



# Mountains, Climate Change, Sustainability and People:

Key findings of the Hindu Kush Himalaya  
Assessment Report

ICIMOD

HIMAP

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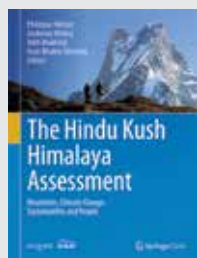
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## LINK TO THE FULL HKH ASSESSMENT REPORT



P. Wester, A. Mishra, A. Mukherji, A. B. Shrestha (eds) (2019) *The Hindu Kush Himalaya Assessment—Mountains, Climate Change, Sustainability and People*, Springer Nature Switzerland AG, Cham.

Download the full assessment at

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## BACKGROUND

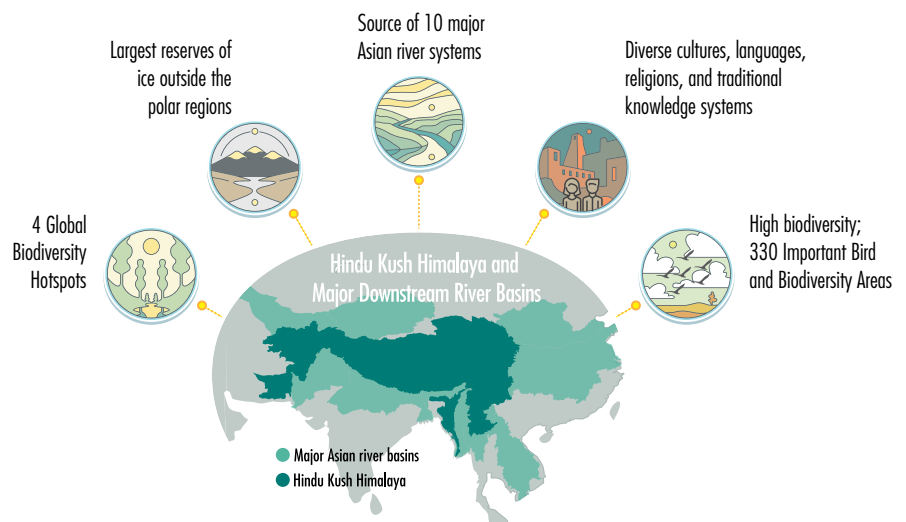
Mountains matter because what happens in the mountains affects every human on the planet. Mountains occupy 22% of the world's land surface area and are home to about 13% of the world's population. They host vast biological diversity and are an integral component of all of the planet's ecosystems. The glaciers in these mountains have forever acted as critically important water storage in the form of ice. But across the planet, that water storage system is rapidly changing since – due to elevation dependent increased warming – glaciers are melting more rapidly than scientists originally predicted. That change in the amount and timing of glacier melt has profound impacts on human populations – on the way we organize our food systems and agriculture, and on the very availability of water for basic human needs.

## THE HKH: THE PULSE OF THE PLANET

Among the globe's most important resources the HKH – Hindu Kush Himalaya – sits at the peak. Home to vast life, culture, beauty and biodiversity, the HKH is a microcosm of the world around us and the source of clean drinking water for close to two billion people. It is the place where, quite literally, the earth comes together, and its reach spans across everything. Regions. Countries. Landscapes. Languages. But despite its global importance, the HKH remains one of the poorest and most neglected regions in the world. The forces of climate change and globalization are wreaking havoc on this fragile asset, wiping out resources, communities and cultures that have existed for centuries. Being at the top of the world, changes happen here before they happen anywhere else and the beat of this place vibrates across the globe. It is the pulse of the planet. And we need to work together to protect the pulse.

The HKH extends over 3,500 km across eight countries – from Afghanistan in the West to Myanmar in the east, including all or parts of Bangladesh, Bhutan, China, India, Nepal and Pakistan, and comprises one of the world's greatest mountain systems. A critically important global asset with the largest ice storage outside the Polar Regions, this area is also known as the 'Third Pole'.

