim, India; Dasho Sherub Gyaltshen, Secretary, Ministry of Agriculture and Forests, Royal Government of Bhutan; Dr BMS Rathore, Joint Secretary, Ministry of Environment and Forests, Government of India; Mr Krishna Acharya, Director General, Department of National Park and Wildlife Conservation, Government of Nepal; Mr Thomas Chandy, Principal Chief Conservator of Forest (PCCF), Department of Forests, Government of Sikkim; Dr LMS Palni, Director, GBPIHED; and Dr Eklabya Sharma, Director Programme Operation, ICIMOD. Their messages acknowledged the challenges faced by the existing protected areas and the timely effort of ICIMOD to develop a programme to strengthen transboundary biodiversity conservation and management in the KL. The speakers highlighted on the changing dynamics of resource management issues and challenges while also emphasizing on the requirement of a different approach of management through regional cooperation and people's participation. They also brought forward examples of conservation measures practiced by individual countries sharing this important landscape and suggested to develop the programme through a consultative process as done in the Kailash Sacred Landscape.

Highlights of the Technical Session

The technical session dealt with setting the context of this expert consultation through a presentation by Dr Nakul Chettri with highlights on the process and progress made on action research, generation of baseline information and pre-feasibility assessment at the landscape level. Dr Gopal Rawat brought the learnings from the Kailash Sacred Landscape, and biodiversity conservation efforts from the States of Sikkim and West Bengal by Pradeep Kumar and Siddhartha Roy, respectively, also helped set the context in terms of biodiversity. This was followed by country-wise updates on the progress made in terms of information gathering, consultations and pre-feasibility assessments conducted by Bhutan, India and Nepal. These updates were followed by country-wise group discussion and presentations on the critical elements of the feasibility study, conservation strategy, comprehensive environmental monitoring strategy, and Regional Cooperation Framework (Annexes 3-6). These contents were discussed along with the proposal for identifying the focal institute and the timeline for the preparatory phase.

Key points from the technical session:

- Human-wildlife conflicts in terms of elephants need to be considered in this landscape, together with consideration of conflicts/damage from small mammals such as wild boar, monkeys etc. Also, there is need to expand the boundary of the landscape considering movement of wildlife, with particular emphasis on the elephant corridor between Nepal and India.
- Collective wisdom of countries could help address challenges with regards to grazing, particularly looking into how various practices have been translated into policies in the countries.
- Cross-regional learning across other landscapes in the HKH is crucial and should be promoted early in the process.
- It is essential to include communities in the process of conservation motivating them through opportunities to enhance their livelihoods – for example, involving communities to stop poaching activities in Sikkim.
- Delineation of KL will be part of the preparatory process where countries would have an opportunity to redefine the current working boundary and add new area if necessary.
- Technological innovations and participation at the local level should not be ignored.
- Functionality of corridors will be different for different countries. Country specific criteria for identifying corridors and individual management actions will have to be drafted. Appreciation was shown towards the Bhutan Biological Conservation Corridors (B2C2) concept. A proposal was made for including an additional corridor from Toorsa Strict Nature Reserve (TSNR) to Gedu in Bhutan.

- Understanding of several other distant stakeholders from sectors such as Defence, Energy, and Transport have to be taken into account.
- Ways to compensate people in the mountain landscapes for their conservation efforts need to be explored.

Conclusion and Way Forward

In the concluding session, the Ministry of Environments and Forests, Government of India, offered immediate support for addressing the most pressing issues such as dealing with elephant migration and conflicts, and urged the participants from India to explore such prospects. It was indicated that the corridors and connectivity highlighted by the KL is crucial for the future in coping with impacts imposed by different drivers of change. The point on balancing conservation with development was brought forward while discussing issues over payment for ecosystem services, together with the need to document small-scale examples of such mechanisms from across the region. Furthermore, the need for consensus over cross-border issues and for collaboration to address such issues was reiterated. Good facilitation by ICIMOD and inclusive approach of KL countries would be a key to advance the KL initiative. Member countries were encouraged to channelize internal funds to complement the actions intended for the preparatory phase. The government officials representing each country expressed their commitment to support the process of the preparatory phase and to work towards the larger vision of biodiversity conservation and ecosystem management in the entire landscape, with the ultimate aim of enhancing the well-being of local people. There was consensus among all that changing dynamics in mountain landscapes, such as the KL, require a more participatory management approach for common resources facilitated through regional cooperation, and that government endorsement of the regional cooperation framework is crucial. With a positive note that KL initiative would provide an opportunity to strengthen bilateral ties on transboundary issues, biodiversity conservation, research and capacity building among the three participating countries, the participants decided on the following action milestones and timelines as presented in Table 1. It was also agreed that the participatory and consultative process of preparing the transboundary initiative during the next 18 months would be led by ICIMOD; that the country consultations would be organized by the nodal institution in each country; that regional workshops would be organized by ICIMOD with support from the host country; and that the timelines with regard to each action should be respected.

