

Kailash Sacred Landscape Conservation Initiative

Developing a transboundary cooperation framework for conservation and sustainable development in the greater Mt Kailash region of China, India, and Nepal

Second Regional Workshop

4 - 6 September 2010 Jiuzhaigou, Sichuan, China

Convened by

International Centre for Integrated Mountain Development (ICIMOD)
United Nations Environment Programme (UNEP/ROAP)

Co-organised by

Chinese Committee on ICIMOD (CNICIMOD)
Chengdu Institute of Mountain Hazards and Environment, Chinese Academy of Sciences

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FOR MOUNTAINS AND PEOPLE



Preface

The Kailash Sacred Landscape Conservation Initiative (KSLCI) is a first of a kind cooperation among China, India, and Nepal, seeking to conserve a highly unique and special landscape through the application of transboundary ecosystem management approaches. It was conceived and is being implemented in collaboration with partner institutions in China, India, and Nepal, with support from ICIMOD and the United Nations Environment Programme (UNEP). This region, like much of the rest of the Hindu Kush-Himalayan region (HKH), faces many challenges and is likely to be significantly impacted by changes resulting from global warming and environmental degradation. The Kailash region is considered sacred to a large number of people in Asia and throughout the world. As such, its charismatic role as an example of the urgent and existential need to preserve both our cultural and biodiversity heritages cannot be overestimated. In this International Year of Biodiversity, the KSLCI directly addresses the challenges laid out in the Convention on Biological Diversity (CBD) and, more specifically, promotes the goals and approach described in the CBD's Mountain Biodiversity Program of Work.

The KSLCI Second Regional Workshop, hosted by the Chinese Committee on ICIMOD (CNICIMOD) and the Chengdu Institute of Mountain Hazards and Environment (IMHE), marked a significant milestone for the KSLCI. In particular, the completion of the country level Feasibility Assessments, and the synthesis for a Regional Feasibility Assessment, is a major accomplishment, not only providing the basic needs analysis for the KSLCI, but also in the process providing the baseline overview for long-term conservation planning and environmental monitoring. In addition, significant progress was made in the development process for both the Conservation Strategy and the Comprehensive Environmental Monitoring Plan. The workshop had participants from 12 institutions representing organisations from all three partner countries, as well as from ICIMOD and UNEP and representatives from focal ministries and nodal agencies of all three countries.

This current 'preparatory phase' of the KSLCI will provide the basis for a participatory and transboundary approach for sustainable development, conservation, and regional cooperation. It will lead to the development of a Regional Cooperation Framework, that is based on a complete baseline survey, needs and feasibility assessment, conservation strategy, and comprehensive environmental monitoring plan. All of this will have been developed by the national partners, as part of a consultative and participatory process that is building regional networks and a basis for regional cooperation. National ownership and community-based conservation will be the basis for sustainability. As the KSLCI moves forward, building the implementation frameworks, regional networks, and community-based structures to apply ecosystem management and a landscape conservation approach, this participatory process based on shared responsibility and differentiated approaches will be further developed. The KSLCI has developed a highly innovative approach for developing regional cooperation, and could provide a model for replication across the region.

Many thanks go to all the participants and the many people who have participated in the KSLCI process, and for all the efforts leading up to the Second Regional Workshop. Especially, we would like to thank our Chinese hosts for their tireless efforts which helped to make the workshop productive and efficient. We likewise would like to express our appreciation and gratitude to UNEP, GTZ, and the Government of Norway for financial support for the KSLCI and this workshop. Further, we express our gratitude to the Governments of China, India, and Nepal for their continuing and enthusiastic support for the KSLCI.

Eklabya Sharma
Programme Manager, Environmental Change and Ecosystem Services
International Centre for Integrated Mountain Development (ICIMOD)

Kailash Sacred Landscape Conservation Initiative

Report of the Second Regional Workshop

Developing a transboundary framework for conservation and sustainable development in the greater Mt Kailash region of China, India, and Nepal

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Introduction

ICIMOD with its partner institutions in the region has been advocating conservation-based sustainable development through transboundary landscape, ecosystem, and community-based approaches for more than a decade. Building on these existing and earlier efforts, the Kailash Sacred Landscape Conservation Initiative (KSLCI) was conceived and is being implemented in collaboration with partner institutions in China, India, and Nepal with support from the United Nations Environment Programme (UNEP) and German Technical Cooperation (GTZ). The aim of the KSLCI is to promote transboundary biodiversity and cultural conservation, ecosystem management, sustainable development, and climate change adaptation within the Kailash Sacred Landscape (KSL) through enhancing cooperation among the regional member countries, specifically through the agreement on a Regional Cooperation Framework (RCF). This process involves development of a Feasibility Assessment, a Comprehensive Environmental Monitoring Plan, a Conservation Strategy for the Kailash Sacred Landscape (KSL), and the facilitation of coordination among the various actors and stakeholders within the KSL by enhancing transboundary collaboration and information exchange networks. Support to strengthen the local capacity in conservation and sustainable development, and enhancement of cultural-socio-ecological resilience is an important component and central aim of many of the activities within the KSLCI.

A full set of activities are described and planned (within the KSLCI Project Document) for implementation during this initial phase of the KSLCI to achieve the prerequisites for development of (and agreement on) the RCF. The KSL First Regional Workshop was convened by ICIMOD and UNEP from 11th to 13th of April 2010 in Almora, India, to share the experiences from countries in the transboundary region about the ongoing work, and discuss the way forward. Partner institutions from China, India, and Nepal and representatives from UNEP and the ICIMOD team participated in the workshop. At that time, as a first step to project implementation, the Feasibility Assessment, and notably the delineation of the target landscape, was a prime activity that has been carried out by the regional member countries. This included the delineation of the respective national target areas for the KSL.

The KSL Second Regional Workshop was held in Jiuzhaigou, Sichuan, China from 4th to 6th of September 2010 (see workshop schedule in Annex 1). Partner institutions from China, India, and Nepal and representatives from UNEP and the ICIMOD team participated (see participant list in Annex 2). The major activities and issues discussed and agreed upon include:

- Review of synthesised feasibility study and policy enabling analysis
- Review of the draft comprehensive environmental monitoring plans from each of the three countries
- Review of the draft conservation strategy from each of the three countries
- Presentation of the draft 'Traditional Knowledge System of the Kailash Sacred Landscape'
- Discussion of the first draft of the Regional Cooperation Framework content outline

Objectives and Workshop Overview

Objectives

The broad objective of the workshop was to review the implementation status of the project, discuss the key challenges for project implementation, and review and further reach agreement upon the plans and set of activities agreed upon in the First Regional Workshop. Specific objectives of the workshop included to

- provide an update on the current status and overall progress of the project activities in each country;
- present and review a regionally synthesised Feasibility Assessment and Policy and Enabling Environment Report, and an analysis of the gaps at regional level;
- discuss and receive feedback on the draft Conservation Strategy and Comprehensive Environment Monitoring Plan (CEMP) and draft RCF outlines;
- discuss and plan the next set of activities to be implemented; and
- revisit the work plan and timelines, agree upon common approach and future of the project.

Workshop overview

ICIMOD, in collaboration with the KSLCI China (nodal) partner institutes and UNEP, convened and organised the workshop. The Chinese Committee on ICIMOD (CNICIMOD) and the Chengdu Institute of Mountain Hazards and Environment (IMHE) served as the host in China and provided logistical and organisational support. The workshop had 25 participants from 12 institutions representing organisations from all three partner countries as well as from ICIMOD and UNEP, and including representatives from focal ministries and nodal agencies of all three member countries.

The first day was focused on the main objectives of the workshop, mainly project progress; gaps, challenges and opportunities for conservation and sustainable use of biological resources in KSL; feasibility analysis at the regional level, and presentation of the country conservation strategies. The second day was devoted to presentation of country comprehensive environmental monitoring plans (CEMPs); presentation of community, local, and traditional

conservation and resources management mechanisms with a potential to support institutional development; discussing the draft Regional Cooperation Framework (RCF); and charting a way forward for accomplishing the various tasks and activities within the KSLCI phase one timeframe. On the last day of the workshop (6th September 2010), a field trip to Jiuzhaigou was organised. The day was spent visiting the Jiuzhaigou Natural Reserve, with a particular view to studying the community participation and management pattern of this unique Natural Heritage Site and Biosphere Reserve. Parting remarks were given by Prof Hu Pinghua, and thanks were voiced by many of the participants.

Inaugural Session

(Chaired by **Dr. Eklabya Sharma**, Programme Manager, ICIMOD)

In his welcome address **Prof Hu Pinghua**, CNICIMOD, delineated the target landscape, explained the aim of the project, and expressed his gratitude to all the partners for their support. He introduced the major activities, objectives and expected outcomes for the KSL Second Regional Workshop. At the end of his speech, Prof. Hu Pinghua stated the sincere hope that we should enhance cooperation among the regional member countries in future, and contribute more to the Kailash Sacred Landscape with a successful and productive workshop.

Dr. KP Oli, Regional Coordinator, KSLCI, briefed participants on the objectives and expected outcomes of the workshop; and explained the daily schedule along with the timeframe for accomplishing targets.

In her opening remarks, **Dr. Elizabeth Migongo-Bake**, Task Manager, Division of Environment Policy Implementation, UNEP, expressed her happiness about the meeting and her participation in the project. She reviewed the last regional meeting and said all the participants were very pleased to see the progress the project is making. She looked forward to the conclusion of an RCF. She also gave several examples to emphasise that we should bring this project to the attention of international platforms and policy arenas.

Finally, **Dr. Eklabya Sharma**, Manager of the Environmental Change and Ecosystem Services Programme at ICIMOD, explained why we see the KSLCI as flagship project. He emphasised that there are many challenges if we want to do a good job of cooperation; the basic homework and preparation needed; and the requirement for high quality scientific input. He said that although facing significant challenges, we had made substantial progress in the last 12 months, having conducted consultations and prepared extensive compilations of information in all the countries. He further emphasised the effort required in the next 6 months to realise the conclusion of an RCF. He summarised by strongly stating that we should regard this flagship project as a critical example of transboundary cooperation in a mountain region, and as a model available for replication in other mountain regions.

Regional Feasibility Assessment: Gaps challenges and opportunities for conservation and sustainable use of biological resources in the Kailash Sacred Landscape

(Chaired by **Dr. Subrato Sinha**, Environmental Affairs Officer, of UNEP)

An overview of the regional synthesis of the three country Feasibility Assessment Reports was presented by Dr. Krishna Prasad Oli, KSLCI Regional Coordinator, highlighting the gaps, challenges and opportunities for conservation and sustainable use of biological resources in KSL. The main content of this presentation was as follows:

Delineation of target landscape

The basic attributes of the KSL Target Area were described, including such topics as main land uses, watersheds, human population, major mountain peaks and other geographic features, and classification of KSL by elevation zones.

Compilation of information and expert consultations

Compilation of information, including various expert and community consultations took place on the follow topics:

- Agriculture System
 - Nomadic pastoralism
 - Transhumance
 - Sedentary farming (barley, wheat, potato, mustard, millet, maize, rice , sorghum, pulses and vegetables)
 - Horticulture (walnut, apple, plum, peach, apricot, pears, citrus species and others)
- Development activities
 - Infrastructure
 - Hydropower
 - Urbanisation
 - Quarrying
- Glacier coverage in Kailash Sacred Landscape
- Protected areas in Kailash Sacred Landscape
- Ecologically and/or culturally significant lakes in the landscape
- Select Sacred mountains
- Number of tourists visiting Mount Kailash in TAR-China
- Resource Status, Environmental Degradation and Cultural Integrity
 - Conversion of forest land for development activities
 - Unsustainable timber extraction
 - Unsustainable collection of non-timber forest produce, MAPs, and other useful bio-resources:
 - Invasive Species
 - Human–wildlife conflicts
 - Problems due to illegal trade and over exploitation of natural resources Areas
 - Encroachment of chir pine in oak
 - Forest Fires
 - Socioeconomic changes and status of cultural integrity
 - Tourism Impacts
- Biodiversity Loss and Threatened Flora and Fauna
- Globally and regionally threatened fauna in the KSL

Analysis of Information and Synthesis for Priority Identification

- Community Perception
 - Biodiversity and Environment
 - Cultural Values and Resource Management
 - Livelihood Options
- Biodiversity and Environment
 - Enhanced Biodiversity and Environmental Knowledge Base
 - Biodiversity Conservation and Management
 - Improving productivity, resilience and adaptive capacity of agriculture
 - Protecting and managing water resources
 - Recognising the role of ecosystem services
 - Sustainable Resource Extraction
 - Strengthening practical Traditional Systems of Natural Resource Management
 - Living with Park-People Conflict
 - Understanding Climate Change Impacts and implementing Adaptation measures
- Sustainable Livelihoods
 - Poverty reduction and providing alternative livelihood options
 - Food Security
 - Improving infrastructure
 - Reducing out-migration

- Protection of Traditional Knowledge and Heritage sites
- Community-Based Sustainable Tourism
- Climate Change Adaptation and Risk Management
- Building trust and trans-boundary cooperation
- Cross-Cutting Issues
 - Awareness Raising
 - Capacity Building
 - Policies
 - Transboundary Cooperation
 - Landscape-Level Conservation and Ecosystem Management
 - Tourism Development
 - Trade Regulation and Improvement

Discussion

The following points were highlighted by participants during the discussion:

- Linkages needed: NAPA, MDGs, national plans/programs, CDM (e.g. carbon credit)
- Prioritisation is needed: common aim but differentiated implementation approaches
- Cultural dimension should not be overlooked.
- Good practices need to be highlighted.
- How to keep KSL sacred?
- How to balance conservation and development?
- How to cope with globalisation /commercialisation?
- Precautionary principle: “Do no harm” should be at top of agenda

Three ‘Programme Pillars’ were identified by the participants, with cross-cutting efforts intervening on all pillars:

1. Ecological integrity/conservation
2. Socioeconomic/livelihood issues
3. Sacredness

Presentation of Conservation Strategy

The National Coordinator from each of the countries (i.e., Dr. Shi Peili from China, Dr. Ranbeer Singh Rawal from India, and Dr. Ram Prasad Chaudhary from Nepal) presented their respective country Conservation Strategies for their respective portions of the KSL. A brief summary of each is presented below, with full details given in the KSL Conservation Strategy Country Reports.

