

Partnership for Sustainable Mountain Development

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GIS and Earth Observation: Climate Change in the Himalayan Region - Responding to Mountain Development Challenges

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Basanta Shrestha
Director of Strategic Cooperation
bshrestha@icimod.org

The Hindu Kush-Himalayan – A Global Asset

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Changing face of Himalayas:

- Climate Change
- Demographic change
- Land use change
- Globalization / Social Change
- ...

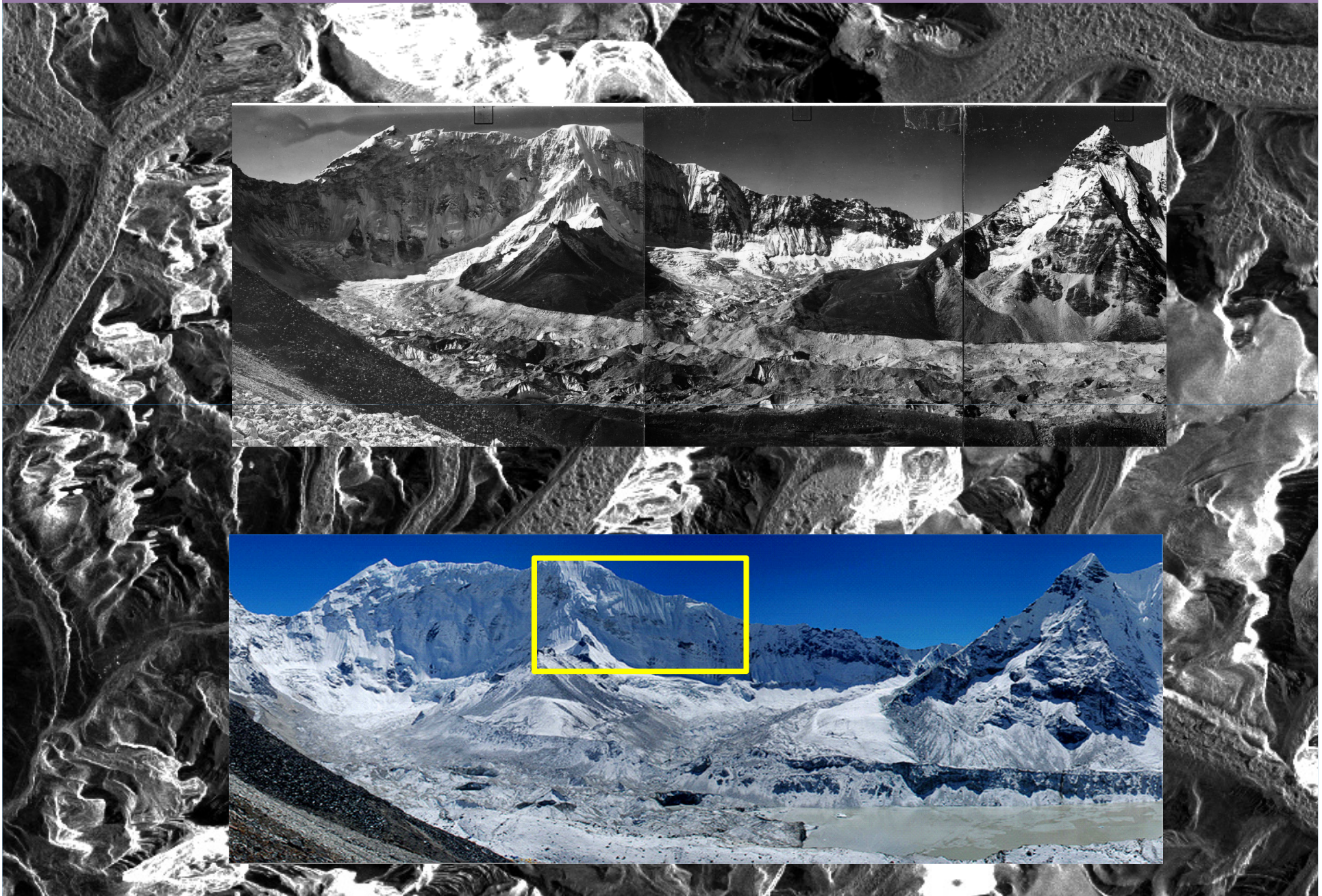
Sources of **freshwater**
reserves - headwaters for 10
major river systems

