



CHAPTER 11 BRIEF

DISASTER RISK REDUCTION AND BUILDING RESILIENCE IN THE HINDU KUSH HIMALAYA



Mountain development and disaster risk are inherently linked, as many mountain settlements are located on unstable mountain slopes that are prone to landslide and erosion, or on river terraces and alluvial fans that are susceptible to debris flows and floods. The Hindu Kush Himalaya (HKH) is one of the most fragile and hazard-prone mountain regions in the world.

Mountain communities are threatened by numerous risks from natural hazards and a changing risk pattern. Disaster risk reduction is particularly important in mountain areas for many reasons, including the multi-hazard environment, land use pressure, and the effects of climate change. Building disaster resilience in the mountains requires decision making that is informed by the best available studies of disaster risk reduction and climate change adaptation.

KEY FINDINGS

- More than one billion people are at risk of exposure to increasing frequency and intensity of natural hazards.
- Cascading events resulting from a multi-hazard environment have upstream-downstream linkages, often with transboundary impacts.
- Women and men are differently affected by disasters in the HKH – in numbers of deaths, increased vulnerabilities, and access to both risk and recovery information

POLICY MESSAGES

- Institutions and governments in the HKH urgently need to adopt a standardized, multi-hazard risk assessment approach.
- All stakeholders – including governments, individuals, households, and communities – need to take urgent action to enhance resilience through four pillars: information, infrastructure, institutions, and insurance.
- The countries of the HKH need to cooperate more extensively and effectively by sharing data, information, and scientific and indigenous knowledge, and by fostering transboundary disaster risk reduction practices.

LINKS TO





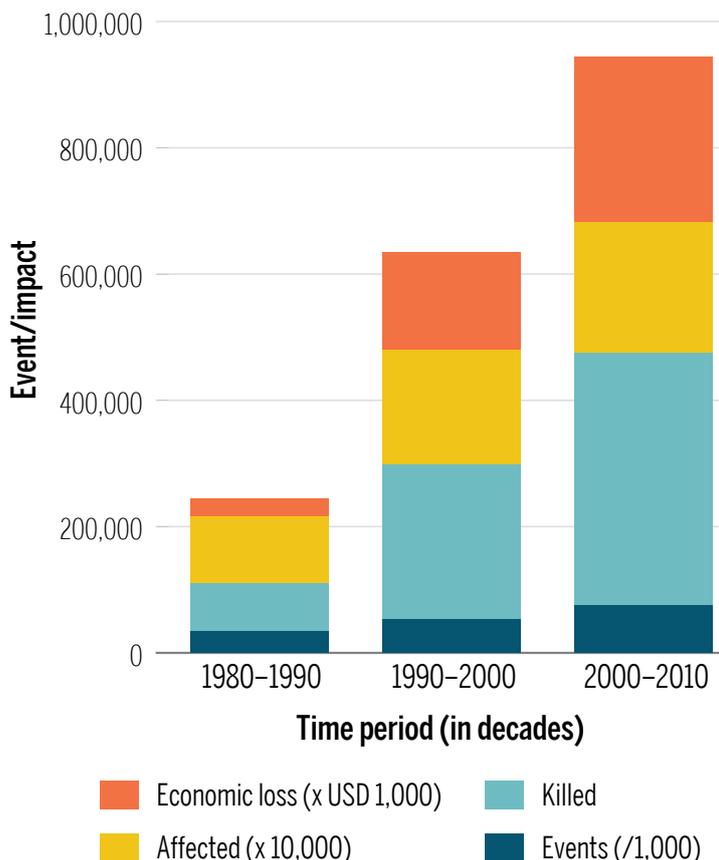
OBSERVATIONS AND TRENDS

NATURAL HAZARDS IN THE HKH ARE INCREASING IN MAGNITUDE AND FREQUENCY DUE TO CLIMATE CHANGE

Because of its steep terrain, high seismicity, fragile geological formation, and intense and highly variable precipitation, the HKH is especially vulnerable to floods, landslides, avalanches, and earthquakes. Natural hazards in the HKH are increasing in magnitude and frequency – a trend driven partly by climate change. Shifting monsoon patterns may result in episodes of intense precipitation, leading to further increases in floods, landslides, and soil erosion.