Table 1: Agreed milestones and timelines by the participants of the three participating countries

S No.	Action Milestones	Responsible Institutions	Timeline
1	Finalize the outline of feasibility report, CS, CEMP and RCF	ICIMOD	30 September 2012
2	Each country forms the team of institutions	Countries	15 October 2012
3	Delineate the boundary for KL (small team to meet)	Countries & ICIMOD	31 December 2012
4	Conduct national stakeholder consultations to discuss Feasibility Assessment	Countries	February-March 2013
5	Draft Feasibility Assessment Report	Countries	15 May 2013
6	Conduct 2nd regional workshop for finalization of Feasibility Report	Countries & ICIMOD	August 2013 (in Bhutan)
7	Synthesize Regional Feasibility Report for KL (at landscape level)	ICIMOD	15 October 2013
8	Drafts country CS and CEMP	Countries	15 Dec 2013
9	Conduct country consultation on CS and CEMP	Countries	February-March 2014
10	Synthesize Regional CS & CEMP for KL (at landscape level)	ICIMOD	April 2014
11	Draft RCF	ICIMOD	April 2014
12	Conduct 3rd Regional Workshop for finalization of CS, CEMP, RCF	ICIMOD & Countries	May 2014 (in Nepal)
13	Finalize Regional Cooperation Framework	ICIMOD	15 June 2014
14	Government consultation on RCF and endorsement	ICIMOD & Countries	Complete by December 2014
15	Conduct regional proposal development workshop (regional in March 2014) and get the draft proposal ready	ICIMOD	May 2015

Annex 1: List of Participants

INDIA

Mr Bhim Pd. Dhungel
Honorable Minister
Tourism, Forests, Environment & Wildlife Management
Government of Sikkim
Tashiling, 737101, Gangtok, Sikkim

Mr Thomas Chandy, IFS
PCCF, Department of Forests, Environment and
Wildlife Management Government of Sikkim
Forest Secretariat, Deorali, Gangtok 737101, Sikkim,
India

Shri BMS Rathore
Joint Secretary
Ministry of Environment and Forest
Government of India
Paryavaran Bhawan, CGO Complex Lodhi Road
New Delhi-110003 India
Tel +91-11-24361774
Email: bms.rathore@nic.in

Dr P K Mathur
Sr. Professor & Scientist 'G'
Landscape Level Planning and Management
Department
Wildlife Institute of India, P.B.18, Chandrabani,
Dehradun - 248 001, Uttarakhand, India
Tel # 0091-135-2640111 to 2640115 (Ext. 203)
Fax # 91-135-2640117
Mob 9412075384
Email: mathurpk@wii.gov.in

Dr R K Agrawal
Deputy Secretary
Ministry of Environment and Forest
Government of India
Paryavaran Bhawan, CGO Complex Lodhi Road
New Delhi-110003, India
Email: rk.agrawal@nic.in

Dr L M S Palni
Director, G B Pant Institute of Himalayan Environment
and Development
Kosi Katarmal, Almora, Uttaranchal
Tel: +91-5962- 241015
Fax: 05962-241150
Email: psdir@gbpihed.nic.in
lmspalni@rediffmail.com

Ms Sumita Ghatak IFS
Divisional Forest Officer
Wildlife II, Jalpaiguri
Email: ghataksumita@gmail.com

Siddhartha Roy, IFS
Divisional Forest Officer
Wildlife Division I
Bengal Natural History Museum
Meadow Bank Road
Darjeeling 734101
Email: dfowildlife1@gmail.com

Mr Sangay Gyatso Bhutia
Divisional Forest Officer cum Field Director
Khangchendzonga National Park and BR
Department of Forest
Government of Sikkim
Email: dfoknpkbr@yahoo.in

Dr Pradeep Kumar, IFS
Chief Wildlife Warden
Department of Forests, Environment and Wildlife
Management Government of Sikkim
Forest Secretariat, Deorali, Gangtok 737101,
Sikkim, India
Email: pradeepifs@gmail.com

Ms Priyadarshani Shrestha
WWF Sikkim
Deorali, Sikkim
Email: pshrestha@wwf.panda.org

Dr Sandeep Tambe, IFS
Special Secretary
Rural Management and Development Department,
Government of Sikkim
Gram Vikas Bhawan, Gangtok, India
Email: jointsecy@gmail.com

Dr Ghanashyam Sharma
Program Manager
The Mountain Institute-India
Abhilasha, Development Area
Gangtok Sikkim-737101
Tel:+91-3592-207942
Email: banstolag@yahoo.co.in