China

Conservation Imperatives and Priorities

- Key challenges
 - Boundary conditions and requirements
 - ◆ Illegal trade and smuggling of animal products, especially protected and endangered species, e.g. Tibet antelope, tiger skin
 - ◆ Cross-boundary trade need to be complementary to conservation goals
 - ◆ Transboundary nomadic grazing
 - Potential large increase in transboundary pilgrimage
 - ◆ Infrastructural construction for Kailash and Manasarovar pilgrimage
 - ◆ Pollution control and treatment along the route of the Mt. Kailash circumambulation and Manasarovar pilgrimage
 - ◆ Firewood collection
 - ◆ Treatment of solid wastes
 - ◆ Eco-tourism and ecological education

- Potential obstacles, hindrances and risks
 - ◆ Inadequate environmental protection and treatment facilities for tourism development in KSL
 - ◆ Inadequate reception capacity for tourism and pilgrim after railway, airport and highway accessible to target area
 - ◆ Rangeland degradation and biodiversity loss
 - ◆ Risk of environmental pollution and epidemic disease
 - ◆ Risk of illegal boundary trade
 - ◆ Risk of alien species invasion
- Sectoral analysis – situational analysis
 - ◆ Agro-pastoral system
 - ◆ Land degradation
 - ◆ Biodiversity and genetic resource loss
 - ◆ Tourism and alternative livelihood
 - ◆ Loss of intangible culture and traditional knowledge
 - ◆ Trade and tourism
 - ◆ Capacity building
 - ◆ Rural development
- Key threats and priority action areas
 - Major threats to conservation of bio-cultural resources in the KSL
 - ◆ Threats to protection of ecosystem (goods and related services)
 - ◆ Loss of biological diversity
 - ◆ Loss of genetic diversity and traditional knowledge
 - ◆ Threats to medicinal and aromatic plants
 - ◆ Threats to the conservation of wetlands and water resources
 - ◆ Threats to livelihood of the local people
 - ◆ Threats to protection of cultural heritage
 - Causative factors and/or relative drivers of change
 - ◆ Anthropogenic
 - ◆ Natural
 - ◆ Climate Change
 - ◆ Socioeconomic Change
 - ◆ Infrastructure and Infrastructure development
 - ◆ Tourism Development and Impact
- Key opportunities
 - Global and local benefits clearly identified
 - ◆ Mountains and wetlands as landscapes of global importance
 - ◆ Transboundary linked biophysical conditions, biodiversity and ecosystems
 - ◆ Water tower of south Asia — transboundary and regional water resources
 - ◆ Sensitive to global change and fragility
 - Opportunities from protection of cultural heritage
 - ◆ Culture heritage census, documentation and renovation in TAR in recent 5 years; 30 million CNY allocated
 - ◆ Survey of intangible cultural heritages, 14 categories of 406 items, 83 traditional opera troupes and 1,177 inheritors
 - ◆ Two masterpieces of intangible cultural heritages ‘King Gesar’ and ‘Tibetan opera’
 - ◆ Central government allocated 330 million CNY to renovate historical cultural heritage sites. TAR invested some 140 million CNY to renovate its surrounding areas
 - ◆ Thangka, Tibetan paper, incense, traditional Tibet medicines and knife making technologies and some intangible culture heritage well protected in recent years.
 - Opportunities emerging from reduced loss of biological diversity and protection of ecosystem
 - ◆ Nature reserve and protected area construction, Changthang National Reserve, Manasarovar Wetland Protected Area

- ◆ Traditional knowledge of wise use of resources and biodiversity by local people
- ◆ Large ecological engineering such as reversing grazing for grassland, Tibet eco-security conservation and construction engineering
- ◆ NGO efforts: e.g. WWF efforts on nature reserves, Tibet antelope protection and capacity building
- Opportunities in using medicinal and aromatic plants (MAPs) to prevent the loss of genetic diversity and traditional knowledge
 - ◆ The utilisation MAPs as a source of medicine, fuel, building material, food, fodder, and fibre in Tibet led to a resurgence of natural, product-based, and pharmaceutical factories
 - ◆ Development of plant gardens to cultivate MAPs in some rain-fed area, especially in Nyingchi, eastern Tibet, provides opportunities for genetic diversity conservation and ex situ protection of plant resources
 - ◆ Traditional knowledge of MAP resource protection and utilisation, medicine manufacture was explored
- Opportunities emerging from the conservation of wetlands and water resources.
 - ◆ In 2008 Manasarovar watershed was declared as national wetland protected area in order to protect two big lakes and their wetland vegetation, fishes, migrant birds and vertebrates. This provides an important ecological corridor for biodiversity between south Himalayas and north Asia.
 - ◆ Tourism and pilgrim reception, public health, soil waste and water pollution treatment, and water quality control were taken into consideration to build infrastructure in tourism planning of Mt. Kailash and Lake Manasarovar area.
- Opportunities from eco-friendly and heritage-based tourism for the livelihood of local people
 - ◆ Ngari prefecture has abundant tourism resources in terms of mountain, grassland and lake landscape, human artefacts and cultural heritage sites; 47 scenic styles and 291 items based on the national standards
 - ◆ Most famous and attractive: sacred Mt. Kailash and holy lakes of Manasarovar and Rakshastal in Burang County, Guge Dynasty castle relics, soil forests in Zhada County and Pangong Lake in Rutog County near Sino-Indian boundary.
 - ◆ Potential industrial structure transformation and opportunities for employment on tourism and transportation
 - ◆ Multiple livelihood choice
- Opportunities for transboundary and regional cooperation on biodiversity conservation and technology transfer
 - ◆ Multilateral or bilateral scientific cooperative programs and forum, conference in trans-Himalaya region, such as the Third Pole Environment (IPE), HKH partnership, HKH Conservation Portal
 - ◆ Compilation of Flora of Pan-Himalayas
 - ◆ Frequent conference on biodiversity and climate change in Himalayan region
- Opportunities for sharing of experiences and expertise (regional exchange)
 - ◆ The Hindu Kush-Himalayan (HKH) Conservation Portal initiated by ICIMOD is a regional cooperation on information and knowledge for conservation and mutual benefit.
 - ◆ ICIMOD proposed 7 transects, including Kailash Conservation Initiative, of environmental monitoring and biodiversity from different section of Himalayas. This provides a forum for regional cooperation of member country of HKH.
 - ◆ The first cooperative Kailash Conservation Initiative program is a good example of transboundary cooperation for biodiversity and culture conservation.
- Opportunities from international and regional benefit sharing mechanism, carbon finance, pay for ecosystem services
 - ◆ Opportunities to promote climate change mitigation and adaptation through agriculture, forestry and other land use (AFOLU) activities in the post Kyoto climate framework in western Tibet.
 - ◆ In western Tibet, the degraded steppe and deserts pose potential for carbon sink if degraded ecosystems are recovery through a series of land use, such as enclosure grazing. The ecosystems in the Kailash region have potential to be rehabilitated for carbon sequestration, especially in the wetland area surrounding big lakes

Conservation strategy and approach

- Overall goal

The overall goal is to achieve sustainable development through biodiversity and cultural heritage conservation on the basis of integrated ecosystem management of bio-resources and sustainable use in order to improve the livelihoods of present and future generations in the Kailash transboundary region among China, India and Nepal
- Objectives
 - Conserve biodiversity and culture heritage through using integrated ecosystem management approach and traditional knowledge of local people;
 - Balance biodiversity conservation and livelihood improvement of local stakeholders through enhancing biodiversity, using ecosystem goods and services;
 - Achieve sustainable development through eco-tourism and environment protection;
 - Reconcile human needs under the carrying capacity of biophysical environment
- Sectoral Strategies
 - Rangeland
 - ◆ Conserve biodiversity and culture heritage through using integrated ecosystem management approach and traditional knowledge of local people;
 - ◆ Balance biodiversity conservation and livelihood improvement of local stakeholders through enhancing biodiversity, using ecosystem goods and services;
 - ◆ Achieve sustainable development through eco-tourism and environmental protection;
 - ◆ Reconcile human needs in view of the carrying capacity of biophysical environment
 - Livestock and agro-pastoral resources
 - ◆ Appropriate livestock structure and grazing capacity ;
 - ◆ Use by-products of crops as fodder and use marginal land to plant forage for winter need;
 - ◆ Improve rangeland productivity by sowing drought-resistant fodder species, and/or plant artificial rangeland;
 - ◆ Change idea of old treasure as livestock number, increase livestock slaughter rate to receive cash income
 - ◆ Reducing grazing pressure on rangelands by planning enclosure grazing
 - Protected area/conservation/biosphere reserve
 - ◆ 34.03% of TAR land area was identified as protected area or nature reserve, land development limited and well protected by government;
 - ◆ Control number of livestock and human population;
 - ◆ Relieve conflict livestock and wildlife through preventing grazing in core zone and buffer zone in PAs;
 - ◆ Establish ecological compensation mechanism to let local people get benefit and arouse the enthusiasm of participation in wildlife conservation.
 - ◆ Activate participatory protection
 - ◆ Establish monitoring system to take information of animal activities, population dynamics and conservation status
 - Local biodiversity hotspots – species richness, and priority conservation list
 - ◆ Documenting species richness and priority conservation target
 - ◆ Protect key species and endangered species by protect their habitats and migrant routes, and incorporation with nature reserve and tourism planning
 - ◆ Promote incorporation of historical, traditional knowledge, spiritual and religious values into biodiversity conservation
 - ◆ Raise awareness of key species and biodiversity of regional and global importance in ecosystem services and human well-being by propaganda
 - Wetland and water bodies
 - ◆ Raise awareness of the importance of wetlands and water bodies in regulation and provisioning services and biodiversity;
 - ◆ Strengthen and empower wetland communities by establishing fences to prevent grazing wetland in important area, and maintain pollution control;
 - ◆ Protect habitats and reproduction site of wildlife