An area of majestic beauty -
a world heritage site for
biodiversity

GIS and Earth Observation:

- ❖ Convergence of Technologies – creating enabling environment
- ❖ Monitoring, Assessment, Modeling, Reporting
- ❖ Linking Science, Technology and Innovation to Policy and Practices

Mountain Matters - Water



2009



Photography: David Breashears, GlacierWorks

Water Tower of Asia – A Lifeline !



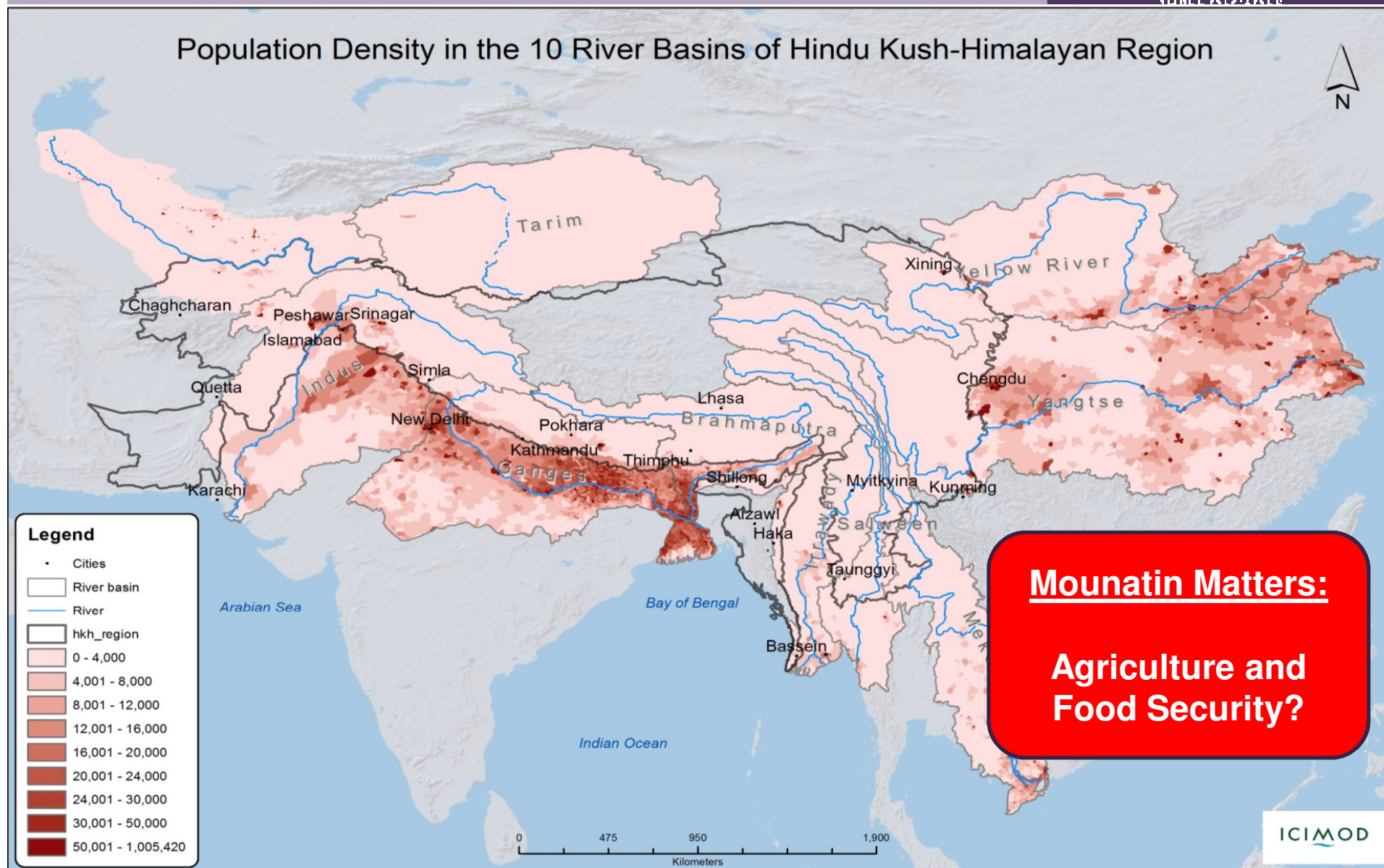
In cities, people
often
do not know
where the water they
drink comes from.....