Changes in the HKH will have major consequences not only for people living in the region, but globally. Urgent regional and international action is needed to protect this global asset.



**240 million**

people depend directly on the HKH for their lives and livelihoods

**1.9 billion**

people depend on the HKH for water, food, and energy

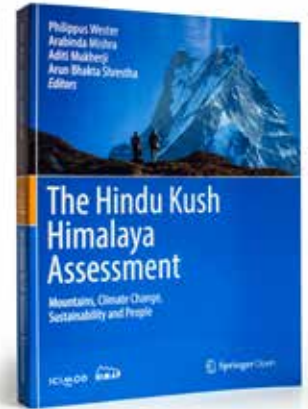
**> 35%**

of the world population benefits indirectly from HKH resources and ecosystem services



## THE HKH AND CLIMATE CHANGE

The *Hindu Kush Himalaya Assessment* report coordinated by the International Centre for Integrated Mountain Development (ICIMOD) and published Open Access by Springer in early 2019 presents an alarming set of messages about the impact of climate change in the HKH region. It shows that even if global warming is limited to 1.5 °C by 2100, there will be 1.8 °C rise in temperature across the region, and up to 2.2 °C in the mountains. In such a situation, about one-third of the glaciers in the HKH region will melt by the end of this century. If global warming is unchecked, the loss will amount to two-thirds of the glaciers. This will adversely impact the lives of 240 million people living in the mountains and hills and 1.65 billion people living in the river basins downstream. Other impacts will be increased disasters, stress on water systems and adverse impacts on the livelihood of millions, the biodiversity, and the hydrological system.



## THE HKH AND THE SUSTAINABLE DEVELOPMENT GOALS

Food and nutrition insecurity remains deeply challenging in the HKH. Over 30% of the population suffers from food insecurity and around 50% face some form of malnutrition, with women and children suffering the most. The causes of food and nutrition insecurity are multifaceted and complex, and influenced by a range of factors including high poverty, natural resource degradation, climate change, low market development, food insecurity, and inadequate policy and institutional support. Traditional mountain food systems are under threat from rapid socioeconomic and environmental changes. Poverty rates in the mountains and hills exceed national averages across each of the HKH countries. Country-level poverty statistics mask significant inequities between mountainous and non-mountainous regions, as well as within mountainous areas. While poverty in mountain areas also reflects the region-wide major determinants of poverty and vulnerability, including socioeconomic inequities, conflicts, gender inequities and caste/ethnicity-based discrimination, it is compounded by mountain specificities such as remoteness, poor accessibility, and high dependence on natural resources. From a policy standpoint, reducing poverty and achieving food, water, energy, and livelihood security in the region is essential and will require exploring various scenarios so that the scientific community, policymakers, the private sector, and community stakeholders can come together and make optimal governance decisions to sustain this global asset. It will also require country-specific recommendations to guide national-level policy-making.

The SDGs provide a set of significant markers and commitments that lead toward a possible future prosperous HKH region, but achieving that prosperity and achieving the SDGs, especially in mountain areas, requires getting out of “business as usual” thinking and action. SDG 10, reducing inequality within and among countries, provides an entry point to recognize the significant differences that exist in the mountainous areas of the HKH countries. The SDG agenda affords a globally recognized frame of inclusiveness, and along with its sustainability principles and integrated approach, provides an important opportunity for mountain environments and mountain people to gain necessary recognition in global agendas. The SDGs cannot be achieved without our mountains and their people on board.



A broad set of consultations on the HKH Call to Action agenda have concluded that urgent action is needed to sustain the mountain environments and livelihoods of the HKH region. For an effective and compelling response to the complex challenges facing the HKH, multiple actors must come together and take collective action for the region's sustainable development that is mountain specific, environmentally sustainable and focused on improving people's well-being and prosperity. More data, information and communication will certainly lead to better decision-making, but we know enough to take action, and that urgent action needs to be taken now.