- ◆ Establish wetland protected area and develop sustainable wetland management plans;
- ◆ Formulate policy and regulatory framework formulation and facilitate conservation and wise use of resources
- ◆ Sustainable eco-tourism and religious pilgrimage
- Protection of cultural heritage
 - ◆ Collect and classify cultural heritage resources;
 - ◆ Raise awareness of cultural heritage protection at different levels: national, provincial and local level;
 - ◆ Train talent individuals from local communities for protection of cultural heritage;
 - ◆ Protect important cultural heritages such as Khorzhak Monastery, Chiu Gompa and intangible Tibet opera or folk-custom
 - ◆ Raise multiple fund or donation for the protection of cultural heritage
 - ◆ Protection in combination with tourism and pilgrimage
- Wild, Edible, Medicinal and Aromatic Plants, including non-timber forest products (NTFPs)
 - ◆ Investigate resource status of wild, edible, MAPs and NTFPs and make planning of resource utilisation and protection
 - ◆ Protect original place or habitats of wild and genuine MAPs and NTFPs
 - ◆ Establish plant gardens of MAPs and NTFPs for ex situ protection and production of required resources
 - ◆ Combination of protection and use of MAPs and NTFPs, appropriate use on the premise of protecting wild resources
 - ◆ Strength basic scientific research, including resource
- Loss of agricultural genetic diversity and traditional knowledge
 - ◆ Establish information system of genetic diversity of crop landraces, livestock breeds, forages
 - ◆ Establish plant germplasm bank to collect and classify agricultural genetic resources
 - ◆ Use multi-means of in-situ, ex-situ, origin habitat protection, native species and variety protection
 - ◆ Make advantage of multi- genetic diversity in stress resistance to guarantee food security
 - ◆ Documentation of indigenous knowledge
 - ◆ Encourage participation of local people and enrich our knowledge on conservation and sustainable use of biodiversity
- Bio-safety issue (e.g. communicable disease – human and livestock)
 - ◆ Proposal for establishing Kailash Sacred Landscape National Ecological Park for protection of sacred Kailash and holy lake landscape, and wildlife of global importance
 - ◆ Strengthen rehabilitation of degraded ecosystem and productivity recovery of fragile rangeland.
 - ◆ Establish cashmere production base in the valleys of Ngari prefecture to solve livelihood of local people
 - ◆ Prevent nature hazards of glacier lake, landslide and soil erosion through biological and engineering means
 - ◆ Manage rodent, grassland insects and pest plants by biological control and degraded land rehabilitation
 - ◆ Strengthen quarantine inspection of plant and livestock epidemic disease
- Ecosystem and heritage-based tourism for the livelihood of the local people
 - ◆ Take advantage of existing agro-pastoral livelihood assets, opportunities for surplus labour forces transferring to tourism and service to diversify livelihood
 - ◆ Promoting ecosystem based environment friendly employment opportunities including eco-tourism, high value products, green yak products, craft and culture
 - ◆ Capacity building for tourism development such as infrastructure construction, skill training
 - ◆ Government financial allowance and micro-credit support for the aid of livelihood diversification

Commitments to address most serious threats to conservation

- China's commitments to address threats to conservation
 - State Council enacted in 2004 'Notice on Strengthening Management of Wetland' which stated "... wetlands are the welfare of the community. Community participation of wetland protection is encouraged."
 - Ministry of Forestry formulated in 2001 'China Wetland Protection Action Plan', 'National Wetland Protection Engineering' stressed "wetland protection and ecosystem improvement should be strengthened."

- Chinese Government plans to use 20 billion CNY for improving ecological conditions on the plateau and construct the Ecological Safe Shelter Zone from 2008 to 2030
- Changthang National Natural Reserve established in 2004
- Ecological Safe Shelter Zone conservation and construction
 - Harness 30 percent of the Region's moderately and severely degraded grasslands, to control soil erosion caused by human factors in key areas and to repair damaged biodiversity from 2008 to 2015
 - Measures to meet these targets include returning grazing land to pastures, controlling rodent and pest damages, standardising construction of five regional nature reserves and rural biogas construction, etc.
 - The whole project is expected to be completed in 2030, when ecosystem in Tibet will enter into a benign circle and serve to protect ecological environment in China and neighbouring countries.
- TAR's commitments to address threats to conservation
 - Place priority on environmental protection, ensures the country's ecological safety and improve the living conditions of farmers and herdsmen, according to an executive meeting of the State Council
 - Enact action plans for biodiversity conservation and strategies for adaptation and mitigation of climate change
 - Manasarovar Wetland Protected Area established in 2008
 - Tourism as the mainstream of economic development, border trade encouraged in the transboundary area
- Commitments to address threats to conservation by Ngari prefecture and local government
 - Detail tourism development planning in Sacred Kailash and Lake Manasarovar areas
 - Regulations of waste and pollution control along Kailash and Manasarovar circumambulation route
 - Manasarovar wetland tourism planning enacted in 2008
 - Tourism service and transportation management rules

Institutional and financial mechanisms

- Local stakeholders are the key forces to implement conservation and sustainable development. So participation of local communities, including tourists and pilgrims, is of great importance
- Burang County, as local government and policy actuator, is responsible to lead the process of ecosystem management, environment protection and eco-friendly livelihood provision for local socioeconomic sustainable development
- Departments of Environment Protection Agency, Tourism Management, and Commission of Ethnic and Religion Management are responsible for Sacred Kailash and Manasarovar wetland area management, environmental protection, tourism and pilgrimage planning and management
- Ngari prefecture, responsible for administration and regional development of northwestern TAR, make conservation and development strategies for target areas.
- TAR as policy-maker of the autonomous region, enacts rules and regulations under the context of laws and regulations of central government, and make policies and planning for environment protection, biodiversity and cultural heritage conservation, and socioeconomic development
- Central government and TAR government make fiscal budget and allocate funds for regional development. Central government set priority program on ecological safety shelter zone protection and construction on the Tibetan Plateau and invest over 20 billion in next 20 years
- Financial support from other provinces mainly focuses on socio-development and provides livelihood opportunities to Tibetan people. In Ngari prefecture, great attention to environmental protection, tourism development and cultural heritage protection
- Special financial program for environment protection, such as Important Ecological Engineering Programs for rangeland enclosure grazing, ecological safety shelter protection, and cultural heritage documentation, renovation, and protection, by central government every five-year plan
- Ecological compensation: one of important on-going policies and support to benefit local communities and stakeholders participating in environmental protection and biodiversity conservation
- Research institutions and NGO provide scientific and technological support for decision and policy-making for different levels of government
- International cooperation programs

Monitoring and evaluation

- Monitoring indicators include environmental, ecological, socioeconomic, with an integrated assessment and evaluation necessary for the target area.
- Scientific institutions will be leading role in monitoring and evaluation
- Involving local stakeholders in monitoring and participation, and demonstration of the effect of the project

India

The KSL, with immense spiritual and sacred values, is amongst the most revered and sacred landscapes for millions of people across the globe. It represents a highly complex and diversified system in terms of biological and physical attributes leading to richness of biophysical and life support values ranging well beyond its physical boundaries. An astonishing range of diversity in socio-cultural systems prevails throughout the landscape and exhibits dynamic linkages with natural resources. While much of the landscape is recognised for prevalent wilderness, it is equally known for its extreme vulnerability to changing faces of development and global climate. Therefore, the rich and unique biological diversity, the ecosystem goods and services, and the value based cultural heritage of this landscape are under rapid process of transformation. As a result the ecological and cultural integrity of the landscape is under severe threat.

Considering the Indian part of KSL, which represents a unique bio-cultural area, it has historically evolved to form a rainbow of bio-cultural plurality. The landscape represents a site of ethnic intermixing and cultural assimilation not only from the mainland of India but also across the borders. Over the millennia, the people have moved through the high passes and settled down in this region making the landscape a centre of activities of ethnic, lingual and cultural groups. This intermixing and the upward and downward mobility of social groups had played important role in evolving the divine diversity of the landscape.

Irrespective of cultural groups, the most unique and common feature of human civilisation in this landscape is to have a rich tradition of conservation of natural resources through customary methods. Throughout the landscape, the common practice in folk wisdom is not to misuse, degrade or destroy common properties. The natural resources are revered with sacred value. Therefore, the prevalent folk belief system of the landscape has broadly helped in protection of natural resources. Notwithstanding these facts, evidences indicate towards fast changing face of the landscape and call for attention. One needs to visualise a strategy for the landscape which builds on ecological and economic realities.

Considering the above, development of the Conservation Strategy for the target landscape broadly includes:

Key challenges

- Defining Conservation Targets
 - high degree of uncertainty on status of natural resources
 - heterogeneity in biophysical conditions and diversity of people and nature relationships
- Understanding conservation and development trade-offs
 - understand how human activities affect the ecosystem
 - rural transformation and rapid disintegration of (i) socio-cultural value system, (ii) indigenous knowledge and practices, and (iii) local institutions
- Building participatory conservation alternatives
 - finding new or strengthening existing forms of community participation and local governance
- Incorporating climate change dimensions
 - integrate climate change dimensions into the conservation framework
- Develop a functional network of institutions
 - local, national, regional institutions –diverse mandates and aspirations

Opportunities

- Strong altitudinal/climate transition, prevailing heterogeneity in biophysical conditions and strong variations in people and nature relationships
- Richness, represent activeness, and uniqueness of biodiversity elements
- Clear zones/areas of wilderness (including snow, alpine and sub alpine areas), sacred and uniqueness values
- Discernible natural water zones (glaciers, rivers, lakes, and springs)
- Abundant forest zone with diversity of forest types, goods and services
- Prevalence of indigenous farming systems, knowledge and practices
- Diversified genetic heritage as a source for livelihood
- Availability of fertile river valleys with irrigated land for optimisation of agricultural production. The rich mosaic of traditional rain-fed agriculture as a means of maintaining genetic diversity and adaptive management
- Rich and diversified traditional ecological knowledge to connect intangible with tangible benefits
- Strong basis of cultural value systems and local institutions
- Diverse range of ecosystem and cultural services, ranging from maintenance of water flow to carbon sequestration, and from recreations to spiritual values
- Long-term natural and cultural interactions which have depended on local level governance systems resulting into successful traditions of participatory, culture based management of natural resources
- Continuum with Nanda Devi Biosphere Reserve –landscape for biodiversity conservation and community-based development
- Prevailing sacred values as means of integration at community level
- Existence of a legally defined protected area – Askot wildlife sanctuary
- A typical mountain landscape with multiplicity of climate sensitive resources, habitats and ecosystem goods and services
- Diverse responses of endemic, sensitive and key stone species
- Maintenance of global values of ecosystem services emanating from glaciers, forests, and rangelands
- Diversity in vulnerability distribution across different sectors of community
- Indigenous knowledge and practices to cope with and adaptations to hazards, changes and extreme events
- Enabling environment and policy back-up National Environment Policy, National Action Plan on Climate Change – National Mission on Sustaining Himalayan Ecosystems, Greening India Mission and Specific task force of planning commission to look into problems of hill states and hill areas, National Biodiversity Action Plan
- Existence of traditional systems of co-existence and community based management
- Commitments at local and national level for environmental conservation and sustainable development
- Common agreement on socio-cultural, socioeconomic and biophysical values, and their rapidly deteriorating state in the target landscape

Conservation strategy-goals

Ensure ecological, socioeconomic and socio-cultural sustainability and maintain flow of regional and global environmental and cultural services emanating from the target landscape

- Ensure availability of systematic reliable datasets to support decision on conservation and development issues
- Achieve ecological, economic and socio-cultural sustainability
- Maintain uninterrupted and reliable flow of environmental services in the landscape with national, regional or global significance
- Realise climate change vulnerabilities and build capacity to cope with and adapt to impact

Commitments to address the most serious threats to conservation

- Comprehensive and exhaustive framework of laws and policies, follows certain guiding principles in the area of conservation of its bio-cultural heritage: "to value and preserve the rich heritage of our composite culture; to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;"
- The Constitution of India, 1950

- National Environment Policy (NEP), 2006
- National Biodiversity Action Plan (NBAP), 2008
- National Action Plan on Climate Change (NAPCC), 2008
- Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

Institutional and financial mechanisms for strategy implementation

- The key for success lies in effective synergy of various local level organisations (GOs, NGOs, CBOs, etc.). It is proposed to establish a coordination mechanism at local level for effective use of available financial resources in the right perspectives of KSL-Conservation Strategy. A consortium of organisations is envisaged to implement, monitor and evaluate the programmes and projects to meet the goals stipulated in Conservation Strategy. The KSL-core group of organisations would act as a technical advisory cell.
- The KSL- core group of organisations in consultation with consortium of local organisations will explore possibilities of adequate funding for implementation of KSL Conservation Strategy under ongoing national level schemes.
- Opportunities available under global initiatives are proposed to be harnessed for attracting funds, skills and technologies to realise long term goals of the Conservation Strategy.

Monitoring and evaluation

While the institutional mechanism, as depicted above, will govern the monitoring and evaluation mechanism. Broadly, following is suggested:

- The local community groups will monitor and evaluate the success of implementation.
- The KSL- core team of organisations will play key role, largely as a facilitator for in word and out word flow of resources and information as well as a Technical Resource Group for smooth conduct of research, monitoring and evaluation. This group would monitor progress of participation at community level, effectiveness of benefit sharing, and successful ground level implementation of various programmes and projects. Also, the team would play a key role in evaluating ecological, economic and socio-cultural suitability of programmes and projects. Synchronisation of KSL activities with ongoing and proposed in-house/externally funded RandD programmes of these three organisations has been proposed as a base for developing KSL initiative.

Nepal

The Kailash Sacred Landscape (KSL) Nepal complex is a proposed transboundary landscape covering a larger region of 31,252 sq. km around Mt Kailash, of which about 13,289 sq. km (42.5% of the total area) falls in Nepal, 10,843 sq. km (34.7%) in China and, 7,120 sq. km (22.8%) in India. The northern and western boundaries of KSL-Nepal area coincide with international boundary with China and India respectively. The KSL-Nepal comprises four districts in Nepal: Baitadi, Darchula, Bajhang and Humla; located in far-western, and mid-western region in Nepal.

