

# SUSTAINABLE MOUNTAIN DEVELOPMENT

in the greater Himalayan region



## Climate Change and the Himalayas

More Vulnerable Mountain Livelihoods,  
Erratic Shifts in Climate for the  
Region and the World

### *In this issue*

The Mountain Perspective as an Emerging  
Element in the International Development  
Agenda

Climate Change, the Himalayan Mountains,  
and ICIMOD

Regional and Country Perspectives:  
Bangladesh, China, India, Pakistan

# Contents



9

## The Mountain Perspective as an Emerging Element in the International Development Agenda

Andreas Schild, *Director General, ICIMOD*

5



15

## Mountain Development in South Asia

Chenkyab Dorji, *Secretary General of the South Asian Association for Regional Cooperation*



11

## Climate Change, the Himalayan Mountains and ICIMOD

Jian Liu *Deputy Secretary, Intergovernmental Panel on Climate Change* and Golam Rasul, *Policy Development Specialist, ICIMOD*

## Mountain Conservation through Accelerated Climate Change

Vinod K. Gaur, *Distinguished Professor, Indian Institute of Astrophysics*



19



22

## Strengthening Environmental Coordination in India

N.C. Saxena, *Ex-Secretary, Planning Commission, India*

## Lessons from Water Management in Bangladesh

Jahir Uddin Chowdhury, *Director, Institute of Water and Flood Management, Bangladesh University of Engineering and Technology*



25



28

## Some Thoughts on Alleviating Poverty in the Himalayan Mountains

Amir Muhammed, *Rector, National University of Computer and Emerging Sciences*

## China's Policy and Programme Priorities for Mountain Area Development

Zuo Ting, *College of Humanities and Development, China Agricultural University*



31



34

## A Changing Role for ICIMOD in Support of Policy Options

Narpat Singh Jodha, *Senior Associate Scientist, ICIMOD*

## ICIMOD's Approach to Policy Support: A Strategic Way Forward

Madhav Karki, *Deputy Director General, ICIMOD* and Golam Rasul, *Policy Development Specialist, ICIMOD*



38

## Institutional Profiles: BARC and PARC

### CENTRE NEWS

#### MTAP Highlights

PAC+ meeting reviews and approves	39
ICIMOD's new Strategic Framework	40
A fruitful Extraordinary Meeting of the International Support Group	41
Preparation of ICIMOD's new Medium-Term Action Plan 2008/2012	42
ICIMOD raises NRs 567,352 for Nepal flood victims	43
A remarkably different trend in beekeeping in the Hindu Kush-Himalayas	43
Noway supports ICIMOD's next Five-Year Strategic Plan	43
ICIMOD Books-online going strong	44
ICIMOD workshops, meetings, and training programmes	45
Mountain Forum	46
Asia-Pacific Mountain Network	47
New Memoranda of Understanding and Agreements	48
Outreach activities	49
Recent ICIMOD publications	53
New appointments	



## Dear Friends of ICIMOD,

I am pleased to introduce issue No. 53 of our newsletter, *Sustainable Mountain Development*. This issue's theme is **Climate Change and the Himalayas: More Vulnerable Livelihoods, Erratic Climate Shifts for the Region and the World**. We are honoured in this volume to have the insights and views of eminent scholars and authorities from a host of regional and international organisations including the South Asian Association for Regional Cooperation (SAARC), and the Intergovernmental Panel on Climate Change (IPCC), and representative perspectives and experiences of governments and research and educational institutions in five of our eight member countries. Our distinguished panel of contributors have covered the broader issues of water, the environment, climate change and livelihoods, and poverty reduction.

The Hindu Kush-Himalayan (HKH) region is an integral part of the global ecosystem. This mountain region is rich in biological and environmental resources and serves as a water reservoir and a regulator of climate for the region and the world. The Himalayan environment supports more than 1.5 billion people and the global environment through environmental services. This environment is under constant stress as a result of environmental degradation and climate change. A key challenge facing policy makers is how to mitigate the impacts of climate change and enhance the adaptation and resilience of mountain people.

The papers in this issue address specific aspects of this challenge. By putting the mountain agenda in a wider development context, I have tried to identify in an overview paper emerging development and environmental issues and challenges in the HKH region, highlighting the role ICIMOD and partners will play in addressing them. Regional cooperation will continue to be a vital element in addressing the critical issues of poverty, sustainable management of natural resources, and cross-border issues of ecosystem services and disaster risk reduction. His Excellency, Mr. Chenkyab Dorji, SAARC Secretary General, highlights some of the potential areas for collaboration and ICIMOD's part as a non-political regional knowledge centre in facilitating this process.

Available and useful knowledge and information about and within the region should be the bedrock of our interventions. Dr. Jian Liu, Deputy Secretary of the Intergovernmental Panel on Climate Change, draws our attention to some data and knowledge gaps in the Himalayas, particularly in the areas of climate, hydrology, and meteorology. ICIMOD and other regional and international organisations can contribute to reducing this scientific uncertainty by building regional knowledge at ICIMOD. Prof. Vinod Kumar Gaur of the Indian Institute of Astrophysics, urges a collective initiative to preserve this global heritage region, the Himalayas.

Dyutiman Choudhary



ICIMOD Director General Andreas Schild at the India consultation. Sitting next to him is Dr Pradipto Ghosh, India's former environment secretary and a member of the committee advising the Indian Prime Minister on climate change issues.

Drawing from experience in Bangladesh, China, India, Nepal, and Pakistan, our other contributors present the programmes and priorities of each country. Dr. N.C. Saxena, former Secretary of the Planning Commission, Government of India, highlights the need to integrate environmental concerns into development planning and programming, and urges better integration among ministries and departments as well as more clear-cut policies on environmental management. Prof. Jahir Uddin Chowdhury, Bangladesh University of Engineering and Technology, argues for an integrated approach

to water management, while Dr. Amir Muhammed, Rector, National University of Computer and Emerging Sciences, Islamabad, outlines a strategic framework for alleviating poverty in mountain areas based on his professional career and practical knowledge of Pakistan. Prof. Zuo Ting, China Agricultural University, describes China's policy and programme priorities for promoting mountain development as envisioned under China's current 11th Five-Year Plan.

The remaining contributors are our own staff at ICIMOD. Recognising the critical role of policy and the institutional environment, Dr. N. S. Jodha explains the Centre's evolving role in providing policy inputs to the regional member countries. Dr. Golam Rasul and Dr. Madhav Karki sketch a framework for our policy work in order to support the strategic goals of poverty alleviation, resource conservation, and climate change mitigation and adaptation in the HKH region.

My special thanks and profound appreciation to the authors for their valuable contributions to this issue. I believe that the insights and experiences brought out will not only shed light on ICIMOD's future course of action, they will also stimulate further discussion and cooperation among the scientific community and development organisations, and will lead to new research and action. Dr. Rasul, Dr. Karki, and the editorial team deserve special mention and appreciation for putting this issue together. The contributors have set the stage well for the work that ICIMOD will be doing in the coming years. We are presently fleshing out more concrete programmes together with our regional stakeholders. The coming edition will highlight how we hope to have an impact on the sustainable management of key resources, the regular provision of ecosystem services, and the wellness of the people. I hope you will not miss the appointment.

Sincerely,  
**Andreas Schild**  
November 2007



Sisha Pangma (8012m) viewed from the the Tibetan Plateau

Joyce M. Mendez



# The Mountain Perspective as an Emerging Element in the International Development Agenda

Andreas Schild, Director General, ICIMOD, [aschild@icimod.org](mailto:aschild@icimod.org)

J. Ramonette Pacia



Tamang village in Rasuwa district, Nepal

**Mountains occupy 24% of the global land surface area and are home to 12% of the world's population. Mountains have significant ecological, aesthetic, and socioeconomic importance not only for those living there but also for people living beyond.**

## Mountains and the evolution of an international development agenda

About 10% of the world's population depends directly on the use of mountain resources for their livelihoods and well-being, and an estimated 40% depends indirectly on them for water, hydroelectricity, timber, mineral resources, recreation, and flood control. Mountains are the earth's unique freshwater reservoirs. They store immense amounts of water and hold them to gradually release to support the lives downstream. The important

cooling and mitigating climatic services offered by the frozen ice of the mountains to the atmosphere have been taken as a given fact of nature. Despite their critical importance for the well-being of humanity, mountains receive little attention in the international development agenda.

The prevailing global concerns focus on economic growth, macroeconomic stability, trade liberalisation, privatisation, deregulation, and structural reform. These macro trends have left little room for local, geographical,



Trekkers  
buying  
local  
Tamang  
woven  
products

**We may be economically globalised, but culturally we are becoming more and more local. We value local products, appreciate an ecologically intact landscape, and have sympathies for local differences.**

cultural, and social differentiation. As a result, many countries are left with pockets and huge areas of poverty. Mountains are typical regions where global trends in terms of trade, economic growth, and climate change have not considered the specific characteristics such as physical environment, economic structure, public and community institutions, social norms, and economic opportunities and constraints.

Structural adjustment policies in the 1980s, poverty reduction strategies starting in the 1990s, and the Millennium Development Goals (MDGs) have brought poverty to the top of the international development agenda. The policies deduced from these agendas have mostly led to country-wide national strategies without considering local characteristics and have failed to address location-specific needs of mountain communities. As a result, with the exception of some countries where some growth has been achieved, mountain regions in many parts of the world, including the Hindu Kush-Himalayan (HKH) region, lag behind in development.

Since the second half of the 20th century, there has been a growing interest in mountain development, with rising environmental awareness and concerns for the deterioration of the global environment including global warming, climatic change, biodiversity loss, and changes in livelihoods and economies, which seriously threaten the ability of mountain regions to provide the

goods and services upon which humanity depends. Realising the global importance of mountains, the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992, incorporated a specific chapter in Agenda 21, entitled '**Managing Fragile Ecosystems: Sustainable Mountain Development**', the plan for action endorsed by the heads of state of most of the world's nations.

In 1995, a global NGO consultation in Lima, Peru, brought together 110 participants from 40 countries. This meeting led to the establishment of **Mountain Forum** – a global network for mountain communities, environments, and sustainable development, whose secretariat is now housed at the International Centre for Integrated Mountain Development (ICIMOD).

Mountain issues began receiving high international, political, and scientific visibility only when the UN General Assembly declared 2002 as the **International Year of Mountains (IYM)**. The IYM ended officially with a Global Mountain Summit in Bishkek, Kyrgyzstan in November 2002, and the formulation of recommendations for concrete action towards sustainable mountain development, providing guidance to governments and others on how to improve the livelihoods of mountain people, protect mountain ecosystems, and use mountain resources more wisely. In these processes, mountains have gained importance and entered into the international development agenda.

These initiatives have remained too selective and specific and have hardly ever led to a shift in priorities of international funding institutions (IFIs), UN agencies, or bilateral donors. The global and macro visions have largely dominated the allocation of funds. Regional differentiation remained at a high level of aggregation, reducing investments in Asia and Latin America, and increasing the attention for Africa.

### **Globalisation calls for locally identified niches and adaptation to climate change and requires geographically differentiated approaches**

Globalisation as an economic, trade, finance, and communication phenomenon is well-recognised and even those questioning it tend to agree that globalisation cannot be stopped. At the same time that it is happening another tendency is gaining importance. We might be economically globalised, but culturally we are becoming more and more local. There is a growing feeling of being world citizens at home not in a nation-state, but in a town, or in a valley. We value local products, appreciate an ecologically intact landscape, we have sympathies for local differences, we celebrate them! This refers also to the ethnic aspects and has led to excesses in areas where the state had completely imploded and where ethnic identification has been questioned and associated with scarce resources. Globalisation has created localisation. In this context, mountains have become a space for retreat, for recovery, and for identification.

Globalisation and climate change have brought other dimensions to the awareness of the scientist, and a growing number of citizens and politicians. The vision of melting glaciers and of mountains falling down because of receding permafrost has become a frightening vision. It questions the vision of 'mountains built for eternity' and the growing concern is for the sustainability of systems we have all taken for granted. This refers to the familiar panorama of snowcapped mountains, the wealth of biodiversity as a source of beauty and recovery, but also as a heritage for mankind. It refers also, and very realistically, to the availability of water, and electricity, and reaches the basic requirements and services we need for our survival. All of a sudden, mountains as a natural system with natural and human features are not anymore in a position to provide the services we have taken for granted.

### **The Hindu Kush-Himalayan region**

The HKH region, stretching from Afghanistan in the west to Myanmar in the east, covers the mountain ranges from the Tibetan Plateau and other Himalayan mountain areas of China in the north, to the Indo-Gangetic Plains in the south. The region directly

sustains more than 150 million people, but the water basins count 1.5 billion inhabitants, and up to 3 billion people live from the food and energy produced by the Himalayan rivers. The region is also home to more than 100 ethnic groups and indigenous communities speaking as many languages and dialects. This remarkable socioeconomic and cultural diversity is matched by a high degree of environmental diversity, with huge variations in climate, soil, vegetation, and wildlife within the region.

### **Salient features and the challenge for the HKH region**

**Persistent poverty.** Despite notable economic growth in some countries of the region, poverty and inequality remain persistent and ubiquitous, and the vulnerability and severity of poverty is much higher in mountain areas. Poverty combined with limited employment and economic opportunities forces out-migration of young people. The extent of adult male migration in some countries went up to 40%. High migration rates have led to a significant change in gender roles in the region, with already overburdened women being forced to take up added roles for both farm and household activities.

**Degradation of resources and ecosystem services.** Natural resources and accompanying environmental and ecosystem services are increasingly degraded. This has exacerbated environmental hazards such as landslides, floods, and glacial lake outburst floods (GLOFs), among others. Deterioration of environmental quality has severely affected the regional and global environment, including climate. In China, for example, precipitation has decreased by 10% in the last 50 years. Similarly, glacier area has decreased by 25% in the last 200 years. A recent study shows that China's Qinghai-Tibetan Plateau glaciers are shrinking by 7% per annum because of global warming.

**Shrinking water storehouse.** The Himalayas are considered as a 'third pole', as here lies the greatest concentration of snow and ice outside of the pole. However, the storehouse of fresh water has been degrading over the years due to global warming and climate change.

**Climate change.** The Himalayan region including the Tibetan Plateau has shown consistent trends in overall warming during the past 100 years. With rising temperatures, areas covered by permafrost and glaciers are decreasing in much of the region. In many areas a greater proportion of total precipitation appears to be falling. As a result, snowmelt begins earlier and winters are shorter. This affects river regimes, natural hazards, water supply, and peoples' livelihoods. Many



Himalayan glaciers are retreating faster than the world average and are thinning by 0.3-1 m/year.

## Emerging issues and ICIMOD's position

Based on the accumulated experience of 23 years, and considering the changing institutional environment of the member countries – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – ICIMOD is refocusing its priorities to maximise its contributions to climate change adaptation, and building resilience of the people of the Hindu Kush-Himalayas.

ICIMOD aims to strengthen its role as a regional knowledge broker and clearing house and as a learning and enabling centre. It intends to contribute significantly to monitoring water resources – closing some of the important knowledge gaps signaled by the IPCC (2007) – and to reducing climate-induced risks. A second strategic orientation is sustainable provision of ecosystem services. Finally, ICIMOD wants to support and document examples of adaptation of livelihoods of marginal mountain communities, reducing their poverty.

The enormous dimensions of the tasks and challenges ahead require ICIMOD to choose a strategy focusing on areas of its core competencies, working with and through strategic national partners and customising international state-of-the-art through collaboration with international resource centres. Growing regional ownership of the process and international solidarity will be the prerequisites for success.

We are convinced that as an inter-governmental, non-political and technical institution, ICIMOD is in a privileged position to make a substantial contribution. Nevertheless a sustainable adaptation requires globally-agreed mitigation measures and enhanced regional and national adaptation strategies.

**In particular, ICIMOD, with its partners, sees its challenges in the following.**

**Strengthening regional cooperation.** As the HKH region gradually integrates into the global markets, institutions and policies and their environments are being affected by the ecological and societal processes of global change. No country alone can address this effectively; it needs concerted efforts from all countries of the region and the globe.

**Creating a mountain knowledge base.** There is little data and information at a regional scale on climate, hydrology, and meteorology, and this has hindered proper planning and decision-making. Because of this dearth, the recent IPCC report (2007) categorises the HKH region as a 'white spot' on the global climatic map. Given the global ecological significance of the region and the importance of scientific data and information,

it is essential to create regional databases on different aspects of mountain regions as well as strengthen regional cooperation for the exchange of data and knowledge to reduce scientific uncertainty about the region and facilitate proper planning and decision-making by the RMCs and international organisations.

**Disseminating successful results in sustainable mountain development.** In order to promote sustainable mountain development, it is vital to share and disseminate successful policies, programmes, and national strategies among the RMCs.

**Disaster risk reduction and flood forecasting.** Floods are the main natural disasters aggravating poverty in the Himalayas. Technical advances in flood forecasting and management offer an opportunity for regional cooperation in disaster management. Transboundary disaster risk management should become an important regional and international political agenda. Preparedness for disaster through disaster management is the best solution.

**Strengthening ecosystem services.** All the countries of the region have now recognised the mountain region's fragility and the need for concerted action to minimise risks and effects. This recognition, however, needs to be reflected in policies and programmes that provide economic incentives to mountain communities for their environmental services, for being stewards of the mountain ecosystems and environmental resources. ICIMOD wants to concentrate on the following ecosystem services: integrated watershed management, the sustainable management of rangelands, and the conservation and management of biodiversity.

Globalisation and climate change put an increased stress on mountain communities. The adaptation of livelihood systems through the promotion of high-value mountain niche products and services rendered by the vulnerable, particularly women and the marginalised, is a visible contribution to the reduction of poverty among mountain communities of the HKH region.

**Facilitation of international cooperation.** International communities including development agencies, research organisations, policy makers, and private and public sectors need to be informed to advance regional and international cooperation to address the ecological, socioeconomic, and cultural implications of climate change in the Himalayas.

## Reference

IPCC (2007) *Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge (UK): Intergovernmental Panel on Climate Change and Cambridge University Press



# Mountain Development in South Asia

Chenkyab Dorji, Secretary General of the South Asian Association for Regional Cooperation, Kathmandu, Nepal



Bireer, Kalash Valley, Chitral, NWFP, Pakistan

**South Asia is a diverse region, both geographically and culturally. The Himalayan mountain range stretches along its northern border, including parts of all countries of South Asia except Sri Lanka and the Maldives. More than one-fourth of the area of the region is hilly and mountainous. Mountains are important sources of water, energy, minerals, forest and agricultural products, and medicine.**

They are enormous water reserves for the region, storehouses of biological diversity, home to endangered species, and an important component of the global ecosystem. The mountains are also home to millions of indigenous people with varied cultures, values, languages, and indigenous knowledge systems. But in recent times, the mountain ecosystems have been faced with various challenges, many of them due to anthropogenic or human-created factors.

The development of the South Asian region, particularly its hill and mountain areas, faces the twin challenges of poverty alleviation and environmental conservation. Despite attractive economic growth in some countries of the region, South Asia has a huge poverty burden. Human poverty indicators point towards formidable challenges.

Poverty reduction has remained at the core of the development agenda of the South Asian Association

for Regional Cooperation (SAARC) since its inception. At the 13th SAARC Summit, the leaders of the region endorsed the SAARC Development Goals (SDGs) as a comprehensive blueprint in the areas of livelihoods, education, health, and the environment for the next five years. The SDGs inter alia cover connectivity of remote areas, poorer regions, and social groups; an acceptable level of forest cover; water and soil quality; and conservation of biodiversity. At the 14th Summit, SAARC leaders agreed that the national plans for poverty alleviation should appropriately mirror the regional consensus reached in the form of the SDGs and the Plan of Action on Poverty Alleviation.

Combating poverty in South Asia becomes more difficult because the region is prone to natural hazards and disasters. The Himalayan ranges are one of the seismically active mountain systems prone to disastrous earthquakes. Growing evidence suggests that temperature is rising in the Himalayas due to global

warming, presenting serious risks to the people of South Asia. Himalayan glaciers are melting and retreating over the years due to the impact of climate change. Glacier lake outburst floods (GLOFs) are becoming real concerns for our countries. The hilly and mountainous areas of the region are vulnerable to flash floods and seasonal floods, soil erosion, heavy landslides, and debris flow. The region regularly experiences floods, cyclones, earthquakes, and other natural disasters, causing huge losses of life and property. In the most recent past, it also experienced the devastation of a huge tsunami.

Given the imperative to collaborate regionally to face natural disasters, the 14th SAARC Summit approved the SAARC Comprehensive Framework on Disaster Management. The objectives of the Framework include sharing best practices and lessons learned from disaster risk reduction efforts at national levels, and establishing a regional system to develop and implement regional programmes and projects for early warning.

In line with the Framework objectives, the SAARC Disaster Management Centre (SDMC) was established in 2006 with the mission to serve the member-states by providing policy advice and facilitating capacity development services. SDMC, with the SAARC Coastal Zone Management Centre, Malé, and the SAARC Meteorological Research Centre, Dhaka, are to implement the Framework in the context of regional cooperation within their respective mandates.

Given the magnitude of poverty and the severity of environmental degradation, there is no doubt that we need to cooperate more closely among our countries, and also with development and research organisations working in the region, to bring in synergies for action for lasting impacts. In this context, the prospective role of ICIMOD can be noted as networks are developed and strengthened with the relevant national, regional and international organisations.

The strengths of ICIMOD as an independent, non-political, technical knowledge centre working in the region are well known. The Centre is reputed for focus on generating and disseminating knowledge, information, technology for poverty reduction in mountain areas, and better management of mountain ecosystems including the reduction of risks of natural hazards. ICIMOD's strategic focus in some key areas also features prominently in the SAARC agenda.

**Poverty reduction.** It is increasingly realised that poverty alleviation programmes need to be better targeted and adjusted to local biophysical and

socioeconomic conditions. Our countries can certainly benefit from tried and tested practices and proven technologies – the wealth of experience generated by ICIMOD in trying out solutions appropriate to local HKH conditions to attain the SDGs and the MDGs.

**Sustainable use and management of natural resources.** The judicious use of natural resources in promoting economic activities is particularly important for South Asia, where the majority of the poor live in rural areas and depend heavily on the use of natural resources such as water, arable land, and forest resources for their livelihoods. Some of the South Asian countries have developed pioneering models and good practices in community-participated management of forests, water, and pasture resources that ICIMOD may refine and disseminate.

**Management of ecosystems and natural resources.** Sound ecosystems management and biodiversity conservation require cooperation among neighbouring countries because ecosystems cross territorial boundaries. Better irrigation practices and river basin management are central in managing ecosystems and natural resources.

**Disaster risk reduction and developing adaptive mechanisms.** Reducing risks of natural disasters is critical for poverty alleviation and development efforts. This is especially true for mountain communities as well as for communities in the flood plains downstream. Mountain communities are more vulnerable to risks and lack information and the infrastructures to cope against disaster.

**Environmental management.** Global warming is potentially the most serious environmental threat the Himalayan region faces today. To deal with this complex issue, governments and policy makers of the region need reliable and comparative regional data and information and data from the individual member countries. We note with appreciation how ICIMOD seeks to develop capacity in these important areas to be able to function as a regional think-tank and to serve as a platform for sharing regional information, knowledge, experiences, and good practices.