Disaster risk reduction is particularly important in the multi-hazard environment of the HKH. Communities are more vulnerable due to their remoteness, poor accessibility, and lack of emergency communication.

THE ECONOMIC AND HUMAN IMPACTS OF NATURAL HAZARDS ARE INCREASING



THERE IS INCREASED RISK OF GLACIAL LAKE OUTBURST FLOODS DUE TO THE INSTABILITY OF MORaine MATERIAL

Among the impacts of climate change and variability are the growing number and size of glacial lakes: Himalayan glaciers have retreated rapidly in recent decades, causing many such lakes to form and expand. Climate change is expected to lead to further increases. The instability of the moraine material holding back these lakes poses a risk of glacial lake outburst floods (GLOFs). As of 2000, the HKH has witnessed more than 33 identifiable GLOFs and the number is increasing.

MOST COUNTRIES IN THE HKH RANK BELOW THE GLOBAL AVERAGE ON THE HUMAN DEVELOPMENT INDEX AND ARE HIGHLY VULNERABLE TO NATURAL HAZARDS

A community's vulnerability to natural hazards includes the exposure of people and property to disasters and their impact. While some of the factors in exposure and vulnerability are physical and environmental, other factors are socioeconomic, such as poverty, human settlement and habitat, lack of preparedness, susceptibility, and adaptive capacity. Poverty leaves many people in the region with few resources when trying to rebuild their homes and livelihoods. With the exception of China, most countries in the HKH rank below the global average on the Human Development Index (HDI) and income inequality is also high throughout the region making them more vulnerable to disasters.



MORE WOMEN DIED IN THE 2015 NEPAL EARTHQUAKE

WOMEN IN THE HINDU KUSH HIMALAYA ARE MORE SUSCEPTIBLE TO NATURAL DISASTERS THAN MEN

The pre-existing social structures and norms create greater stress on women and marginalized groups further exacerbating their vulnerability. More women than men die when disasters strike. Gender inequities are evident in a lack of, or inadequate, early warning information and evacuation procedures and arrangements targeting women. In some cases, women may be ill-informed about natural hazards and not allowed to make the decision to evacuate. This situation is compounded by high rates of male outmigration.



IN THE MULTI-HAZARD HKH ENVIRONMENT EFFORTS TO BUILD RESILIENCE NEED TO CONSIDER CASCADING THREATS AND DISASTERS

Multi-hazard environments are common to many HKH countries, where natural processes are interconnected and a primary event triggers a chain of subsequent (secondary and tertiary) hazard events. Efforts to build resilience thus need to consider not just the primary event, but also secondary hazards involving cascading threats and disasters. Cascading hazards in particular require a multi-hazard methodology that integrates complex “hazard interactions and interaction networks” and a multi-hazard early warning system.