The area, at present, represents the remotest part of the country based on development indices, and suffers seriously from food deficits, disease, nutritional deficiency, and unfulfilled basic needs. The intense conflict between the government and the Maoist insurgents further compounded the food security problem in the region. In the past, Karnali was considered a prosperous region; it is still considered as a place with immense potentialities.

Objectives

- Review key contextual factors in the KSL-Nepal,
- Lay out the strategy and approach for applying ecosystem and landscape management approaches within the KSL-Nepal in the context of different time frames as a core component of the KSL-RCF.

Methodology

- Feasibility Assessment Report
- Desktop review
- Rapid Field Assessment
- Interviews and Meetings
- Interaction
- Dissemination through local FM

Biodiversity and cultural importance

- Eco-regions and forests:
- The KSL-Nepal area comprises five major eco-regions that represent distinct habitat type. At least, 18 main forest types occur in KSL-Nepal area out of total 35 forest types in Nepal.
- Floral diversity;
- We estimate that KSL-Nepal area comprises about one fourth of total 6,500 species angiosperms in Nepal. A total of 13 endemic plant species has been documented that are mainly distributed above 2,500 m. There are altogether 15 plant species in the KSL-Nepal which are threatened.
- Faunal diversity;
- Faunal diversity is high in KSL-Nepal. A total of 83 species of mammal, 455 species of bird, 38 species of amphibian and reptile, 119 species of fish are recorded from the region.
- Important habitats:
- The KSL-Nepal support important habitats of plant and animal species.
- Protected areas:
- The KSL-Nepal area includes three important Protected Areas (PAs); two (Khaptad NP and Api-Nampa CA) within the KSL boundary and one (Rara NP) at the adjoining area. The PAs include important habitat for many threatened wildlife species including endangered, vulnerable, and rare or threatened species, such as snow leopard, musk deer, black bear, and red panda.
- Agro-biodiversity.
- Humla is particularly rich in diversity of crop varieties. Eight different types of finger millet (*Eleusine coracana*), five different types of barley (*Hordeum vulgare*), and several varieties of wheat, millet, buckwheat occur in the region. The region is also famous for beans, i.e. simi.
- Socio-cultural context:
- The total population of the KSL-Nepal was 564,035, with total male population 274,967 (48.75%), and female 289,068 (51.25%). Generally, agriculture is the main livelihood means of the population, and it varies from district to district.

Utilisation and management practices

- Energy: Fuelwood (98%)
- Timber: Own use or sale across the border in India and China. (Timber demand exceeds total supply) (DFO 2005).
- High timber demand is related partly with illegal timber trade across the border.
- NTFPs/MAPs: MAPs, a large quantity collected for trade to China and India.
 - *Sapindus mukorossi* (Ritha) (19,21,346 kg) year 2005-2009;
 - *Cordyseps sinensis* (Yarchagompo) top in terms of royalty generated (NRs 18,737,350)

Conservation imperatives and priorities: Key challenges

- Boundary conditions: Conservation at the border region with China and India ineffective, increasing trade of wildlife and wildlife products, timber, NTFPs.
- Livelihood, poverty and food security: (i) agricultural production and animal husbandry (ii) forest and grassland resources (iii) MAPs (iv) water resources and glaciers (v) trade (domestic and transboundary) (vi) tourism (vii) traditional knowledge and cultural heritage (viii) honey and fruit production .

- Biodiversity loss: (i) Excessive exploitation of BR for trade (ii) poaching, illegal collection, fuelwood, timber, fire.
- Cultural identity and traditional knowledge: (i) multilingual and multi-religious (ii) traditional knowledge in ethnobiology and ethnomedicine.
- Trade and tourism: (i) market promotion of local products and value addition (ii) tourism.
- Capacity strengthening (Institutional strengthening, Empowering women and mobilising communities)
- Infrastructure development (road, energy, drinking water and sanitation, rural development)
- Trans-boundary issues (Illegal trade, and animal husbandry)
- Climate change and vulnerability
- Pollution
- Invasive alien species

Key threats to conservation and root causes

- Key Biological threats
 - The threat of ecosystem loss (forest, rangelands, PAs, wetlands)
 - The threat of species loss (overexploitation, faunal diversity)
 - The threat of genetic loss (agrobiodiversity)
- Key Socioeconomic and cultural threats
 - Threats to livelihood of the local people
 - Threats to protection of cultural heritage
- Causative Factors
 - Anthropogenic causes (wildlife, habitat and other biodiversity loss)
 - Natural causes (vulnerability and disease, invasive species and pests)
 - Climate change

Key opportunities

- Conservation of biological resources and livelihood improvement
- Protection and promotion of the identity of unique, vibrant and valuable cultural heritage
- Protection of traditional knowledge
- Development of entrepreneurship
- Conservation and use of water and wetland resources
- Regional cooperation
- Regional knowledge sharing
- Ecosystem services: Upward-Downward linkage
- Tourism promotion

Conservation strategy and approaches

The KSL-Nepal Conservation Strategy aims to achieve the goal of conservation through the following vision, goals and targets.

- Vision
 - A sacred landscape where the biological and cultural heritage and important water reservoirs of the world are safeguarded; people's rights over resources are ensured; their livelihoods are enhanced and sustained by making the communities capable of adapting to climate change.
 - The long-term goals are as follows. There are 23 targets which have been developed to formulate strategies. The strategies cover different thematic areas that aim to meet the goals and targets of the Convention on Biological Diversity (CBD), Millennium Development Goals, UNFCCC agreements on adaptation and mitigation.
- Goals
 - Recognise, value, and conserve KSL-Nepal's biophysical and cultural resources at national, regional and international level.
 - Improve and manage social and economic assets; conserve and utilise traditional knowledge system.
 - Achieve sustained ecosystem service by institutionalising and implementing policies and legislations for governance and climate change adaptation.

- Targets
 - Institutionalisation of biodiversity conservation in KSL-Nepal
 - Biodiversity conservation at landscape level
 - Maintenance of at least 40% of lands under forest and shrubland
 - Effective management of at least 21% of rangelands
 - Promotion of conservation of agrobiodiversity through community participation
 - Effective conservation of wetlands with emphasis on wetland biodiversity at critical sites
 - Effective management of the existing protected area system within KSL-Nepal and adjoining areas with emphasis on species conservation and habitat management
 - Effective conservation of area of importance for biodiversity outside PAS
 - Sustainable management of local biodiversity hotspots, species richness, and priority conservation
 - Promotion of the conservation and sustainable use of wild edible and aromatic plants
 - Biological study of high elevation regions within KSL
 - Control of potential invasive alien species (IAS)
 - Develop basic infrastructure and services in environment friendly manner
 - Broaden livelihood options for the poor, marginalised groups, aged, women and children
 - Improve socioeconomic condition of the people
 - Management of important socio-cultural and sacred sites within KSL Nepal region
 - Documentation and promotion of traditional knowledge of local peoples
 - Enhance community-based participatory tourism
 - Strengthening of financial, human, technical, and technological capacity of stakeholders
 - Maintain and enhance resilience of the components of biodiversity to adapt to climate change
 - Natural resource accounting and valuation of biodiversity
 - Reduce water and air pollution
 - Development and implementation of policies at national and regional levels
- Priority
 - The priority areas are established as follows:
 - ◆ Top Priority (1);
 - ◆ Very High Priority (2)
 - ◆ High Priority (3)
- Time frame
 - The time frame for the accomplishment of the project activities are grouped under three categories:
 - ◆ Short term (implementation accomplished in one phase, approximately in 3 years);
 - ◆ Medium term (implementation accomplished in two phases, approximately in 8 years);
 - ◆ Long term (implementation accomplished in three phases, approximately in 13 years).
 - The timing of implementation of the KSL-Nepal will coincide with the Eleventh Plan (up to 2012) and subsequent 12th (2012-2015) and 13th (2015-2018) National Plans. KSL conservation strategy will be implemented in three phases.
- Strategic approaches
 1. Incorporate the provision of biodiversity conservation strategy in all three countries (1)
 2. Develop regional sui generis IPR legislation (2)
 3. Identify and restore important landscape in terms of biodiversity conservation and include underrepresented ecosystems in different physiographic regions (1)
 4. Ecosystem resilience and habitat restoration (1)
 5. Encourage handing over of forest area to local communities (1)
 - 6a. Incorporate the provisions of biodiversity conservation by local community (1)
 - 6b. Enhance management of government-owned forest through proper supervision (1)
 7. Documentation of biological resources (2)
 8. Protect, conserve, and manage rangeland biodiversity especially at high altitudes (2)
 9. Prepare a management plan to manage the rangelands jointly with the communities (1)

10. Conservation of indigenous knowledge of rangeland biodiversity (2)
11. Pastoral and forage development and management in the KSL-Nepal region (3)
12. Conserve the genetic diversity of crops, livestock, and other valuable species, and maintain associated indigenous and local knowledge (2)
13. Strengthen apiculture production and processing in the KSL-Nepal region (2)
14. Identify, restore, conserve and maintain sustainably the potentially important wetlands in the KSL-Nepal region (2)
15. Mountain micro-watershed management (3)
16. Effective in situ conservation of biodiversity in PAs and in their buffer zones with meaningful community participation and support (1)
17. Develop activities to improve the socioeconomic conditions of local people around the Khaptad National Park as a means to improve their attitude about biodiversity conservation in general (1)
18. Effectively manage newly established Api-Nampa Conservation Area through community's participation (1)
19. Enhance biodiversity education and awareness (2)
20. Priority habitat monitoring (3)
21. Conservation and effective management of endangered and protected species together with priority species assemblage (2)
22. Park/people partnership program: Biodiversity conservation and sustainable community development (3)
23. Identify and manage biodiversity hotspots at local level and important habitats (1)
24. Reduction of impact of uncontrolled fire and grazing on biodiversity (2)
25. Restore, maintain or reduce the decline of population of species of selected taxonomic group (2)
26. Sustainably manage the biodiversity products derived from different sources, and manage the production area consistent with the conservation of biodiversity (2)
27. Reduce unsustainable consumption of biological resources, or those impacts upon biodiversity (2)
28. Promote domestication of NTFPs (3)
29. Biodiversity friendly and sustainable forest products harvesting (2)
30. Bioprospecting of un-utilised and under-utilised plant resources (3)
31. Ensuring equitable benefits from NTFPs (3)
32. Conduct thorough and periodic study of mountain biological resources (3)
33. Control the pathways for major potential alien species (3)
34. Make separate management plans for major IAS that threatens ecosystems, habitats or species within KSL-Nepal region and adjoining areas, and implement effectively (3)
35. Improve livelihood options for local communities with emphasis on natural quality of environment (1)
36. Launching rural energy development program: Conservation of natural environment through the promotion of sustainable energy systems and sustainable community development (3)
- 37a. Promotion of the disadvantaged groups and communities for improvements in their livelihood (3)
- 37b. Strategy 37b. Promote value-chain approach for effective utilisation of high value resources like herbs and NTFPS (1)
38. Improve the position of the districts of KSL-Nepal in development indicators as set in MDGs (2)
39. Accelerate growth in productivity of agriculture, livestock and other related economic activities (2)
40. Manage natural, cultural and sacred sites within KSL-Nepal region (2)
41. Recognise and preserve cultural identity of multi-ethnic groups and their relationship to nature conservation (2)
42. Maintain socio-cultural diversity of indigenous and local communities (2)
43. Documentation of indigenous knowledge (2)
44. Develop nature and culture-based tourism in KSL by creating economic opportunities for the local communities (1)
45. Build up capacity of local organisations and partners (organisations and communities) (1)
46. Improve financial, human, technical and technological capacity (2)
47. Strengthening institutions for biodiversity conservation (2)
- 48a. Reduce vulnerability of ecosystems to impacts of climate change (2)
- 48b. Promote community-based disaster risk management (1)
49. Develop and Implement adaptive measures under the scenario of climate change (3)

50. Develop an accounting system for natural resources of KSL-Nepal region to promote conservation and sustainable use of biodiversity (3)
51. Improve and maintain the capacity of ecosystems to deliver goods and services (3)
52. Maintain the biological resources that support sustainable livelihoods, local food security and health care especially of rural people (2)
53. Reduce water and air pollution and its impact on biodiversity of KSL-Nepal region (3)
- 54a. Use the natural environment positively and wisely (3)
- 54b. Effective conservation of water resources (1)
55. Effective conservation of rangeland biodiversity through the development of a national rangeland policy and legislation (2)
56. Development of integrated wetland management plan and policy with focus on socioeconomic development of communities (2)

Institutional and financial mechanisms for strategy implementation

- Institutional mechanisms for strategy implementation
 - The role of government
 - Community-based organisations and household user groups
 - VDC and Ward governments
 - District level government, including line agencies
 - District NGOs and private sectors
 - Universities and research institutions
 - State and International agencies
 - Indigenous institutions/organisations/community (Talukdars/Mukhiyas, Lama)
- Financial mechanisms for strategy implementation
 - National funds
 - Fund for conservation in KSL-Nepal
 - Recycling of government revenues
 - Donations by the private sectors
 - Contributions by NGOs/CBOs
 - Grants from the bilateral/multilateral donor agencies
 - Loan from international bodies
 - Technical assistance from the international community
 - In kinds cooperation of the local communities
 - Other funding mechanisms

Need for monitoring and evaluation

- Monitoring of climate
- Monitoring of land use change
- Monitoring of the cryosphere
- Monitoring of water system
- Monitoring of ecosystem function and services
- Monitoring of biodiversity
- Assessment of forest cover
- Assessment of habitat
- Assessment of species
- Monitoring of hazards
- Monitoring of health determinants (humans and livestock)
- Monitoring of economy
- Monitoring of society and global change

Conclusion

- KSL-Nepal – a potential area having landscape conservation approach
- Conservation strategy should focus on national initiatives and livelihood/poverty issues of landscape dependent communities
- Strengthen national institutional capacity
- Strengthen transboundary cooperation
- Develop national database system at landscape level
- Strengthen national and local research groups
- Harmonise (update if needed) conservation strategy of respective countries

Comprehensive Environmental Monitoring Plan

The National Coordinator from each of the countries, Dr. Shi Peili from China, Dr. Gopal Singh Rawat from WII India, and Dr. Ram Prasad Chaudhary from Nepal) presented their respective country Comprehensive Environmental Monitoring Plan for their respective portions of the KSL. A brief summary of each is presented below, with full details given in the KSL Comprehensive Environmental Monitoring Plan Country Reports.