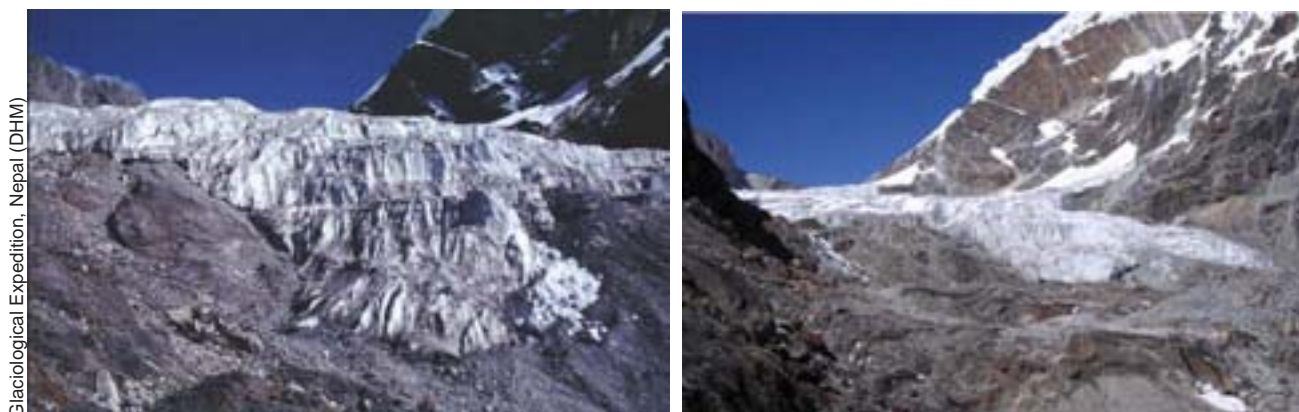
As ICIMOD redefines its mission, priorities, and roles based on changing realities and requirements to continue to make itself relevant, it becomes apparent that building closer strategic partnerships within and beyond the region will gain greater emphasis. In this context, it may be useful to assess carefully how SAARC and ICIMOD may benefit from each other's experiences, and how a symbiotic relationship may contribute to facilitating transfer of know-how and good practices to deal better with the issues of poverty confronting the mountain areas of South Asia.



# Climate Change, the Himalayan Mountains, and ICIMOD

Jian Liu, Deputy Secretary, Intergovernmental Panel on Climate Change (IPCC), jianliu@wmo.int

Golam Rasul, Policy Development Specialist, ICIMOD, grasul@icimod.org



Terminus positions of Glacier EB060, Khumbu Himal, Nepal in 1997 (left) and 2004 (right)

**The Fourth Assessment Report of the Intergovernmental Panel on Climate Change shows that the warming of the global climate system is unequivocal and is very likely due to increased greenhouse gas concentrations in the atmosphere resulting from human activities. Even if greenhouse gas concentrations were to stabilise, climate change and rising temperatures as well as sea level rise would continue for centuries due to time-scales associated with climate processes and feedback (IPCC 2007).**

Many natural systems and regions including the Hindu Kush-Himalayan region are affected by regional climate changes. Mountains in many parts of the world are susceptible to the impacts of a rapidly changing climate. The change in hydrological cycle may affect river runoff, accelerate water-related hazards, and affect agriculture, vegetation, forests, biodiversity, and health (Beniston 2003). On the other hand, mountain ecosystems have a significant role in biospheric carbon storage and carbon sequestration, particularly in semi-arid and arid areas. Mountain ecosystem services such as water purification and climate regulation extend beyond geographic boundaries and affect all continents.

## Climate change in the Himalayan mountains

Climate change is a major concern in the Himalayas because of potential impacts on the economy, ecology, and environment of the Himalayas and areas downstream. Himalayan glaciers cover about three million ha, or 17% of the global mountain area. They are the largest bodies of ice outside the polar caps. The total area of the Himalayan glaciers is 35,110 sq km. The total ice reserve of these glaciers is 3,735 km<sup>3</sup>,

which is equivalent to 3,250 km<sup>3</sup> of fresh water. The Himalayas, the water tower of the world, is the source of nine giant river systems of Asia: the Indus, Ganges, Brahmaputra, Irrawaddy, Salween, Mekong, Yangtze, Yellow, and Tarim, and are the water lifeline for 500 million inhabitants of the region, or about 10% of the total regional human population (IPCC 2007).

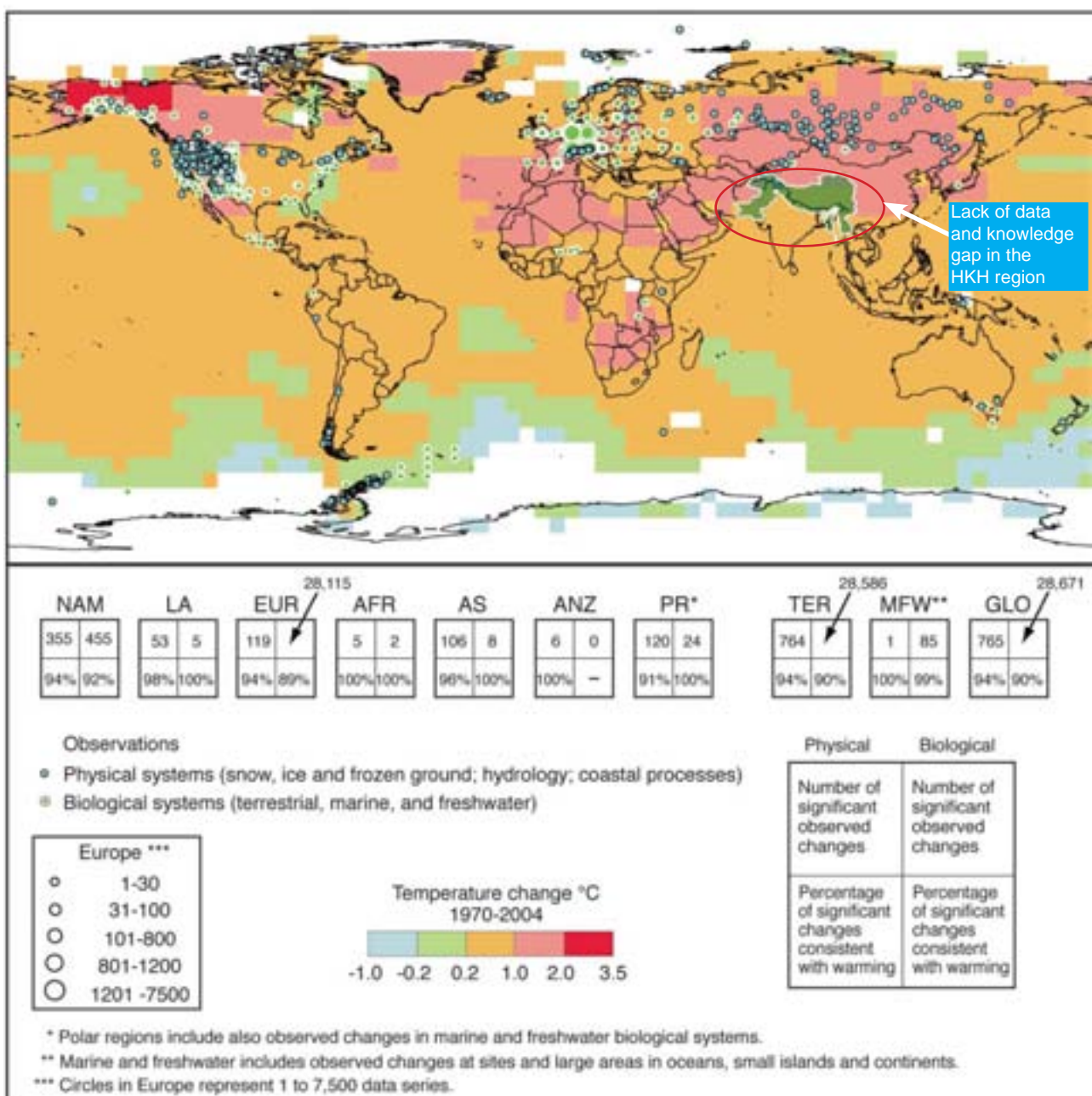
Although regional differences exist, growing evidence shows that the glaciers of the Himalayas are receding faster than in any other part of the world. For example, the rate of retreat of the Gangotri glacier over the last three decades has been more than three times the rates of retreat during the preceding 200 years. Rapid deglaciation is taking place in most of the glaciers studied in Nepal: the reported rates of glacial retreat range from several metres to 20 m/year. On the Tibetan Plateau, the glacial area decreased by 4.5% over the past 20 years and by 7% over the past 40 years (CNCCC 2007). If present retreat trends continue, the total glacier area in the Himalayas will likely shrink from the present 500,000 to 100,000 sq. km by the year 2035. In northwest China, 27% of glacier areas equivalent to an ice volume of 16,184 km<sup>3</sup> will disappear; so will 10-15% of frozen soil area by 2050 (Qin et al. 2002).

The receding and thinning of Himalayan glaciers can be attributed primarily to global warming. Isolated studies on Himalayan climate change have revealed warming synchronous with yet greater than global average warming rates. For example, the last 30 years witnessed an average temperature increase of 0.6°C decade in the Nepal Himalayas, while in the Tibetan Plateau the average temperature increased by 0.3°C decade.

As the glaciers are a water source for nine major populated river basins, rapid shrinkage of these glaciers is likely to seriously threaten water availability in the region, particularly during lean flow seasons when meltwater contribution is crucial to sustain the river flow which supports human activities and ecosystem services in these areas and downstream. As glacier

melt accelerates, river runoff will initially increase as the ice reserve reduces below a critical threshold. This will have an impact on the livelihoods of half a billion people in the Himalayas, and also for 1.3 billion people living in the nine river basins.

Accelerated glacier melting has led to increased glacial hazards in the Himalayas known as glacial lake outburst floods (GLOFs). Approximately 200 potentially dangerous glacial lakes in the region could cause catastrophic floods (referred to by others as the 'mountain tsunami'), which can sweep away all means of livelihood in a single stroke (Bajracharya et al. 2007). There is clear evidence of permafrost degradation in the region, with potential to cause ground surface subsidence and failure of infrastructure.



Observed climate change in different regions of the world (1970-2004), highlighting the lack of data in the Hindu Kush-Himalayan region





A stretch of the Himalayas as seen on the way to Bumthang, Bhutan.

## Knowledge gap on regional vulnerability and a policy setting for adaptation

While the Arctic, Sub-Saharan Africa, Small Island States, and Asian mega deltas have been found to be the most vulnerable regions in the world in the context of global climate change (IPCC 2007), the vulnerability of the Himalayas is unclear because of the lack of data and knowledge at the regional level (see Figure p.11). Knowledge gaps in the following areas have been identified.

- Inventories of glaciers and other physical and ecological systems
- Changes in the Himalayan glaciers in the past and projections for the future under different temperature scenarios
- Glacier melt induced hydrological changes: floods and droughts
- Regional adaptive capacity

## The role of ICIMOD

The relevant findings of national perspectives from countries of the region such as China and India in the IPCC Assessment Report 4 are far from adequate to reflect the regional magnitude and urgency of climate

change impacts. The knowledge gaps identified require a comprehensive regional database, a regional observation network of key physical and ecological systems, as well as integrated, in-depth analysis and synthesis. Enhanced regional coordination on these aspects is increasingly important. ICIMOD, as a regional inter-governmental knowledge and learning centre for the Himalayas is therefore well placed to play such a coordinative role.

Ground-based observations are rather poor in many parts of the region. Meteorological stations are clustered around low altitude belts and settlements, whereas hydrometric stations are located far away from the glaciated regions being observed. Glacier monitoring work is largely limited to a terminus survey. Observation and systematic monitoring of glacier ice volumes through mass balance studies are scanty, isolated, and not standardised. Ecosystem monitoring stations are at best patchy and limited. ICIMOD can facilitate the coordination of these regional observation networks, including but not limited to providing guidance and standards to existing networks and, where gaps are identified, to helping establish field stations. It is suggested that ICIMOD continue to update glacier inventories to document their changes, model these

**Support from the regional member countries and from partners outside the region such as scientific organisations will strengthen ICIMOD's role as the only regional intergovernmental centre providing relevant knowledge on adaptation to climate change.**

changes under different climate change scenarios, and establish a regional database that member countries contribute to and share. This will provide the basis for a regional picture that reflects past and possible future changes in the regional climate system and their likely impacts on the livelihoods of local and downstream populations. To this end, the development of climate modelling expertise at ICIMOD is necessary for assessing climate change impacts annually in various parts of the region.

ICIMOD is also well positioned to facilitate communication and exchange among research institutions in the region for concerted research activities on such areas as glacier changes under different temperature scenarios, glacier melt induced hydrological changes and their consequences including floods and droughts, and adaptive capacity assessment. Information on these areas of study will provide governments of the region with vital information to set up policy on adaptation to climate change across the region and in the individual member countries.

These efforts can be implemented building on the strength of the member countries and need not start from scratch. Support from outside the region is essential and will strengthen ICIMOD's role as the only regional inter-governmental centre providing relevant knowledge on adaptation to climate change.

## References

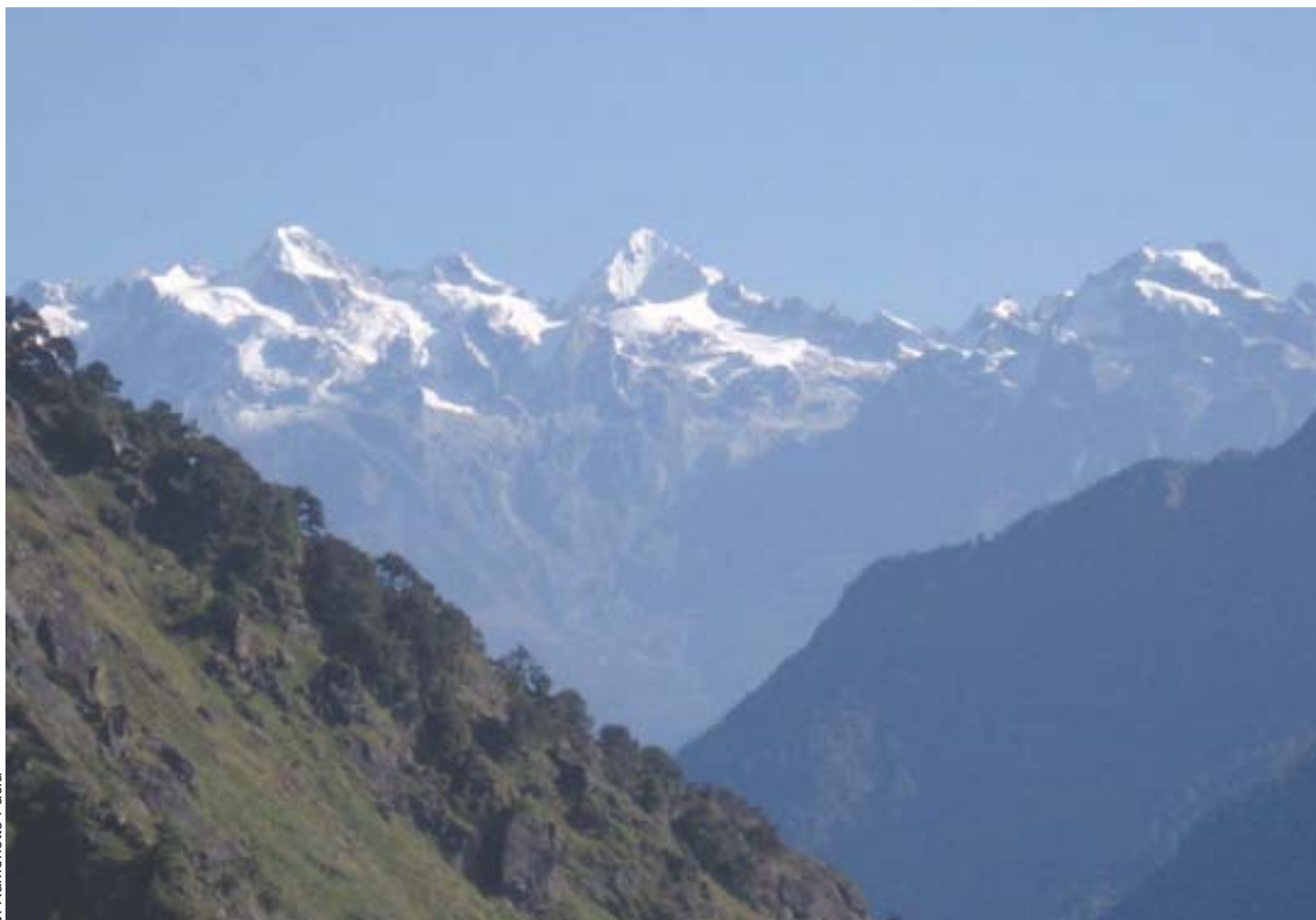
- Bajracharya, S.R.; Mool, P.K. Shrestha; B.R. (2007) *Impact of Climate Change on Himalayan Glaciers and Glacial Lakes: Case Studies on GLOF and Associated Hazards in Nepal and Bhutan*. Kathmandu: ICIMOD
- Beniston, M. (2003) 'Climatic Change in Mountain Regions: A Review of Possible Impacts'. In *Climatic Change* 59: 5–31
- Christensen, J.H.; B. Hewitson, A.; Busuioc, A. et al. (2007) 'Regional Climate Projections. In *Climate Change 2007: The Physical Science Basis*'. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller, eds).
- Cambridge (UK): Intergovernmental Panel on Climate Change and Cambridge University Press
- CNCCC (2007) *China National Report on Climate Change 2007* (in Chinese). Beijing: China National Committee on Climate Change
- Cruz, R.V., H.; Harasawa, M.; Lal, S.; et al. (2007) 'Asia Climate Change 2007: Impacts, Adaptation and Vulnerability'. Contribution of Working Group II to the *Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. (M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, eds.), p 469-506. Cambridge: Intergovernmental Panel on Climate Change and Cambridge University Press
- Dyurgerov, M. D.; Meier, M. F. (2005) *Glaciers and Changing Earth System: A 2004 Snapshot*. Boulder (USA): Institute of Arctic and Alpine Research, University of Colorado
- IPCC (2007) 'Summary for Policymakers'. In *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. (M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, eds), p.7-22. Cambridge: Intergovernmental Panel on Climate Change and Cambridge University Press
- IPCC (2007) 'Summary for Policymakers'. In *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Avery, M.Tignor and H.L. Miller, eds) Cambridge: Intergovernmental Panel on Climate Change and Cambridge University Press
- Liu, X.; Chen, B. (2000) 'Climatic Warming in the Tibetan Plateau During Recent Decades'. In *International Journal of Climatology*, 20:1729-1742
- Q. Dahe. (2002) *Assessment of Environment Change in West China*. Beijing: Science Press
- Shrestha, A. B.; Wake, C. P.; Mayewski, P. A.; Dibb, J. E. (1999) 'Maximum Temperature Trends in the Himalaya and its Vicinity: An Analysis Based on Temperature Records from Nepal for the Period 1971-94'. In *Journal of Climate*, 12: 2775-2787



# Mountain Conservation through Accelerated Climate Change

Vinod K. Gaur, Distinguished Professor, Indian Institute of Astrophysics, Bangalore, India, [vgaur@iiap.res.in](mailto:vgaur@iiap.res.in)

J. Ramonette Pacia



The Himalayas viewed from Rasuwa district, Nepal

**The mountain fastnesses of the Himalayas, stretching over 2400 km from the Hindu Kush in the west to Arunachal in the east, together with Tibet, constitute some of the most dramatic geomorphic features on earth. A kaleidoscope of spectacular landscapes forever forming from the arid west to the lush east are the most eloquent expressions of its internal vibrancy.**

These landscapes have fashioned an equally fascinating array of human cultures sensitive to the interplay of the intrinsic rhythms of Nature: the inexorable pulsations of the earth below, tempered by the elements above. By a sensible response to their perennially transforming landscapes – often paroxysmal – people have created flourishing cultures while conserving the many unique endowments of its extraordinary habitats – a gift, though sadly remaining unacknowledged, to the wider global community. The natural processes of change, always mercifully slow enough in the past to enable a creative

reordering of human activities have, over the past decades of radically new techno-economic structures, acquired a speed that threatens to destabilise many critical subsystems of this complex environment. The changes are too rapid and daunting for most local people to respond in a constructive manner. The most serious result is an almost irreversible erosion of the regenerative capacity of vital ecological niches crucial for the sustenance of local communities, and the survival of the planet.

## The heritage value of Himalayan biodiversity lies in its subtle role in securing greater stability for the global ecological system, and herein lies the heart of our concern to sustain its integrity.

Herein lies the heart of our modern concern about the sustained integrity of this global heritage. By virtue of its extraordinary world eminence, the Himalaya-Tibet region is at once the driver of atmospheric circulation of the Northern Hemisphere – a vast reservoir of steady release freshwater, a rich basket of unique flora (some of them forming the core of rare pharmaceutical products in the world markets), and home to some of the most beautiful, if threatened, creatures: the black-necked crane, the curiously agile wild ass of Ladakh, the musk deer of the Central Himalaya, to name a few.

Only an incisive analysis of the consequential issues and thoughtful, knowledge-based interventions can arrest this one-way attrition of our global heritage. And all our recent experiences in disaster mitigation point to empowering local communities with knowledge and skills as the most effective means of accomplishing the desired goals. Sustaining a vibrant organic culture among diverse Himalayan people in their natural habitat, in a way that makes life meaningful for them, is the most enduring insurance for the health of the Himalaya-Tibet region.

Fora and meetings in countries of the region and elsewhere have brainstormed the critical issues which, addressed effectively, could achieve the desired goals. My own articulation of a desired goal is the gestalt view of landscape conservation, inspired by the expectation that in optimising a dynamic balance between the subsistence requirements of a dignified indigenous human culture and the wider biological ambience on the one hand, and the changeful forces of nature and the demands of the international community on the other, these fragile ecological niches could be sustained for a long time. Its realisation would call for the availability of insightful and periodically refined, user-friendly knowledge products and current information, systems design, technology availability for implementation, and most pre-eminently, the realisation of a shared perception of goals through participatory processes. Assuming that a **healthy human culture-landscape synergy** could be an effective safeguard against the runaway processes of degeneration in the Himalaya-Tibet region, and that an agreed clarity on critical issues may be a promising start for constructive intervention, it may be instructive to explore some of the implicated issues.

One can begin with the subsistence needs of local communities for a **modicum of dignified existence** – easy availability of water, food, energy resources,

health care, education, protection from natural hazards, and grazing lands for livestock that do not outstrip the regenerative capacity of the ecosystems. Without recounting the serious erosion of the sources of water, food, and energy resources suffered by the Himalayan region in the wake of pressure from a growing human family and livestock, and the rapid changes in the global climate during the past half century, it is worth considering how much, may yet be done by conservation measures in catchment areas and monitoring-based stabilisation of hill slopes. Further, the realisation that by optimising the outreach of income through knowledge and understanding, the educational enterprise, implemented with initial investments, is a self-generating capital with enormous possibilities for empowering local communities. Knowledge and understanding can unleash the local communities' imaginative potential to identify productive ecological niches for value addition, to create wholesome habitats for a healthy life, and to build effective safeguards against preventable diseases and hazards.