Mr Roshan Rai
Programme Officer
Darjeeling Ladenla Road PRERNA
Hayden Hall Complex
42 Ladenla Road
Darjeeling 734101, India
Email: rairoshan@gmail.com

Dr Sarala Khaling
Regional Director
Eastern Himalaya Programme ATREE
Khangsar House, Above Brahmakumari Development
Area Gangtok 737101 Sikkim
Tel: +91-3592-206 403
Email: sarala.khaling@gmail.com

Dr Sunita Pradhan
Eastern Himalaya Programme
ATREE, Khangsar House, Above Brahmakumari
Development Area
Gangtok 737101 Sikkim
Tel: +91-3592-206 403
Email: sunita.pradhan@atree.org

Mr Kinzang Bhutia
Khangchendzonga Conservation Committee
PO Yuksam, West Sikkim, 737113
Tel: +91-3595 41211
Email: kcc_sikkim@hotmail.com

Dr K K Singh
Scientist "D" & In-charge
G.B. Pant Institute of Himalayan Environment and
Development
Sikkim Unit, Pangthang, Post Box 24-Gangtok, East
Sikkim-737101, INDIA
Ph: 03592-237328/237189
Fax: 03592-237415 (O)
Email: kksingh@gbpihed.nic.in;
singhkk20@hotmail.com

Dr H K Badola
Scientist- E (Conservation of Biodiversity)
GBPIHED Sikkim Unit, Gangtok
Post Box 40, Sikkim 737101, India
Tel.: 09609740419 (m); (3592) 231 130 (R),
(3592) 237189 ext 203 (O)
Email: hkbadola@gmail.com, badolahk@yahoo.co.in

Dr Ranbeer Singh Rawal
Scientist E
GBPIHED Kosi, Katarmal,
Almora 263643, Uttarakhand, India
Fax: 91-5962-241150, 241014
Email: rsrawal@gbpihed.nic.in,
ranbeerawal4@gmail.com

Mr Nima Bhutia
Khangchendzonga Conservation Committee
PO Yuksam, West Sikkim, 737113
Tel: +91-3595 41211
Email: kcc_sikkim@hotmail.com

BHUTAN

Dasho Sherub Gyaltshen
Secretary
Ministry of Agriculture
Thimpu, Bhutan
Tel: 975 2 326735, 322379
Email: sherub@moa.gov.bt

Dr Sangay Wangchuck
Director
SAARC Forestry Centre
Bhutan
Taba, Thimpu, Bhutan
Email: sangaywangchuck33@yahoo.com

M Mr Sonam Wangchuk
Chief
Wildlife Conservation Division
Department of Forest & Park Services
Thimphu 11002, Bhutan
Email: sonamwangchuck@gmail.com

KKarma Dukpa
Director General
Department of Livestock/MoAF (former DG, DoFPS)
Email: k_dukpa@moa.gov.bt

K Mr Kingzang Namgay
Country Representative
WWF Bhutan Program
P O Box 210
Tel: 00975-2-323528
Fax: 00975-2-323518
Email: knamgay@wwfbhutan.org.bt

NEPAL

Mr Krishna Prasad Acharya
Director General
Department of National Parks and Wildlife
Conservation
Babar Mahal, Kathmandu
Mobile: 9851131831
Tel: 4227926/4220912
Fax: 4227675
Email: kpacharya@dnpwc.gov.np

Mr Gangaram Singh
Under Secretary,
Kangchenjunga Conservation Area,
Taplejung, Nepal
Mobile: 9841715842

Mr Bishnu Bhandari
District Forest Officer
Jhapa, Nepal
Phone: 9851131467
E-mail: bhandaribishnu@gmail.com

Mr Ashok Kumar Ram
Conservation Officer,
Kosi Tappu Wildlife Reserve,
Sunsari, Nepal
Phone: 9802712040

Ms Sabita Poudel
Assistant Scientific Officer
Department of Plant Resources
Thapathali, Kathmandu, Nepal
Mobile: 9841352997
E-mail: sabip2001@gmail.com

Mr Santosh Mani Nepal
Director, Policy and Support
WWF Nepal, PO Box 7660
Baluwatar, Kathmandu
Tel: +97714434820,
Mobile: 9801015436
Fax: +97714438458
Email: santosh.nepal@wwfnepal.org

Mr Kamal Raj Rai
Program Manager
(Environment, Forest & Health)
Namsaling Community Development Center (NCDC)
Phone: +977 27 520411;
Email: raikamal35@gmail.com

Mr Mohan Koirala
Regional Director
Eastern Regional Forest Directorate
Government of Nepal
Biratnagar

International Centre for Integrated Mountain
Development (ICIMOD)
G.P.O. Box 3226, Kathmandu, Nepal
Tel: +977-1-5003222; Fax: +977-1-5003277,
5003299