China

Aims and objectives

- Aims of the CEMP:
 - Promote development of long-term environmental, ecological, climatic and biodiversity database
 - Form a basis for regional cooperation framework for biodiversity conservation and sustainable development in the transboundary KSL.
- Objectives of the CEMP:
 - build regional and national capacity for environmental monitoring and long-term ecological research;
 - promote the early identification of and response to potential adverse environmental impacts associated with various on-going processes (including climate change) within the KSL;
 - facilitate and encourage regional knowledge sharing and transboundary cooperation.

Overview of current status of environmental monitoring

- Current available monitoring
 - Climate: Burang Meteorological observing Station established in 1971 and nearly 40 yrs data records
 - Glacier: Gurla mountain glacier monitoring station
 - Socioeconomic records by statistic department of government

Key thematic monitoring areas

- Climate
 - Equipment and meteorological observation
 - Climate change analysis
 - ◆ Use altitude to calculate lapse rate of climate factors;
 - ◆ Compiling secondary data source with existed meteorological station data of Burang to extrapolate and analyse trend of climate change;
 - ◆ Extreme climate and frequencies, such as drought, rainfall, snow and high temperature;
 - ◆ Comparison Kailash climate with regional climate.
 - ◆ Land use Change
 - Land cover and land use change
 - ◆ GIS maps of territory, administrations, topography
 - ◆ Remote-sensed vegetation and land cover

- ◆ Road survey of vegetation and supervised classification
- ◆ Use of remote-sensed NDVI, vegetation coverage of Landsat image (1990s -) and road sampling survey;
- ◆ Land cover classified by LCCS2.4.5 system;
- ◆ In comparison with land resource record of local government, esp. cropland and rangeland;
- ◆ Two levels of land cover

– Historical trend analysis

Two general approaches (remote-sensed data)

- ◆ Comparative analysis of independently produced classifications (bias from classification criteria)
- ◆ Simultaneous analysis of multi-temporal data (bias from different phenology);

Government land use statistic data

- ◆ Cropland may be more accurate

– Impact of land cover and land use change

Drivers of land use and land cover change

- ◆ Climate change;
- ◆ Population growth
- ◆ Livestock (overgrazing)
- ◆ Tourism and pilgrimage

Impacts of land use and land cover change

- ◆ Land degradation
- ◆ Livelihood
- ◆ Ecosystem goods and services

• The cryosphere

– Glacier extent

– Glacier mass balance

- ◆ Geodetic method
 - Elevation and glacier extent
 - Mass balance = surface density × volume change
 - Other baseline data (Topographic map, digital elevation model)

◆ Glaciological method

- Drill and in situ measurement
- Mass balance = surface level change × density (900 kg .m³)

◆ Hydrological method

- Mass balance = precipitation – runoff – evaporation

– Melt water yield

- ◆ Runoff from glacier

– Snow cover

◆ Multispectral imagery

- Normalised difference snow index (NDSI), defined in terms of the spectral bands of Landsat TM/ETM as $NDSI = (TM2 - TM5) / (TM2 + TM5)$
- Snow is normally assumed to be present if the NDSI exceeds a value of 0.4, although varying seasonally.

– Snow melt

- ◆ Snowmelt drainage (vertical)
- ◆ Snowmelt infiltration

– Snow gauging

- ◆ Snowfall: precipitation of snow melting into water.
- ◆ Snow depth (cm): measure flat, open area, or a representative flat snow surface.
- ◆ Snow pressure (g.cm⁻²): measured when the snow depth more than 5 cm in a single observation day.

- Permafrost
 - ◆ Ground temperatures measured in boreholes and at the surface near to the drill site,
 - ◆ Changes in subsurface ice and water content at the drill sites by geo-electrical surveys, and
 - ◆ Velocities of permafrost creep determined by geodetic surveys and/or photogrammetry.
- Water systems
 - Water quantity

Monitoring sites:

 - ◆ South of Burang County Town in Karnali river
 - ◆ Water source of Lake Rakshastal and Manasarovar
 - ◆ Four religious bathing places of Manasarovar

Methods:

 - ◆ Establish water quality monitoring site
 - ◆ Collect water for laboratory measurement

Monitoring frequency:

 - ◆ Every summer and winter
 - Watershed hydrology and runoff

Establishing hydrological gauge station:

 - ◆ Karnali river station near Burang county town
 - ◆ Headwater of Manasarovar and Rakshastal

Indicator and Methods:

 - ◆ Surface water flow, runoff, water yield
 - ◆ Automatic monitoring by sensor

Monitoring frequency:

 - ◆ Continuous monitoring using gauge
 - Extent and change of Water Bodies
 - ◆ Using remote sensing image to extrapolate change of water bodies, including river, lakes and tributaries, glacier lakes
 - ◆ Response of extent of water bodies to climate change
 - Vegetation and Wildlife in water bodies

vegetation

 - ◆ Plant species and wetland vegetation
 - ◆ Habitats of wildlife

Wildlife

 - ◆ Amphibian, reptile and fish
 - ◆ Migratory birds
 - ◆ Ecosystem function and services
 - High Altitude Lakes and Wetlands

Provisioning services:

 - ◆ Food (fish species)
 - ◆ Forage production (wetland pasture)
 - ◆ Freshwater storage

Regulating services:

 - ◆ Air quality regulation (O₃-)
 - ◆ Carbon sequestration (NPP- heterotrophic respiration)
 - ◆ Water storage (water volume)
 - ◆ Erosion prevention (sediment)
 - ◆ Floods control (reservoir capacity)
 - ◆ Waste treatment (waste purification, water quality)

Supporting services:

 - ◆ Habitat for wildlife (wildlife species and population)
 - ◆ Reproduction habitat for wildlife (wildlife eggng)
 - ◆ Maintenance of nutrient-balance (see water quality)

Cultural services:

- ◆ Aesthetic: scenic road rounding Manasarovar, landscape, Gompa (monastery)
- ◆ Recreation and eco-tourism
- ◆ Cultural heritage
- ◆ Spiritual and religious worship

– Role of Grazing Lands in C, N and Water Cycles

Indicators:

- ◆ Rangeland area and plant community types
- ◆ Livestock population, number and grazing intensity
- ◆ Dominant plant species and key species
- ◆ NPP and forage yield
- ◆ Soil organic matter,
- ◆ Total N, available N: NH_4^+ , NO_3^- , Nitrogen retention
- ◆ Soil porosity and water contents
- ◆ Water infiltration and water holding capacity

Method of monitoring:

- ◆ Land cover map of rangelands and classification
- ◆ Monitoring site: Manasarovar watershed and Kailash rangeland
- ◆ Quantifying grazing land species composition and plant, NPP, nutrient and water retention;
- ◆ Every 3 - 5 years

– Soil systems

Indicators: soil features and soil microbes

- ◆ Soil classification along altitudinal gradient in KSL
- ◆ Soil particle size and component
- ◆ Soil organic carbon and carbon storage
- ◆ Soil quality: SOM, total N and available N
- ◆ Soil microbes and key species, microbial biomass

Monitoring and analysis

- ◆ Establish sites along transects within KSL landscape from Burang to Mt. Kailash including cropland, pasture, wetland and alpine scree
- ◆ Establish chronosequences of soils from glacier front to alpine grassland for monitoring soil formation and ecosystem succession
- ◆ Address soil formation and soil quality and its relation with mountain climate, glacial front community succession
- ◆ Analyse relationship among climate, soil features and soil microbe
- ◆ Every 5 years

– Pollution (indicators to be identified)

Monitoring indicators

- ◆ Persistent organic pesticides (POPs)
- ◆ Chemicals and pesticide in cropland
- ◆ For wetlands, indicators as water quality (see in water system section)
- ◆ Monitoring every five years

– Plant pest and diseases

Monitoring indicators

- ◆ Crop disease such as barley or wheat rust, potato viruses
- ◆ Rangeland rodent, insects such as grasshopper
- ◆ Avian influenza

- ◆ Pest herbs, such as Stellera, Oxytropis
- ◆ Monitoring every year.
- ◆ Biodiversity and ecosystems
- Ecosystem and ecological community change
Monitoring indicators
 - ◆ Species distribution and abundance change along altitudinal gradient in KSL
 - ◆ Biomarker of climate change — sub-nival upper limit change
 - ◆ Plant community and plant-animal relation change
- Key fauna and flora
Monitoring indicators
 - ◆ Abundance, population size and dynamics of key plants and endangered animals (endemic and special medicinal plants, CITES endangered animals, for example, Yartsagumbu, Tibet antelope, black-necked crane)
 - ◆ Migrant route and distribution extent
- Invasive species and impacts
Monitoring indicators
 - ◆ Occurrence and abundance of alien species along transportation line and altitudinal gradient
 - ◆ Impact of grazing and plant facilitation on alien plant invasion
 - ◆ Impact of invasive species on community change and ecosystem biogeochemistry, if any
- Culturally dependent species
Monitoring indicators
 - ◆ Abundance, population and community dynamics of culturally dependent species, such as Junipers, Spirea, Daphne for incense of pilgrims; Caragana, Berberis as firewood for frying barley
 - ◆ Assess impact of loss of these species on rangeland desertification
- Agricultural biodiversity and genetic resources
Monitoring indicators
 - ◆ Number of crop and animal breed varieties
 - ◆ Landraces and wild varieties used and maintained
 - ◆ Crop diversity and plant diseases
 - ◆ Hazards
- Floods/potential glacier lake flood outburst
Monitoring indicators
 - ◆ Potentially floods-effected area, river basin and glacier lakes
 - ◆ Floods frequency, intensity and risk assessment
 - ◆ Global warming and glacier snowmelt
 - ◆ Extreme event of rainfall record
- Drought
Monitoring indicators
 - ◆ Historical drought frequency and duration
 - ◆ Extreme precipitation and temperature records
 - ◆ Historical food and forage production records
- Mass movement — landslide and avalanches
Monitoring indicators
 - ◆ Potentially place of landslide and avalanches and baseline map of topography and hydrology
 - ◆ Hazard historical records and frequency

- ◆ Climate records
- ◆ Health determinants afflicting human and livestock

Monitoring indicators

- ◆ Epidemic situation of human and animal disease
- ◆ Epidemic disease and frequency, for example, avian flu., livestock disease
- ◆ Record of plant and animal quarantine inspection

• Mountain economics

– Agroecosystem and livelihoods

Monitoring indicators

- ◆ Land-holding and cultivated land area
- ◆ Cropping system, main crops and vegetables
- ◆ Household food production and food per capita
- ◆ Health condition, education, cash income
- ◆ Governmental allowance for food production
- ◆ Food price and trade
- ◆ Manpower and employment other than agriculture

– Natural resource based employment and income

Monitoring indicators

- ◆ Diverse natural resources and temporal-spatial distribution
- ◆ Resource stock per capita share
- ◆ Employment on different resources and income
- ◆ Trade channel and market pricing
- ◆ Community perception and awareness