Another larger issue is that of landscape conservation in the Himalaya-Tibet region, with implications for the long-term interest of humanity. Its significance to climate and the indicators of climate change as well as to freshwater storage and responses to climate change, biodiversity, particularly for those who have invented exotic biochemical mechanisms for survival in extreme environments and, are thereby, valuable in designing special purpose drugs or efficient biochemical pathways for industrial processes. The heritage value of Himalayan biodiversity lies in its subtle role in securing greater stability for the global ecological system whose biodiversity, with few exceptions (after being enriched steadily over the past 500 million years), is suddenly registering a worrisome attrition. That the stability of any interconnected system of energy and materials flow, such as the biological world, is determined by the varietal richness of the network, of which a telling example is the precariousness of mono-culture, is now well appreciated.

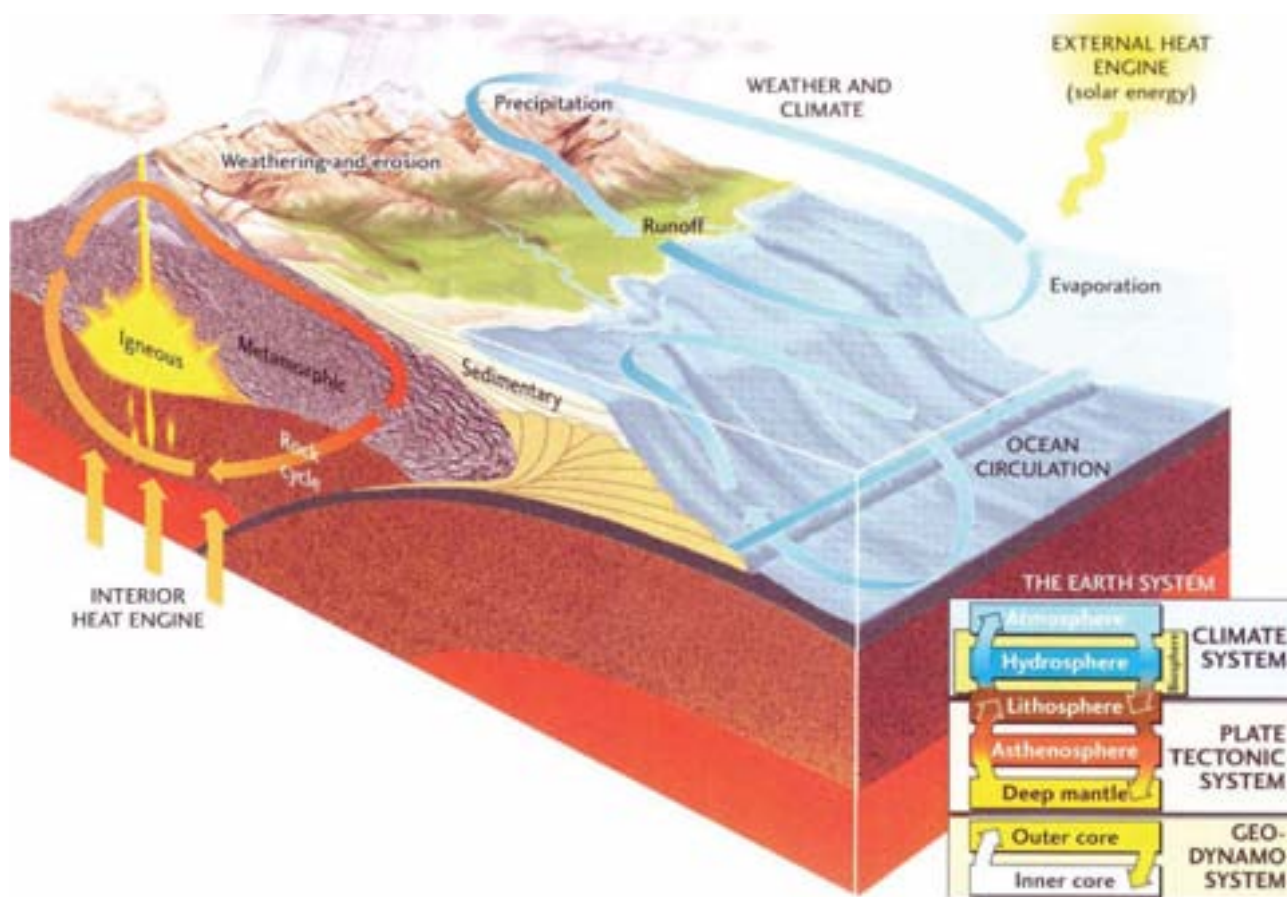
Fortunately, these issues are amenable to acceptable solutions, although they may require some relocation or redesign, or both, of extant systems. More important, since these are both knowledge- and technology-intensive, they would require massive inputs. Here are a few examples.

**Climate Change.** The earth's climate has been changing, after being warm through much of history

over the last 130 million years. During the last 1.8 million years, it was periodically covered with large sheets of continental ice, 3-4 km thick, separated by briefer periods (20,000 years) and warmer interglacials such as we have today. Its climate at any time, represented by the mean global temperature, is determined by the balance of incoming solar radiation and that radiated back by the earth, except that the atmospheric constituents of certain long-lived gas molecules (notably carbon dioxide and methane) increase its opacity to the outgoing radiation thereby increasing the thermal budget (the total amount of thermal energy transferred to the water during the given elevated temperature operation of the earth's atmosphere). Increasing CO<sub>2</sub> emissions in the atmosphere generated by human activities since the Industrial Revolution, and particularly since the 1960s, have thus led to increases in the earth's mean global temperature. There is little doubt that this trend will continue until the end of the 21st century unless corrective regulatory measures are put in place in the interim to contain our runaway dependence on fossil fuels for energy. Another source of increased atmospheric CO<sub>2</sub> resides in degraded lands. Here, the Himalaya-Tibet region contributes to climate change by a variety of human activities such as denudation of the alpine rhododendrons for fuelwood. Discontinuing such practices by creating alternative solutions for the energy requirements of mountain communities, and creating awareness of what could be their enlightened

self-interest in preserving these habitats, is achievable through well-formulated activities engendered among local communities. Measures to constrain the adverse impact of global warming on the fresh water storage capacity of mountains, or sudden glacial outburst flows, would need high cost technological solutions. Governments of the region must be made aware of the potential threats so that mitigative solutions are implemented. A persuasive approach would require illuminating knowledge products illustrating the geographical characteristics of this mountain region: the geomorphic ambience, particularly of downstream habitats potentially at risk, and most importantly, the rates of activity. For example, in order to create a model of the glacier response function needed to reliably predict a glacier's future behaviour in the wake of climate change, there is a need to constrain the changing ablation rates of glaciers, among other characteristics of their spatial ambience. These can be determined by carefully designed experiments to measure glacier advance rates using the millimetre precision of GPS geodesy and its cross-section with the help of a ground-probing radar – high technology solutions that are now within reach.

**Extreme events.** A particularly intriguing aspect of climate change is the increasing frequency of extreme events such as heavy rainfall over a short period. One such extreme event took place in the 500-year old





town of Almora in the Central Himalaya. The town is situated on a rocky ridge which is considered the safest foundation, yet an unanticipated water seepage beneath the ridge destabilised dwellings in the area. A basic fact to appreciate here is that mountain systems which are subject to a steady supply of ground deforming energy from the ongoing mountain building processes are forever poised in a meta-stable state – susceptible to destabilisation by the slightest addition of energy that may be contributed by any of a myriad of factors, much like the classic case of a sand pile. Built slowly by a constant supply of sand, it moves inexorably towards a critical state poised to drive an avalanche that may be triggered by the next arriving grain. This condition applies to all critically stressed mountain environments: landslides, avalanches, and debris flows, as well as the regions stressed by the unabated penetration of the Indian plate into the belly of Tibet – the prime source of energy that powers earth movements in the entire Indo-Tibetan region and drives devastating earthquakes in various segments of the Himalaya once every few hundred years.

**Earthquakes.** The Himalaya and Tibet have been formed and are sustained by the continued under-thrusting of the Indian plate (a fragment of the earth's outer brittle rind) into Tibet powered by material flows welling up from its hot interior. Despite the steady stress this imposes, the outer, colder brittle material cannot slide steadily into Tibet because of the frictional bond at their shared interface – usually tens of thousands of square kilometres in area. Only when this frictional bond is exceeded by the steadily accumulating stresses do materials on each side of the interface slip in a sudden displacement of a few metres, causing a devastating earthquake. Between great earthquakes, minor slips at localised asperities of their interface occur at shorter intervals. The Himalayan people are therefore no strangers to the risk posed by earthquakes and have, traditionally, built dwellings with local materials such as timber and bamboo. Unlike concrete, these organic materials do not fail catastrophically during such extreme events. However, modern construction style has proliferated the use of concrete for multi-storey buildings. These materials are not designed to withstand the strong ground shaking that great earthquakes such as the 2005 Kashmir earthquake caused, burying over 70,000 people under falling building debris within minutes. This catastrophe could have been altered dramatically or prevented had there been an estimate of the probable ground shaking that a future earthquake in a given region could cause based on the probabilities of various earthquake scenarios. This can now be estimated scientifically

using high precision GPS geodesy and computer simulation of fault-induced ground motion. Structures designed on the basis of this knowledge would be able to withstand the fury of earthquakes, or at least not fail catastrophically, thereby reducing the risk posed to life and property.

Summing up, the global setting of the Himalaya-Tibet region, beyond dispute, marks it as a fundamental element of the global ecosystem and, by this token, a unique heritage of mankind worthy of a collective global initiative to preserve it against the processes of global change and the intrinsic instabilities of the mountain building process. Fortunately, this challenge can be met effectively by bringing to bear the illuminations offered by modern instrumentation and information systems. Sophisticated modelling and computer visualisation of probable future scenarios in advance of a hazardous event can give people and communities lead time to prepare for disaster. For example, a dynamic analysis of mass and energy balance of a meta-stable system has the power to show how the various subsystems such as

**The prime focus of interventions should be on helping to generate a human culture capable of being sustained locally with a modicum of dignity, in harmony with its landscape.**

lakes, streams, glaciers, and avalanches, function. The same models can be exploited to design and test cost-effective implementation solutions for mitigative social, administrative, and engineering systems to minimise the potentially adverse impacts of possible hazards. Their effectiveness would depend on how local communities perceive these programmes and are prepared to support them, which underlines the desirability that the prime focus be on helping to generate a human culture capable of being sustained locally with **a modicum of dignity, in harmony with its landscape.** The challenge is a persuasive one, and the attendant tasks perfectly feasible, albeit not trivial, given our global capital of knowledge and expertise. The major effort would need to be contributed by local and regional governments and communities, but the possibility of catalysing their purpose would be heightened by generating innovative knowledge products that help delineate policy options and a hierarchy of possible technological solutions that can be implemented at various levels: individual, community, local, and regional. ICIMOD could provide such a catalyst by creating, jointly with its strategic partners, insightful knowledge about the system characteristics of mountain regions and the critical environmental processes and their rates, with a bearing on the quality of human culture, its biospheric ambience and landscape. This may form the bases for policy initiatives and dialogue to mitigate the impacts of and design adaptation to climate and environmental change.

# Strengthening Environmental Coordination in India

**N.C. Saxena**, Ex-Secretary, Planning Commission, New Delhi, India, [nareshsaxena@hotmail.com](mailto:nareshsaxena@hotmail.com)



Leh Valley, Ladakh, India

**The environment cannot be seen as a stand-alone concern. It cuts across all sectors of development. Rapid land degradation, increasing floods and droughts, advancing deserts, the deteriorating condition of fragile ecosystems, deforestation, loss of biodiversity, and environmental pollution are ample evidence that we need to address environmental degradation in a holistic manner to ensure both economic and environmental sustainability.**

This paper assesses current issues and systems for integrating environmental concerns into other sectors (ministries, departments) in India and recommends remedial measures. There are no mechanisms in most government ministries in India to do environmental assessment of policies and programmes. This often leads to environmentally unsound policies. The lack of coordination between the Ministry of Environment and Forest (MOEF) and other ministries, especially at state, MOEF, and state counterpart levels, is unable to prevent damage to the environment from the activities

of various departments. Vested interests often lead to policies that benefit the elite at the cost of the poor and long-term concern for the environment. In addition, there is sometimes a lack of sensitivity in the MOEF to problems relating to the poor and ethnic groups, leading government agencies to follow anti-people policies that in the long run harm the environment.

For instance, the unbalanced use of fertilisers in agriculture leads to concentrations of heavy metals in the soil, which ultimately get into the human body



The unbalanced use of fertilisers and chemical pesticides can lead to negative impacts on soil and human health.

through the food chain. Similarly, chemical pesticides increase the presence of toxic material in the soil, which also affects human health. These chemicals are highly resistant to biological degradation and are a potential source of toxicants to the environment. Crops are becoming resistant to pesticides, thereby demanding the use of stronger, more harmful, or toxic pesticides. Ultimately, farmers lose out on profit while causing damage to the environment and human health.

Similarly, intensive aquaculture requires loads of organic and chemical inputs. At the end of each harvest the waste is flushed into and pollutes coastlines and other bodies of water. The effluents affect coastal fisheries and, to a large extent, are responsible for depletion in fish catch from coastal waters. Although no estimates are available, anecdotal evidence shows that this has adversely affected livelihoods of local fishermen. Leasing out coastal lands for prawn farms also obstructs the flow of fresh water and their livelihoods. The salt pans, which were once a natural source of salt and thus supported the poor during lean fishing periods, have disappeared. The worst impact is on the ecological balance of freshwater and sea water fauna which have dwindled from lack of nutrients. On the other hand, increased salinity of surface and groundwater from these inputs have affected soil fertility in the adjacent areas and made agriculture unsustainable, displacing farmers from their traditional occupations.

## What needs to be done?

Achieving inter-departmental and inter-sectoral co-operation and collaboration are difficult challenges. Cooperation in and integration of programme activities must manifest themselves at both state and central government levels up to the level of local bodies such as the van panchayats/gram sabhas.

Currently, there is little donor coordination. Information exchange even between the largest donors in the sector is minimal. Some donors appear not to like being involved in policy and institutional reforms and prefer to work at the local level. One hopes that the MOEF would monitor closely and coordinate donor activities.

MOEF should produce a paper every year on the environmental impact of policies and programmes, followed by other ministries, and a book every two years on the state of India's environment. To the extent possible, the papers should be written jointly by at least two ministries and should be public documents so that advocacy by civil society can help secure a change in policies that impinge on the environment.

Inter-ministerial teams with adequate representation from academia and development activists should be formed to review and evaluate these reports, or to commission new studies with a focus on finding pragmatic solutions. Such committees are either non-existent or weak at the state level, as the environment is often not the area of the Forest Department. Very often, there is tension between the Forest and the Environment departments. Therefore, such a Committee should be chaired by the Chief Secretary or the Development Commissioner so that the deliberations are taken seriously by all departments.

Such committees are urgently required in forestry, as joint decisions need to be taken by the Forest Department (FD) in collaboration with the Tribal Development and Revenue departments. Forest development plans should be integrated with tribal development schemes to ensure the development of fringe villages. The FD should take an active interest in improving livelihoods of forest dwellers including tribal communities, non-tribal forest dwellers, fisherfolk, and pastoralists, among others. It is not enough to set up forums for facilitating coordinated action, their progress also needs to be constantly monitored by civil society so that these fora do not become defunct.

The Government of India may also consider posting environmental advisers in key ministries along the pattern of internal financial advisers. The Joint Secretary may be entrusted with this task. The MOEF should design appropriate training programmes for such officers. The profile of the environment as a subject should also be enhanced in all schools, colleges, and training institutions.



Much of the soil in India is either already degraded, being degraded, or at risk of degradation. This increases risk of cultivation, often forcing small and marginal farmers to leave their lands fallow, or to lease them out to the rich, thus leading to a process of proletarianisation. Programmes in watershed development, provision of drinking water, agriculture, irrigation, and dairy will have sustained benefits only when barren lands are put under green vegetative cover. The MOEF should be able to secure huge increases in its budget if it proves that increased budget allocation will lead to reducing risk and insecurity in semi-arid regions. Soil erosion due to water and wind action emerge as the dominant types of soil degradation.

We need a strong broad-based coalition between livelihoods and the environment; exclusivist approaches will not work. Environmental concerns must go 'beyond pretty trees and tigers', as 100 million people (3 million of them inside parks) are dependent on forest resources. Therefore, co-existence is a better model although in some cases inviolate spaces may be needed.

We also have to be careful that plantations are not put onto eco-systems which, by nature, are not meant to be forests. This has destroyed millions of hectares of grasslands and arid lands. There is an unfortunate 'forest bias' in environmental circles which subordinates all other ecosystems, and even the 33% forest cover target has become, in some cases, a cause for ecologically damaging activities.

The Ministry of Environment and Forests has issued guidelines for converting forest villages into revenue villages. Here, again, progress is slow for lack of coordination between the two departments. All forest lands including reserve forests must be made a part of the revenue villages for integrated planning, in order to develop a sense of ownership of the panchayats of the forests.

There has not been much success in relocating habitations from protected areas. The MOEF should take the lead in proposing an acceptable displacement policy for relocated people. Even more important is the need for guidelines, policy, and plans on coexistence, since even with the best of intentions and relocation plans the majority of the people will continue to remain within protected areas.

Consider establishing a forum for regular discussion among the Ministry of Environment and Forest, the Ministry of Industry and Commerce, civil society and recognised industry associations to harmonise

the interest of the people and the environment with development, and to review tariff rates and evolve a rational import-export policy.

Other examples where inter-departmental coordination is needed are in eco-tourism, settling inter-village disputes, harmonising village committees with the panchayats, and ensuring that conserving and promoting biodiversity is the concern of all, including the private sector. We also need to emphasise the need for institutional structures meant specifically for inter-departmental and inter-sectoral integration. We could start with assessing institutions of this kind, such as River Basin authorities, Forest Development authorities, and the Chilika Development Authority, to examine how well these institutions are working, which bodies are effective and therefore can be replicated, and what lessons can be learned for expanding such institutions. Finally, new institutions such as eco-regional authorities for ecologically contiguous regions may be put in place, cutting across district or state boundaries.

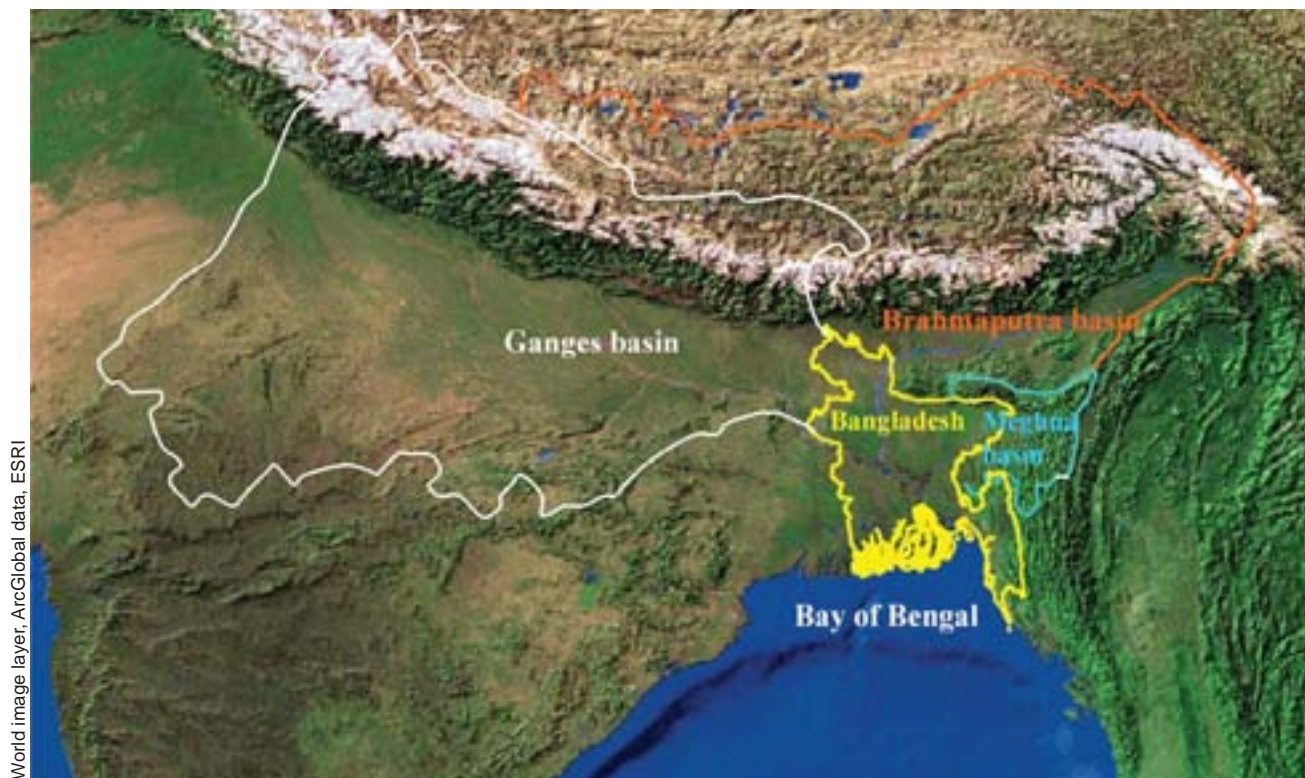
**Environmental management and economic development are mutually supportive aspects of the same agenda. A poor environment undermines development, while inadequate development results in a lack of resources for environmental protection.**

### Summing up

In the ultimate analysis, environmental management and economic development are mutually supportive aspects of the same agenda. A poor environment undermines development, while inadequate development results in a lack of resources for environmental protection. The vicious cycle of interrelationship between poverty and the environment could be broken through redistribution of economic opportunities and the empowerment of local communities. This is where participatory community-based development programmes appear to be most effective entry points for reversing trends. The two programmes: environment protection, and poverty alleviation, reinforce each other just as some programmes address the issues singly. Ecological poverty may, in fact, be the starting point for dealing with poverty. However, this is not how the government ministries and departments, especially at the state level, view things. Coordination can succeed only when policy objectives and the road map leading to it are clearly articulated, and consensus builds around major policy directions.

# Lessons from Water Management in Bangladesh

**Jahir Uddin Chowdhury**, Director, Institute of Water and Flood Management, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh, [juc@iwfm.buet.ac.bd](mailto:juc@iwfm.buet.ac.bd)



Map of Bangladesh with the Ganges, Brahmaputra and Meghna river basins

**Bangladesh is a lower riparian country in the basins of the Ganges, Brahmaputra, and Meghna (GBM) rivers. A major portion of the country is formed by the deltas of these large rivers. Tributaries of the Ganges and the Brahmaputra drain the southern and south-eastern slopes of the Himalayas, and the Meghna river system drains the Naga-Manipur hills of the Himalayan range.**

## The landscape and hydrology of Bangladesh

Approximately 7% of the GBM basins – a total area of 1.74 million sq. km – lies in Bangladesh. The country also has a tertiary hill region which is a part of the Himalayan range. This hill region is outside the GBM basins and covers approximately 9% of the country's area of nearly 0.15 million sq. km.