Mountain Matters:

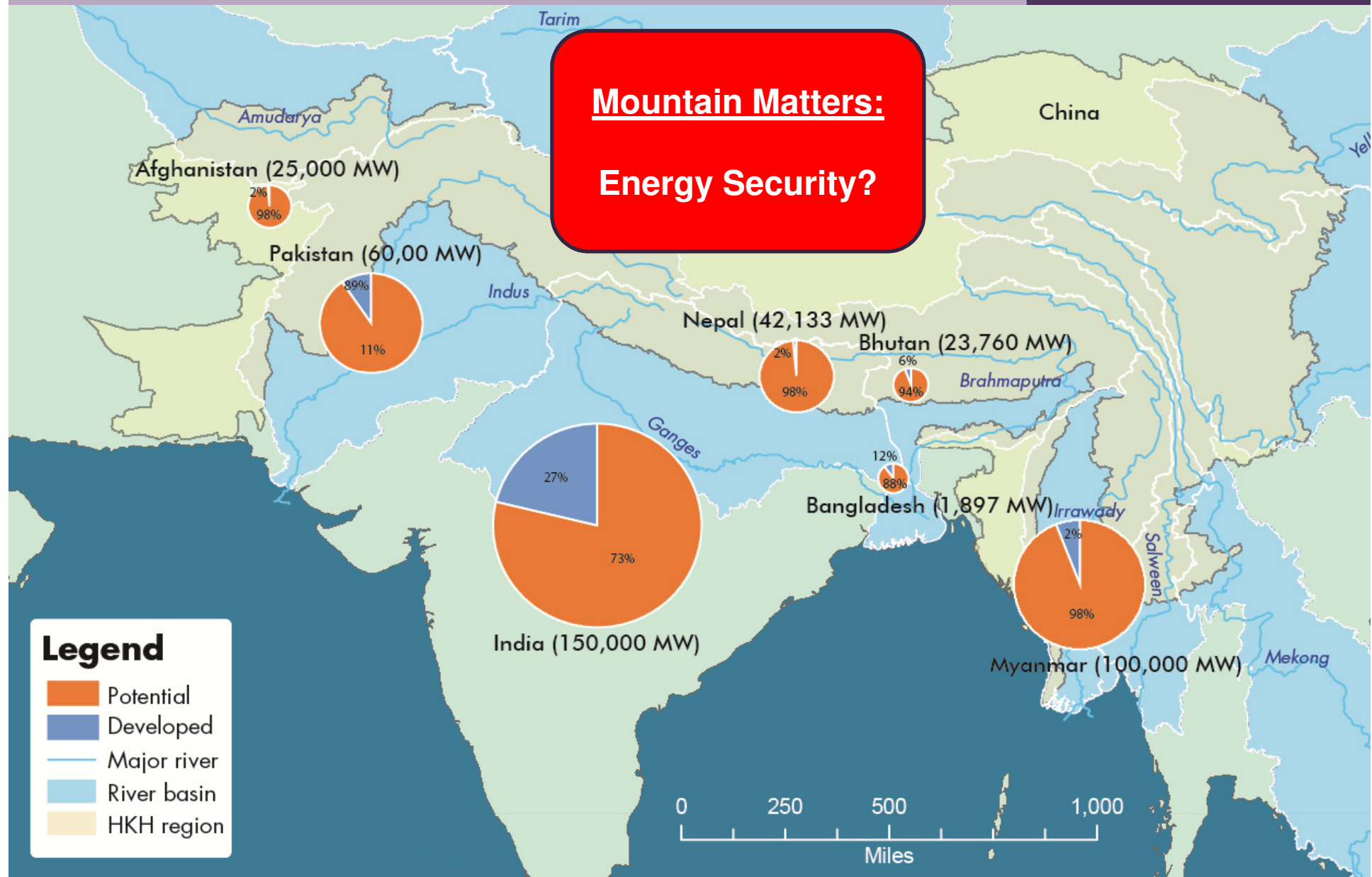
**Water Availability /
Security?**

River Basins Support Some of the Most Populated Areas on the Globe



Hydropower development relative to its potential in the region

Mountain Matters: Energy Security?