– Mountain pasture — livestock number and composition

Monitoring indicators

- ◆ Grazing system, pasture and livestock change in terms of species composition, communities and biodiversity
- ◆ Pasture production including forage and livestock products
- ◆ Medicinal and aromatic plants
- ◆ Rangeland disasters and land use change

– Valuation of ecosystem services

Monitoring indicators

- ◆ Value of provisioning, supporting, regulating and cultural services, with focus on economic value to mountain people
- ◆ Tourism and livelihoods

– Cross border trade

Monitoring indicators

- ◆ Type of trading products and supply-demand relationship
- ◆ Volume of cross border trading
- ◆ Illegal trade

– Tourism and recreation economy

Monitoring indicators

- ◆ Cultural heritage and landscape aesthetic value
- ◆ Tourist number, source of client and willingness to pay
- ◆ Employed stakeholders in tourism and recreation

- ◆ Income from tourism and recreation and its quota of local GDP
- ◆ Society and environmental change
- Governance institutions
 - ◆ origins and functioning of existing governance institutions, their effectiveness in terms of range of potential stakeholders goals
 - ◆ options for improved effectiveness with respect to different goal sets.
- Rights and access to water resources
 - ◆ Water resource availability, quantity and quality and its change with climate change
 - ◆ Water right governance institutions and their role in water management
 - ◆ Role of water resource in mountain economy
- Conflict and peace
 - ◆ Land tenure and delineation of public and private resources
 - ◆ Difference of lifestyle and living conditions
- Traditional knowledge and belief systems
 - ◆ Local knowledge, cognition, perceptions and beliefs of resource use and conservation
 - ◆ Religious belief and taboo
- Urbanisation

Indicators:

 - ◆ Land use
 - ◆ Population density
 - ◆ Transportation
 - ◆ Infrastructure and construction
- Development (dams, roads, and other infrastructure)

Indicators:

 - ◆ Infrastructure construction intensity (road network)
 - ◆ GDP level
 - ◆ Housing
- Development trajectory and vulnerability

Indicators:

 - ◆ Different levels of social group
 - ◆ Source of social insecurity
 - ◆ Vulnerability of different social groups

Nepal

Background

- ◆ A comprehensive environmental monitoring plan needs coordinated effort
- ◆ Kailash Sacred Landscape – ecological interdependence across international boundary, and communities interdependence along borders

Aim, purpose and objectives of CEMP

- Aim
 - KSLCI has stated aim to promote the development of long-term environmental, ecological, climatic and biodiversity datasets

- Purpose
 - Build regional and national capacity for environmental monitoring and long-term ecological research
 - Promote the early identification of and response to potential adverse impacts associated with various on-going processes (incl. climate change) within the KSL-Nepal
 - Facilitate and encourage knowledge sharing and transboundary cooperation
 - Enhance associated institutional and scientific networks for improved environmental data and information to better implement environmental programmes
- Objectives
 - Monitor environmental components that are currently being affected and predicted to be significantly affected due to global change
 - Monitor the effectiveness of adopted environmental management programmes to ensure sustainable development
 - Ensure that environmental management is being performed effectively in accordance with technical requirements, and among partnership at national level as well as regional and global levels

Knowledge gap and institutional capacity building needs

- The feasibility study and conservation strategy analyse need assessment different thematic areas where more research and information or response strategies would be needed. Data available do not permit for a comprehensive study on physical, biological, social, and environmental characteristics. Therefore, it is intended that the enhancement of long-term environmental monitoring and data collection within the KSL area will contribute to reducing knowledge gaps in the HKH region.
- Knowledge gaps are a serious impediment to improved understanding, modelling, and prediction of climate change impacts and adaptation, across scales (locally, regionally, and globally) and provide valuable input to the understanding of these processes at both the regional and global levels.
- For KSL-Nepal, there is lack of basic and comparable data taken over a long period of time and in reliable series. There is an urgent need to address the lacunae in our knowledge about biodiversity in order to preserve mountain resources for the benefit of highland and lowland people now and in the future.

Comprehensive Environmental Monitoring Plan (CEMP)

- CEMP Considerations – Nepal
 - Need generation of reliable baseline data
 - Need accumulation of scattered information across different sectors
 - Political stability
 - Interdependency of landscape across political boundary
 - Quantitative integrated approach and regional networking
- CEMP for KSL-Nepal – Framework

Thematic areas

 - Targets (separate, as well as in coordination)
 - Objectives
 - Indicators/parameters/components
 - Method
 - Location
 - Schedule/frequency
 - Remarks: Lead agency (departments) and supporting organisations (Dept/Inst)

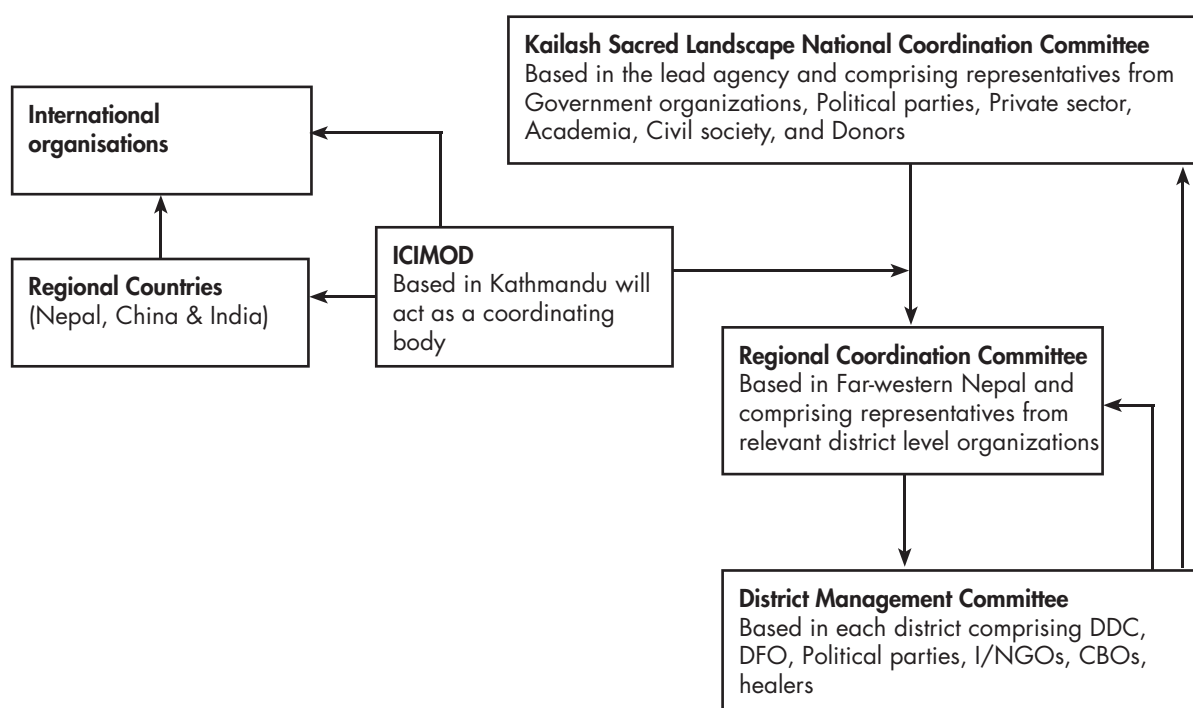
Establishing long-term observation sites

- Monitoring the effects of climate change
 - GLORIA, the 'Global Observation Research Initiative in Alpine Environments', is an initiative towards an international research network to assess climate change impacts on mountain environments.
 - GLORIA focuses on a standardised setup of permanent observation sites that is applicable in all major mountain system on earth
 - GLORIA's multi-summit approach is a standardised sampling design to compare data from different mountain regions
- Objectives

The objectives for setting up of long-term observation sites in KSL-Nepal are to

 - Provide standardised, quantitative data on the altitudinal differences in species richness, species composition, vegetation cover, on the soil temperature and on the snow cover period
 - Assess the potential risks for biodiversity losses due to climate change by comparing the current distribution patterns of species, vegetation, and environmental factors along vertical gradient
 - Provide a baseline for the long-term monitoring and observation of species and vegetation to detect climate-induced changes of vegetation cover, species composition and species migration (at observation intervals of 5 to 10 years or longer)
 - Quantify the temporal changes of biodiversity and vegetation patterns
- GLORIA methodology
 - summit selection
 - plot type and design outline
 - Data recording
 - ◆ Summit area section
 - ◆ Quadrat cluster
 - ◆ 1 m x 1 m quadrats
 - ◆ Temperature measurements
 - ◆ Photo documentation

Coordination and Monitoring Mechanism



Conclusions

- An environmental monitoring plan is needed through a coordinated regional effort of the three countries
- A strong national coordination among government, partners and society
- Regional and international networking needed to initiate and support to elaborate research on specific thematic areas, time frame, partners involved, etc.
- Essential to work out adaptation strategies to cope with global changes
- The strategy and monitoring plan also play a key role to ensure optimal livelihood opportunities to present and future generations

India

The KSL-India Feasibility Assessment Report, on the Indian part of KSL, gives an update on the state of environment in the region. A number of conservation strategies and action plans have been suggested in the feasibility report. Also, the proposed Conservation Strategy for KSL- India elaborates upon various sectoral and cross-sectoral issues and action priorities for conservation and development in the target landscape.

Effective implementation of above strategies and action plans by the state and local management authorities in collaboration with inhabitants would be extremely crucial to ascertain long term economic and ecological security to the landscape and the local communities.

This description gives a overview of the comprehensive environmental monitoring plan (CEMP) for the KSL-India. Various parameters for monitoring at landscape, local and site levels, integration of conservation strategies and action plan with the CEMP, institutional mechanism for monitoring have been given.

Conservation inputs underway / planned In KSL – Indian part

- Link National Rural Employment Scheme with forestry / conservation activities
- Promote trans-boundary cooperation for implementing CITES
- Strengthening VP / Village Institutions in PRM
- Managing fire, fuel wood and fodder
- Rural technology for energy saving
- BCRLIP / Project Snow Leopard

Monitoring goals and objectives

- The major goal of CEMP is to build regional and national capacity for long term ecological research and environmental monitoring in the KSL.
 - Advance alerting system
 - Scientific basis for managing of the environment and natural resources
- Specific objectives of the CEMP are as follows:
 - To establish an institutional mechanism for systematic recording of environmental changes including climatic variables in KSL;
 - To promote the early identification of and response to potential adverse environmental impacts associated with anthropogenic pressures and natural changes (including climatic) within the KSL;
 - To document the ecosystem response to conservation efforts and changed land use practices in KSL;
 - To detect progressive changes in traditional cropping systems, livestock husbandry practices and agrobiodiversity in the region vis-a-vis adaptations by local communities to changing climate;
 - To facilitate and encourage regional knowledge sharing and trans-boundary cooperation for conservation of natural resources, globally threatened species and sites of ecological and cultural significance.

- Expected Changes in the KSL
 - Boundaries of ecosystems
 - Forest cover
 - Major vegetation classes
 - Socioeconomics
 - Populations of species and distribution pattern
 - Expanse and volume of cryosphere
 - Natural resource usage pattern of local communities
 - Regional climate and local adaptations

Monitoring Approach

- SMART objectives
- Hierarchical approach
- Visualise a larger transect
- Manuals of protocols and methods – to be developed
- Formation of monitoring team and capacity building

Key parameters for monitoring

Some of the parameters identified for monitoring at different levels within GKSL – India are suggested below:

- Land use / land cover (LULC)
- Climatic parameters
- Vegetation dynamics
- Cryosphere
- Water Resources
- Edaphic parameters
- Pastoral practices
- Status of ecologically sensitive areas (ESAs)
- Human and livestock health
- Rural transformations and consequences
- Climate change vulnerability of local communities
- Energy resources and consumption pattern
- Indicator, rare, endemic, threatened, endangered, and keystone species
- Agrobiodiversity
- Abundance and cover of alien invasive plants (AIPs)
- Flow of benefits of environmental services

Integration of CEMP with the KSL Conservation Activities

The following strategies are proposed to integrate the CEMP with the conservation activities in the KSL-India:

- Reorganisation and strengthening of van panchayats (VPs)
- Restoration of degraded forests and rangelands
- Final notification of sanctuaries and establishment of conservation reserves
- Alternate livelihoods for the families heavily dependent on NTFPs
- Further, the conservation strategy intends to establish participatory evaluation systems to support and compensate the efforts of indigenous communities in maintaining the goods and services of the ecosystem
- Upkeep of sacred and religious sites
- Solid waste management

Institutional Networking

- Core Institutions: GBPHIED, UKFD and WII
- Probable collaborators
 - Forest Research Institute (FRI) Dehra Dun
 - Forest Survey of India (FSI)
 - Indian Institute of Remote Sensing (IIRS), Zoological Survey of India (ZSI)
 - Botanical Survey of India (BSI)
 - Wadia Institute of Himalayan Geology (WIHG)
 - Indian Institute of Technology, Roorkee (IITR)
 - Herbal Research and Development Institute, Gopeshwar
 - Kumaun University (both Nainital and Almora Campuses)
 - Government P.G. Colleges at Pithoragarh and Berinag
- NGOs
 - Hemal Prakruti, Munsiyari
 - Society for Environmental Education and Research (SEER), Nainital
 - ECOSERVE, Majkhali.

