

Disaster Risk Reduction and Increasing Resilience

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Introduction

The Hindu Kush Himalaya (HKH)– covering more than four million square kilometers from Afghanistan to Myanmar – is one of the world’s most ecologically diverse mountain biomes, with extreme variations in vegetation. It is also one of the most hazard-prone. Because of its weak geology, high seismicity, steep terrain, and intense and highly variable precipitation, the HKH is especially vulnerable to floods, landslides, and earthquakes. Currently, natural hazards in the HKH are increasing in magnitude and occurrence – a trend driven partly by climate change. While some of the factors in exposure and vulnerability are physical and environmental, other factors are socioeconomic. While both men and women in the HKH have valuable knowledge, skills, experience, and coping capacities, these strengths tend to differ by gender. When seeking ways to increase resilience to hazards in the HKH, policy makers need to consider five key issues: the multihazard environment, the close links between upstream and downstream hazards, the effects of climate change and variability, the challenge of connectivity and physical access, and the role of governance.

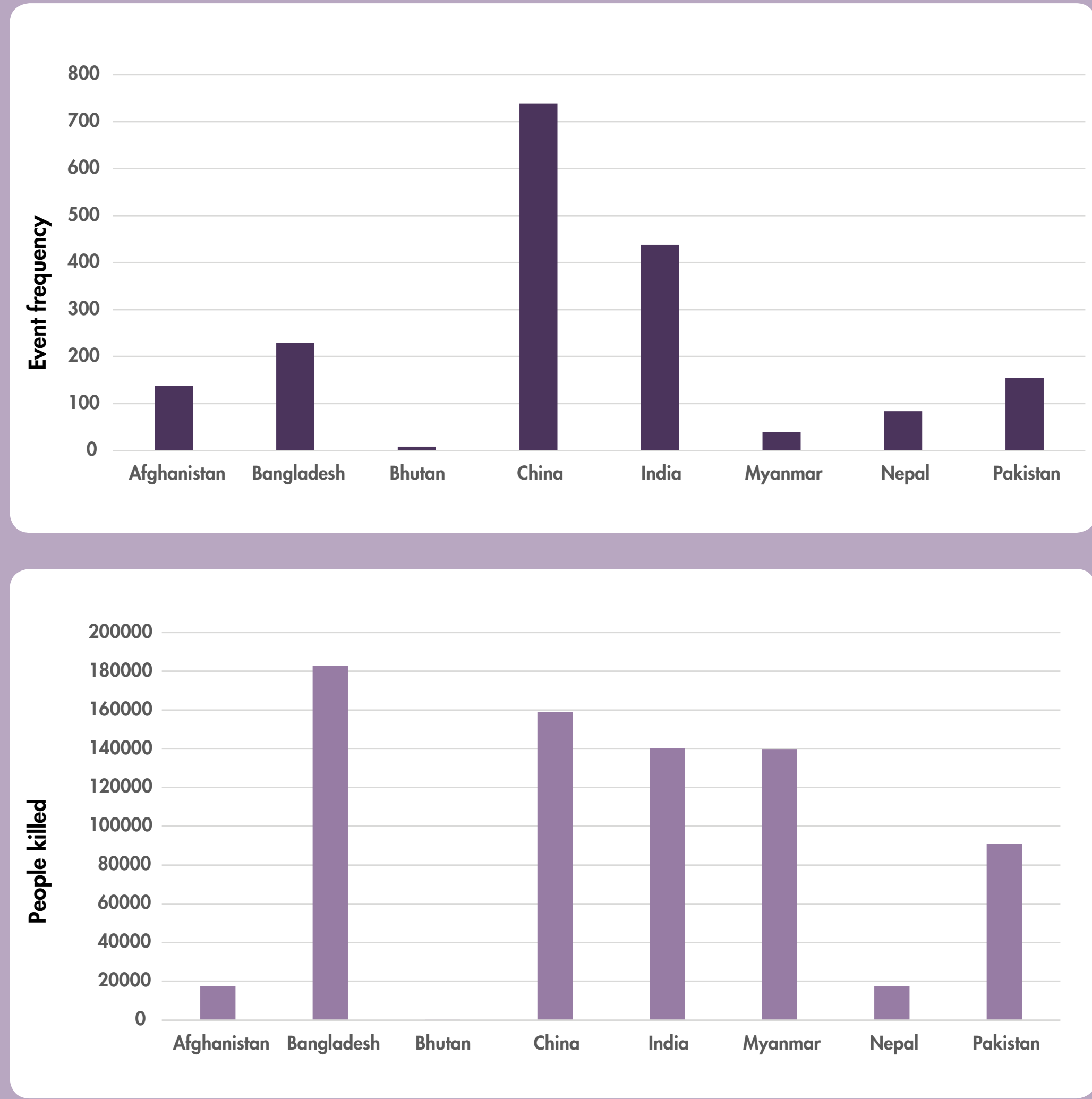
Key Messages