Dr Eklabya Sharma
Director Programme Operation
esharma@icimod.org

Dr Gopal S Rawat
Deputy Programme Manager, ECES
grawat@icimod.org

Dr Nakul Chettri
Team Leader-BCM
nchettri@icimod.org

Ms Bandana Shakya
Biodiversity Analyst-BCM
bshakya@icimod.org

Ms Marjorie van Strien
Tourism Specialist
SLPR Programme
mstrien@icimod.org

Annex 2: Detailed Programme Structure

Day 1: 16 August 2012

Venue: Hotel Mount Siniolchu

09:00 – 13:00 Visit to GBPIHED Sikkim Unit, Pangthang

Opening Session and Reception Dinner hosted by GBPIHED/Government of Sikkim and ICIMOD

Time: 17:30 PM onwards

Emcee: Dr Gopal Rawat, ICIMOD

17:30–17:35	Welcome remarks	Mr Thomas Chandy, IFS Principle Chief Conservator of Forest, Government of Sikkim, India
17:35–17:55	Welcome remark and overview on ICIMOD's transboundary conservation and objectives and expected outputs from the consultation	Dr Eklabya Sharma, Director Programme Operation, ICIMOD
17:55–18:00	Remarks	Dr B M S Rathore, Joint Secretary, Ministry of Environment and Forest, Government of India
18:00–18:05	Remarks	Dasho Sherub Gyaltshen, Secretary, MoAF, Royal Government of Bhutan
18:05–18:10	Remarks	Mr Krishna Acharya, DG, Department of National Park and Wildlife Conservation, Government of Nepal
18:10–18:20	Remarks by Chief Guest	Mr Bhim Pd. Dhungel Hon'ble Minister, Tourism, Forests, Environment & Wildlife Management Government of Sikkim
18:20–18:30	Vote of Thanks	Dr L M S Palni, Director, GBPIHED, India

Reception Dinner 18:30 – 20:30

Day 2: 17 August 2012

Technical Session I: Overview on the progress made and setting the stage

Chaired by Mr B M S Rathore, Joint Secretary, MoEF, India

09:00–09:15	Brief self-introduction by the participants	Participants
09:15–09:30	Highlights of the concept, process and progress made in Kangchenjunga Landscape	Dr Nakul Chettri, ICIMOD
09:30–09:45	Biodiversity conservation and protected area management in Sikkim	Mr Pradeep Kumar IFS, Chief Conservation of Forest cum Chief Wildlife Warden, Government of Sikkim, India
09:45–10:00	Biodiversity conservation and protected area management in North Bengal	Mr Siddhartha Roy, IFS Divisional Forest Officer, Darjeeling, West Bengal
10:00–10:15	Salient features of the process involved in Kailash Sacred Landscape Conservation Initiative	Dr Gopal Rawat, ICIMOD
10:15–10:45	Discussion	
10:45–11:00	Tea Break	

Technical Session II: Country updates on KL initiatives including biodiversity, ecosystem services and climate change action research**Chaired by Mr Krishna P Acharya, DG, DNPWC, Nepal**

11:00–11:30	Presentation (Bhutan)	Mr Sonam Wangchuk, Wildlife Conservation Division, Royal Government of Bhutan
11:30–12:00	Presentation (India)	Dr K K Singh, GBPIHED, India
12:00–12:30	Presentation (Nepal)	Mr Ashok Kumar Ram Department of National Parks and Wildlife Conservation, Government of Nepal
12:30–13:00	Discussion	
13:00–14:00	<i>Tea Break</i>	

Technical Session III: Country wise group discussion on programme elements of Preparatory Phase**Chaired by Dr Sangay Wangchuck, Director, SAARC Forestry Centre, Bhutan**

14:00–14:10	Preparatory Phase – expected outputs	Dr Gopal Rawat, ICIMOD
14:10–17:00	Country group discussion on:	Draft outlines provided
	Feasibility Assessment Report	
	Comprehensive Environmental Monitoring Plan	
	Conservation Strategy	
	Elements of Regional Cooperation Framework	

Day 3: 18 August 2012**Technical Session IV: Discussion and finalization of Programme Elements of Preparatory Phase****Chaired by Dr L M S Palni, Director, GBPIHED, India**

09:00–11:00	Presentation of the group works	
	Plenary discussion	
11:00–11:30	<i>Tea Break</i>	

Way Forward and Concluding Session**Chaired by Dr R K Agrawal, Deputy Secretary, Ministry of Environment and Forest, Gol**