## SIX URGENT ACTIONS FOR THE HINDU KUSH HIMALAYA

Cooperate at all levels  
across the HKH

Limit global  
warming to  
under 1.5 degrees

Enhance ecosystem  
resilience



Recognize and  
prioritize the  
uniqueness of HKH  
mountain people

Achieve the SDGs  
in the HKH

Share information  
and knowledge



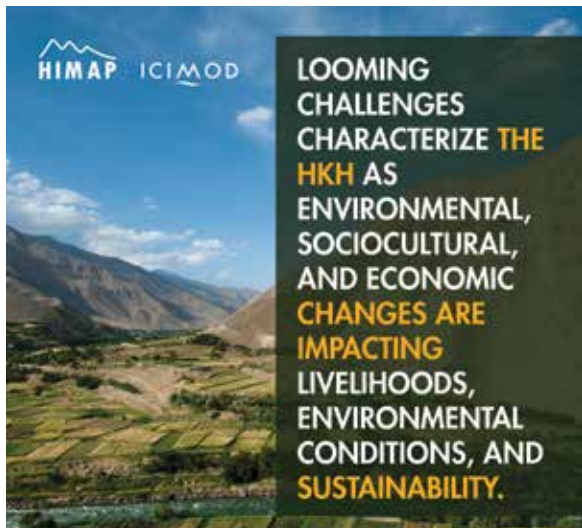


## KEY FINDINGS OF THE HINDU KUSH HIMALAYA ASSESSMENT

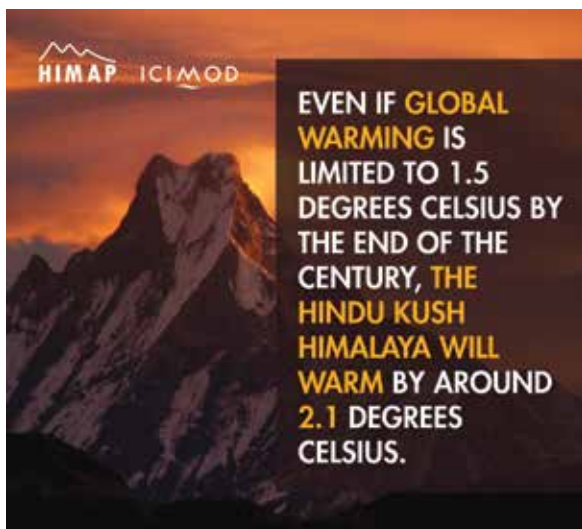
Styled after the Intergovernmental Panel on Climate Change (IPCC) reports, the *Hindu Kush Himalaya Assessment report* is the first and most authoritative study of its kind to provide an assessment of one of the world's most significant, yet often overlooked, mountain regions. The following summarizes the key findings of the report, with full details available [here](#).



Unprecedented socio-economic change in the HKH has both exacerbated long-standing challenges and created new ones for sustainability and livelihoods. Challenges for sustainability are related to natural resource over-exploitation, environmental degradation, unregulated and rapid urbanization, weak governance, and loss of traditional culture.



The drivers of environmental, sociocultural, and economic change in the HKH are interconnected and are inextricably linked and increasingly influenced by regional and global developments. Among the most significant drivers of change are current governance systems, climate change, demographic changes, demand for and use of natural resources, economic growth, and poverty and context-specific vulnerability to changes.



Mountains are a hotspot of climate change in part because temperature changes caused by greenhouse gas emissions are amplified with elevation. Thus, when global temperatures rise, temperatures across the HKH will rise at a higher rate. At current emission trends, average temperatures in the HKH are expected to rise by about 5 °C by 2100. Higher rates of warming in the mountains will effect changes in upstream water resources such as increased glacial melt and decrease in ice reserves.