1. Mountain communities in the HKH live in a multi-hazard environment.
2. Disaster-related indicators for the HKH are on the increase.
3. When disasters hit the HKH, they kill more women than men.
4. Past assessments of natural hazard risk in the HKH suffer from methodological weaknesses.
5. Five considerations are central for efforts to build disaster resilience in the HKH:
 - The multi-hazard environment.
 - The upstream and downstream linkages of hazard events.
 - The effects of climate change and variability.
 - The challenge of connectivity and physical access to mountain areas.
 - The role of governance.

Policy Messages

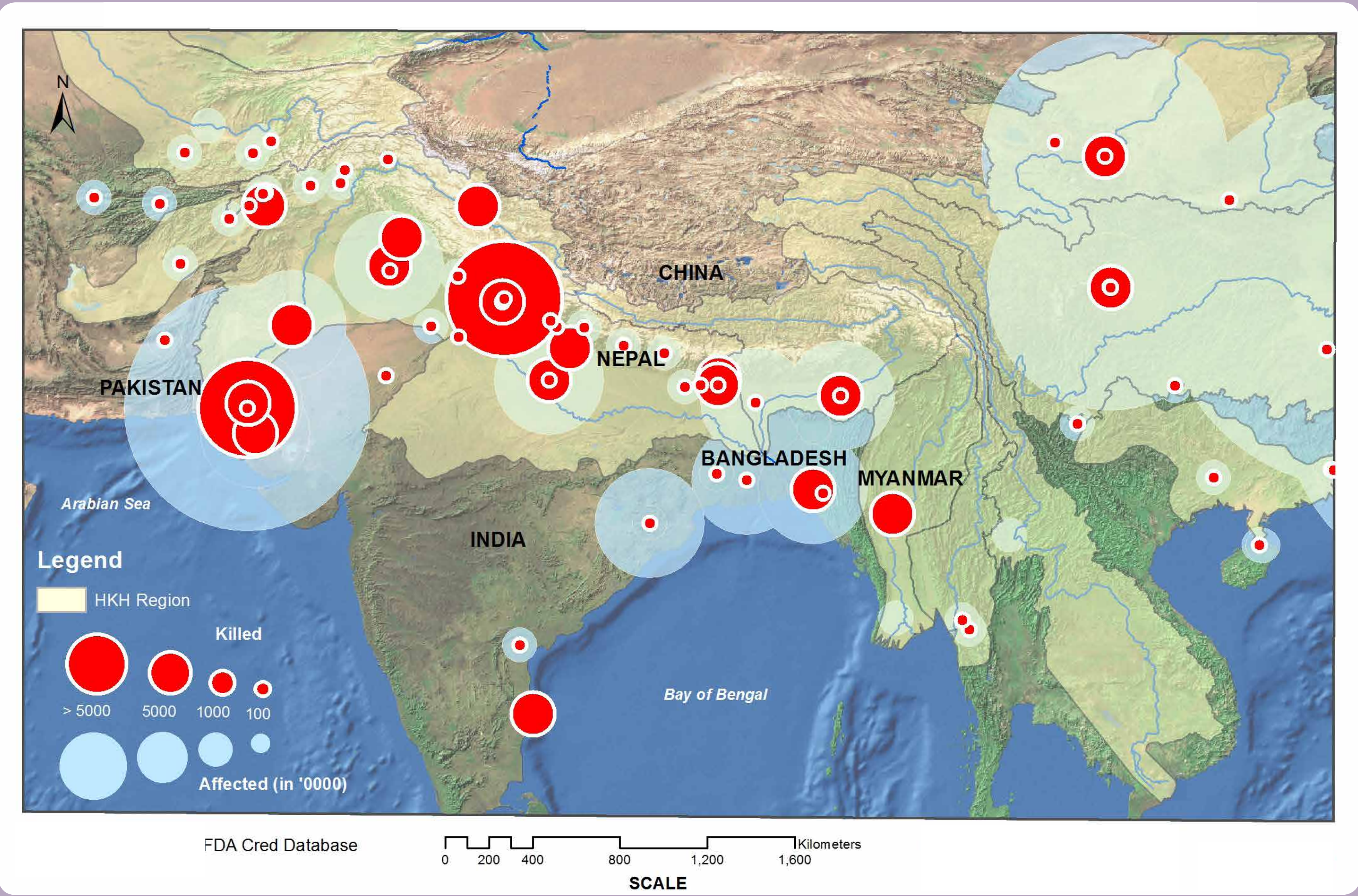
1. **Institutions and governments in the HKH urgently need to formulate and adopt a standardized, multihazard risk assessment approach.** Such an approach should address primary, secondary, and cascading hazards.
2. **Policies and programmes should seek to enhance women’s and men’s resilience at the local level.** Such efforts should promote an enabling environment through education, capacity building, and incentivized risk management.
3. **The countries of the HKH need to cooperate more extensively and more effectively.** They can do so by sharing data, information, and knowledge, and by fostering transboundary disaster risk reduction (DRR) practices.