The water regime in Bangladesh is dominantly influenced by runoff generated outside the country in the upper catchments of the GBM rivers. About 80% of runoff is generated outside the country while 20% is contributed by local rainfall. Annual volume of runoff to the sea is equivalent to about 12 metres depth over the country's area under the GBM basins. More than 80% of annual rainfall occurs during June

to October, and groundwater is recharged during this period. Because of snowmelt in the Himalayas, the Brahmaputra starts rising ahead of the monsoon in early April. The floodplains of the GBM rivers and their tributaries and distributaries form the main landscape of the country. Floodplains moderate flood flows by acting as detention reservoirs in flat topography, where drainage of floodwater to the Bay of Bengal is a slow process because of the backwater effect from the sea.

## Water, ecosystems, and livelihoods

Agricultural projects play an important role in providing livelihoods since the agricultural sector is the largest employer in rural areas in Bangladesh. A large portion of rural livelihoods for the poor is dependent on ecological resources of the floodplains and the subsistence functions of the water resources system. The life cycle

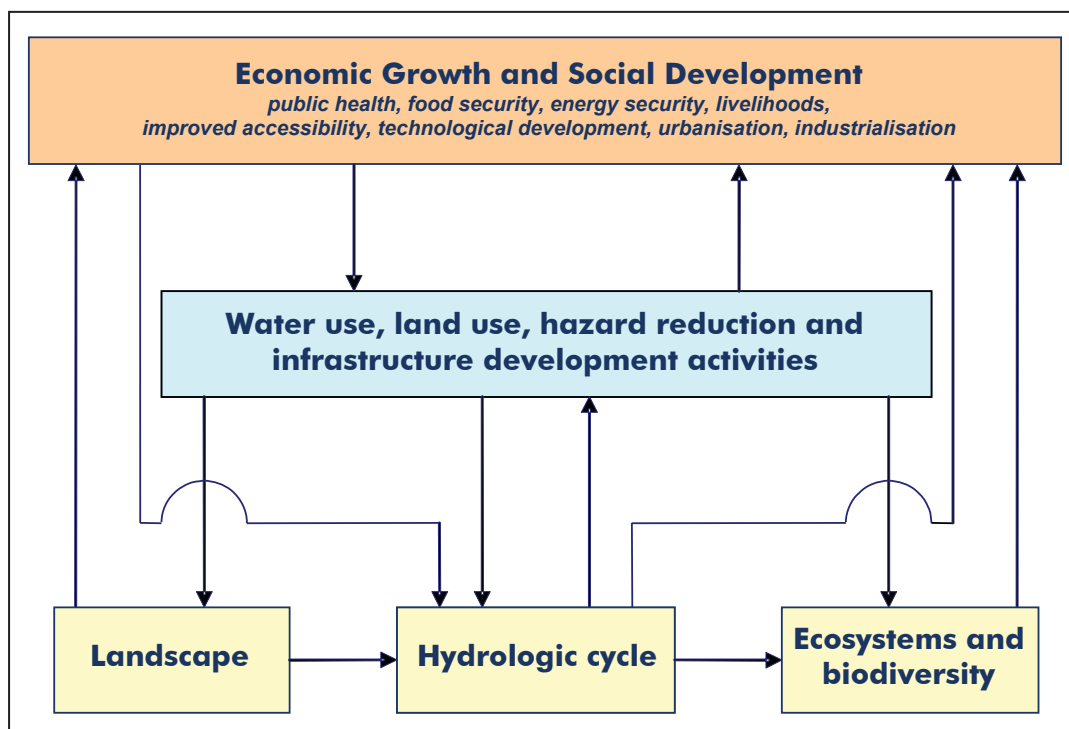
of open water fisheries, a source of protein for the poor sections of society, is intimately related to inundation of the floodplains during monsoon floods. Floods during the monsoon link the floodplains, wetlands, and rivers, providing suitable aquatic habitats for reproduction, migration, breeding, and growth. Open water fisheries are a major source and supplier of protein for the poor in rural areas. Rivers and 'khals' (natural channels or canals) provide a cheap means of transport in riverine Bangladesh. Country boats have a significant role in socioeconomic activities in rural areas, and they are able to reach outlying rural areas which are otherwise inaccessible. The population of the highlands is dependent on shifting cultivation for subsistence food production, and the main source of income is genetic resources.

## Experience in water management

**Impact of water management projects.** Driven by fears of food insecurity, water management in Bangladesh has been dominated by large investments in flood control and drainage and irrigation projects since the 1960s. Water regimes and ecosystems in alluvial rivers, hill streams, and tidal rivers are subject to growing stress and adverse impacts because of water management projects. The notion of flood control projects is that a flood-free condition in the floodplains would incur less damage to monsoon rice. Many floodplains wetlands have shrunk and lost hydraulic contact with the river as a result of flood control projects. Such projects have disrupted fish movement between rivers and floodplains and have adversely affected open water fisheries. Flood control projects in many places

have actually only shifted the risk of floods elsewhere rather than reduce the risks, victimising poor sections of the society and generating social conflict. Large numbers of hand tube wells for rural water supply become inoperative towards the end of the dry season because of the excessively lowered groundwater level seeping through the shallow and deep tube wells for irrigation. Water, land, and ecosystems in the hill region are subject to stress because of land cover changes due to short cycle shifting cultivation, soil erosion, deforestation, migration, urbanisation, landslides, and stone mining by rock-blasting. Disruption of the storage function of the tidal floodplains by coastal flood control polders (low-lying areas of land defended from flooding) have caused the channel bed to rise, leading to serious waterlogging (where water cannot penetrate deeply) in adjacent areas. This has caused serious damage to agriculture, homesteads, forestry, fisheries, livestock, and physical infrastructures in Bangladesh.

Coastal flood control polders are also the main cause of the deterioration of the waterways due to siltation in rivers, often incurring huge dredging costs. Development of shrimp aquaculture in the areas covered by flood control polders in the coastal region has generated serious conflict with agricultural land use. Another major issue is transboundary water conflict between India and Bangladesh. Diversion of water from the Ganges at Farakka since 1975 has created severe water shortages and saline water intrusion in the Ganges-dependent area, leading to losses in agriculture, fisheries, and navigation, and damage to the Sundarban mangrove forest and biodiversity.



Interdependence of land, water, ecosystems and socioeconomic development



**Interdependence of land, water, ecosystems, and socioeconomic development.** Many water management projects in Bangladesh have not been able to achieve the desired objectives because of a lack of consideration of the interdependence of land, water, ecosystems, and socioeconomic development. On the one hand, water management projects create land use opportunities; on the other, water regime and water availability are affected by land use and infrastructure, which in turn affect aquatic ecosystems and livelihood activities. Rivers and wetlands perform a range of subsistence functions essential for a section of the rural population. Inequity in the distribution of social costs and benefits of water management and land use projects has deprived many rural people of their livelihood opportunities. Fisherfolk and boatmen suffer the most. While water management interventions bring economic benefit to one section of society, they cause economic hardships to other sections, especially the poor.

### Integrated approach to water management for sustainable development

Experience with water management interventions in Bangladesh indicates the importance of preserving floodplains functions, protecting ecosystems, reducing vulnerability to water-related hazards, facilitating people's participation in planning and operating projects, ensuring equity in decision-making, and adopting an integrated approach to water management. Such observation is in congruity with the 'integrated water resources management' concept promoted by the Global Water Partnership (GWP 2000).

**Integration of water use, land use, hazards reduction, and ecosystem protection.** The National Water Policy of Bangladesh (Ministry of Water Resources 1999) recognises the need to frame rules, procedures, and guidelines for combining water and land use planning, and stresses the need for water development and management to include restoration and preservation of the environment and biodiversity. Water and land management decisions need to take into account the contribution to alleviating poverty, supporting livelihoods, strengthening economics, and sustaining ecosystems in order to make progress towards sustainable development. Regulation is needed to impose constraint of environmental flow in order to ensure in-stream flow requirements for the maintenance of river morphology, the sustenance of the ecosystem, and the prevention of saline water intrusion. Reducing vulnerability and increasing society's resilience to natural hazards like river floods, storm surge floods, riverbank erosion, and drought, among others, should be the focus of hazard

management. Steps are necessary to make water control structures multi-functional and consistent with the water regime in the floodplains in order to satisfy the needs of agriculture, aquaculture, navigation, and the ecosystems. Integrated watershed management is essential to address land and water management issues in the hill region so that degradation of land and the environment is prevented.

### **Community participation and equity consideration.**

Community participation needs to be an integral part of identification, appraisal, and operational stages of water and land use planning and infrastructure construction projects. Multiple criteria decision-making that takes into consideration the principles of equity, livelihood security, ecosystem protection, and development goals, is the way to ensure social justice regarding costs and benefits. Water- and ecosystem-based local management zones can be formed to facilitate effective community participation and ecosystem maintenance. The negative impacts of irrigation projects on open water fisheries can be reduced by promoting complementary development of community-managed fish production schemes within irrigation systems in floodplains agricultural land. Large sections of the rural population and most highland populations suffer from a lack of water supply and sanitation facilities. Formulating and implementing regulations for water rights are necessary to provide protection for these basic human needs. Efforts are needed to introduce and strengthen community-based domestic water supply and sanitation facilities.

**Integrated river basin management.** Integrated river basin management (IRBM) is an important means of integrating water use, land use, and ecosystem maintenance, and in addressing competing upstream and downstream water interests. Enormous opportunities exist to bring prosperity to the people of the GBM basins through IRBM for dry season flow augmentation, agricultural water supply, hydro-power generation, navigation, hazard management, ecosystems maintenance, and environmental conservation. IRBM is also essential to address issues related to the possible impacts of climate change over the basins. An institutional framework is necessary to provide the mechanism for conflict resolution and cooperative development of shared water resources through integrated river basin management.

### References

- GWP (2000), *Integrated Water Resources Management, Background Paper No. 4* prepared by the Technical Advisory Committee, Global Water Partnership (GWP), Stockholm, Sweden
- Ministry of Water Resources (1999) National Water Policy, Government of the People's Republic of Bangladesh

# Some Thoughts on Alleviating Poverty in the Himalayan Mountains

**Amir Muhammed**, Rector, National University of Computer and Emerging Sciences, Islamabad, Pakistan  
 amir.muhammed@nu.edu.pk



Farooq Ahmad

Kalash woman and children of Chitral, NWFP, Pakistan with an ICIMOD staff member

**A major development challenge for countries of the Himalayan region is alleviating widespread poverty, especially in rural areas. Studies analysing the incidence of poverty in various sub-regions of the HKH countries show that, on the whole, poverty is higher in the mountain regions. The peculiar biophysical characteristics, and relative remoteness and inaccessibility of the mountain regions are among the main reasons for widespread poverty and the poor quality of mountain life.**

Unless the quality of life of mountain people is improved substantially by reducing their abject poverty, efforts to improve the biophysical environment of the Hindu Kush-Himalayan mountains will face difficulties. The consequences of a deteriorating biophysical environment in the mountain regions will be disastrous not only for these areas but also for large populations living in the vast plains of India, Pakistan, Nepal, and Bangladesh. The highest priority in ICIMOD's plans

should therefore be the alleviation of poverty in the mountainous areas of the region. While the main responsibility for development efforts to reduce poverty lies with the governments of these countries, ICIMOD can play a key role through a well-planned research programme in collaboration with experts from the region to analyse the causes and extent of poverty in its sub-regions and to identify interventions that can reduce poverty in a sustainable way.



The issue of widespread poverty and poor quality of life in developing countries has attracted the attention not only of governments and policy makers in these countries but also of international development organisations. Most governments of the HKH countries now have poverty alleviation programmes with sizable funds from national resources as well as through international development assistance. However, research efforts to analyse poverty in various sub-regions and the effectiveness of poverty alleviation approaches are modest at best. ICIMOD was established as a research centre and has the capability to provide a leading role in undertaking research on this important issue in collaboration with relevant national agencies. It is essential that a high priority is accorded to this kind of research, both by ICIMOD as well as by the participating countries.

**Defining poverty.** A first step in this direction will be the availability of reliable statistics on the extent of poverty in various sub-regions. It is essential to have an agreed upon definition and indicators of poverty so that data from countries of the region can be compared. In addition to the criterion of average per capita income, it would be useful to incorporate quality-of-life parameters in the definition of poverty. This should include access to food, education, health and sanitation facilities, and opportunities for gainful employment. The goal of the research and analysis should be to enable people to live a healthy and happy life and play a useful role in community development.

**Agriculture remains the dominant sector.** The majority of the population in the HKH region depend on agriculture for sustenance. Because of higher population growth rates in these areas compared to national averages, and the deteriorating state of land and water resources from a myriad of factors including soil erosion, land degradation, deforestation, among others, the already marginal net income of mountain families from agriculture has been decreasing further, aggravating poverty. The main sources of income for the average mountain household are land and livestock. Mountain families in the region mainly grow cereal crops like maize, wheat, or rice for family consumption; they rear cattle to produce milk and meat to meet the family consumption needs, and some surplus to generate income to meet other family needs. Income from these resources is meagre and dwindling further with the continuous deterioration of the natural resource base and adverse climate changes.

**Seeing poverty with my own eyes.** The depressing state of poverty of the local population made a deep impression on me when I spent two days in an official guesthouse located in the scenic high mountain region of Azad Kashmir. A large part of the mountain road that led to the guesthouse had been washed away by a massive landslide which, I found out, is a common feature in these high mountain areas. Next morning when I went for a walk, I saw many children from surrounding villages sweeping the floor under the pine trees for pine needles and dried leaves to be used as



Salman Asif Siddiqui

Balochistan, Pakistan: aside from agriculture, rearing cattle helps mountain families meet their consumption needs and earn income from surplus.



fuel to cook meals. This contributed to the deteriorated overall condition of mountain forests and resulted in massive erosion leading to landslides. Next, I saw herds of cattle the size of goats in the plains, walking up the soggy slopes in search of grass which existed only in small patches. All this presented a very sorry state of affairs.

#### ***Resource characteristics of mountain areas.***

While there can be different prescriptions for poverty alleviation in various sub-regions, keeping in view the location and opportunities for development in mountain areas including for eco-tourism, mountain cottage industries, other employment opportunities and income from agriculture will remain the main sources of livelihood for most of the HKH region. The following need to be kept in mind while planning interventions for the mountain areas of the HKH region.

- Landholdings of mountain families are generally small.
- Location in the mountains has several advantages for agriculture compared to agriculture in the plains, notably better availability of water for irrigation, higher content of organic matter in the soil due to mild temperatures, better availability of family labour due to small landholdings, and environments relatively free from insects and diseases because of freezing conditions during winter.
- The local population needs cereals, milk, and meat to meet their nutritional requirements, and fuel to cook their meals and provide warmth in winter. They will meet these requirements to stay alive even if this means destroying the resource base for future generations.

***Approaches to poverty alleviation.*** Realistic approaches need to be adopted so that the needs of mountain communities for food and fuel are met while simultaneously increasing family income to reduce abject poverty. The following are some ideas for projects that need to be seriously considered.

1. Mountain farmers use most of their scarce landholdings to grow staple crops: maize, rice, and wheat. Having enough food to sustain life takes the highest priority over all other human needs. However, this is a poor and inefficient use of scarce land in mountain regions. Cereal crops can be produced more efficiently in the plains where good agricultural land is more abundant and machinery can be used for increased crop production. It will therefore be more efficient to import food grains from the plains to the mountain region to free up land in the mountains to produce selected high-value crops for which the local environment is more suitable.

For this to be successful, packages of production technology suited to local mountain conditions need to be developed and field-tested before large-scale introduction in the mountain region.

Adequate marketing arrangements for mountain commodities is another important requirement. Markets are crucial since many innovative projects aimed at increasing the net family income of local populations fail mainly because of poor marketing arrangements.

2. Environmental conditions in the HKH region are similar to those in the Alps and other mountainous areas around the world. Technologies are available in developed countries for fast-growing trees for fuelwood and fodder, as well as fodder crops which can be produced efficiently to facilitate stall-feeding of cattle. Similarly, breeds of cattle are available for alpine conditions which produce 10-20 times more milk than typical cattle in mountainous regions. Therefore, more efficient cattle, fodder varieties, and tree species introduced in the mountainous areas of the HKH region can meet the needs of mountain communities for milk and fuelwood using only a fraction of the land currently being used under inefficient production. This will reduce the pressure on forest areas and land resources and will enhance the mountain environment while meeting the vital needs of mountain communities for milk, food, and fuelwood. The government can organise fuelwood lots and dairy production on a community cooperative basis. The principle can also be extended to poultry production along modern, more efficient and hygienic lines than the present system of domestic poultry production. Efficient agricultural and livestock production in these regions can be organised on a cooperative basis, and these enterprises, cottage industries, and other more remunerative ventures can provide employment to the local population not engaged in agriculture.

The state of poverty and human deprivation in the mountain regions is desperate and needs measures that can produce tangible results in a relatively short time. The proposal outlined in this article needs to be discussed at length by experts in consultation with target communities. If feasible, pilot projects along these lines can be initiated in sub-regions of the Himalayas. This will enable the study of the overall impact on poverty alleviation in the communities and on the state of the bio-physical environment in the target areas. ICIMOD being an inter-governmental, mountain-focused institution can facilitate such discussions.

# China's Policy and Programme Priorities for Mountain Area Development

Zuo Ting, College of Humanities and Development, China Agricultural University, Beijing, China, [zuoting@cau.edu.cn](mailto:zuoting@cau.edu.cn)



Joyce M. Mendez

Tibetan community in Tashilhumpo, Shigatse, PR China; Inset – The mountains are home to a majority of China's many ethnic minorities

**Mountains, mostly located in the western regions, comprise 69% of China's national territory. This vast mountainous territory is home to a majority of Chinese ethnic minorities and is characterised by economic underdevelopment and environmental fragility as well as by many other historical and institutional constraints.**

To reduce east-west regional economic disparity within China, mitigate environmental degradation in these areas, and pursue a more balanced and sustainable development, China's central government has endeavoured on the one hand to renew and update its development philosophy by advocating for scientific development and 'building a harmonious society', and on the other, to launch a batch of operational initiatives, notably, the **West Development Strategy** (WDS) and **New Countryside Construction**.

Rural and mountainous development is highlighted in both the national and provincial 11th Five-Year Development agenda for advocacy and programme implementation. Priority policies and programmes have also been formulated to enhance mountain development and conservation during China's 11th Five-Year Development phase.

## Formulating priorities: the planning cycle, processes, and key actors

As China is transforming from a centralised planning economy to a market-oriented one, the country's planning and programming cycle tends to be more anticipative rather than obligatory as it was in the past. Development and reform commissions at national, provincial, prefecture, and county levels are currently in the position to review, endorse, and monitor government planning and programming while inspection and evaluation tasks remain in the hands of the National People's Congress and its standing committee.

Developing a Five Year Plan (FYP) is a long and open process which takes about three years. Take the nation's **11th Five Year Plan**: basic studies and needs assessment were started and carried out by different ministries as early as 2004, a draft for further consultation was delivered in 2005, and a final endorsement of the Plan witnessed in March 2006 at the National People's Congress. Provincial, prefecture, and county 11th FYPs follow the same procedures and administrative structure.

The policy development cycle involves various actors or stakeholders including power holders, duty bearers, implementation agencies, and various target groups, among others. In addition to the top administrative structure such as the National People's Congress, the Ministries and Commissions of Finance, Agriculture, Land Resources, Water Resources, Environmental Protection, Civil Affairs, Science and Technology, Forestry, Poverty Reduction, Tourism, Ethnic Affairs, and Education under the State Council, are involved in rural development and the environment to certain degrees. Similar government bodies are set up at provincial, prefecture, and county levels. Elected village committees are authorised as both owners and managers of collective resources and affairs. In practice, the village committee's role varies depending on capacity, accountability, and relationship with the local government. Civil society is playing an increasing but ambiguous role in promoting transparency and reliability of decision-making at different administrative levels.

## Mountain development-related priorities of the 11th Five Year Plan

Despite a large proportion of mountains and plateaus, there is not a single government agency in China at present established for mountains. Instead, over half of all 29 ministries and commissions under the State Council are appointed various functions and duties related to the sustainable development of mountain

areas. Their development remains a comprehensive and integrated task among many involved ministries, which take either a small or large proportion of the tasks. For instance, the Ministry of Land and Resource assumes responsibility for the protection and utilisation of land and mineral resources of mountain areas. The Ministry of Water Resources is in charge of protection and utilisation of river and lake resources. The Ministry of Forestry is responsible for the protection of forests and natural reserves. Yet, coordination and cooperation among different ministries remains a challenge.

Correspondingly, China lacks an integrated strategy for the sustainable development of mountain areas. This does not mean that the country does not value the sustainable development of its mountain areas. On the contrary, the substance of a large number of laws, rules, and regulations are released for the sustainable utilisation and protection of resources in mountain areas. Huge fiscal investments have also been put into protecting the environment and natural resources including forestry reserves, soil erosion control, biodiversity protection, and many other aspects. Particularly, the National 11th Five Year Plan is a milestone in prioritised initiatives towards mountain area development, as illustrated below.

## Principal function zones

The concept<sup>1</sup> of principle function zones is highlighted in the 11th FYP considering the resource-environmental bearing capacity, existing development density and development potential, population distribution, geographical distribution of different sectors of the economy, territory utilisation and urbanisation patterns. The plan proposes four types of principal functional zones for optimal development, key development, restricted development, and prohibited development, respectively.

A set of classified zone management policies have been proposed accordingly. Financial policies shall be inclined to increase transfer payment for restricted/prohibited development zones in the interest of the public good. Investment policy shall preferably support restricted construction of public service facilities and protection of the ecological environment in the prohibited development zone. Industrial policy shall guide the development in the restricted development zone of a characteristic industry but shall restrict industrial expansion. Land use policy shall be directed towards ensuring basic farmland and strict land use control for restricted/prohibited development zones, and shall prohibit change in ecological land use for these land uses.

<sup>1</sup> This concept, proposed by the State Environmental Protection Administration, is now accepted officially.



## Rural development

The 11th Plan emphasises the development of a 'new socialist countryside'. The proposed programmes include 1) the development of modern agriculture, 2) increase in peasant incomes, 3) improvement in agricultural quality, 4) training in new rural development types, 5) increasing investments in agriculture and the rural areas, and 6) deepening rural reform.

## Regional development priorities

A balanced development is among the goals of the 11th FYP. Large sections of the regional development priorities focus on the western provinces, especially ethnic minority regions and border areas closely related to the HKH mountain belt. They enjoy greater aggregate financial transfer payments, investments, and support under the new development plans through the following means:

- Protection of the natural ecology and improvement of infrastructural conditions
- Development of pre-school education, accelerated popularisation of compulsory education, ethical junior and senior high school classes in central cities, and strengthening ethical universities and higher education in minority nationality regions
- Reconstruction of traditional ethnic cultural community, support for publications and establishment of a bilingual teaching demonstration zone
- Enhanced cultivation of talents in minority nationality regions
- Support for the development of an ethnic industry, ethnic commodities, ethnic medical industry, and other industries
- Bias for alleviation of extreme poverty in ethnic minority areas, support for the economic and social development of underpopulated ethnic groups, promotion of booming border areas, and improvement in people's incomes
- Continuing support for the development of Tibet and Xinjiang.