11:30–12:15	Way Forward	Dr Eklabya Sharma, Director Programme Operation, ICIMOD
12:15–12:30	Remarks by Country Representatives	Dasho Sherub Gyaltshen, Secretary MoAF, Bhutan and Mr. Krishna Acharya, Director General, DNPWC, Nepal
12:30–12:40	Closing Remarks	Dr R K Agrawal, Ministry of Environment and Forest, Government of India
12:40–12:50	Chair's Summary	Dr R K Agrawal, Ministry of Environment and Forest, Government of India
12:50–13:00	Vote of Thanks	Dr K K Singh, GBPIHED

Afternoon – Free time / Visit to Rumtek Monastery

Annex 3: Kangchenjunga Landscape Feasibility Assessment (KL-FA)

Objective: Objective of the KL-FA is to prepare state of the art report on biodiversity, ecosystem, information gaps, research and development needs for the entire KL covering in the area delineated in three countries (Bhutan, India and Nepal). Country reports on these parameters and socio-economic aspects for the respective landscapes would be synthesized into a comprehensive report with recommendations for long term biodiversity conservation, ecosystem management, sustainable development, and climate change adaptation strategies for the entire KL.

Outline of the FA discussed during the consultation is given below:

Description of Target Landscape

Boundary delineation of KL landscape – Agreement on the present boundary or changes if needed

Proposals made by the countries for expansion of KL include:

- wild elephant movement to be considered for delineation of corridors
- threats from infrastructural development such as hydropower, mid-mountain highways etc have to be considered
- connecting Buxa Tiger Reserve to TSNR through Gedu Elephant Conservation Area
- Terai-Duars connectivity
- best practices from other landscapes such as Terai Arc landscape (Nepal) and Bhutan Biological Corridors Complex (Bhutan) can be looked at.

Overview of the KL (Physical and biological characteristics; Land use and land cover; Biological diversity; Protected areas and corridors)

Criteria for delineation of landscape boundaries (adopted from KSL)

Some of the following criteria were identified in the delineation of the target area:

- Transboundary ecosystem services and ecosystem contiguity
- Key biodiversity areas, including migratory routes and biological corridors
- Endemism of biodiversity and culture
- Indicator or flagship, and rare, endangered, and threatened species (and their ranges)
- Protected areas/Ramsar sites, and other conservation priority areas
- Cultural heritage sites and pilgrimage routes, and existing and potential ecotourism sites
- Livelihood linkages of mountain communities
- Vulnerability of the area (globalisation, migration, and other change processes)
- Urbanisation and infrastructure development
- Watershed and river basin coverage for headwater areas of major rivers originating from the landscape
- Demarcation of ecological zones

State of the environment and conservation status

Trends in land use and land cover; State of the environment and major threats; Biodiversity hotspots, threatened flora and fauna; Park-people interface and efficacy of PA network; Corridors and connectivity

Human environmental and socio-cultural aspects

Unique socio-cultural practices within the region which have helped in conservation of biodiversity-both wild and domestic; gender issues; traditional management practices, linkages between biodiversity and local livelihoods

Cross-cutting issues and elements of convergence:

Developmental projects; equitable sharing of resources; convergence among line departments; transboundary cooperation

Policy and enabling environment

International and regional obligations; national policies and legal instruments; traditional institutions and customary laws; policy constraints and conflicts; policy needs, gaps, and priorities; enhancing regional cooperation.

Methodology and Approach

- Information will be based on both primary and secondary data.
- Primary data collection (if needed) can be done through rapid biodiversity survey, community consultations, and household surveys.
- All previous studies and research findings will be referred and used and secondary information may also be derived from detailed literature review.
- Detailed geospatial analysis, including land cover mapping and watershed delineation will be done.
- Lead institutions in each country will be responsible for coordinating the compilation of information for FA.

Lead Institute identified for FA:

Bhutan: Wildlife Conservation Division, Department of Forests and Park Services

Core group for FA drafting:

Wildlife Conservation Division, Department of Forests and Park Services

WWF - Bhutan

India: GBPIHED, State Forest Departments (Sikkim & W Bengal), TMI, WII, WWF (Sikkim & W. Bengal), NBU, ATREE, KCC, BSI, Sikkim Government College, ZSI, and Individuals

Core group for FA drafting: GBPIHED, 2 Government Forest Departments, ATREE

Nepal: Ministry of Forests and Soil Conservation, Government of Nepal

Core group for FA drafting: Ministry of Forests and Soil Conservation, Government of Nepal, WWF - Nepal

Annex 4: Kangchenjunga Landscape Conservation Strategy (KL-CS)

Objective: The purpose of the KL-CS is to ensure conservation biodiversity at various levels following the integrated ecosystem management approaches through regional cooperation, and the sustainable use of bio-resources, in order to improve the livelihoods of present and future generations.