The HKH provides ecosystem services to two billion people, more than any other mountain system in the world. The mountain ecosystems of the HKH are a global asset with rich biodiversity (+ 15,000 endemic species) and varied ecosystem services. About 60-80% of the rural population in the HKH directly or indirectly depend on biodiversity for subsistence. However the values of ecosystem services in the HKH have received little attention.





Glaciers have thinned, retreated, and lost mass since the 1970s, except for anomalies in parts of the Karakoram, eastern Pamir, and western Kunlun mountain ranges. Trends of increased glacial mass loss are projected to continue in most regions, and there are likely to be large consequences for the timing and magnitude of glacier melt runoff and glacial lake expansion. Projections of glacial volume loss are both alarming and highly credible – optimistically, there could be 36% loss in a 1.5 degree world, but if current emission trends continue, the projected loss of glacier volume by 2100 could be as high as 69%.

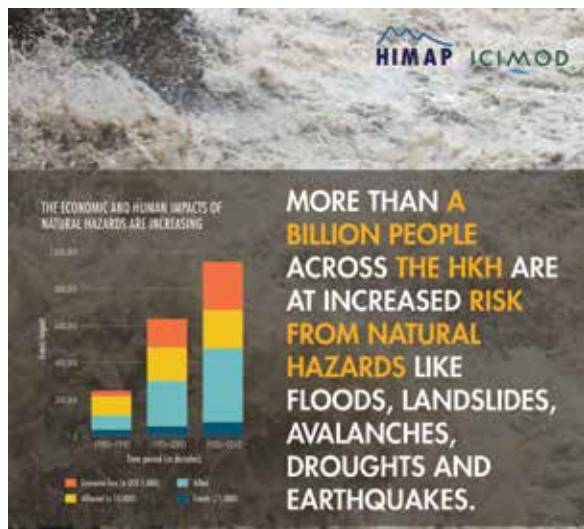


Snow covered areas and snow volume will decrease and snowline elevations will rise. Snowmelt-induced run-off peak will be stronger and occur earlier in the year. Since glacier and snowmelt are important components of overall stream-flow in the region, changes in this stream-flow will affect around two billion people in terms of water for food (especially irrigation), water for energy (hydropower), and water for ecosystem services (riparian habitats, environmental flows, and rich and diverse cultural values).



More than 80% of the rural population in HKH countries – a large part of whom live in hill and mountain areas – rely on traditional biomass fuels for cooking and about 400 million still lack basic access to electricity. Although there is great capacity for hydropower as a potential source of renewable energy across the HKH, it remains underdeveloped.





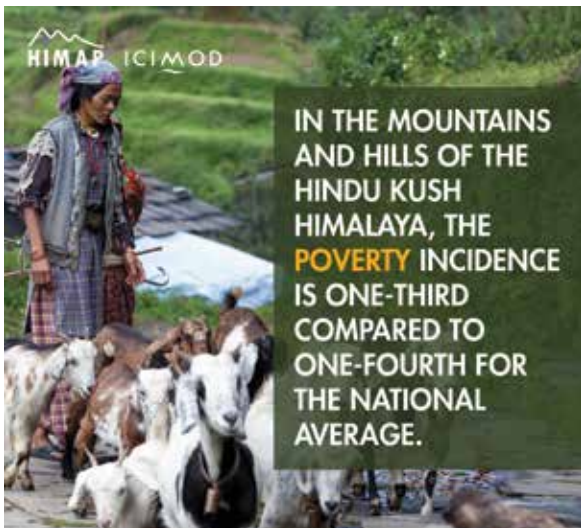
Mountain and downstream communities in the HKH live in a multi-hazard environment. Disaster events are increasing both in frequency and intensity, and they affect women and children more than men. The region is especially prone to floods, flash floods, avalanches, and landslides, as well as droughts and earthquakes, sometimes resulting in cascading disasters with upstream-downstream linkages and transboundary impacts.