## Energy, natural resource management, and environment protection

Water and land conservation and ecological preservation are highlighted in China's development agenda. Key ecological protection projects listed in 11th FYP for the HKH region cover the following aspects.

- Natural forest resource protection
- Conversion of sloping farmlands into forests and grasslands

- Limited grazing for pasture land restoration
- Building a protective forest system
- Wetlands protection and remediation
- Ecological protection and construction of the Qinghai Sanjiangyuan Nature Reserve

Public security and disaster management are also highlighted under the 11th FYP. Under the Plan the process of industrial structure optimisation and upgrading emphasises ecological protection, resettlement of affected residents, environmental management and flood prevention, and nautical navigation. Preferential finance and taxation and investment policies are also provided to encourage the production and consumption of renewable energy resources.

## Social management and service development

The 11th FYP mentions developing the road network in the western region to support the expansion of a large-scale airport, construction of a medium-scale airport and a number of small-scale airports, and increased airport density in the central, west, and northeast regions. Listed key projects include the Lanzhou-Chongqing, Taiyuan-Zhongwei (Yinchuan), and the Qinghai-Tibet railway extension line projects, all targeting the western mountain region. Tourism development planning is also mentioned although there are no concrete projects yet. Agricultural tourism as a new concept has also been raised. In terms of social management and service development, the construction of a harmonious socialist society is highlighted as the plan's grand goal.

## Conclusion

The 11th FYP concludes with a long list of key fields ranging from the development of a new socialist countryside, to public service, resource environment, and infrastructure construction supported by central government investment. Following the National 11th FYP, provincial 11th FYPs are also being developed in the provincial contexts.

All levels of the 11th FYP plans have set out concrete priorities connected with mountain area development. Specific development programmes and policies will need to be further implemented and effective mechanisms and innovative instruments carried out before a desirable integrated mountain area development can be realised in China.

# A Changing Role for ICIMOD in Support of Policy Options

Narpat Singh Jodha, Senior Associate Scientist, ICIMOD, njodha@icimod.org



Narendra Bajracharya

Regional consultation on ICIMOD's strategy for 2008/2012, Kathmandu, Nepal, August 2007

**Appropriate policies and accompanying implementation strategies are a key to fulfilling the goals and objectives directed at the well-being of mountain communities and the sustainability of the natural resource base to support them. This applies equally to ICIMOD's vision and approaches focused on mountain areas and communities. The present note summarises the important features and steps characterising ICIMOD's policy support work.**

## ICIMOD's mandate

Three basic points are relevant to the present discussion. First, policy making is not a mandate of ICIMOD, it is the responsibility of RMC governments and their agencies. ICIMOD's task is to identify, analyse, and suggest relevant options (best practices, processes about specific interventions) for consideration by the RMCs, and adopt or amend them for actual use.

Second, the policy thrust/approach of ICIMOD's work has evolved over time, as ICIMOD itself has evolved since its inception, particularly in terms of approaches and activities to fulfill its mandate.

Third, ICIMOD focuses on policy as a process, where apart from final state legislation on policy issues, different stages with involved provisions and practices along with the supportive institutions which, individually or collectively, help in meeting the policy goals, are emphasised. Depending on the requirements and pressures, the same are often incorporated in the legislative structure of the policy.

These three attributes have influenced ICIMOD's policy related work as it has evolved, based on the Centre's understanding RMC needs and their approaches to mountain development on the one hand, and the Centre's capacities to deliver usable output while working with partners from RMCs on the other.

## **There is increasing request from national agencies in the region and international organisations for ICIMOD's inputs in policy and programme advisory work on water, climate change, biodiversity, energy, and livelihoods.**

By way of a comment on the evolution of the policy thrust in ICIMOD's work, during the early phase of its work (1988-1993) ICIMOD developed what is described as a 'Mountain Perspective Framework' (MPF), an operational framework to assess the extent to which the imperatives of mountain specificities (fragility, inaccessibility, marginality, diversity, among others) are internalised by interventions in mountain areas. Using this framework, ICIMOD in collaboration with national institutions in the RMCs, looked at agricultural development policies and programmes in different countries. It was noted that the RMCs had, by and large, ignored the imperatives of mountain specificities while planning and implementing development interventions in mountain agriculture (covering different land-based activities such as cropping, horticulture, livestock, agro-forestry, among others).

The Centre tried to address this issue through interaction workshops, one-on-one dialogues with people engaged in the policy making processes (such as planning commissions, line agencies of the government, etc.), and dissemination of the findings of these dialogues and consultations through publications, seminars, and workshops. However, it was quickly realised that though relevant, inducing RMCs to reorient public interventions in keeping with the mountain perspective was not going to be easy.

Hence, while continuing its advocacy for the 'mountain perspective framework' through orientation meetings with government agencies and NGOs, the policy thrust of ICIMOD shifted towards on-the-ground practices that incorporate some imperatives of the mountain perspective. Accordingly, ICIMOD looked at best practices and initiatives taking place in one or the other of the RMCs. ICIMOD studied these practices and sensitised those member countries which did not have such initiatives to the new options, including by way of taking government and non-government officials to the sites of these initiatives so that they might see for themselves and replicate these good and best practices. After four years, ICIMOD looked at the extent and process of adoption of successful practices and found mixed success. Two of the reasons behind the limited success were: (i) continued domination of supply-side concerns as against the demand-side factors characterising ICIMOD recommendations, and (ii) the lack of resources as well as lack of continued presence of the officials who initially agreed to implement the new practices or initiatives.

As an additional step to sensitise policy makers to the mountain perspective, or to understand the demand-side perspectives on recommended options, ICIMOD arranged meetings with senior government officials who have had associations with policy decisions as present or past members of national planning commissions and other development agencies. Discussions revealed that the national government's approaches to mountain areas were overshadowed by the overall national perspective rather than by specific concerns for mountain areas. The lesson to be learned here is that ICIMOD should interact at state, county, or lower levels, to sensitise decision makers and implementors of government programmes to the crucial importance and functions of mountain specificities in designing and implementing mountain development components to programme planning. Hence, the Centre's broad outreach approach moved from national (macro entities) to local micro-level agencies.

Following the change in governments in the RMCs (for example, changing dominance by different political parties at different periods), the suggested mountain perspective-based approaches did not have continuity in government support. To address this problem, ICIMOD interacted with and sensitised the 'think-tanks' among different political parties, which are usually more stable than the political parties and their leadership. This was also attempted for a short period. However, as a result of the lack of interest on the part of concerned individuals representing different political parties, this effort did not work. However, in a broader and technical sense, the mountain perspective did get some concern in long-term development documents such as the Agricultural Perspective Plan (APP), the Nepal and India Planning Commissions' 'Action Plan for the Himalayas'. At a micro-level some NGOs also tried to shape local development in keeping with the imperatives of relevant mountain specificities.

In order to jointly address demand- and supply-side concerns while projecting ICIMOD's outputs vis-à-vis RMC policy makers, a more concrete emerging issue, namely the repercussions of economic globalisation for mountain areas and communities, was put as a subject of policy dialogue. Based on a quick exploratory study on this subject in selected areas in China, India, Pakistan, Nepal, and Bangladesh, interactive workshops involving public and private sector decision makers and implementers were carried out. A range of risks and opportunities associated with globalisation for



mountain areas/communities were identified and shared with these groups. The participants promised to explore these aspects of mountain interventions further and to act accordingly. This phase ended with the completion of a project on 'Globalisation and Mountains' in 2002. The emerging issues were further projected during donor-supported meetings, where RMC officials also participated. The policy impact of these strategies did not move beyond taking stock of the broad issues and potential consequences of globalisation for mountain areas, although it helped indicate direction of future work in subsequent periods.

Post 2003, new qualitative elements were added to work on the policy dimensions at ICIMOD. An important change in the objective circumstance was a shift in German assistance to ICIMOD from core support to programme support, where policy dimension work and personnel support for it were specifically emphasised. The supply side aspects of policy work were reoriented with the help of identifying and articulating stakeholders' needs, with focus on the evaluation and monitoring aspects of policy work including by involving stakeholders, re-focusing on the interests and concerns of ICIMOD output users and internal capacity building for policy work.

Furthermore, previous work on honeybees, biodiversity conservation, PARDYP (watershed management), community NRM (forestry), sloping agricultural land technologies, glacial lake outburst floods, rural energy systems, GIS-IT-based approaches and methods to understand and promote potential options, reached a stage where their findings formed not only a useful training and advocacy material, but attracted donors and RMC agencies to support, assess, and pick up some of the concrete options or good practices suggested by these initiatives.

These moves complemented ICIMOD's renewed focus on training and sensitisation programmes involving RMC specialists including from governments. In a number of cases, the local governments, donors, and NGOs, picked up the policy and/or programme options suggested by the Centre.

An internal review of past achievements, challenges, and lessons learned helped in identifying emerging issues to enhance the relevance and impact of ICIMOD's policy-related work and to strengthen them. Among other things, it emphasised strengthening links between research and development, as well as the ownership by RMCs; building strategic partnerships and long-term donor support for innovative and impact making outputs usable by policy makers (*ICIMOD:*

*Achievements, Challenges and Lessons Learned, 2006*).

An important dimension of ICIMOD's contribution to mountain policy processes has been its participation and inputs in mountain-related discourse at the global level. ICIMOD has been contributing to the process of developing a mountain agenda ever since the Rio Conference in 1992, followed by the International Year of Mountains, 2002; World Summit on Sustainable Development 2002; Millennium Ecosystem Assessment 2003-2005, amongst others. The nature of its involvement and inputs have changed substantially in recent years. Impressed by the approaches and results of ICIMOD work in the areas of poverty and livelihoods (e.g. honeybees; women, water and energy; community-based NRM such as shifting cultivation and community forestry; indigenous resource use systems; global environmental changes and climate change; transboundary biodiversity conservation; medicinal and aromatic plants, natural disaster/hazard management; decentralised renewable energy systems; IT/GIS-based insights and understanding of macro-level/global level dynamics of change), more and more requests for collaboration with ICIMOD and for the use of its approaches are emerging. Besides donor-RMC-NGO supported activities, professional training and information sharing activities have become frequent events in ICIMOD. A number of international agencies such as UNEP, IUCN, The World Bank, FAO, GEF, IFAD, on the one hand and premier national institutions in RMCs on the other are collaborating on the emerging global problems and adaptation strategies. All these, in a way, suggest the greater importance of demand-side rather than just supply-side aspects of ICIMOD's work.

This assessment is further reinforced by increasing requests from national and international agencies for ICIMOD input (presentations) in policy- programme advisory work on subjects dealing with water, climate change, biodiversity, energy, and livelihood systems. ICIMOD's publications in peer-reviewed international journals also indirectly suggest this. ICIMOD is now contributing to regional and global knowledge like CGIAR and other research institutions.

The shift partly implies what one of the RMC member said, "in the past we used to ask, what is ICIMOD? Today we ask: what can ICIMOD do for us?"

Put another way, ICIMOD has slowly moved from a status of 'street vendor projecting/selling its products' to 'a mall/department store or retailer', where people themselves come to enquire and acquire its services/products.

# ICIMOD's Approach to Policy Support: A Strategic Way Forward

Golam Rasul, ICIMOD, grasul@icimod.org, **Madhav Karki**, Deputy Director General, ICIMOD, mkarki@icimod.org



Nakul Chettri and RBS Rawat

The Bhutan (left) and India (right) country consultations for the Medium Term Action Plan, 2008/2012

**ICIMOD is an independent regional knowledge, learning and enabling centre committed to contributing to improving people's lives and the environment of the hill and mountain areas of eight regional member countries: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.**

## Strategic orientation

In line with emerging regional and global development and environmental challenges and priorities, ICIMOD has developed a more focused and coherent programming thrust under the new strategy. The new strategic programme encompasses three interrelated issues to sustainable livelihoods and poverty alleviation, adaptation to environmental change, and integrated management of water and natural disasters.

The thrust areas are interconnected and reinforce one another. Poverty in the mountains, for example, is linked with accessibility and the availability of a range of natural resources, especially land, water, and forests. Poverty is often exacerbated by environmental deterioration including rapidly manifested impact of climate change, as mountain communities largely depend on natural and environment resources for their sustenance and well-being. Experts point out that the degradation of ecosystem services in mountains is

largely driven by several factors including poverty and deprivation, and lack of awareness. To effectively deal with these issues requires a holistic and integrated approach, one which cuts across both the natural and the social science disciplines. Realising this, ICIMOD has adopted a comprehensive and integrated approach which includes a combination of critical thematic and crosscutting issues such as policy, governance, equity and gender, and information and knowledge management (Figure 1, p. 35). ICIMOD's approach to policy support is driven by this framework.

## Strategic approach to policy support: a framework

ICIMOD, based on experience and its existing knowledge base, realises that national and sectoral policies have failed to make a significant impact on reducing poverty, conserving natural resources, and keeping environmental quality in the mountains. Growing evidence suggests that purely technical solutions

are neither effective nor sustainable unless they are supported by favourable policies and institutions. While policy decisions are the prerogative of the RMC governments, relevant information and knowledge, and proper ground-level understanding are necessary for policy makers to make the right choices in terms of formulating appropriate policy.

Being a non-political regional organisation, ICIMOD plays important roles to support and facilitate informed decision-making by concerned agencies at national and sub-national levels. Founded 24 years ago by the RMCs with the support of international partners, ICIMOD's role is to build a regional knowledge base through generation, analysis, and mutual sharing of knowledge and good practices gained by the member countries and other mountain partners in both the region and the globe. With necessary data, information, and knowledge, relevant policy-making bodies will be in a better position to make wise decisions in adopting appropriate policy options and, most importantly, to successfully implement formulated policies.

As knowledge is a critical factor in development and environmental management, ICIMOD aims to support the RMCs through gathering, generating, analysing, and transferring necessary information, knowledge, practices, and suitable policy options through our integrated knowledge management and scientific backstopping approaches. The aim is to achieve meaningful and long-term impact on poverty, development, livelihoods, and climate change. The key elements of ICIMOD's approach to policy support may be summarised as follows:

- a. Generating and synthesizing knowledge on three thrust areas: poverty, environmental change, and water resources;
- b. Facilitating pro-poor and pro-mountain development and promoting appropriate approaches, methodologies, strategies, institutions, and models;
- c. Disseminating appropriate and necessary information, knowledge, and good practices;
- d. Supporting policy making processes and advocacy; and
- e. Facilitating multi-way communication by providing a platform for dialogue and understanding.

The schema in the following page illustrates how ICIMOD's policy inputs feed into different stages of the policy making process and eventually contribute to achieving ICIMOD's strategic goals (Figure 2).

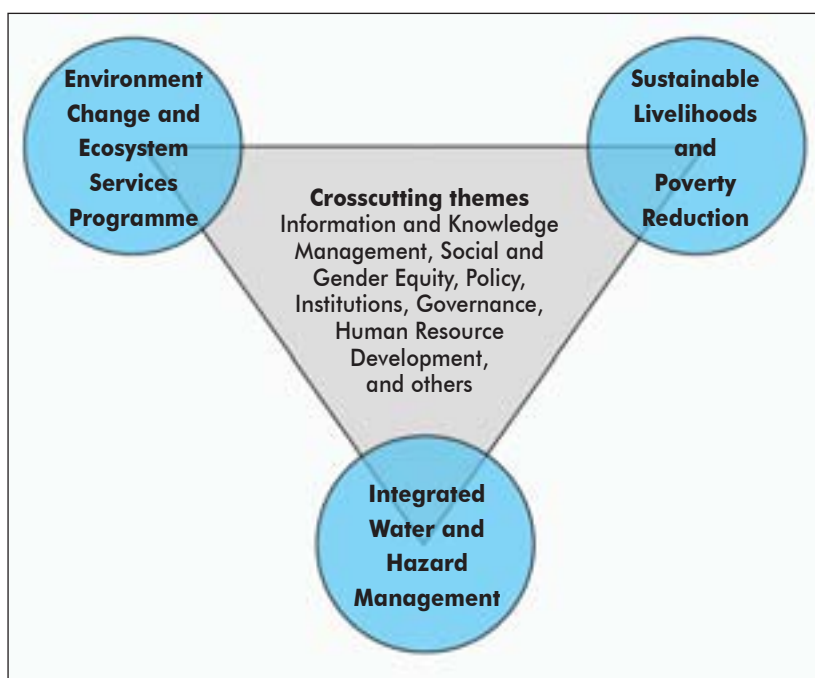


Figure 1: ICIMOD's Strategic Thrusts and Crosscutting Themes

## Strategy for enhancing policy support

ICIMOD's new strategy for improving policy support work in line with the new programmatic approaches includes the following key elements:

### 1. *Developing a knowledge base in the three strategic thrusts and crosscutting areas*

- a. Thoughtful and correct policy decisions require reliable data and information, especially on costs and benefits of adopting different policy options. However, for the mountain regions of all the RMCs, there is a dearth of reliable data and information at the regional scale. To fill in this gap, ICIMOD will develop a suitable knowledge base in the three programme thrust areas in order to make required knowledge available to RMCs and the global community.
- b. ICIMOD will sensitise policy makers through provision of mountain-specific data, information, knowledge, and cost-benefit analysis to enable them to act on and respond to new issues such as climate change, globalisation, natural resource management, and socioeconomic equity.
- c. ICIMOD will exert a concerted effort to highlight mountain issues and identify viable solutions in national, regional, and international policy discourse through various mechanisms.
- d. To cater to the needs of the RMCs, ICIMOD will strengthen policy-relevant trans-disciplinary research and will provide new concepts and practices for finding solutions to mountain problems and will strengthen the research-policy linkage. ICIMOD will continue to be a focal institution for the HKH region on key strategic areas to inform national and sub-national policy-



making processes by bringing in cross-regional learning. In order to enhance policy research, the following strategies will be adopted:

- o Developing in-house capacity in policy review and analysis by forming a policy think-tank at ICIMOD which will regularly monitor and evaluate the regional policy scenario to develop and implement demand-driven policy research and analysis that can feed into national and regional policy-making processes;
- o Developing vertical and horizontal institutional linkages with regional and international policy research institutions working in similar areas, and joint research on critical policy issues; planning advocacy and convening common e-platforms for targeted dissemination of research results;
- o Facilitating and supporting placement for visiting researchers from the region and beyond with the aim of cross fertilising ideas, experiences, and knowledge.

## 2. *Developing and promoting appropriate methodologies, approaches, strategies and options*

- a. ICIMOD will identify and customise simple technologies, options, coping mechanisms, and methodologies, and demonstrate and

mainstream their application though scaled up projects in the RMCs.

- b. Find practical solutions that minimise trade-offs between poverty reduction and environmental protection from the perspective of climate change as well as resource conservation.
- c. Enhance the value of incorporating a policy dimension in our work: in order to remain connected with global discussions, ICIMOD's policy work will be integrated with global discourses such as on the Millennium Development Goals, globalisation, and climate change.
- d. Improve networking and communication, identifying allies and champions, strategic partners, and sharing information, knowledge, and skills to build rapport, consensus, and alliances with key stakeholders including governments, NGOs, the private sector, bilateral and international organisations, to achieve common goals.
- e. Enhance evaluation of current policies and development programmes relevant to mountain communities using outcomes and impacts as criteria to provide feedback to all stakeholders regarding effectiveness of resolving problems using a dynamic policy reform approach.

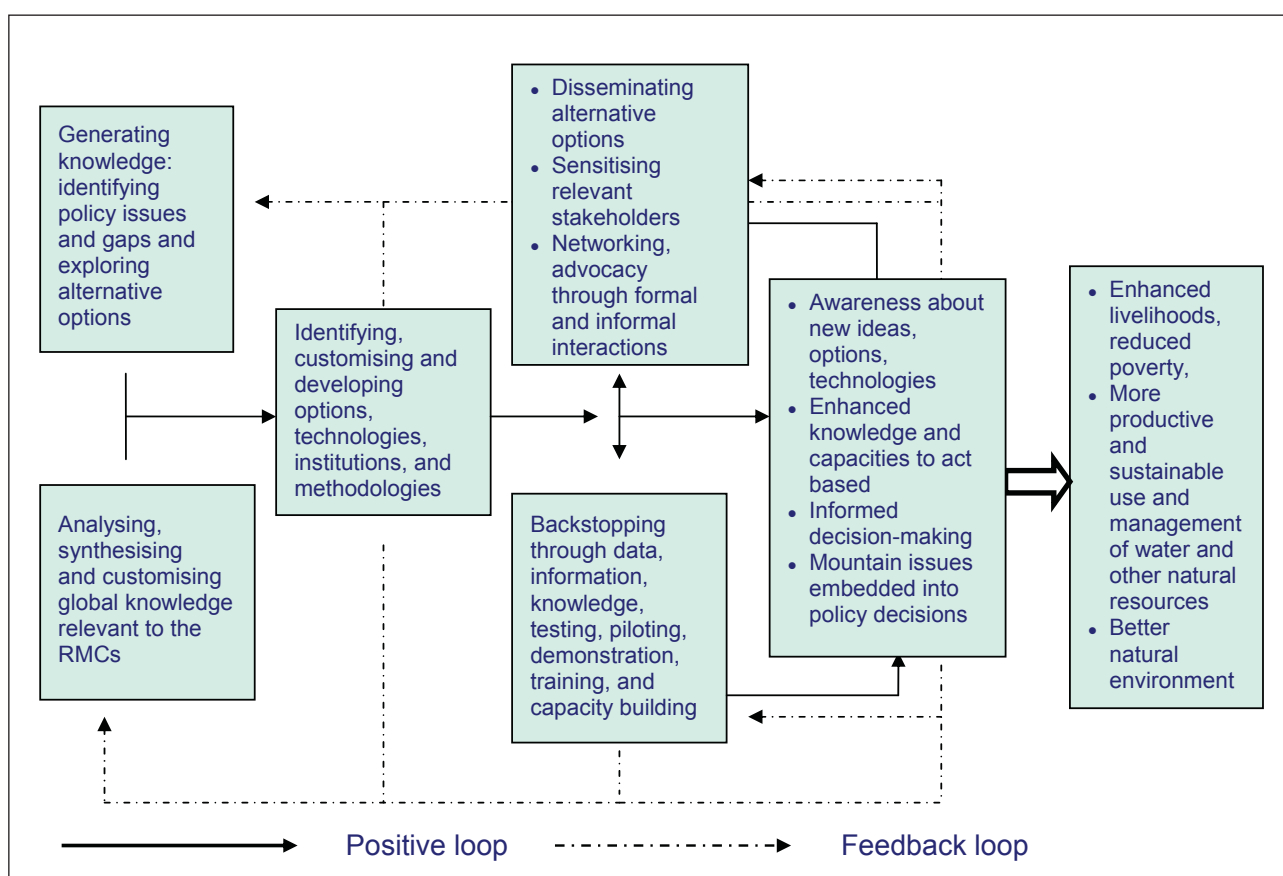


Figure 2: Strategic approach to policy support



ICIMOD Headquarters in Kathmandu, Nepal

- f. Promote public-private sector partnership and introduce market-based instruments along with regulatory mechanisms to bring efficiency in poverty alleviation, resource management, and environmental conservation.
- g. Document and disseminate good practices and successful approaches in implementing policy options and monitor pro-poor policy related impacts in the RMCs to facilitate and advocate their adoption and implementation.
- h. Facilitate policy and programme evaluation by developing and providing necessary monitoring, evaluation, and rapid assessment tools for policy makers and other key stakeholders.