Outline of the CS discussed during the consultation is given below:

Key areas of Agreement and Basic Principles (reoriented as per Nepal's suggestion)

- Linking biodiversity conservation with rural livelihoods: Conservation of biodiversity, especially outside the PA network, will require participatory approach by linking conservation activities with rural livelihoods. (1)
- Promoting sustainable development and inclusive growth: Good environmental governance, equitable sharing of benefits from biodiversity and innovative livelihood options for poor communities who subsist primarily on forest resources including non-wood forest products. Care will be taken to conserve the rich cultural heritage and traditional knowledge on biodiversity inherited by such communities. (2)
- Conserving biodiversity and cultural heritage through applying an integrated ecosystem management approach that incorporates the traditional knowledge and cultural institutions of local communities. (3)
- Recognising climate change vulnerabilities of, and implications for, biodiversity, ecosystem functioning, mountain and pastoral communities, downstream beneficiaries of ecosystem services, and regional and global public goods and services, while enhancing and building capacity to adapt, cope with, minimise, and mitigate environmental change, and to benefit from new opportunities. (4)

Conservation imperatives and priorities

Key conservation challenges	<ul style="list-style-type: none"> • Defining conservation targets • Understanding conservation and development trade-offs and synergies • Building participatory conservation alternatives • Incorporating climate change adaptation and mitigation dimensions • Maintaining the integrity and sacredness of the landscape while promoting livelihood diversification and ecotourism • Conservation of traditional knowledge • Conservation of rare, endangered, critically endangered, threatened and endemic species. • Recovery of degraded ecosystems and threatened biodiversity • Development of a functional regional network of institutions • Biological corridors
Key threats	<ul style="list-style-type: none"> • Climate change • Forest loss and degradation • Wildlife poaching and illegal trade • Rangeland degradation • Wetlands and riverine habitats degradation • Lack of corridors between the islands of protected areas • Unmanaged tourism development • Unsustainable extraction of resources • Human-wildlife conflict • Habitat loss and degradation • Forest fires • Loss of genetic diversity • Loss of traditional knowledge and skills
Key socioeconomic, livelihood and cultural threats	<ul style="list-style-type: none"> • Change in economic relations • External linkages and globalisation • Immigration & emigration • Political fragility • Poverty and food security
Threats to the protection of cultural heritage	<ul style="list-style-type: none"> • Outmigration and socioeconomic/cultural change • Institutional and administrative context • Infrastructure development • Tourism

Key areas and issues to be addressed

Areas	Issues to be addressed
Biodiversity and Environment	<ul style="list-style-type: none"> • Enhancing biodiversity / environmental knowledge base • Biodiversity conservation and management • Rangeland ecosystems • Riparian zones and wetlands • Invasive alien species and ecosystem restoration • Improving productivity, resilience and adaptive capacity of mountain agriculture • Improving management, resilience and adaptive capacity of forests and rangelands • Ecosystem restoration • Corridors and habitat connectivity • Monitoring and protecting water resources • Assessing and recognising the role of ecosystem services • Sustainable resource extraction and illegal cross-border trade • Strengthening indigenous systems of natural resource management and protecting sacred sites • Managing people-park conflict • Addressing climate change impacts and adaptation
Sustainable livelihoods	<ul style="list-style-type: none"> • Poverty alleviation and providing alternative livelihood options • Minimising out-migration • Food security • Improving infrastructure support • Traditional knowledge and heritage • Community-based sustainable tourism • Climate change adaptation and risk mitigation
Cross-cutting issues	<ul style="list-style-type: none"> • Awareness raising • Capacity building • Coordination • Policies • Integrated planning
Transboundary cooperation	<ul style="list-style-type: none"> • Regional cooperation for ecosystem management at the landscape-level • Regional knowledge sharing • Regional cooperation for long-term environmental monitoring and ecological research • Regional cooperation for sustainable development and ecotourism • Regional cooperation for climate change adaptation and mitigation • Regional cooperation for the preservation of cultural heritage and transboundary historical and cultural routes • Trade regulation and improvement

Content outline of KL-Conservation Strategy

Background

Overview of the KL-CS
Basic guiding principles
Transboundary ecosystem management approach
Process for developing the KL-CS
Implementing organisations

Description of KL and current status of landscape elements

(Resource status; environmental degradation and cultural integrity; major degradation trends in land, water and human environment; Degradation of natural vegetation and habitat; Problems due to illegal trade and over-exploitation of natural resources; Socioeconomic changes and cultural heritage)

Conservation imperatives and priorities

Key challenges
Key threats
Key opportunities
Key actions and priority areas
Review of effectiveness of present conservation strategy

KL-CS overview

Overall goal
Objectives
Outcomes - enhancing regional cooperation
Implementation strategies and mechanisms

Commitments to implement the conservation strategy

International and regional obligations; Global conventions, regional and bilateral agreements; Bilateral agreements within the region; National policies and legal instruments; Policy needs, gaps and priorities

