

Though the mountainous region was formed around 70 million years ago, its glaciers are extremely sensitive to the changing climate. Since the 1970s, when global warming first set in, these ice masses have steadily thinned and retreated, and snow-covered areas and the amount of snow have decreased. These changes have ripple effects felt throughout the region.

When glaciers melt, they flow into lakes and rivers. Changes to the timing and magnitude of this melting leads to an increase in the number and size of glacier lakes, which can suddenly flood. This can lead to a surge of glacier runoff into major rivers, which could lead to flooding and the destruction of crops. As a result of the HKH ice melt, more water is expected to surge through the Indus, Ganges and Brahmaputra rivers, forcing a change to the agriculture in the valleys around them.

Greenhouse gases are exacerbated by air pollutants originating from the Indo-Gangetic Plains—one of the world's most polluted regions. These pollutants deposit black carbon and dust on the glaciers, hastening their melting and changing monsoon circulation, and rainfall distribution over Asia.

As the Nepal earthquake in 2015 laid bare, mountain cities and settlements are vulnerable to disasters—from landslides and erosion to debris flows and floods. As the number and intensity of these disasters increase, more than one billion people are at risk.

These changes hit the region's poor hardest. About one-third of the 250 million HKH mountain people live on less than \$1.90 a day; more than 30 percent of the region's population doesn't have enough to eat, and around 50 percent face some form of malnutrition, with women and children suffering the most. The realities of mountain life, such as inaccessibility, fragility and remoteness, make it difficult for people to earn a living in the region; nonetheless, the report points out that mountain people have the potential to earn incomes by better utilizing the region's resources, such as hydropower potential.

For example, HKH has a huge hydropower potential of ~500 gigawatts, enough to power half a billion homes in the region. Nonetheless, more than 80 percent of the rural population, most of whom live in mountain regions, rely on traditional fuels, such as firewood or dung, for cooking, and about 400 million people in HKH countries still lack basic access to electricity.

Despite the cultural and political diversity of the countries studied, they are united in the unique challenges facing mountain regions, which will only get worse with climate change and glacial melt, the report argues.

"There are rocky times ahead for the region: between now and 2080, the environmental economic and social conditions laid out in the report could go downhill," said Eklabya Sharma, deputy DG of ICIMOD. "Because many of the disasters and sudden changes will play out across country borders, conflict among the region's countries could easily flare up. But the future doesn't have to be bleak if governments work together to turn the tide against melting glaciers and the myriad impacts they unleash."

The report also calls for greater recognition of mountain areas and the HKH region in global climate efforts.

"We need to start thinking of mountain regions as climate hotspots worthy of urgent attention, investments and solutions," Dasho Rinzin Dorji, ICIMOD board member from Bhutan, said.

About ICIMOD

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

About HIMAP

The Hindu Kush Himalayan Monitoring and Assessment Programme ([HIMAP](#)) is a long-term, integrated science-policy initiative – facilitated by ICIMOD – that aims to support policy change and sustainable solutions to some of the region’s most immediate challenges by:

- Comprehensively assessing the current state of knowledge of the HKH region, including thematic assessments and annual outlooks
- Increasing understanding of various drivers of change and their impacts
- Developing evidence-based policy solutions and recommendations
- Engaging decision makers across sectors and institutes through a series of HKH Science-Policy Forums

HIMAP is a platform for long-term collaboration and coordination among a broad and diverse group of leading researchers, practitioners, and policy specialists working in the HKH.

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