### **3. Disseminating knowledge and information to feed into policy processes to promote informed choices and decision-making**

- a. The general findings of policy research will be disseminated widely through professional journals, mass media, personal communication, and lobby groups in order to enlarge the constituents who can in turn sensitise and stimulate policy makers about mountain problems and transform knowledge and good practices into practical actions.
- b. A communication strategy will be developed and implemented in order to disseminate knowledge and information in a more effective way to feed into policy-making processes in the region and the member countries.

### **4. Facilitating communication for collaborative decision-making by providing a neutral platform**

- a. ICIMOD will provide a platform/s for knowledge and information exchange among scientists and policy makers to discuss, debate, and negotiate in sharing ideas, building trust and confidence, and strengthening cooperation among key stakeholders for collaborative decision-making. Through a free flow of new and relevant information, it will facilitate the regular input of regional perspectives and global understanding on mountain development issues and themes.
- b. Enhance the voice and expand the space for mountain communities in decision-making: in order to enhance the ability of mountain communities to respond to new challenges and opportunities, ICIMOD will generate and provide required information and knowledge to make the poor and marginalised speak with greater voice and to enable them to articulate their agenda and participate in decision-making through proper representation.
- c. Provide evidence-based and properly analysed policy advice and options to targeted persons in governments, research institutions, development practitioners, and civil society for scaling up good practices through policy and programme support.
- d. Enhance the capacities of regional partners by bringing in new ideas, options, and methodologies.

## Bangladesh Agricultural Research Council

The Bangladesh Agricultural Research Council (BARC) was established in 1973 to plan and coordinate agricultural research in Bangladesh. In order to address the challenge of agricultural productivity, restructuring the country's agricultural research system was a felt necessity. In view of this, the BARC Act reformulated BARC in 1996 giving it wider responsibility to coordinate, plan, set priorities, monitor, develop human resources, and review and evaluate research programmes of the National Agricultural Research System (NARS).



As an apex body of NARS, the mission of BARC is to strengthen and mobilise the research capabilities of the NARS institutes, universities, the private sector, and other stakeholders in partnership to generate appropriate technologies and information for the development of the agricultural sector.

The reconstituted BARC works for the following national goals:

- Strengthen and consolidate the capacities of NARS for frontier research
- Plan, fund, coordinate and monitor competitive research grants
- Generate client-oriented or demand-driven appropriate technology
- Document and disseminate research outputs for stakeholders

- Improve administrative and financial set-up for supporting research
- Create a research enabling environment through improved management

BARC plans, directs, coordinates, and monitors agricultural research in the NARS and associated institutes. The Council also helps the government in policy formulation. BARC is organised with a governing body (GB), and Executive Council (EC), and a Secretariat. The GB, chaired by the Minister for Agriculture and co-chaired by the Minister for Fisheries and Livestock, and the Minister for Environment and Forest, directs, controls, and oversees the Council's research, planning, coordination, and administrative policy formulation functions. The EC consists of the Executive Chairman of the BARC, BARC member directors and heads of agricultural research institutes (ARIs).

Over the last 25 years, BARC has been playing an important role in sharing technologies and information and has benefited from the inflow of technologies, scientific information, and germplasm from other countries for promoting agricultural development. BARC has been a partner with the research centres of CGIAR and research coordinating bodies of various countries. In this connection, the Memoranda of Understanding (MoU)/Agreements have been signed with many international organisations to facilitate linkage between the BARC and such organisations. In February 2007, it signed a MoU with ICIMOD for greater and more effective collaboration on research and development in agriculture in the hilly areas of Bangladesh.

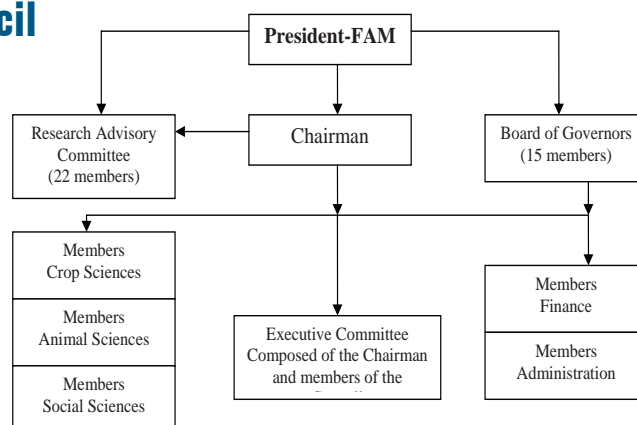
## Pakistan Agricultural Research Council

The Pakistan Agricultural Research Council (PARC), established in 1981, is an autonomous apex body with mandate to aid, promote, and coordinate research at the federal and provisional levels in Pakistan to provide science-based solutions for agriculture.

### Statutory Functions

- Undertake, aid, promote, and coordinate agricultural research
- Expedite utilisation of research results
- Establish research establishments
- Train high-level scientific manpower
- Generate, acquire, and disseminate agricultural information
- Establish a research library
- Perform other related functions

The Federal Minister for Food and Agriculture and Livestock is the President of the Council and chairs the Board of Governors (BOG) of PARC. The BOG is the highest body responsible for the direction and superintendence of the affairs of the Council. The Council Chairman is assisted by three technical members and one member each from



Administration and Finance. The Executive Committee composed of the Chairman and members of the Council is responsible for executing all policies and discharging functions of the Council. Matters related to research planning, coordination, budget and policy formulation, are referred to the Board for guidance and general direction. The Research Advisory Committee (RAC) carries out detailed review of PARC research programmes, identifies researchable issues of national importance, and advises on research programmes.





# Centre News

## MTAP HIGHLIGHTS

Planning the next five years...

## Programme Advisory Committee plus meeting reviews and approves ICIMOD's new Strategic Framework

ICIMOD organised a three-day meeting of the Programme Advisory Committee plus two special invitees (PAC+) from 9-12 June 2007 to review the draft strategic framework prepared by ICIMOD. (The ICIMOD Board formed the PAC+ Committee.)

The meeting was chaired by the Board Vice-chair, Prof. Bruno Messerli, and started with a presentation by Dr. Andreas Schild, ICIMOD Director General, of the proposed strategic framework for the next five years, 2008/2012. The framework highlights ICIMOD's four new programmatic thrusts: i) Sustainable Livelihoods and Poverty Reduction, ii) Integrated Water Resource Management, iii) Environment Change and Ecosystem Services, and iv) Integrated Knowledge Management.

The PAC+ members expressed support for the new framework and commended ICIMOD's work in such a short time to develop it. The Committee suggested that the new framework have the key messages clear, namely: what is new, what is being added and what is being dropped, what is continuing with new emphasis, and what are the key deliverables and how will be they achieved. The meeting deliberated on the proposed content of the new thrust areas, where the PAC+ members made concrete suggestions. They stressed that the framing of the new framework should give ICIMOD "a strategic chance to do groundbreaking work". Emphasis was laid on better integration of the social and natural science elements in programmatic work, and greater reference to international conventions and global processes. All four thrusts should be



Narendra Bajracharya

The PAC+ meeting at ICIMOD

conceptualised and designed in an integrated and transdisciplinary manner. The Committee suggested that, given its critical importance to the regional member country (RMC) partners, the poverty thrust needed some reworking. In revising the document, ICIMOD was asked to focus on meeting the expectations and priorities of the RMCs and international donors, most of whom were participants in the Lucerne meeting, which finally reviewed the framework for the next five years of ICIMOD's work.

Overall it was a productive and fruitful meeting. The PAC+ members expressed interest to continue helping to finalise the documents. The PAC Chair, Prof. Messerli, thanked everyone, and both he and the Director General, Dr. Schild, cited the special contributions of Dr. Anne Whyte, former PAC chair, to the meeting's successful conclusion.

Madhav Karki, [mkarki@icimod.org](mailto:mkarki@icimod.org)



## A fruitful Extraordinary Meeting of the International Support Group

### RMCs and cooperating partners commit to continue supporting ICIMOD for 2008/2012

The governments of Switzerland and Germany co-hosted the Extraordinary Meeting of ICIMOD's International Support Group (ISG), held 27-29 June 2007 in the beautiful mountain setting of Lake Lucerne, Switzerland.

The purpose of the meeting was to discuss existing commitments and additional resources, which will enable ICIMOD to gear up for its continuing, and further strengthened role as a knowledge leader and technical capacity builder on mountain development in the Hindu Kush-Himalayas in the next five years. ICIMOD Director General, Dr. Andreas Schild, presented the Centre's new strategy for 2008/2012, for discussion and feedback by the members and cooperating partners. The new strategy, with programme thrusts in i) Sustainable Livelihoods and Poverty Reduction, ii) Environmental Change and Ecosystem Services, iii) Integrated Water and Hazard Management, and iv) Information and Knowledge Management, will also benefit, especially through research, mountain communities around the world.

Representatives of both the regional member countries and international cooperating partners attended this important meeting. On behalf of the host governments, Mr. Remo Gautschi, Deputy Director General of the Swiss Agency for Development and Cooperation, Government of Switzerland, and Dr. Elke Loebel of the German Ministry of Economic Cooperation and Development, German Federal government, welcomed

the meeting's participants, expressing their respective government's concern and continuing commitment to mountain development. Professor V.K. Gaur of the Indian Institute of Astrophysics, Bangalore, and Dr. Jian Liu from China representing the Inter-governmental Panel on Climate Change (IPCC) and its Secretariat in Geneva, gave presentations highlighting the importance of the Hindu Kush-Himalayas in the context of global climate change. The presentations provided a starting point and background for discussions on the new strategy. Small interactive working groups discussed the new thrusts in detail, with questions presented and answered by ICIMOD's panel of experts in a plenary. An interactive information bazaar elaborated further on the new thrusts. A session was devoted to ICIMOD's new financial strategy, highlighting projections for 2008/2012, which were presented by Mr. Milan Tuladhar, ICIMOD's Director for Finance and Administration.

On the last day of the meeting, Prof. Bruno Messerli, world renowned expert in mountain development from the University of Berne, gave a presentation on the importance of mountains and their global significance; while the Mountain Forum and the Mountain Partnership gave presentations in the context of their alliance with ICIMOD. The participants then joined Prof. Messerli in a field visit to the biosphere reserve in Entlebuch, which event capped the three-day meeting.

Both the co-chairs of the ICIMOD International Support Group, Mr. Jochen Kenneweg and Mr. Olivier Chave, and ICIMOD's Director General expressed satisfaction at the meeting's results. All eight regional member countries and the international cooperating partners showed keen interest in the new programme thrusts and, in principle, committed to continue to support ICIMOD. The actual figures of the commitments will be known during the next Board meeting in November 2007.

*Nonna Lamponen  
nlamponen@icimod.org  
Samjhana Thapa  
sthapa@icimod.org*

Nonna Lamponen



The Lucerne meeting



## Preparation of ICIMOD's new Medium-Term Action Plan 2008/2012

ICIMOD's staff are currently engaged in preparing the **Medium-Term Action Plan (MTAP)** for the next five years, 2008/2012. The MTAP builds on the strategic elements of the new strategy of ICIMOD and aims at describing a general programme architecture and the boundaries for a programme of work which ICIMOD will be supporting and carrying out during the next five years. The MTAP process involves a number of key steps taken.

### *Staff reflections and consultation*

After the appointment of the new Director General, a number of internal reflections and brainstorming sessions were carried out among the ICIMOD staff to collectively envision the future strategy and programmatic framework of ICIMOD during 2008/2012. A strategy planning meeting was organised in January 2007, which first outlined new thematic directions based on the external evaluation in 2006. Based on a preliminary menu of ideas gathered through staff reflections and brainstorming, a draft ICIMOD strategy was prepared and shared with the Board and Programme Advisory Committee (PAC) members.

### *ICIMOD strategy development*

The new DG assumed his duties in April 2007. The strategy was revisited once again and a number of thematic working groups were constituted to develop the discussion papers. The papers were categorised into two types: a) Thrust papers and b) Policy papers. The thrust papers covered a number of areas: a) water and disaster, b) ecosystem services, c) pro-poor growth, d) sustainable livelihoods and poverty, e) water and energy, and f) integrated knowledge management. The policy papers provided the basis to incorporate the strategic elements of ICIMOD within the programmatic framework.

### *Regional and national consultations*

The third component of the MTAP was regional and national consultations. ICIMOD plans to use the inputs collected during the national and regional consultations to develop specific action choices in developing its programme in each RMC.

Narendra Bajracharya



One of many staff discussions on the MTAP

## ICIMOD Board of Governors 2007

### Regional Board Members

**Eng. Ghulam Mostafa Jawad**  
CHAIRPERSON  
ICIMOD Board of Governors  
Deputy Minister of Agriculture  
Ministry of Agriculture and Irrigation  
Afghanistan

**Mr. Md. Abdus Sabur**  
Secretary-In-Charge  
Ministry of Chittagong Hill Tract Affairs  
Bangladesh Secretariat  
Bangladesh

**Mr. Sherab Gyeltshen**  
Secretary  
Ministry of Agriculture, Bhutan

**Prof. Li Jiayang**  
Vice President  
The Chinese Academy of Sciences, PR China

**Ms. Meena Gupta**  
Secretary  
Ministry of Environment and Forests, India

**U Khin Maung Zaw**  
Pro-rector  
University of Forestry, Myanmar

**Dr. Jagadish Chandra Pokharel**  
Vice Chairman  
National Planning Commission  
Nepal

**Mr. M. Zia-ur-Rehman**  
Secretary  
Ministry of Food, Agriculture and Livestock  
Pakistan

### Independent Board Members

**Dr. Jacqueline A. Ashby**  
Research Coordinator  
Andean Change Program  
International Potato Center (CIP), Peru

**Dr. Tone Bleie**  
Professor  
Institute of Planning and Community Studies  
University of Tromsø  
Norway

**Dr. Elke Förster**  
GFA Consulting Group GmbH  
Representative Office Hanoi/  
Senior Consultant  
Vietnam

**Prof. Bruno Messerli**  
VICE-CHAIR BOARD  
Professor  
Institute of Geography  
University of Berne, Switzerland

**Dr. Amir Muhammed**  
Rector, National University of Computer and  
Emerging Sciences, Pakistan

**Dr. Rob Visser**  
Ministry of Foreign Affairs (DSI)  
The Netherlands

**Dr. Linxiu Zhang**  
Professor and Deputy Director  
Centre for Chinese Agricultural Policy  
Chinese Academy of Sciences (CAS)  
PR China

**Dr. Andreas Schild**  
(Ex-officio) Director General, ICIMOD



The aims of the regional consultations were to discuss and define the roles and responsibilities of ICIMOD in developing long-term research programmes of regional nature in ICIMOD and the HKH region. The twin objectives were: a) to enrich the strategic framework with regional perspectives, and b) to identify potentials regional programme opportunities and partners. ICIMOD plans to use the inputs collected during the national and regional consultations to develop specific action choices in programming in each of the RMCs.

The national consultations focused on understanding national priorities, plans, and programmes in each of the member countries, and on identifying potential scaling up partners and mechanisms for cooperation. Given the heterogeneity of political, social, cultural, research, economic, technological conditions in the RMCs, the objectives of the national consultations were to share and finalise the new strategy and identify opportunities and options as well as explore ways of working together with strategic partners.

Madhav Karki, [mkarki@icimod.org](mailto:mkarki@icimod.org)

## ICIMOD raises NRs 567,352 for Nepal flood victims

ICIMOD staff contributed NRs 283,676 to provide relief for the victims of the recent floods in the Terai regions of Nepal. ICIMOD as an institution, and with the approval of the Director General, matched the staff contributions with the same amount, raising NRs 567,352 as the Centre's total contribution for flood relief in Nepal. ICIMOD also gathered used clothing for the flood victims. Forty-two of Nepal's 75 districts, or 56% of the country, has been affected by floods this year. The disaster killed more than 150 people in Nepal, and over 2700 in the whole of South Asia. ICIMOD's contributions were channeled through the Nepal Red Cross Society (NRCS).

The Centre's attempts to accompany NRCS in relief operations in order to assess the social impacts of the disaster were hindered by security concerns in the Terai. (The Terai regions of Nepal are also presently coping with social and political unrest.) Only the NRCS, which has been leading relief operations in Nepal through its 75 warehouses, distributing relief materials as equitably as possible, was able to reach the remote affected areas. ICIMOD made a special request to the NRCS to bring part of the relief funds and goods gathered to the four most affected districts of Mahottari, Sarlahi, Dhanusa, and Rautahat, where ICIMOD had earlier conducted case studies on disaster preparedness.

Mr. Milan Raj Tuladhar, ICIMOD Director for Finance and Administration, handed over the contributions to Mr. Devratna Dhakwa, Secretary General of NRCS, during a small function at the NRCS headquarters on 17 August 2007. Mr Tuladhar also handed over 20 copies



Mr. Milan Tuladhar hands over ICIMOD's relief contributions on behalf of ICIMOD

of ICIMOD's publication, *The Snake and the River Don't Run Straight*, translated in to Nepali, and 50 copies to DP-Net, a network for coordination, communication, and knowledge development on disaster preparedness in Nepal. The publication is a case study on local knowledge for disaster preparedness with particular reference to flood disasters in the affected districts of Mahottari and Dhanusa. Accepting the contributions for the flood affected areas, Mr. Dhakwa thanked ICIMOD and the staff on behalf of NRCS and the flood victims for the generous contributions. "We are pampered by your recognition".

Vijay Ratan Khadgi, [vkhadgi@icimod.org](mailto:vkhadgi@icimod.org)

Narendra Bajracharya

Around the world bee colonies are disappearing in huge numbers...

## A remarkably different trend appears in the Hindu Kush-Himalayas

The recent disappearance of honeybees in large numbers in various regions of the globe – a phenomenon known as ‘colony collapse disorder (CCD)’ – has generated both curiosity and alarm among conservation groups and grassroots organisations around the world. The phenomenon has been reported in Europe, North America, and parts of Latin America, where bees have been disappearing, threatening the heretofore profitable pollination and associated industries.

The beekeeping team of ICIMOD suspects a connection between the introduction and expansion of genetically modified crops and indiscriminate use of pesticides on a large scale in these regions, and the bees' mysterious disappearance, although more studies are needed to reach a definitive conclusion.

We have not observed this phenomenon engulfing the bee industry in various parts of the world in the HKH region in South Asia, but the situation is fluid in areas where genetically modified crops and high value cash crops are being promoted by agencies and institutions. This is leading to landscape changes and reducing the space and scope for all types of pollinators and honeybees.



Farooq Ahmad

Beekeeping in Afghanistan

In addition to this phenomenon, in the HKH region, the European honeybee, *Apis mellifera*, is under severe attack by parasitic mites, *Varroa jacobsoni* and *Varroa destructor*, which have virtually destroyed more than 50% of bee populations of this species in Punjab, Haryana, and Himachal Pradesh, India, and in Pakistan and Afghanistan. The Asian hive bee, *Apis cerana*, which is the focus of ICIMOD's work in beekeeping, is resistant to these parasitic mites and there is no report of an African hive beetle attack on this bee species in the region.

Farooq Ahmad, fahmad@icimod.org

## Norway supports ICIMOD's next Five-Year Strategic Plan

Norway is the first donor to sign an agreement of support for ICIMOD under the new Five-Year Strategic Plan 2008/2012.

The Norwegian commitment of support totals Norwegian Kroner 25 million. This is an increase of 43% over the support provided by Norway under ICIMOD's last five-year plan. The support is roughly equivalent to US\$ 4.2 million at the current exchange rate. It will be used as core financing for the five-year programmes of ICIMOD.

This encouraging show of support from Norway has paved the way for many other donors to extend their support to ICIMOD's next strategic programme dedicated to the sustainable development of Hindu Kush-Himalayan region.

ICIMOD gratefully acknowledges this important contribution from Norway and has expressed its determination to fulfill the objectives laid down in the five-year strategy.

Milan R. Tuladhar, mtuladhar@icimod.org

## ICIMOD Books-online going strong

**ICIMOD Books-online** <<http://books@icimod.org>>, opened to the public on 5 June 2007, and has been a resounding success. In the first five months after this online facility opened, the public downloaded more than 11000 files, some 9000 of them complete books. Altogether, 213 of the 275 available titles were downloaded at least once. Although recently published titles are the most in-demand documents, papers from as far back as the mid-1980s, and from a range of books 10 years old and more have also been downloaded, some in considerable numbers.

We have received many encouraging responses from our readers across the globe, and we are delighted by this indication of the continuing interest in and relevance of ICIMOD publications. As of 1 November, all the 500 titles from our catalogue have been uploaded, with full pdf files for publications for 2000 onwards and titles and contents pages only with an option to order for most titles before 2000.