Monitoring and evaluation

Timeframe

Annex 5: Kangchenjunga Landscape Comprehensive Environmental Monitoring Strategy (KL-CEMS)

Objective: The purpose of the KL-CEMS is to build regional and national capacity for environmental monitoring and long term ecological research, to promote the early identification of and response to potential adverse environmental impacts associated with various on-going processes (including climate change) within the KL, and to facilitate and encourage regional knowledge sharing and transboundary cooperation. The KL-CEMS will support landscape conservation and ecosystem management approaches, biodiversity conservation and management, and regional cooperation based on better informed decision-making,

Outline of the CEMS discussed during the consultation is given below:

Key areas of agreement and basics principles

- **Hierarchical approach:** Environmental parameters would be monitored following a clear hierarchical approach depending upon the scale of measurement. At the highest spatial scale, changes in land use and land cover (LULC) would be monitored. Within the larger landscape ecosystems and habitats are nested. Observations at these levels and population level studies on individual taxon would be done at respective scales. Integration with National efforts: On-going national efforts by the three respective countries were identified as the initial entry points for identifying common approaches, and in particular, common standards and protocols. The CEMP must harmonize with the national plans of the respective countries.
- **Transparency of CEMP Process and Stakeholder Involvement:** Preparation of KL-CEMP should follow transparent and participatory process. Consulting the local people and the managers of resources within the landscape in the planning and implementation phase is therefore central to the implementation of the KL-CEMP.
- **Society and Environmental Change:** Monitoring of socio-economic parameters, cultural change, and the human dimension of adaptation, focusing on mountain communities, is an essential component of the KL-CEMP, and should be framed within the context of climate change and adaptation.
- **Promotion of Regional Knowledge Sharing and Open Data Exchange:** The KL-CEMS will promote transboundary knowledge and data sharing, common formats facilitating open data exchange, and develop a common data sharing framework
- **Environmental and Ecological Indicators:** There is a need to identify sets of indicators early in the process that will facilitate long-term comparative analysis, and allow for an overall evaluation of ecosystem health and efficacy of conservation efforts.
- **Ecosystem-Specific Sampling:** A sampling frame should be developed for each set of parameters to be measured that takes into account the spatial and temporal variability of the conditions to be sampled.
- **Permanent Environmental Monitoring and Ecological Research Sites:** Identification of permanent sites for monitoring of change is a valuable method for establishing baseline conditions, and especially for understanding change processes as related to landuse, land degradation, biodiversity, invasive species, ecosystem function.

Key thematic areas and parameters for assessment

Climate	<ul style="list-style-type: none"> • Data collection will be based upon and coherent with international climate monitoring efforts, in particular WMO, GCOS, and in-country national efforts, e.g. CERN in China. • Secondary data sources, e.g. NASA data on snowfall, etc., incorporated into climate data base.
Land Use change	<ul style="list-style-type: none"> • Quantifying and Monitoring Landcover / Land Use Change (Harmonized Legends) • Historical Trend Analysis • Overview and Assessment of Impacts of Landcover / Landuse Change • Modelling and Prediction of Habitat Change and Impact on Biodiversity
Cryosphere	<ul style="list-style-type: none"> • Glacier Extent and Volume • Glacier Mass Balance • Melt Water Yield • Snow Cover • Snow Melt • Snow Gauging • Permafrost
Water resources	<ul style="list-style-type: none"> • Water Quantity • Water Quality and Sediment Production • Extent of Water Bodies (including potential GLOFs), • High Altitude and other Wetlands • Springs and Water Sources – General condition
Ecosystem functions and services	<ul style="list-style-type: none"> • High Altitude Lakes and Wetlands • Role of Various Ecosystems in N and Water Cycles • Role of Forest in C Cycle and Resource Production • Role of Grazing Lands in C, N and Water Cycles • Soil Systems • Pollution • Plant Pest and Diseases • Invasive species
Biodiversity: Ecosystems, species, genes	<ul style="list-style-type: none"> • Biodiversity Assessment and Monitoring • Biodiversity along Ecotones and in Transitional Zones • Ecosystem and Ecological Community Change • Key Flora and Fauna, and Habitat • Vegetation Dynamics • Invasive Species • Forest Structure / Non-timber Forest Products / Medicinal Plants • Culturally Dependent Species • Impacts of Invasive Species • Agricultural Biodiversity and Genetic Resources
Risks and Hazards	<ul style="list-style-type: none"> • Floods / Potential Glacial Lake Flood Outburst (GLOF) • Drought • Wildland Fire • Mass Movements • Landslide / Avalanches
Health Determinants and Outcomes Afflicting Humans and Livestock	<ul style="list-style-type: none"> • Vector born diseases • Pest infestations