Climate Change Impact: Ecosystem Services

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Mountain Matters:

Sustenance of
natural resources
economy?

- 6 UNESCO world heritage sites
- 60 eco-regions
- 30 Ramsar sites
- 488 Protected Areas
- 330 important bird areas
- 53 important plant areas



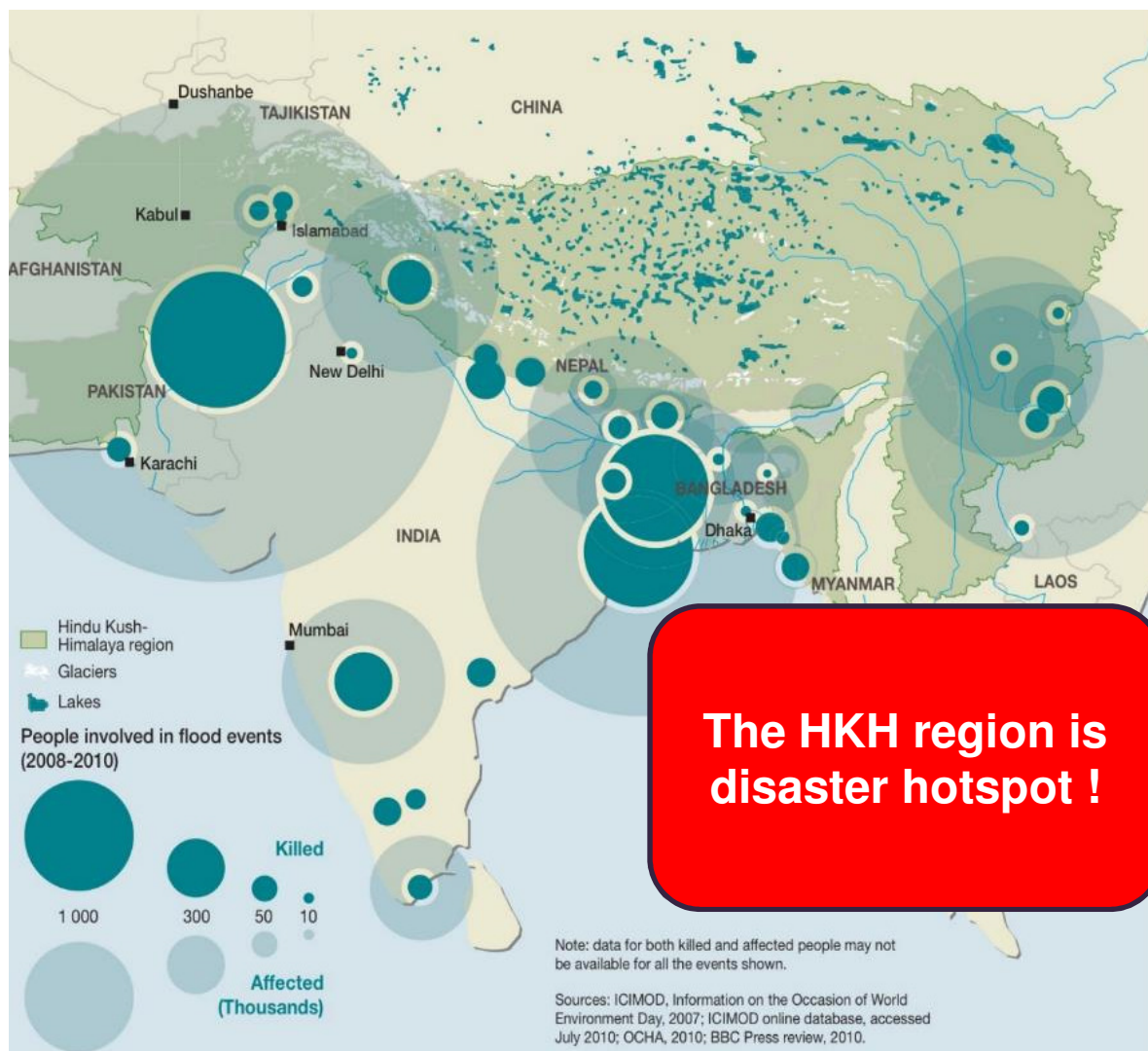
Habitat loss for wildlife and productive lands for domestic animals