# ICIMOD workshops, meetings, and training programmes

March - September 2007

Event	Date	Place
Regional Workshop/Training on Earthquake Vulnerability and Multi-Hazard Risk Assessment	5-16 March	Kathmandu, Nepal
Regional Training of Trainers in Advocacy	13 - 17 March	Kathmandu, Nepal
Training on Beekeeping Management and Queen Rearing in Manipur, India for IFAD project beneficiaries	12-22 March	Manipur, India
Regional Workshop of the Advocacy Forum for Revitalising Equitable Societies in the Himalayas	17-19 March	Kathmandu, Nepal
International Workshop on the University Consortium and Fellowship Programme	24-25 March	Kathmandu, Nepal
Workshop on System Dynamics Modelling for Ecosystem Management	27-29 March	Kathmandu, Nepal
National Value Chain Workshop on Herbs	28-30 March	Kathmandu, Nepal
Capacity Building Workshop on Wetlands Database Development and the Asian Wetlands Inventory Approach	30 March - 5 April	Kathmandu, Nepal
UNISDR Regional South Asia Wildland Fire Network	02-03 April	Kathmandu, Nepal
Low-Cost Soil and Water Conservation Techniques and Water Management Activities	2-24 April	Kathmandu, Nepal
ENRAP Meeting for IFAD Projects in Nepal	9-April	Kathmandu, Nepal
Training on Beekeeping Development for Men in Swat	9-15 April	Swat, Pakistan
International Workshop on Bamboo	10-12 April	Kathmandu, Nepal
Application of FAO/UNEP land cover classification system for the study of land cover dynamics in SNPBZ	11-13 April	Kathmandu, Nepal
ICIMOD/InWent Partnership Programme Preparatory Workshop and 4th Steering Committee Meeting	11-15 April	Kathmandu, Nepal
Regional Management Workshop on EU-BRAHMATWINN Project	25-26 April	Kathmandu, Nepal
Inception Workshop of the Medicinal Plants and Herbs: Developing Sustainable Supply Chain and Enhancing Rural Livelihoods in the Eastern Himalayas	25-27 April	Kathmandu, Nepal
Training on Bee-based Micro-enterprise and Marketing for Business Entrepreneurship Development of Small Bee Entrepreneurs and Staff of Partner Organisations	3-5 May	Kathmandu, Nepal
Workshop on Sharing Knowledge and Bridging Gaps in Disaster Preparedness	9-11 May	Kathmandu, Nepal
Second NATA Himalayan Travel Mart	11-13 May	Kathmandu, Nepal
Regional Workshop on Diversification of Knowledge Sharing Methods	21-25 May	Kathmandu, Nepal
National Stakeholder Consultation Workshop on Conservation of High Altitude Wetlands through Application of the Asian Wetlands Inventory Approach and Stakeholder-led Catchment Management in Nepal	21 May	Kathmandu, Nepal
Training on Beekeeping Management and Queen Rearing in Uttranchal, India for IFAD project's beneficiaries	24-30 May	Almora, India
Workshop on Broadband Connectivity in Mountain Areas of Nepal	25 May	Kathmandu, Nepal
Inter-School Environment Quiz Contest, World Environment Day (WED) 2007	31 May, 2- 3 June	Kathmandu, Nepal
Mountain Forum Board Meeting and Node Managers Meeting	3-10 June	Kathmandu, Nepal
Symposium on Climate Change Impacts in the Himalaya, WED 2007	4 June	Kathmandu, Nepal
Publications Launch, WED 2007	5 June	Kathmandu, Nepal
Books Online Launch, WED 2007	5 June	Kathmandu, Nepal
Exhibition and Painting Competition for Schoolchildren, WED 2007	5-7 June	Kathmandu, Nepal
Atmospheric Brown Cloud Consultation and Awareness Seminar, WED 2007	6 June	Kathmandu, Nepal
Programme Advisory Committee+ meeting	9-12 June	Kathmandu, Nepal
South Asia Environment Outlook (SAEO) and South Asia Sustainable Development Strategy (SSDS) meeting	6-8 June	Kathmandu, Nepal
The Extraordinary Meeting of the ICIMOD International Support Group (ISG)	27-29 June	Lucerne, Switzerland
Proposal Writing and Fund Raising Training Workshop	28 June-1 July	Darjeeling, India
Multi-Stakeholder Workshop on Conservation of High Altitude Wetlands in China: Response and Adaptation to Climate Change	21-24 July	Kunming, China
Training Workshop on Advocacy Strategies and Gender Equity	30 June - 4 July	Kabul, Afghanistan
Convening of Training Workshops on Participatory Pastoral Innovation and Development in the Context of Rangeland Co-management	9-19 July	Sichuan, Chengdu, China
Consultation Workshop on Declaring Jhum Products as Organic	16-17 July	Shillong, India



Staff Consultation on ICIMOD's Strategy and Medium-Term Action Plan (MTAP) Development Process	16 July	Kathmandu, Nepal
Nepal Consultation to Share ICIMOD's Future Strategy and Identify Programming Opportunities	19 July	Kathmandu, Nepal
Training Workshop on Flash Floods Risk Management in the Himalayas	1-10 August	Kathmandu, Nepal
Regional Consultation on ICIMOD's Future Strategy.	2-3 August	Kathmandu, Nepal
India Consultation to Share ICIMOD's Future Strategy and Identify Programming Opportunities	7 August	New Delhi, India
An Interaction Programme on Issues Related to International Honey Markets, Organic and European Standards for Honey, Bee Products and Services	9 August	Kathmandu, Nepal
Afghanistan Consultation to Share ICIMOD's Future Strategy and Identify Programming Opportunities	14 August	Kabul, Afghanistan
Pakistan Consultation to Share ICIMOD's Future Strategy and Identify Programming Opportunities	18 August	Islamabad, Pakistan
Myanmar Consultation to Share ICIMOD's Future Strategy and Identify Programming Opportunities	22 August	Nay Pi Taw, Myanmar
Bhutan Consultation to Share ICIMOD's Future Strategy and Identify Programming Opportunities	31 August	Thimpu, Bhutan
Training workshop in Advocacy Strategies	31 August - 4 September	Malakand, NWFP Pakistan
Bangladesh Consultation to Share ICIMOD's Future Strategy and Identify Programming Opportunities	6 September	Dhaka, Bangladesh
National Training Course and Orientation Workshop on Change Management for Nepal	10-21 September	Kathmandu, Nepal
ICIMOD Planning Meeting	13-15 September	Kathmandu, Nepal
Conservation Day	23 September	Kathmandu, Nepal

## Mountain Forum

### Mountain Forum organises a 'Virtual Innovation Marketplace' workshop

A two-day workshop on the 'Virtual Innovation Marketplace' was organised by the Mountain Forum Secretariat (MFS) and the Global Mountain Programme at Kathmandu on 31 May-1 June 2007. The workshop aimed to present the concept of an 'innovation and information marketplace' as an innovative way to approach the issue of connecting information supplies with information demands in mountainous regions.

Thirteen participants attended representing the Global Mountain Programme (GMP), CONDESAN, the Mountain Forum Secretariat (MFS), the Food and Agriculture Organization of the United Nations (FAO), Bellanet, Himanchal Foundation, ICIMOD, and the Internet Service Providers Association of Nepal, as well as one external consultant.

### Mountain Forum Annual Board and Node Managers' Meet

Mountain Forum Board members, staff from all Regional Nodes of

the Mountain Forum and from the Mountain Forum Secretariat met during 3-10 June 2007 in Kathmandu, Nepal, on the occasion of Mountain Forum's Annual Board and Node Managers' meetings. Representatives from Mountain Forum's partner organisations, FAO, GMP, UNEP, and TMI, and from main donor, SDC, also joined the Board meeting, which was held at ICIMOD during 5-7 June. Time was also dedicated to the Node Managers and MFS staff meetings. Discussions revolved around ways to strengthen the network and its collaboration with key stakeholders in the Mountain Agenda.



Mountain Forum Board, Secretariat, and Regional Node members

## Selection Process for the new Mountain Forum Executive Secretary Ongoing

A vacancy announcement for the position of Executive Secretary of the Mountain Forum (MF) Secretariat was issued recently. Out of a shortlist of five who were interviewed via telephone patch by a panel including the ICIMOD Director General, the Vice Chair of MF Board and the outgoing MF Executive Secretary two candidates were invited to Kathmandu and presented their concept of 'ICT and Knowledge Management in the Context of Development' before Mountain Forum and ICIMOD staffs. The search committee hopes to appoint a new MF Executive Secretary before the end of the year.

## Mountain Forum holds a Retreat

On 1 August 2007, the Mountain Forum Secretariat team organised a retreat in Godavari to discuss collaboration with the Mountain Partnership Secretariat during its next phase. The draft concept document for the Mountain Partnership Secretariat and detailed activities were discussed during the retreat with the participation of Dr. Andreas Schild and Dr. Madhav Karki.

## Mountain Forum Bulletin is out

The latest issue of *Mountain Forum Bulletin* on the theme 'Melting Mountains', highlights climate change in the Cameroon Highlands, the Brahmaputra River Basin, the Himalayas, the European Alps, and the Bolivian Andes, amongst others. Visit the following link to download the bulletin: <http://www.mtnforum.org/rs/bulletins/mf-bulletin-2007-07.pdf>

## Asia-Pacific Mountain Network

Asia-Pacific Mountain Network (APMN) is the Asia-Pacific node of Mountain Forum (MF). It is an informal and democratic information network of individuals and organisations interested in the promotion of sustainable mountain development in the mountain countries of the Asia-Pacific region. At present, APMN is funded by SDC and hosted by ICIMOD, where it is managed by the Information Management, Communications and Outreach (IMCO) Division. As well as moderating two MF discussion lists (mf-asiapacific and mf-centralasia), and contributing to Mountain Forum's other activities, APMN has its own programme and website (<http://apmn.icimod.org>)

The summer issue of *APMN Bulletin* ([http://apmn.icimod.org/publications/APMN-bulletin\\_vol\\_8\\_no\\_1.pdf](http://apmn.icimod.org/publications/APMN-bulletin_vol_8_no_1.pdf)) was published in July. The Bulletin is intended particularly for off-line members of the network. It highlights recent activities of APMN and critical and emerging mountain issues, as well as mountain-related events and activities taking place in the Asia-Pacific region.

A survey on broadband connectivity in mountain areas of Nepal was carried out in May/June under an agreement between MFS and the Mountain Partnership as a contribution to a wider comparative study including a similar survey in mountain areas in Romania. The Nepal survey was carried out by the Forum for International Telecommunication (FIT Nepal) on behalf of APMN. The results will be presented in the next issue of the APMN Bulletin.



A study has been completed for the Mountain Partnership to assess the communication needs in Central Asia, especially as they relate to Mountain Forum and the Mountain Partnership, focusing on Kyrgyzstan and Tajikistan. The results and recommendations have been submitted to the Mountain Partnership.

**Keep up to date on mountain issues in the Asia-Pacific region.**

**Visit**

**<http://apmn.icimod.org/>**

**and join Asia Pacific Mountain Network,  
the Asia Pacific node of the Mountain Forum**



# New Memoranda of Understanding and Agreements signed with partners

February - August 2007

## February

International Water Management Institute, Colombo, Sri Lanka

Promotion and coordination of research and cooperation initiatives in the Hindu Kush-Himalayan region

Xinjiang Institute of Ecology and Geography, Urumqi, China  
Regional collaboration, participatory action research, and capacity building

South Asia Partnership International, Kathmandu, Nepal  
Building awareness and capacity in knowledge management and development communications in the HKH region

FOCUS Humanitarian Assistance, Islamabad, Pakistan  
Development of a training manual on community-based flash floods risk management

Aga Khan Foundation, Kabul, Afghanistan  
Collaboration in the major thematic areas of AKF and ICIMOD

GTZ/Private Sector Promotion Project, Lalitpur, Nepal  
Up-scaling the honey sub-sector through the value chain approach

## March

International Development Research Center (IDRC), New Delhi, India  
Development of a Himalayan (HKH) university consortium

Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Beijing, China  
Mountain geographic information network and scientific data sharing in the HKH

Centre for Environmental and Geographic Information Services (CEGIS), Dhaka, Bangladesh  
Mountain geographic information network in the HKH

Kathmandu University (KU), Dhulikhel, Nepal  
Sharing information and enhancing mountain-related knowledge

Kunming Institute of Botany (KIB), Kunming, China  
Medicinal and aromatic plants traditional knowledge network in Southwest China

National Snow and Ice Data Center/ Global Land Ice Measurements from Space (NSIDC/ GLIMS) University of Colorado, Boulder, USA with ICIMOD  
Sharing and exchange of data and information on the Himalayan region

Macaulay Land Use Research Institute (MLRI), Aberdeen, UK  
Project collaboration - Range enclosure on the Tibetan Plateau of China: impacts on pastoral livelihoods, marketing, Livestock productivity, and rangeland biodiversity

## April

Karakorum International University (KIU), Gilgit, Pakistan with ICIMOD  
Sharing information and knowledge in furthering sustainable mountain development in the HKH region through systematic instruction

Bangladesh Water Development Board (BWDB), Dhaka, Bangladesh  
Application of Satellite Rainfall Estimation in the HKH region



Narendra Bajracharya

ICIMOD MOU signing with Dr Charles Crissman, CIP Deputy Director General for Research

## May

The International Potato Center (CIP), Lima, Peru  
Provision of a potato IPM specialist to be stationed at ICIMOD

Food and Agriculture Organization (FAO) of United Nations, Rome, Italy  
Development of practical approaches and tools to promote better interagency coordination to design and implement SARD-M interventions

Department of Livestock, Ministry of Agriculture, Thimphu, Bhutan  
Development of Sustainable Energy for Rangelands (DESER) Phase I to implement the project in Sio Yaksa and Nubri sites

Sichuan Academy of Grassland Sciences, Chengdu, P. R. China  
Development of Sustainable Energy for Rangelands (DESER) Phase I to implement the project in the Sichuan site

## June

National Trust for Nature Conservation, Lalitpur, Nepal  
Development of Sustainable Energy for Rangelands (DESER) Phase I to implement the project in an Upper Mustang site

## July

EvK2CNR, Rome, Italy  
Promotion and coordination of research and cooperation initiatives in the Hindu Kush-Himalayan region

## August

Aga Khan Rural Support Programme, Chitral, Pakistan  
Development of Sustainable Energy for Rangelands (DESER) Phase I to implement the project in a Chitral site

GTZ/Private Sector Promotion Project, Lalitpur, Nepal and Council for Technical Education and Vocational Training, Kathmandu, Nepal  
Income and employment generation through producing competent human resources in the field of beekeeping

Simulistics Ltd., Loanhead, Midlothian, UK  
System dynamics modelling within the framework of regional Decision Support Systems (DSS-HKKH) partnership project



## Outreach activities

### ICIMOD joins the world in celebrating World Environment Day 2007, under the theme: 'Melting Ice - a Hot Topic?'

ICIMOD organises as well as takes part in outreach activities regularly. The objective is to inform our partners, stakeholders, as well as the general public about our programmes and activities. One such event was World Environment Day, celebrated in Nepal and around the world June 5 every year, since its declaration by the UN to stimulate worldwide awareness of environmental issues and encourage political action.

The theme for this year's celebration was *Melting Ice – A Hot topic?* Although the theme focused on the polar region, the subject is equally important and relevant for this region where the Himalayan glaciers, known popularly as the 'third pole', are found. ICIMOD played a major role in celebrating this event in Nepal in close collaboration with the Ministry of Environment, Science and Technology, Government of Nepal, and the United Nations Environment Programme, Regional Office for Asia and Pacific (UNEP-ROAP), Bangkok. Several interesting activities were organised (See Box 1) the details of which events can be read from our web site at <http://www.icimod.org/home/news/news.content.php?nid=67>

#### Box 1: World Environment Day Related Activities

- Inter-School Environment Quiz Contest, 31 May to 2-3 June 2007
- Symposium on Climate Change Impacts in the Himalaya, 4 June 2007
- ICIMOD participates in the International Climate Conference in Norway
- Launch of three new books: Nepal Biodiversity Resource Book; Impact of Climate Change on Himalayan Glaciers and Glacial Lakes; Case Studies on GLOF an Associated Hazards in Nepal and Bhutan; and UNEP's Global Environment Outlook on Ice and Snow, 5 June 2007
- Launch of the ICIMOD Books Online, 5 June 2007
- 3-day exhibition at the Birendra International Convention Centre, 5-7 June 2007
- Art Painting Competition for schoolchildren, 5-7 June 2007
- Atmospheric Brown Cloud Consultation and Awareness Seminar, 6-7 June 2007

The main day event was held at the Birendra International Convention Centre (BICC) in Kathmandu on the morning of 5 June 2007, attended by dignitaries, high-level government officials, and representatives of international and local NGOs, community organisations, as well as teachers and schoolchildren in Kathmandu.

On this occasion, the Government of Nepal conferred the *Environment Prize* and the *Environment and Development Honor 2007* to key institutions and individuals including



ICIMOD Director General, Dr. Andreas Schild, describes Nepal as a 'superpower' in terms of biodiversity during his address at the World Environment Day celebration at the BICC in Kathmandu, Nepal

ICIMOD, UNEP, and WWF Nepal in recognition of these institutions' contribution to environmental protection and conservation efforts. Dr. Andreas Schild, Director General of ICIMOD, and Mr. Surendra Shrestha, UNEP Regional Director and Representative ROAP, Bangkok received the awards on behalf of their respective institutions.

In accepting the award, Dr. Schild, citing the recently published MOEST-ICIMOD-Nepal *Naturedotcom* book, *Nepal Biodiversity Resource Book* supported by UNEP, described Nepal as a 'superpower' in terms of biodiversity and called on everyone to be conscious of this special status and how to protect it. Mr. Shrestha, accepting the award for UNEP-ROAP, urged the government to work with institutions like ICIMOD and WWF to plan for the continued protection of this wealth in biodiversity.

On the occasion three environmental books were launched by the Honourable Minister Mr. Mahantha Thakur, MOEST/GON. Also launched during *World Environment Day* was **ICIMOD Books On-line**, a new service from ICIMOD

accessed through the website [www.icimod.books.org](http://www.icimod.books.org) More activities are listed in Box 2.

*Nira Gurung, [ngurung@icimod.org](mailto:ngurung@icimod.org)*

#### Box 2: Other Outreach Activities, January-September 2007

- Earthquake Safety Exhibition, 16-18 January 2007, Kathmandu
- The World Wetlands Day Workshop and Exhibition held at the Nepal Tourism Board, Kathmandu, 2 February 2007
- The 21st International Review of Mountain Publications/Trento Film Festival, 24 April – 6 May 2007, Trento, Italy
- 2nd NATA Himalayan International Mart, 11-13 May, Kathmandu, Nepal
- USAID "Share Fair" 5 June 2007, Kathmandu, Nepal
- 4th Asian Regional Conservation Forum, 10-14 September 2007, Kathmandu, Nepal
- Conservation Day, 23 September 2007, Kathmandu, Nepal



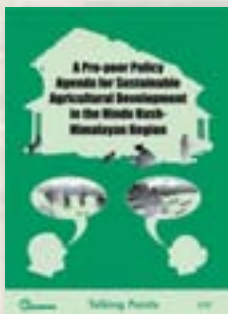
## Recent ICIMOD publications

The following are the major documents published between March 2006 and October 2007. The three prices quoted are applicable to developed countries, developing countries, and ICIMOD's regional member countries respectively, and include post and packing. Publications are available at a reduced rate at the Centre itself. Publications can be provided free-of-charge to institutions actively involved in sustainable development of the greater Himalayan region. Order on-line (see below) or from the Distribution Unit, [distri@icimod.org](mailto:distri@icimod.org), or download from <http://books@icimod.org>



Jana, S. **Working Towards Environmental Justice: An Indigenous Fishing Minority's Movement in Chitwan National Park, Nepal.** Talking Points 3/07 54p ISBN: 978-92-9115-051-9 Price: \$10/\$7/\$5

Reconciling the needs of people who depend on natural resources for their survival with nature conservation is a burning issue in many parts of the world. The emerging problems are approached by the concept of environmental justice – the struggle against the unfair environmental burden often placed on marginalised communities. This book traces the struggles of the Bhote-Majhi-Musahars, marginalised indigenous fishing communities who live along the periphery of Chitwan National Park in Nepal, as they try to regain their right to fish, ferry, and collect forest products from the National Park area. Their struggle sums up the problems of many indigenous groups and shows how individual resistance transforms into a movement, and how this movement then withers in the face of changing conditions. It raises the issues of vulnerability to floods, of land title recognition, resettlement, declining in fish populations, and rights to indigenous knowledge. Here is an example of one small group's trials, successes, and failures, and how they are confronting a situation shared by many others caught up in the parks-people conflict.



Rasul, G.; Karki, M. **A Pro-poor Policy Agenda for Sustainable Agricultural Development in the Hindu Kush-Himalayan Region.** Talking Points 2/07 21p ISBN: 978-92-9115-044-1 Price: \$10/\$7/\$5

The conditions in mountain areas are significantly different from those obtaining in the plains. These differences have not been adequately reflected in national agricultural policy, research, extension, and credit, and in other programmes promoting agricultural development in many countries, especially in South Asia with its vast mountain areas.

This Talking Points document offers an alternative mountain-specific framework that calls for an integrated

and holistic approach to agricultural development, the removal of policy biases, and a fundamental change in perception and approaches. The paper recommends the development of a strategy specific to mountain agriculture, that takes into account its agro-ecological potentials, the biophysical and socioeconomic conditions of mountain farmers, and considers specific measures to overcome difficulties in market access. The framework highlights the mountains' comparative advantages: such as the potentials for organic and niche mountain products, and advocates adding value to mountain environmental services. Policy makers, planners, development practitioners, and academia may find the perspective offered useful in designing policies and programmes for agriculture in hilly and mountain areas, and a basis for future in-depth research on mountain agriculture.

Statz, J.; Kotru, R.; Beukeboom, H.; Rasul, G.; Kerkhoff, E.; Karki, M. **Advances in Participatory Forest Management in South Asia: Learning from Field Experience in Bhutan, India and Nepal.** Talking Points 1/07 65p ISBN: 978-92-9115-022-9 Price: \$10/\$7/\$5



The book summarises the findings of a multi-disciplinary team that studied three recently completed GTZ community-based forest management projects in Bhutan, India, and Nepal. The projects represented different approaches to forest resource management with different institutional arrangements and policy orientation. The team examined how the projects have linked people, institutions, sectors, disciplines, and programmes together in a dynamic system of community forest resource management. The results indicate that using appropriate technical and financial support it is possible to achieve the twin goals of forest conservation and poverty reduction. The factors that led to successful innovations, and those that slowed progress are described, and good practices in community-based natural resource management documented – many of them technological innovations that pave the way for a shift from mere subsistence to a more commercial use of forest products. The book will interest all those concerned with community-based approaches to natural resource management.





**Glossary of Access and Benefit Sharing Terms.** 25p

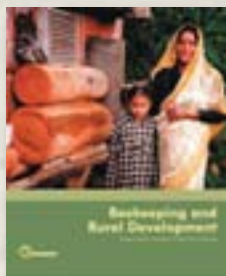
ISBN: 978-92-9115-043-4

(Free-of-charge, hard copy available on written request)

The Convention on Biological Diversity developed a framework in 1992 recognising the sovereignty of the nation-states

over their biological and genetic resources, and the authority of national governments to determine access to these resources subject to national legislation. Over 189 countries signed the Convention, which encouraged countries to access these resources and take up measures to ensure fair and equitable sharing of the benefits from their use, a process called 'access and benefit sharing' or 'ABS'.

To facilitate the ABS processes in the HKH region, ICIMOD, with support from the German Federal Ministry for Economic Cooperation and Development (BMZ), entered into a project to raise awareness on ABS. Explaining ABS terminologies is important in understanding the process of introducing an ABS regime in the region. The Glossary collates over 70 terminologies related to ABS and is part of ICIMOD's contribution to facilitating the ABS process in the eastern Himalayan countries. Many of the definitions are still being debated. The Glossary was written for stakeholders engaged in the development and interpretation of an ABS regime, including policy makers and stakeholders without access to this information.



Ahmad, F.; Joshi, S. R.; Gurung, M. B. **Beekeeping and Rural Development.** Kathmandu, ICIMOD 35p ISBN: 978-92-9115-048-9 US\$ 4 p&p

Beekeeping can play an important role in rural development, by providing products for household consumption and income from

sale of honey and other bee products, and an important source of pollinators to improve productivity, especially of horticultural crops. This generously illustrated booklet describes some of the benefits of beekeeping, especially for the rural poor and marginalised groups in the extended Himalayan region. It also discusses beekeeping's contribution to resource and biodiversity conservation, and looks at the challenges in marketing and the need to follow a market chain approach to ensure that beekeepers benefit fully from their products. Beekeeping can contribute effectively to the empowerment of disadvantaged people and communities, and makes a multifaceted contribution to rural livelihoods. The booklet closes with recommended approaches in future rural development strategies.

Xu, J.; Shrestha, A.; Vaidya, R.; Eriksson, M.; Hewitt, K. (2007) **The Melting Himalayas: Regional Challenges and Local Impacts of Climate on Mountain Ecosystems and Livelihoods**, ICIMOD Technical Paper. 15p ISBN: 978-92-9115-047-2. (Free-of-charge, hard copy available on written request.)