Mountain Economies	<ul style="list-style-type: none"> • Agroecosystems and Livelihoods • Natural Resource-Based Employment and Income • Forest products • Mountain Pastures • Livestock numbers and composition • Valuation of ecosystem services • Cross Border Trade
Society and Environmental Change	<ul style="list-style-type: none"> • Governance Institutions • Rights and Access to Water Resources • Conflict and Peace • Traditional Knowledge, skills, and Belief Systems • Urbanization • Development (Infrastructure) • Development Trajectory and Vulnerability • Cross Border Trade / Illegal Trade

Note: Some parameters for monitoring the environments are technically too complex for some countries and may require long term human resource support. For example, Bhutan indicated to the need of in-country capacity building for cryosphere monitoring

Annex 6: Kangchenjunga Landscape Regional Cooperation Framework (KL-RCF)

Elements for RCF-KL discussed during the consultation is as follows:

Preamble

Kangchenjunga Landscape: Transboundary Biodiversity Management Initiative

Vision

A landscape with unique and rich biological diversity, cultural heritage, and vital ecosystem services is conserved through transboundary ecosystem management and participatory approaches.

Goal

The goal of the RCF is to promote and facilitate transboundary biodiversity and cultural conservation, ecosystem management, sustainable development, and climate change adaptation within the KL through regional cooperation, enabling policies and knowledge management

Objectives

- To conserve the biological diversity of the KL, recognising the need for sustainable development and human well-being in the transboundary landscape.
- To maintain the ecosystem health for sustaining the services, long term viability of biological corridors and ensuring resilience of local communities to global changes
- To harmonise conservation policies within and among member countries so as to strengthen ecosystem management in the trans-boundary landscape.
- To promote regional collaboration for conserving biological resources and cultural heritage and their associated indigenous and traditional knowledge/skills, and strengthen capacities for transboundary ecosystem management.
- To recognise, respect, and support the protection of sacred and cultural sites, their associated traditional knowledge and customary institutions governing natural resources in the landscape, ensuring access to knowledge, expertise, and collaborative research to wider communities.
- To promote scientific and technical cooperation among the countries in the KL for environmental monitoring, and knowledge sharing in the areas of biodiversity conservation and climate change adaptation.
- To promote climate change adaptation and socio-ecological resilience in the landscape.
- To promote sustainable and eco-friendly tourism in the KL, that provides benefits to local communities

RCF process

The above objectives will be realised by adopting, inter alia, following processes

- Bring together policy-makers, scientists, natural resource managers, and communities onto a common platform for applying ecosystem management and transboundary approaches for biodiversity, environmental and cultural conservation and cooperation;
- Promote regional collaboration and knowledge sharing with respect to environmental monitoring, long-term ecological research, climate change mitigation and adaptation, and CBD implementation among the three countries in the KL;
 - Identify policy issues related to transboundary cooperation and promote adoption, with particular reference to the Mountain Biodiversity provisions and goals of CBD at the regional level;

RCF principles and mechanisms

The RCF is based on the principles of:

- National Sovereignty
- Consultative and Participatory Management
- Equitability and Inclusiveness
- Sustainability
- Partnerships,
- Ecosystem Management and
- Transboundary Cooperation

The following Mechanisms will be established, to achieve the goal and objectives of the RCF, as facilitated by ICIMOD, through consultative and participatory process

- **A Regional Coordinating Body (RCB)** will be formed for the facilitation, and implementation of the KL-RCF. . The roles and responsibilities of RCB will be delineated in the first meeting of the RCB. In order to achieve the goal and objectives stipulated in the KL-RCF, a nodal institute will be identified by each country including major partners and stakeholders relevant to the implementation of the KL-RCF.
- **A Regional Working Group (RWG)** will be established by RCB for the facilitation, and implementation of the KL-RCF, and specifically the goals and objective of the KL-CS and the KL-CEMS facilitating enhanced regional cooperation for conservation, environmental monitoring and long-term ecological research.
- **A Regional Knowledge Sharing Platform** will be facilitated by RWG for the implementation of the KL-CS and KL-CEMS
- RWG will facilitate **Regional Capacity Building** for transboundary biodiversity conservation, environmental monitoring, and ecosystem management.
- RWG will promote **Regional Collaboration** for ecosystem management, which will be encouraged through awareness raising and fund raising activities.



International Centre for Integrated Mountain Development
GPO Box 3226, Kathmandu, Khumaltar, Lalitpur, Nepal
Tel +977-1-5003222 **Fax** +977-1-5003299
Email info@icimod.org **Web** www.icimod.org

Further information contact

Dr Nakul Chettri
Programme Coordinator
Kangchenjunga Landscape Conservation and Development
Initiative (KLCDI)
nakul.chettri@icimod.org