Important biodiversity sites in the Hindu Kush-Himalayan Region

Increasing frequency and magnitude of disasters

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Climate Change Impact: Transboundary Air Pollution and Black Carbon

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Nov to April Skies

- Accelerated snow and glacial melt
- Impact on Human health
- Negative impact on agriculture



Climate Change Impact: Erratic Monsoon Patterns ...

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Mountain Matters:

**Too much water
too little water?**

**Changes in rainfall intensity, water
availability, disaster frequency
detrimental for livelihood systems**

Vital source of ...

Water, Food, Energy, Forests, Biodiversity, Tourism...

Vital for economy and businesses ...

Survival of environmental and cultural heritage

Key Applications:

- Climate change modelling and assessment
- River basin management and information system
- Biodiversity conservation and assessment
- Agriculture and food security assessment
- Land cover change management
- Disaster management information system
- Regional flood and early warning system
- GHG and REDD Information system
- Dynamics of glaciers and associated hazards
- Air pollution monitoring and modelling
-

Mountain GeoPortal

*- Putting Geospatial information to
the hands of end-user community*

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Browser address bar: <http://216.108.229.218/geoportal/>

Navigation menu: Home | Science Applications | Datasets | Servir Himalaya | Story Maps | About | Contact

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Mountain GeoPortal




Featured Story Maps

- Assessing the agricultural difficulties in Nepal
- Potentially dangerous glacial lakes of Nepal
- Imja - fastest growing glacial lake of the HKH region
- The world's 14 highest mountain peaks

Science Applications


A collection of innovative and interactive web mapping applications that provides dynamic visualization of spatial data along with the tools to support informed decision making.



Status of Glaciers in the HKH Region

Comprehensive glacier inventory and status of the entire Hindu Kush Himalayan region


[View all](#) [View Details](#)



Land Cover Dynamics in Bhutan

Statistics on the harmonised land cover database of Bhutan for 1990, 2000 and 2010

[View Details](#)



Nepal Disaster Information Management System

Historical disaster events data and information on multi-level hazard, vulnerability and risk assessment

[View Details](#)

Earth Observation for sustainable mountain development

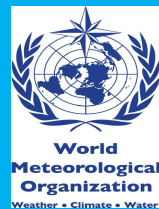
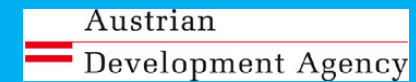
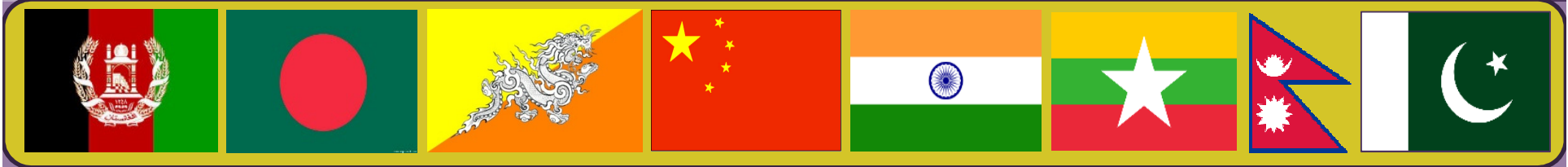
Aligning with GEO Priority → Himalayan GEO

THE GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS



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Thank you for your attention !

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Collaboration through
Knowledge and **Regional Cooperation**
in the SAARC Region

Stay Happy ☺ !