Community, Local and Traditional Knowledge Systems, Conservation and Resources Management, and Institutional Mechanisms with Potential to Support for RCF Process

An report on community, local and traditional knowledge systems, conservation and resources management, and institutional mechanisms with potential to support for RCF process was presented by Dr. Krishna Prasad Oli, KSLCI Regional Coordinator. Main content included the following.

Traditional knowledge

Refers to the knowledge, innovations, and practices of indigenous and local communities; developed from experience gained over the centuries and adapted to the local culture and environment, transmitted orally from generation to generation. Collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds/ resources management. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, and forestry and other resources management and governance

Principles of traditional institutions

- Reciprocity
- Equilibrium
- Duality
- High degree of resilience

Traditional institutions in KSL

- Traditional barter economy, largely dominated by the salt-grain trade between the TAR, Nepalese, and Indian region shaped the resource governance.
- Communities at different elevations were linked and united in larger economy. Large numbers of herds and flocks of animals were vehicles of the economy.
- Centuries-old economic system came to an almost complete halt by a combined effect of several factors: change in political system, influx of salt from low land in the hills and mountains, reduced access to grazing areas for caravans

- Religious institutions: shape the value system of the society influencing the way resources are extracted.
- Monasteries, monks, shamans in the mountain societies played key roles in dispute settlements of resource management, conservation activities, and symbolic aspects of resource management like appeasing deities of various resources, transferring knowledge and tradition of resource management.
- Several sacred forests, dev vans, formed in India to reduce the degradation and to avoid disputes between the neighbouring communities

Institutions of resource governance

- Different forms of village chiefs, panchas, talukdar, mukhiya, gabbu, badda, instrumental in resource governance at local level.
- Lath panchayats are the predecessors of van panchayat in India
- Traditional institutions of resource management in communities shaped by parental property inheritance system. Different forms of village council, formed to manage resources like, irrigation system, forest, crop lands, and pastureland. Tribal traditional groups manage pastureland in TAR China
- Formal local level institutions like van panchayats, community forest user groups, VDCs

Current institutions of governance

- Management of resources involves interplay between formal and non-formal institutions.
- State agencies operating at different levels:
 - Purang County of Land and Resources; Bureau of Environmental Protection; Bureau of Agriculture and Animal Husbandry, and Bureau of Water Resources in China;
 - Forest Department manages Reserved Forests, Revenue Department manages Civil Forest; and van panchayats by Village Forest Committees in India
- CFUGS and DFOs manage forest and NTFP resources, traditional institutions for pastureland management in Nepal. Role of Agriculture, Livestock Department, and Irrigation department has been more of technical back up rather than governance. Role of institutions like VDCs has been diminished.
- Property rights for non-conventional resources like Cordyceps and Morchella harvested from high alpine pastures have not been defined and no institutional mechanisms are in place for management.

Issues

- Traditionally, property rights and management system have taken into account the ecological boundaries of resources and social relations of production and resource use. Over-ruling of such socio-ecological boundaries of resource use by political administrative boundaries has impacted on resource management.
- There are instances where social boundaries of resource use over-rule administrative boundaries as in the case of Cordyceps harvest in Byas of Nepal where farmers from Darbyang of India are allowed.

Mainstreaming Community-based Environmental Monitoring/Common Standards for CEMP

An report on mainstreaming community-based environmental monitoring /common standards for CEMP was presented by Dr. Robert Zomer, ICIMOD. Main content of his presentation as follows:

Mainstreaming community monitoring

A 'Community-Based Monitoring Manual' was delineated in the Project Document as Activity 3.2, however, it was agreed by consensus of that this activity was premature in light of the overall development of the project, and that, instead, what was required was the articulation of the principle of community based monitoring their inclusion within the CEMP process. As such, it was decided to instead produce a 'chapter' on this topic, for inclusion into the regional CEMP, and as a base document for the RCF.

- Process
 - Preliminary basic document – ICIMOD
 - Input from Partners
 - Iterative revision process
 - Final document for inclusion into CEMP

Common standards and protocols

- Discussion at 1st Regional Workshop
 - Initial set of parameters identified
 - Incorporated into CEMP process
- Will be developed in detail in Startup Phase
- Involvement of UNEP-WCMC

Role of UNEP-WCMC

- UNEP-WCMC
 - Expertise
- International Centre of Excellence
- Input into / Review of – CEMP
 - Technical review – commonalities - global efforts
 - International outreach
- Interfacing global efforts –
- Input into / Review of Conservation Strategy
- Common standards and protocol
 - Startup (next) Phase

Workflow

- Finalising Feasibility Assessment
 - Review by partners of Country Reports
 - Review by partners of Synthesis
- CEMP / Conservation Strategy
 - Synthesis submitted to partners
- Review by partners of Synthesis
- Revision approved by consensus
- Community monitoring for CEMP / RCF
 - iterative process
- Draft to partners – partner input – revision / Synthesis

Draft outline of Regional Cooperation Framework

An outline on Regional Cooperation Framework Agreement was presented by Dr. Eklabya Sharma, Programme Manager. Several articles in the CBD which give impetus to regional cooperation given the imminent need for transboundary cooperation in conservation of biological and genetic diversity. Since the area proposed for the KSL under the RCF is a legally pluralistic area predominantly inhabited by local, rural and indigenous/tribal communities, it is also pertinent to take into consideration the local and customary laws of the communities. While undertaking planning and programming special attention should be paid to:

- Transboundary transport, energy and telecommunications infrastructure and services
- Conservation and sustainable use of natural resources
- Coherent town and rural planning in border areas
- Preventing cross-border impact of pollution
- Integrated land use planning, and environmental impact assessments

As initial input into the RCF process, the following guidelines, or principles, were identified by partners during the KSL First Regional Workshop.

- The principle of respecting sovereignty
- The principle of following the laws and regulations of the respective member country
- The principle of equality and mutual benefit
- The principle of sustainable development
- The principle of counselling and serving development of local communities

The proposed RCF, in addition to the laws and policies referred to in the Feasibility Report (Policy and Enabling Environment), should take into account a focused array of specific target areas identified as relevant both nationally, and regionally. In this context, it was agreed that each country teams and UNEP and ICIMOD will separately discuss the draft and provide inputs and suggestion to the RCF agreement outline.

Plenary Discussion and Finalisation of Frameworks

After group discussion, each country teams and UNEP and ICIMOD provided inputs and suggestion to the RCF agreement process. Concrete feedback was provided by all the countries.

UNEP feedback

- Will look similar initiatives in other regions to see whether we can borrow some experiences for this.
- Eastern Asia experiences on regional cooperation on air pollution: the document should have no legal binding (to facilitate agreement by the involved countries) , simple, focusing on science, capacity building and technical part.

Response from ICIMOD

- First draft to start discussion process
- Issues raised will be addressed iteratively in next versions
- It should be a simple focused on nonpolitical issues such as research and capacity building and others.
- The circulated document will be dropped and shall not be further used for the discussion. A UN expert will send us a sample agreement from other regions and based on this we will draft a new one by integrating your recommendations. ICIMOD will draft the new one, invite two reviews from each country and then revise it for December discussion.

In the end , Chairperson emphasised that the document was still too ambitious and contains many contentious issues. It should start from soft issues. Must be highly simplified and be easily understood. Focusing should be more on technological part and sharing of good experiences. Should highlight the benefits of the KSL programme that will bring true benefits to the local people of the three countries.

Workplan and Timelines

After revisiting the workplan, the timeline for the various milestones was adjusted to take into account progress to date, input from the partners on constraints associated with the implementation of various activities, and the limited duration of the project. The following plan and timeline were agreed to by all partners. All the regional documents will be finalised after receiving inputs from the various countries and UNEP.

Closing Remarks

Dr. Eklabya Sharma (ICIMOD): It is a great pleasure to have such a very focused meeting. We are very happy to be part of the whole process, to have the partners from all the countries. KSL is a very important project for ICIMOD. Mostly importantly, it represents a new modality of project development in which all the partners are involved in

Milestone	Institution	Timeline
Feedback on Feasibility Synthesis Report	Countries/UNEP	15 October 2010
Finalisation of Feasibility Synthesis Report	ICIMOD	30 October 2010
Feedback on Country Conservation Strategy and CEMP	All countries, UNEP & ICIMOD	30 September 2010
Finalisation of Country Conservation Strategy and CEMP	Countries	30 October 2010
Synthesis of Conservation Strategy and CEMP (draft)	ICIMOD	30 November 2010
Inputs from World Conservation Monitoring Centre (WCMC) on CEMP	ICIMOD	September to December 2010
Draft RCF prepared and shared with countries and UNEP	ICIMOD	30 November 2010
Third Regional Workshop to be held in Kathmandu	ICIMOD & Nepal	16-18 December 2010
Supportive studies on TK and ecotourism and equipment for Nepal	ICIMOD & Countries	September to December 2010
Finalised Regional Cooperation Framework	ICIMOD	1 January 2011
Government consultation on RCF	ICIMOD & Countries	Complete by end Jan 2011
Conclusion of RCF Process	Countries & ICIMOD	By Feb 2011 *

project development. We would like to use the model in the future. ICIMOD partnership with China is very special. The Jiuzhaigou venue was proposed by CAS during our Indian meeting. China ICIMOD has taken the initiative to organise this workshop. It is a very important gesture from CNICIMOD to do this and we appreciate this very much. Thanks for all partners for the hard work in the past months. Thanks also go to UNEP for their support. Through Almora of India to Jiuzhaigou of China, we have had a lot of interactions with UNEP. UNEP and ICIMOD are cooperating at very strategic level. Thanks to CNICIMOD for their work. Thanks to ICIMOD staff for their work and wish them to keep the moment of work.

Dr. Elizabeth Migongo-Bake (UNEP): It is a privilege to be a part of the KSLCI process. Happy to see the spirit from the three countries to drive the process from the very beginning to the present stage. Partners have been cooperating together to push the process. We wish that the partners can continue their spirit to complete the strategy. We also wish that the nodal agencies can be informed of the process and the results of the work. UNEP has already booked the time for the conclusion of the RCF and wishes to see it happen. This was a successful workshop and we wish to join the workshop in December. Thank ICIMOD for long-term cooperation which has understood the test of time. Thank CAS for hosting the meeting. Thanks to the contribution of every one of the participants.

Dr. Lok Man Singh Palni (India): Special thanks to China for hosting the meeting. It was a demanding meeting and people have been working very hard. GB Pant Institute is going to hold a Workshop on 6-8 December on Himalayan biodiversity. In Nagoya, GB Pant is also having a side event. There will also be an Indian pavilion in that occasion. CBD COP 11 will be hosted in India and we wish that ICIMOD can hold a session. The present Minister of Environment is very much interested in the KSL. He went to Beijing and proposed to have a specific meeting on KSL. Thanks to those working behind the scene.

Mr. Surya Prasad Joshi (Nepal): In the two day workshop, we discussed on feasibility reports, strategies, and CEMPs by respective countries. There were a lot of recommendations and suggestions. As was mentioned, in Nepal the landscape approach is adopted for managing natural resources. We had have some experiences in this respects (for example, by working with WWF). These projects have contributed in different ways to biodiversity conservation and livelihood improvements. This KSLCI will have its own importance on Nepal. In the Conservations Strategy, we identified problems and gaps. Somehow, most of them are similar across the countries. It may be good to have a common strategy but each country can have its own priorities. On behalf of our delegation, we express sincere thanks to experts from China and India for their sharing of information, ICIMOD and UNEP for supporting the work and for my colleagues for hard work. All are invited to attend the December conference in Kathmandu.

Dr. Shi Peili (China): This regional workshop is very successful and fruitful. We discussed strategies and many issues. This project is very important also for local people in terms of improving the livelihood. CAS attached great importance to this project. Thanks to ICIMOD for this workshop. Also thank CNICIMOD for their hard work.

Dr. Krishna Prasad Oli (ICIMOD): Thank you Prof. Hu and ICIMOD – CN committee. Firstly, thank those who gave all the ingredients from western Nepal – India to Purang County. I am grateful to you for cooperation. Particularly, I have been working intensively with Dr. Shi and Dr. Rawat and Dr. Chaudhary for the workshop. Specially thankful to Ms Hu Ying and Prof. Hu Pinghua for their hard work to organise this workshop. Thanks to Prof. Luorong, for his very constructive support on studies and to the project. Thanks all the participants. Thankful to UNEP representatives for your support and thanks also go to Dr. Sharma and my other colleagues. Thanks to GB Pant institute for their work (especially Dr. Palni).