Air pollution in the HKH is pervasive and regional air quality has worsened in the past two decades. Air pollutants originating within and near the HKH add to the effects of greenhouse gases and affect the cryosphere, the circulation of monsoons, and the distribution of rainfall over Asia, in addition to their negative impact on human health and agriculture.



Food and nutritional insecurity remains a serious challenge in the HKH; more than 30% of the population suffers from food insecurity and around 50% face some form of malnutrition, with women and children particularly vulnerable. The causes of food and nutrition insecurity in the HKH are multifaceted and complex, and influenced by a range of factors including high poverty, natural resource degradation, climate change, low level of market development, food insecurity, and inadequate policy and institutional support.



**IN THE MOUNTAINS AND HILLS OF THE HINDU KUSH HIMALAYA, THE POVERTY INCIDENCE IS ONE-THIRD COMPARED TO ONE-FOURTH FOR THE NATIONAL AVERAGE.**

Poverty rates in the mountains and hills (31%) exceed national averages (26%) across each of the HKH countries. Country-level poverty statistics mask significant inequities between mountainous and non-mountainous regions, as well as within mountainous areas. While poverty in mountain areas also reflects the region-wide major determinants of poverty and vulnerability including socioeconomic inequities, conflicts, gender inequities and caste/ethnicity-based discrimination, it is compounded by mountain specificities such as remoteness, poor accessibility, and high dependence on natural resources.



**ADAPTATION IS BECOMING INCREASINGLY URGENT FOR THE HKH, WHILE DATA, CAPACITY, AND RESOURCE GAPS CONTINUE TO CHALLENGE POLICYMAKERS.**

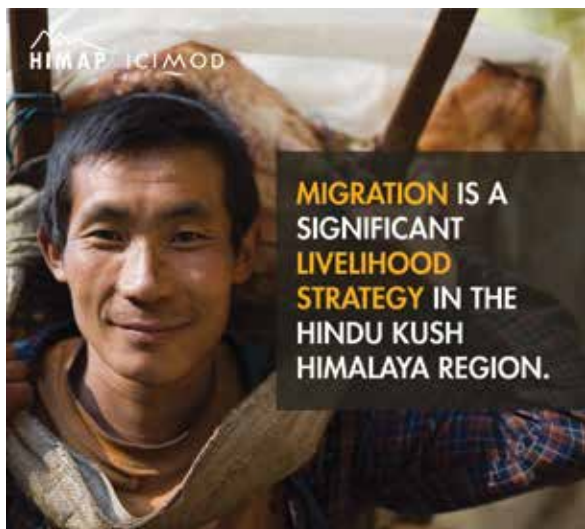
Climate change adaptation responses by governments in the HKH are largely incremental and not well integrated with development plans and programmes despite the urgency for the HKH. In spite of these challenges, opportunities exist for scaled up, inclusive, and more comprehensive climate change adaptation responses in the region. Bolstering climate change adaptation in the region will require substantial increases in funding than is currently available.



**POLICIES AND RESPONSES IN THE HINDU KUSH HIMALAYA COUNTRIES OVERLOOK THE MULTIPLE FORMS OF OPPRESSION AND EXCLUSION THAT WOMEN FACE.**

Policies and responses in the HKH countries neither comprehend the multiple forms of oppression and exclusion faced by women nor do they recognize the multiple ways in which women negotiate their roles in households, communities, and the market. Despite shouldering productive and reproductive workloads and responsibilities, women throughout the HKH do not have corresponding decision-making rights or control over resources.





Migration drives a broad range of economic, social and political changes throughout the HKH, and decisions to migrate are influenced by multiple factors. While remittances can promote resilience to climate change, investment in agriculture or climate adaptation is rarely the first priority of migrant households in mountain areas.



Policies and processes for environmental governance in the HKH are rarely articulated at the regional level, most are national and subnational. HKH countries lack institutions to link upstream and downstream communities in river basins and mountain landscapes. Transboundary cooperation is crucial for improving environmental governance in the HKH.



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### For further information

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