

# Mountain Biodiversity and Climate Change

## The need for long-term research and action in the Hindu Kush-Himalayas

Twenty-four per cent of the surface area of the Earth is covered by 'islands in the sky' – mountains. Some 12% of the global human population lives within this astounding series of rugged valleys and peaks. They do not live alone; however isolated these giant fortresses above us appear to be. Mountains are also home to a rich array of fauna and flora and are a source of water and other ecosystem services – more perhaps than we can imagine or that we know of at present. It is for this reason that mountains have ecological, aesthetic, and socioeconomic significance, not only for those living in mountain areas, but also for people living beyond. Amongst the most fragile environments in the world, the influence of the mountains extends far beyond their geographical limits to the surrounding lowlands that need their goods and services.

Mountains are places of legend and refuge, and many human mountain inhabitants have settled in them in the past to escape religious or political persecution or wars in the lowlands. In terms of biodiversity, our natural patrimony, they are its last refuge and well worth our attention. Today, the mountains are facing enormous pressure from global changes related to drivers such as climate change, industrialisation, increasing population, and changes in land use that place added demands on the ecosystem services the mountains offer. While mountain biodiversity and its people are the first to be affected by these changes, those in river basins downstream will also suffer and beyond them distant populations across the globe.

Mountains began to receive attention during the United Nations Conference on Environment and Development (UNCED) in Rio in 1992, with a specific chapter in Agenda 21. This was followed by the UN General Assembly's 2002 declaration of the 'International Year of Mountains', the World Summit on Sustainable Development in Johannesburg 2002, and the Global Mountain Summit in Bishkek 2002. However, despite growing awareness about the importance of mountain systems, they continue to be marginalised by the global international development agenda.



In 2007, the Inter-Governmental Panel for Climate Change (IPCC) provided concrete evidence of the global relevance of climate change in its 4th Assessment Report, which shows that the Earth's climate is definitely warming. Climate change is the most prominent force in global change; however, it is embedded in a matrix of drivers such as globalisation, population growth, and local land-use change. Reading the report, it seems that the Hindu Kush-Himalayan region is a virtual 'white spot' (or area of data gap) for which little consistent long-term information is available. The region has never received the attention of the global, regional, and national research mechanisms needed to fill this gap.

Most of the global biodiversity hotspots are located in mountain and coastal regions: they host the world's most threatened and endemic species. A large number of the people in these areas live in poverty and need the biological resources for their subsistence. The mountainous countries have set aside 11.4% of their areas as protected area networks, however, and the

Hindu Kush-Himalayan region has all or part of four global biodiversity hotspots that provide immense value in terms of ecosystem services.

We have reached a stage at which the increasing awareness of the impact of climate change on mountain ecosystems, and the consequences for the rest of the world, has brought mountains to the centre of international debate. ICIMOD, along with its global and regional partners is determined to help mitigate the effects of climate change and contribute to the ability of the people of the Hindu Kush-Himalayan mountain system to adapt to them.

In November 2008 ICIMOD hosted the International Mountain Biodiversity Conference. The conference brought together some 75 renowned biodiversity, climate change, and conservation experts, representatives of global programmes, and representatives of institutions in the eight countries that share the Himalayan region. In addition to the main conference, two pre-conference







workshops on 'Mountain Transboundary Protected Areas' and 'Linking Geodata with Biodiversity Information', and a post-conference workshop on 'A Research Strategy on Global Change in Mountain Biosphere Reserves' were also held. These experts discussed ways of systematically gathering and sharing the information needed to develop a reliable picture of the present situation, and to formulate approaches towards a common future strategy for mountain biodiversity conservation. The text of this booklet is based largely on the papers contributed to the main conference, prepared in form of answers to the questions we hear people asking. The Conference Proceedings, which include all of the invited papers as well as the conference and workshop reports, are included in the CD found in the jacket of this booklet. All references can be found in the proceedings. Details of the participants and programme can be found the conference website <[www.icimod.org/imbc](http://www.icimod.org/imbc)> ICIMOD gratefully acknowledges the contribution of all authors.