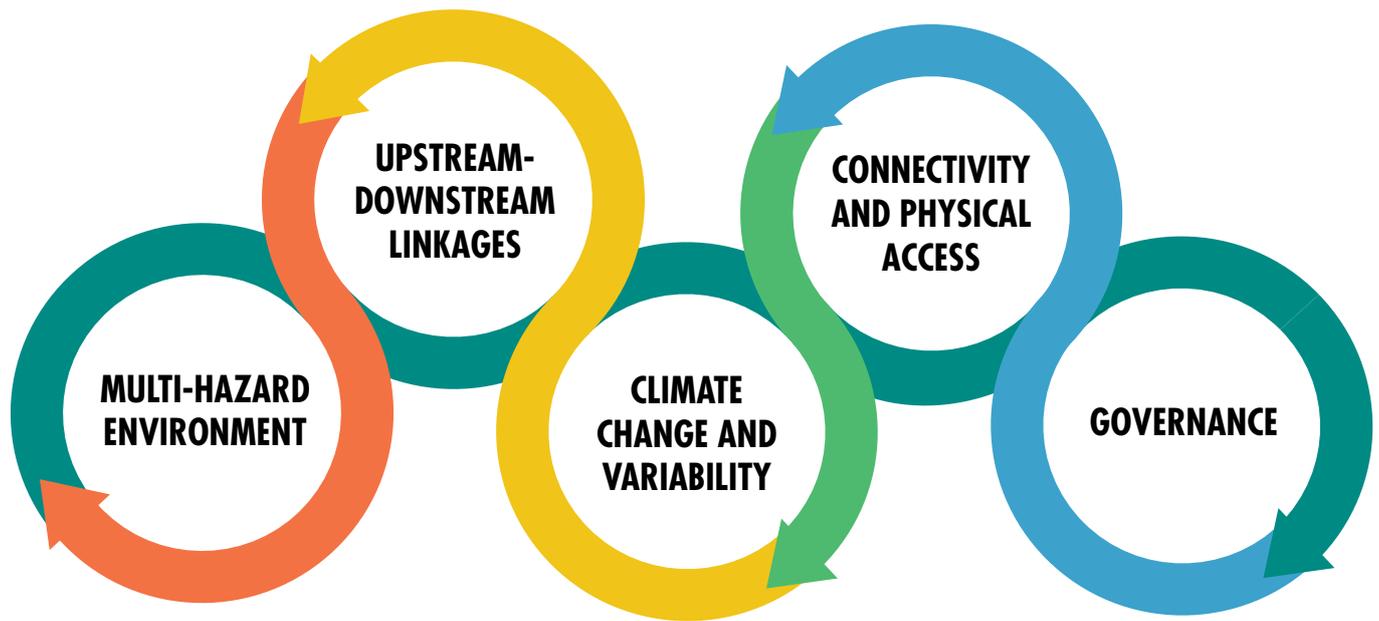
EXPOSURE TO HAZARDS CAN EXTEND BEYOND THE SITE OF THE PRIMARY EVENT, EVEN ACROSS INTERNATIONAL BORDERS

The upstream and downstream linkages of hazard events may extend exposure to hazards, though with a time lag, to an area much larger than the site of the primary event, often across international borders. For example, the outburst of a landslide-dammed lake in the Tibetan Autonomous Region of China could seriously damage a hydropower plant in Nepal. Similarly, events in Nepal could endanger India’s densely populated northern states. Communication channels between local authorities in upstream and downstream nations are often poorly developed and central government efforts to establish communication may be too late to save human lives or infrastructure.

MOUNTAIN COMMUNITIES ARE MORE VULNERABLE BECAUSE OF THEIR REMOTENESS, POOR ACCESSIBILITY, AND LACK OF EMERGENCY COMMUNICATION

The challenge of connectivity and physical access can involve road and air travel and information and communication technology in sparsely-settled and often remote mountain areas. Compared to better connected areas, local governments and communities need the capacity to make decisions about hazards that commonly affect isolated and remote locations. In addition, national plans and institutional options for strengthening adaptive capacity may not fully reflect local realities and could be more thoroughly informed by local adaptation concerns.

KEY CONSIDERATIONS FOR INCREASING RESILIENCE TO DISASTERS IN THE HINDU KUSH HIMALAYA

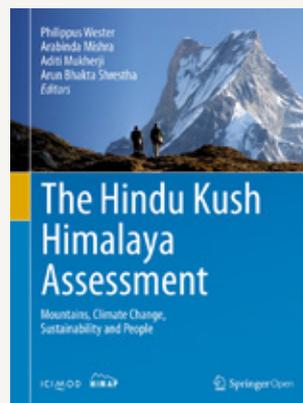


NEW DISASTER RISK REDUCTION FRAMEWORK AND THE NEED FOR STRONGER REGIONAL COOPERATION

The proposed disaster risk reduction framework can help assess hazard and risks while discussing adaptation and resilience measures. It draws on two existing frameworks: the Hyogo Framework for Action (2005–2015) and the Sendai Framework for Disaster Risk Reduction (2015–2030).

It envisions a four-by-four matrix emphasizing the four elements of disaster risk reduction — information, infrastructure, institutions, and insurance — against the four elements for successful planning and execution — command-and-control mechanisms (e.g., zoning regulations, land use guidelines and building codes), monetary incentives (e.g., subsidies on insurance premiums), persuasion by providing information (e.g., risk maps), and nudging (e.g., early warning systems).

Because natural hazards know no borders, disaster risk reduction in the HKH would benefit greatly from stronger regional cooperation. A regional approach, with efforts in timely data sharing and modelling, should improve flood management and help mitigate adverse impacts in transboundary basins.



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