Disaster frequency (a) and people killed (b) by country, from climate, hydrometeorological, and geophysical hazard types between 1980 and 2015



Data source: EM-DAT

People killed and affected by floods in the Hindu Kush Himalaya (2010 – 2014)



Source: OFDA/CRED Emergency Disaster Database (EM-DAT).

Risk index in the HKH countries

Country	World Risk Index	Exposure	Vulnerability	Susceptibility	Lack of coping capacities	Lack of adaptive capacities	Rank
Afghanistan	9.50%	13.17%	72.12%	56.05%	92.85%	67.48%	2
Bangladesh	19.17%	31.70%	60.48%	38.23%	86.36%	56.85%	1
Bhutan	7.51%	14.81%	50.70%	29.43%	73.77%	48.90%	4
China	6.39%	14.43%	44.29%	22.81%	69.86%	40.18%	7
India	6.64%	11.94%	55.60%	35.79%	80.22%	50.78%	6
Myanmar	8.90%	14.87%	59.86%	35.63%	87.00%	56.93%	3
Nepal	5.12%	9.16%	55.91%	38.05%	81.05%	48.64%	8
Pakistan	6.96%	11.36%	61.26%	35.04%	86.26%	62.48%	5

Source: World Risk Report 2016

DRR elements and behavioral change strategies

	Information	Infrastructure	Institutions	Insurance
Command-and-control methods	Zoning and building code enforcements	- Infrastructure development projects - Technical design standards - Building codes - Land use plan/zoning	Institutionalization of formal and informal institutes	
Incentives		- Rural Housing Reconstruction Program (RHRP): financial support for seismic-resistant housing - Multi-sectoral DRR budgets		Subsidizing the insurance premium a farmer has to pay for index-based weather insurance for crops
Persuasion	Reviving drying springs by providing hazard and “Opportunity” maps	Technical guidelines and dissemination training by engineers	Support from formal and informal institutes	Engaging NGOs as social mobilizers to raise awareness of market insurance for crops
Nudging	Community-based flood early warning systems (CBFEWS)	Promoting retrofitting with nudges to consider traditional and cultural preferences	CBFEWS	Encouraging self-insurance through personal savings motivated by a clearly visible purpose such as loss of crops due to floods

A framework for reducing risk and increasing resilience to disasters

We present a new disaster risk reduction (DRR) framework that can help in assessing hazard risks and discussing adaptation and resilience measures. While developed specifically for the region, it draws on two existing frameworks: the Hyogo Framework for Action 2005–15 and the Sendai Framework for Disaster Risk Reduction 2015–2030. It has four elements:

- **Information:** sharing hazard information between upstream and downstream communities, ensuring communication about cascading hazards.
- **Infrastructure:** adapting to climatic and seismic risks, investing to enhance connectivity.
- **Institutions:** addressing gender and governance dimensions and developing mechanisms to connect national institutions, policies, and actions with local ones.
- **Insurance:** insuring, or transferring risk, to build resilience to residual disaster risks (those that may not be eliminated).

We also present a matrix showing how these four DRR elements can interact with four components of resilience-building programmes. These components are, first, command-and-control mechanisms such as zoning regulations, land use guidelines, and building codes; second, monetary incentives such as subsidies on insurance premiums; third, persuasive information such as risk maps; and fourth, “nudges” such as early warning systems.