Hu Pinghua (China): Thanks to all very much for your participation during the workshop.

Field Trip

On the last day of the workshop (6th April 2010) a field trip to Jiuzhaigou National Park was organised. The day was spent visiting and studying the Jiuzhaigou Natural Reserve pattern. Prof. Hu Pinghua gave brief details of the community participation and management pattern: setting specialised institutions and utilising free community organisations to work with residents; creating multiple channels for community residents to obtain employment and participate in managing; building up shareholding tourism companies; setting up fair profit distribution mechanism, etc. The participants showed keen interest in the pattern, and felt personally the effects of this pattern through visiting Jiuzhaigou National Park.

Annex 1: Workshop Agenda

Second Regional Workshop

Kailash Sacred Landscape Conservation Initiative (KSLCI)
4 – 6 September 2010, Jiuzhaigou, Sichuan, China

Day 1 – 4th September 2010 (Saturday)

Time	Agenda	Responsible person
Opening Session Chaired by Dr. Eklabya Sharma		
08:30 – 09:00	Registration of participants	
09:00 – 09:15	Welcome to the participants	Director, Chengdu Institute of Mountain Hazards and Environment Research, CAS, China
09:15 – 09:30	Objective of the Workshop and project progress	Krishna Oli, ICIMOD
09:30 – 09:45	Opening Remarks	ICIMOD
09:45 – 10:00	Opening Remarks	UNEP
10:15 – 10:30	Opening Remarks	China Committee for ICIMOD
10:30 – 10:45	<i>Tea /Coffee</i>	

Technical session 1

10:45 – 10:55	Brief Introduction of the participants	Participants
10:55 – 11:40	Gaps challenges and opportunities for conservation and sustainable use of biological resources in Kailash Sacred Landscape – Feasibility analysis at the regional level	Krishna Oli, ICIMOD
11:40 – 12:45	Discussion	
11:45 – 12:45	Discussion about the types of maps that need to be produced for the Conservation Strategy and RCF	
12:45 – 13:45	<i>Lunch</i>	

Technical Session 2

13:45 – 14 :45	Presentation of conservation strategy	IGSNRR, CAS, China
14:45 – 15:45	Presentation of conservation strategy	GBPIHED, India
15:45 – 16:45	Presentation of conservation strategy	TU, Nepal
16:45 – 17:00	<i>Tea/Coffee</i>	
17:00 – 18:00	Discussion and conclusion of the day	Notes taken by Krishna and Robert
18:30 – 21:00	<i>Reception Dinner</i>	

Day 2 – 5th September 2010 (Sunday)

Session facilitation: MOEF Hem Pande

Time	Agenda	Responsible person
08:30 – 08:40	Review of the previous day	UNEP
08:40 – 09:25	Presentation on Comprehensive Environmental Monitoring Plan	IGSNRR, CAS, China
09:25 – 10:10	Presentation on Comprehensive Environmental Monitoring Plan	TU, Nepal
10:10 – 10:55	Presentation on Comprehensive Environmental Monitoring Plan	GBPIHED, India
10:55 – 11:10	Discussion	
11:10 – 11:20	<i>Tea/Coffee</i>	
11:20 – 11:40	Community, local and traditional knowledge system, conservation and resources management ,institutional mechanisms with potential to support for process	Krishna Oli
11:40 – 12:00	Mainstreaming Community-based environmental monitoring/ common standards for CEMP	Robert Zomer
12:00 – 12:30	Discussions	
12:30 – 13:30	<i>Lunch</i>	
13:30 – 14:00	Presentation of draft Outline of Regional Cooperation Framework	Eklabya Sharma
14:00 – 14:30	Discussions	
14:30 – 15:15	Group work to finalize the draft Format for Regional Cooperation Framework	
15:15 – 15:45	Group presentation in the plenary, discussion and finalization of frameworks	
15:45 – 16:00	<i>Tea/Coffee</i>	
16:45 – 17:15	Revisiting work plan, timelines (Milestones and timelines and future plan of the project second phase)	ICIMOD/UNEP/Partners

Closing Session: Chaired by CNICIMOD Committee

17:15 – 17:45	Closing remarks (6 minutes each)	
	ICIMOD	ICIMOD
	UNEP	UNEP
	India	MOEF/GBPIHED
	Nepal	GoN
	China	CAS
17:45 – 17:55	Session closure	CNICIMOD Committee
17:55 – 18:00	Vote of thanks	CNICIMOD Committee

Day 3 – 6th September 2010 (Monday)

	Field visit and cultural show in the evening	
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Annex 2: List of Participants

China

1.	Dr. Shi Peili Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences Deputy Director of Lhasa National Ecological Research Station A 11, Datun Road, Chaoyang District, Beijing 100101, P R China Tel: +86 10 64889026; 136 7124 0032 (Mobile) Fax: 86 10 64854230 Email: shipl@igsnrr.ac.cn
2.	Dr. Zhou Caiping Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, A 11, Datun Road, Chaoyang District, Beijing 100101, PR China Tel: +86 10 64889813; 135 2079 8161 (Mobile) Fax: 86 10 64854230 Email: zhouc@igsnrr.ac.cn
3.	Dr. Luo Rong Zhandui China Tibetology Research Center 131 East Road of North 4th Ring, Beijing 100101, China Tel: 13370126037 Email: luorzh@126.com
4.	Mr. Fan Yibin PhD candidate 100 Beijing University of Technology Tel: 15101140411 E-mail: fanyibin1976@163.com
5.	Prof. Hu Pinghua CNICIMOD, Chengdu Institute of Mountain Hazards and Environment, Chinese Academy of Sciences #.9, Block 4, Renminnanlu Road, Chengdu, China Tel: +86 28 85237507 Mobile: 13980674218 Email: pinghuahu@imde.ac.cn
6.	Ms. Hu Ying CNICIMOD, Chengdu Institute of Mountain Hazards and Environment, Chinese Academy of Sciences #.9, Block 4, Renminnanlu Road, Chengdu, China Tel: +86 28 85237507 Mobile: 13550281984 Email: huying@imde.ac.cn

India

7.	Dr. Lok Man Singh Palni Director, GB Pant Institute of Himalayan Environment and Development (GBPIHED) Paryavaran Bhavan, Kosi Katarmal, Almora, Uttaranchal, India Tel: 91-5962-241015; 91-4962-241034; (Mobile) 09412092188 Fax: 91-5962-241014 Email: lmspalni@rediffmail.com, psdir@gbpihed.nic.in
8.	Dr. Ranbeer Singh Rawal Scientist, G B Pant Institute of Himalayan Environment and Development (GBPIHED) Kosi Katarmal, Almora, 263643 Uttarakhand, India Tel: 91-5962-241041 *36; +91-5962-241038; +91-9410392114 (Mobile) Fax: 241150 Email: rsrawal@gbpihed.nic.in; ranbeerrawal4@gmail.com
9.	Dr. Subrat Sharma Scientist, GB Pant Institute of Himalayan Environment and Development (GBPIHED) Kosi Katarmal, Almora, 263643, Uttarakhand, India Tel: 91-5962-241041 *36; +91-5962-241038 Fax: 241150 Email: subrats@gbpihed.nic.in;
10.	Dr. G.S. Rawat Professor, Wildlife Institute of India, Department of Wildlife Habitat Ecology Post Box # 18 Chandrabani, Dehradun – 248 001 Uttarakhand, India Tel: + 91 135-2640111 to 115(O), (Mobile) 09412053542 Fax: + 91 135-2640117 Email: rawatg@wii.gov.in
11.	Mr. Manoj Chandran Deputy Conservator of Forests (Working Plan) Pithoragarh Forest Division, Pithoragarh Forest Division Pithoragarh (Uttarakhand) Mob: 09837851572 E-mail: chandranmanoj@hotmail.com

Nepal

12	Professor Dr. Ram Prasad Chaudhary Programme Coordinator, KSLCI Central Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal Tel: 977-1-4333722 (Off) 4331322, Tel: 4288394 (Res.); Mobile: 9841283652; Fax: 977-1 4333722 Email: ram@cdbtu.wlink.com.np
13	Professor Dr. Krishna Kumar Shrestha Department Head Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal Mobile: 9841221465 Email: kkshestha@cbdtu.edu.np
14	Mr. Surya Prasad Joshi Joint secretary (Nodal person and member secretary of KSLCI steering committee) Foreign aid coordination division Ministry of Forests and Soil Conservation Singha Durbar, Kathmandu, Nepal Mobile: 9841628480 Email: joshi_spj@yahoo.com
15	Dr. Keshav Prasad Sharma Deputy Director General Department of Hydrology and Meteorology, Babar Mahal. Mobile: 9802011786 Email: kpspoudel@gmail.com
16	Mr. Prakash Sayami Director General Department of Forests, Babar Mahal Phone ++(977)1 4227574, 4221231
17	Mr. Gopal Prasadd Upadhyaya Director General Department of National Parks and Wildlife Conservation Babarmahal, Kathmandu Mobile: 9741053661 gopalupadhyay@hotmail.com

UNEP

18.	Dr. Elizabeth Migongo-Bake, PhD Task Manager, Dryland Ecosystems Terrestrial Ecosystems Unit (TEU) Division of Environment Policy Implementation (DEPI) United Nations Environment Programme (UNEP) P.O Box 30552, Nairobi, Kenya Tel: +(254-20)-762-3261 From Europe and N America, dial via Italy +39 0831 24 3000, wait for voice then dial 124 3261 Email: elizabeth.migongo-bake@unep.org Web: http://www.unep.org/
19.	Dr. Subrato Sinha Environmental Affairs Officer United Nations Environment Programme for Asia and the Pacific (UNEP ROAP) 2nd Floor, Block-A, United Nations Building Rajdamnern Nok Avenue, Bangkok 10200 Tel: 66-2-2882259, Fax: 66-2-2803829 Email: subrata.sinha@unep.org
ICIMOD	
20.	Dr. Eklabya Sharma Programme Manager, Environmental Change and Ecosystem Services E-mail: esharma@icimod.org
21.	Dr. Robert Zomer Deputy Programme Manager, Environmental Change and Ecosystem Services Email: rzomer@icimod.org
22	Dr. Krishna Prasad Oli Regional Coordinator, Kailash Sacred Landscape Conservation Initiative, Environmental Change and Ecosystem Services Email: koli@icimod.org
23.	Dr. Yi Shaoliang Action Area Team Leader, Rangeland Resource Management Environmental Change and Ecosystem Services Email: syi@icimod.org
24.	Dr. Ester Kruk Tourism Specialist Sustainable Livelihoods and Poverty Reduction G.P.O. Box 3226, Kathmandu, Nepal Tel: +977-1-5003222; Fax: +977-1-5003277, 5003299 Email: ekruk@icimod.org
25.	Mrs. Prabha Shrestha Payment Controller Budget and Finance Section E-mail: pshrestha@icimod.org

Acronyms and Abbreviations

CAS	Chinese Academy of Sciences
CNICIMOD	Chinese Committee on ICIMOD
CBD	Convention on Biological Diversity
CEMP	Comprehensive Environmental Monitoring Plan
GBPIHED	GB Pant Institute of Himalayan Environment and Development
GTZ	German Technical Cooperation
HKH	Hindu Kush-Himalayas/Himalayan
ICIMOD	International Centre for Integrated Mountain Development
IGSNRR	Institute of Geographical Sciences and Natural Resources Research
ITP	Institute of Tibetan Plateau Research
KIB	Kunming Institute of Botany
KSL	Kailash Sacred Landscape
KSICI	Kailash Sacred Landscape Conservation Initiative
MoEF	Ministry of Environment and Forests (India)
MoE	Ministry of Environment (Nepal)
MoFSC	Ministry of Forests and Soil Conservation (Nepal)
NGO	Non-government Organisation
RCF	Regional Cooperation Framework
RMC	regional member countries
ROAP	Regional Office Asia and the Pacific
TAR	Tibet Autonomous Region
TU	Tribhuvan University
UNEP	United Nations Environment Programme
UK	Uttarakhand State - India
WII	Wildlife Institute of India

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.

Globalisation 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.



About UNEP

The United Nations Environment Programme (UNEP), established in 1972, is the voice for the environment within the United Nations system. UNEP acts as a catalyst, advocate, educator and facilitator to promote the wise use and sustainable development of the global environment. To accomplish this, UNEP works with a wide range of partners, including United Nations entities, international organizations, national governments, non-governmental organizations, the private sector and civil society.

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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. Krishna Prashad Oli
KSLCI Regional Coordinator
koli@icimod.org

Dr. Robert Zomer
KSLCI Technical Coordinator
rzomer@icimod.org