This policy summary looks at reported and possible future consequences of climate change in the greater Himalayan region. The emphasis is on responses to high mountain phenomena like glaciers, permafrost, and avalanches; the implications for water resources, ecosystems, and hazards; and how these threaten regional populations. The assessment points to a serious need to improve relevant knowledge in the region concerning key policy areas and strategies to improve the adaptive capacities of communities at risk.

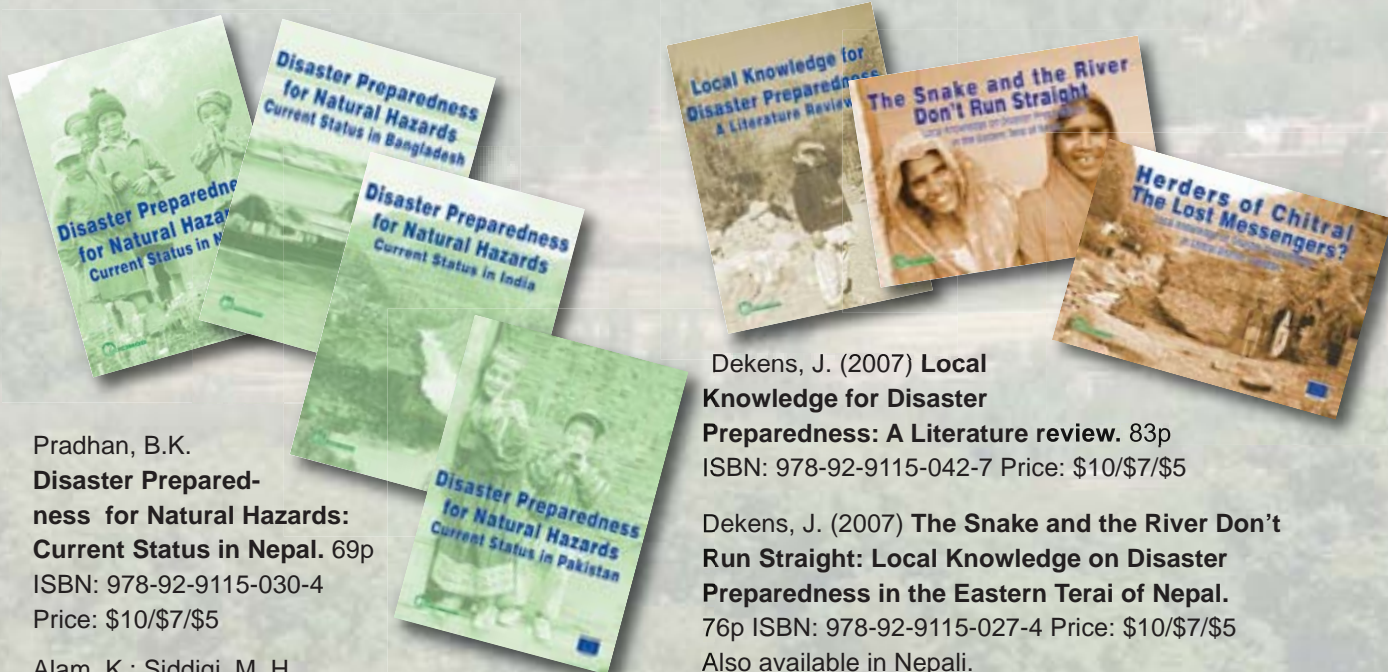
Bajracharya, S. R.; Mool, P. K.; Shrestha, B. R. **Impact of Climate Change on Himalayan Glaciers and Glacial Lakes: Case studies on GLOF and Associated Hazard in Nepal and Bhutan.** 119p ISBN: 978-92-9115-032-8 Price: \$ 15/\$10/\$7.50



This study, prepared in close cooperation with and supported by the United Nations Environment Programme Regional Office for Asia and the Pacific, investigates the impact of climate change on glaciers and glacial lakes in two major glacial hotspots in the Himalayas: the Dudh Koshi sub-basin in the Khumbu-Everest region in Nepal, and the Pho Chu sub-basin in Bhutan. The focus was on changes in the number and size of glacial lakes forming behind exposed end moraines as glaciers retreat, and the resulting potential threat of glacial lake outburst floods (GLOFs). The report aims to demonstrate methodological aspects of monitoring and potential GLOF hazard assessment using a case study approach. A hydrological model was used to calculate discharge and flood arrival times in downstream areas, and classification into terrain units was used to assess vulnerability in the vicinity of a possible Imja Tsho GLOF. Monitoring glacial lakes in poorly accessible mountain locations using satellite-based techniques is also explored as a basis for monitoring and prioritising disaster mitigation efforts. The study recommends refinements and adaptation to the local situation when replicating in other areas. The report will be useful for scientists, planners, and decision makers, as well as for raising the awareness on the potential impacts of climate change in the Himalayas.



A Series of eight books has been published as an outcome of the project 'Living with risk – sharing knowledge on disaster preparedness' funded by the European Commission through their Humanitarian Aid department (DG ECHO) as part of the Disaster Preparedness ECHO programme (DIPECHO) in South Asia, and by ICIMOD.



Pradhan, B.K.  
**Disaster Preparedness for Natural Hazards: Current Status in Nepal.** 69p  
ISBN: 978-92-9115-030-4  
Price: \$10/\$7/\$5

Alam, K.; Siddiqi, M. H.  
**Disaster Preparedness for Natural Hazards: Current Status in Bangladesh.** 49p  
ISBN: 978-92-9115-036-6, Price: \$10/\$7/\$5

Khan, M. A. (2007) **Disaster Preparedness for Natural Hazards: Current Status in Pakistan.** 67p  
ISBN: 978-92-9115-039-7 Price: \$10/\$7/\$5

Bandyopadhyay, C. **Disaster Preparedness for Natural Hazards: Current Status in India.** 62p  
ISBN: 978-92-9115-038-0 Price: \$10/\$7/\$5

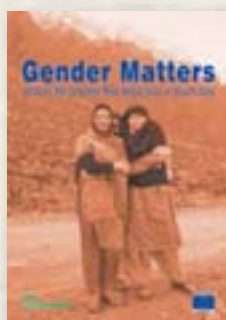
The four country reports provide an overview of the status of disaster preparedness planning in Bangladesh, India, Nepal, and Pakistan, including documents, plans, and legal instruments in place and institutions governing their implementation. They include a summary of the conclusions of a workshop held in Kathmandu, Nepal in August 2006 to discuss the status of disaster preparedness in these countries as reflected in policies, strategies, and plans, and to identify gaps and shortcomings.

Dekens, J. (2007) **Local Knowledge for Disaster Preparedness: A Literature review.** 83p  
ISBN: 978-92-9115-042-7 Price: \$10/\$7/\$5

Dekens, J. (2007) **The Snake and the River Don't Run Straight: Local Knowledge on Disaster Preparedness in the Eastern Terai of Nepal.** 76p ISBN: 978-92-9115-027-4 Price: \$10/\$7/\$5  
Also available in Nepali.

Dekens, J. (2007) **Herders of Chitral: The Lost Messengers? Local Knowledge on Disaster Preparedness in Chitral District, Pakistan.** 70p  
ISBN: 978-92-9115-026-7 Price: \$10/\$7/\$5

The importance of integrating local knowledge and practices into development and conservation projects has started to receive recognition only recently, but the approach is far from being mainstream. This book is one of a set of three prepared to increase awareness and understanding, particularly among implementing organisations, of local knowledge, practices, and contexts related to disaster preparedness so they can be used in disaster management activities. The first book summarises a cross-disciplinary literature review, and presents a framework that can be used to understand local knowledge on disaster preparedness. It highlights the overriding processes, including the need to understand the nature of local knowledge, the transformation processes influencing it, the key dimensions, and the links between local knowledge, disaster preparedness, and poverty reduction.



Mehta, M. (2007) **Gender Matters: Lessons for Disaster Risk Reduction in South Asia.** 51p ISBN: 978-92-9115-024-3 Price: \$10/\$7/\$5

It is commonly assumed by the lay public and disaster preparedness and management professionals alike, that natural disasters are 'levellers,' affecting everyone in a more or less equal fashion. In fact, disasters are extremely gendered events in terms of both their impacts and people's responses. Failure to acknowledge this can diminish the efficiency of disaster responses and create new categories of victims. This book synthesises key findings from the literature, with the aim of helping practitioners understand how and in what ways natural disasters have different impacts on the sexes, and what can be done to integrate a gender perspective into disaster preparedness and management in the South Asian context.





Bhuju, U. R.; Shakya, P. R.; Basnet, T. B.; Shrestha, S. **Nepal Biodiversity Resource Book: Protected Areas, Ramsar Sites, and World Heritage Sites.** 128p ISBN: 978-92-9115-033-5 Price: \$20/\$15/\$10

This book builds upon the earlier *Biodiversity Profiles of Nepal 1996* to update available information about biodiversity in Nepal published as well as verified in the field. It is organised in eight chapters and discusses currently reported data on flora and fauna including some analysis of the trends since 1996 following the establishment of protected areas and sites, Ramsar sites, and World Heritage Sites in Nepal. The book also makes a note of threatened and protected species, and endemic floral and faunal diversity in protected and unprotected sites. The final chapter advances key recommendations based on comprehensive assessment of the status and issues of biodiversity as a result of the resource book project, and areas and issues which future work on Nepal's biodiversity must address.



ICIMOD **Good Practices in Watershed Management: Lessons Learned in the Mid Hills of Nepal.** 72p ISBN: 978-92-9115-017-5 Price: \$10/\$7/\$5

The book summarises lessons learned and recommendations from a participatory action research project carried out in Nepal between September 1996 and June 2006 under the ICIMOD-coordinated People and Resource Dynamics Project (PARDYP) in Mountain Watersheds of the Hindu Kush-Himalayas, funded by the Swiss Agency for Development and Cooperation (SDC), the International Development Research Centre (IDRC), and ICIMOD. The research focused on farming systems, agricultural productivity, water management, and access and equity issues in resource management in middle mountain watersheds. Soil erosion, nutrient leaching, water supply and demand, water management, water quality, forest cover, commercialisation of agriculture, and improved low-cost on-farm options, including methods of composting are discussed. The challenge of livelihoods improvement and issues of access,

equity, and governance, place the activities in context. Ways of sharing the findings and of scaling up are considered, and various participatory approaches are described. The book will be useful for extension workers, planners, development specialists, researchers, and policy makers in national institutions, NGOs, and donor agencies working on watershed management and mountain agriculture.

Mijin Cha (2007) **Increasing Access to Environmental Justice: A Resource Book for Advocacy and Legal Literacy in South Asia.** 57p ISBN: 978-92-9115-021-2 Price: \$10/\$7/\$5

Most of ICIMOD's member countries have a good legal basis for ensuring environmental justice, but knowledge about the legal options and processes is limited. This book is an outcome of the 'Minority Rights and Environmental Justice' project initiated in 2004 by the Ford Foundation and ICIMOD. It aims to provide a reference and training resource to increase local awareness of environmental justice, focusing on legal approaches. With examples from Bangladesh, India, and Nepal, the knowledge provided should help users to become familiar with legal concepts and practices related to the environment in these countries. The book will be use the to people and organisations trying to decrease the environmental burdens of marginalised people and contribute to socially and environmentally sustainable societies.



Khanal, N. R.; Shrestha, M.; Ghimire, M. (2007) **Preparing for Flood Disaster: Mapping and Assessing Hazard in the Ratu Watershed, Nepal.** 102p ISBN: 978-92-9115-018-2 Price: \$15/\$10/\$7.50

The Ratu Khola watershed employs flood-hazard mapping to study flood hazard, risk, and vulnerability in a watershed unit. The study combined three approaches: a geomorphic approach using geographical information system and remote sensing; measurement of rainfall-runoff processes using the Hydrological Engineering Corporation's River System Analysis (HEC-RAS) model; and social flood hazard mapping based on community



**ICIMOD publications on-line order direct at**

<http://www.icimod.org>  
<http://www.panaseanemall.org/shop/icimod/>  
<http://www.earthprint.com/icimod>



experiences. Technologies such as GIS, RS, and HEC-RAS have made flood hazard mapping more accurate and less time-consuming and laborious in recent times. As part of the study, attempt was also made to develop a community-based early warning system and to identify evacuation routes and areas for safe shelter to improve local capacity to respond to and manage flood hazards. Through the study and the publication of its findings, ICIMOD and UNESCO-Delhi which jointly supported the study, hope to save lives and livelihoods in Ratu Khola, but also to provide a basis for replicating the efforts throughout the Himalayan region.

## GENERAL PUBLICATIONS

- **Sustainable Mountain Development** (ICIMOD Newsletter) No. 52, Spring 2007, '**Greater Voice for All Mountain Peoples**'

This issue focuses on how ICIMOD and partners try to contribute to a more equitable society in which the voices of all mountain people are heard.

<http://www.icimod.org/home/pub/publications.content.php?puid=100>

- **Asia Pacific Mountain Network (APMN) Bulletin**, Vol 7, No. 2. Spring 2007  
The bulletin covers the period from Autumn 2005 to Spring 2007. [http://apmn.icimod.org/publications/APMN-bulletin\\_vol\\_7\\_no\\_2.pdf](http://apmn.icimod.org/publications/APMN-bulletin_vol_7_no_2.pdf)
- **Asia Pacific Mountain Network (APMN) Bulletin**, Vol 8, No. 1. Summer 2007  
The bulletin covers the period from January – June 2007. [http://apmn.icimod.org/publications/APMN-bulletin\\_vol\\_8\\_no\\_1.pdf](http://apmn.icimod.org/publications/APMN-bulletin_vol_8_no_1.pdf)
- ICIMOD books-online, June 2007, 2p (flyer)
- Regional flyer in Dari, May 2007, 2p (flyer)  
<http://www.icimod.org/home/pub/publications.content.php?puid=110>
- The Melting Himalayas: Regional Challenges and Local Impacts of Climate Change on Mountain Ecosystems and Livelihoods, June 2007, 4p (leaflet)
- Sharing Knowledge on Disaster Risk Reduction in the Himalayans Region, June 2007, 4p (leaflet)
- BRAHMATWINN: Twinning of a European and a South Asian River Basin to enhance capacity and implement adaptive integrated water resources management approaches, April 2007, 4p (project flyer)

## New appointments

### Andreas Schild, Director General, Directorate

Dr Andreas Schild, a Swiss national, joined ICIMOD as Director General from April 1, 2007.

Dr Schild is a development specialist with over 30 years of experience in designing, planning, executing, and monitoring cooperation programmes mainly in sustainable natural resource management. He is familiar with the Hindu Kush-Himalayan region through various long-term assignments in Afghanistan, Bangladesh, and Nepal, and through multiple missions to all the regional member countries. He has acquired considerable management experience through a number of positions that he has held, including Country

Director of Swiss Development Cooperation in Nepal and Rwanda/Burundi; Executive Director of Intercooperation, a major Swiss NGO; and Chief Technical Advisor in North Korea for the UNDP-financed Aid Coordination Programme. Prior to joining ICIMOD, he was team leader of the Oversight Consultant of the National Solidarity Programme (NSP) in Afghanistan.

Dr Schild has a PhD in History and Sociology from the University of Berne in Switzerland.



### Eva Kristin Gerharz, Associate Scientist, CEGG

Dr des(ignate) Eva Gerharz from Germany joined ICIMOD as an Associate Scientist in March 2007. She is responsible for the project, 'Advancing Minority Rights for Environmental Justice'.

Based at the Faculty of Sociology at the University of Bielefeld, Germany, she has done research in South Asia for the last 10 years. She holds a degree

in sociology (Dipl-Soz), with a thesis that based on an empirical study about development cooperation, peace-building, and ethnicity in the Chittagong Hill Tracts, Bangladesh and worked in CHT as a member of a German Technical Cooperation (GTZ) mission.

Before joining ICIMOD, Eva Gerharz completed her doctoral thesis about reconstruction and development in northern Sri Lanka. Her fields of specialisation include ethnicity and minority-related issues, transnationalisation, and migration





### **Brigitte Leduc, Gender Specialist, CEGG**

Ms Brigitte Leduc is a Canadian national who has acquired extensive experience working on gender and development issues since 1997. She has promoted gender equality in Tunisia, Morocco, Algeria, Senegal, Ivory Coast, Djibouti, Nepal, Vietnam, and India. She also lived for seven years in North Africa, conducting training on the gender approach and gender mainstreaming for NGOs, government institutions, parliamentarians,

and international agencies; conducting studies to identify new economic opportunities for rural women; collaborating with the governments of Algeria and Ivory Coast to develop a national strategy and programme in these countries; and developing a gender mainstreaming strategy and tools for UNDP. She has been working in Nepal since 2003. Ms Leduc has a Master's degree in Social Anthropology from the University Laval in Quebec City. She joined ICIMOD in May 2007 as Gender Specialist.

### **Karma Phuntsho, NRM Policy Specialist, NRM**

Mr Karma Phuntsho has a Master's degree in Earth Resources from Colorado State University, Colorado, USA, and a Post-graduate diploma in Forestry from the then Indian Forest College, Dehradun, India.

Mr Karma Phuntsho worked for the Ministry of Agriculture, Royal Government of Bhutan for more than two decades. He has extensive field experience in community-based natural resources management and improvement of social and economic performance of mountain farming. His professional experience also covers innovative mechanisms and institutions for making protected areas effectively attain their

goals, raising funds and working with innovative mechanism for financing conservation programmes. In the recent past, Mr Karma headed Policy Analysis and Planning at the Ministry of Agriculture.

He is currently working in the Natural Resource Management division of ICIMOD as a natural resource policy analyst. His work will contribute to policy innovations in natural resource management at ICIMOD.



### **Rekha Rasaily, Programme Assistant, WHEM**

Ms Rekha Rasaily, a Nepali national, joined ICIMOD as Programme Assistant in the Water, Hazards and Environmental Management (WHEM) division from March 2007.

Prior to joining ICIMOD, she worked for 10 years in various positions (administration, logistics and inventory management) for DFID/Nepal, UNCDF, and United Traders Syndicate P. Ltd. Ms Rasaily holds a Bachelor's degree in Sociology and Rural Development from Trichandra College, Kathmandu, Nepal.

### **Marc Sporleder, Integrated Pest Management specialist, NRM**

Dr Marc Sporleder, a German national from the International Potato Center (CIP) in Lima, Peru, joined ICIMOD as a guest researcher in June 2007. He is hosted by the Natural Resource Management division and will coordinate CIP's activities on Integrated Pest Management (IPM) in potato production in Nepal, Bhutan, and Bangladesh.

Dr Sporleder finished three years of vocational training in agriculture, studied International Agriculture at the University of Kassel (GhK), and Agricultural Science at the Georg-August University of Göttingen, where he earned his MA degree. He participated in a one-year post university training course at the Center for Advanced Training in Agricultural and Rural Development (CATAD) of the Humboldt University in

Berlin. He carried out a three-year research initiative on potato integrated pest management in Peru at CIP, and earned his Master's degree in Agricultural Science from the Institute of Plant Production and Agroecology in the Tropics and Subtropics, University of Hohenheim, Germany. The research was awarded the Josef G. Knoll-Scientific Prize of the Father and Son Eiselen Foundation, Ulm, Germany. He has been working as an entomologist at the Agroecology/IPM unit at CIP in Lima, Peru, developing IPM especially for the Potato tuber moth in different agroecologies.



## Yi Shaoliang, Coordinator, Regional Rangeland Programme, NRM

Mr Yi Shaoliang, a Chinese national from Kunming, joined ICIMOD in April 2007 as Coordinator of the Regional Rangeland Programme within the Natural Resources Management division.

Mr Yi has a Bachelor's degree in Forestry and a Master's degree in Ecology, both from the Southwest Forestry University in Kunming. His PhD studies from Chengdu Institute of Biology, Chinese Academy

of Sciences is on the Tibetan pastoral systems and in particular the interactions between anthropogenic activities and alpine ecosystems. Before joining ICIMOD, Mr Yi worked for 20 years in instruction, administration, project management, and research in Yunnan and Sichuan provinces of China.



## VISITING SCIENTIST



### Ramesh Ananda Vaidya, Senior Visiting Scientist, WHEM

Dr Ramesh Ananda Vaidya is a senior visiting scientist with research interest in the economics and policy of climate change and consequences for water resources, focusing

primarily on disaster risk management and integrated water resources management in the context of regional economic cooperation. He brings to ICIMOD his research and management experience on water resources in the U.S. and Nepal, and economic diplomacy in Japan.

Dr Vaidya started his postdoctoral career as a research associate in water resources economics at

Cornell University. He pursued a teaching and research career as a faculty member at the University of Minnesota. More recently, as Nepal's National Planning Commissioner for water resources, he directed the team that prepared water resources strategy papers for Nepal.

Dr Vaidya earned his undergraduate degree in mechanical engineering from IIT Delhi, an MBA from MIT's Sloan School of Management, and a PhD in Systems Analysis and Economics from Cornell. He has several publications in this area and has also presented at international meetings on water and disasters.

issn 1013-7386

Newsletter of the **International Centre for Integrated Mountain Development**

### Editorial contact

ICIMOD Publications, [imco@icimod.org](mailto:imco@icimod.org)

Guest Editors: Golam Rasul, Madhav Karki; Editor: Joyce M. Mendez

Issue Coordinator: Nira Gurung; Editorial Assistance: Asha Kaji Thaku

Design & Layout: Punam Pradhan

Printed by Sewa Printing Press, Kathmandu, Nepal

Cover photo by Salman Asif Siddiqui  
Skardu district, Baltistan, Northern Areas, Pakistan

The views and interpretations in this paper are those of the authors. They are not attributable to the International Centre for Integrated Mountain Development (ICIMOD) and do not imply the expression of any opinion concerning the legal status of any country, territory, city, or area of its authorities, or concerning the delimitation of its frontiers or boundaries.



# MTAP Country Consultations, July - August 2007



**Afghanistan**



**Bangladesh**



**Bhutan**



**China**



**India**



**Myanmar**



**Nepal**



**Pakistan**

International Centre for Integrated Mountain Development  
Khumaltar, Lalitpur, G.P.O. Box 3226, Kathmandu, Nepal  
Telephone: (977 1) 5003222  
Fax: (977 1) 5003299  
Email: [icimod@icimod.org](mailto:icimod@icimod.org)

**[www.icimod.org](http://www.icimod.org)**

[www.apmn.icimod.org](http://www.apmn.icimod.org)  
[www.bees4livelihood.icimod.org](http://www.bees4livelihood.icimod.org)  
[www.biodiversityofnepal.icimod.net](http://www.biodiversityofnepal.icimod.net)  
[www.books.icimod.org](http://www.books.icimod.org)  
[www.disasterpreparedness.icimod.org](http://www.disasterpreparedness.icimod.org)

[www.mappa.icimod.org](http://www.mappa.icimod.org)  
[www.spacetechnology.icimod.net](http://www.spacetechnology.icimod.net)  
[www.icimodfoundation.org](http://www.icimodfoundation.org)  
[www.mtnforum.org](http://www.mtnforum.org)  
[www.icimod-gis.net](http://www.icimod-gis.net)