

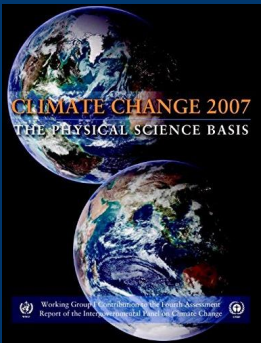


The Hindu Kush Himalaya Assessment

Mountains, Climate Change, Sustainability and People

Dhrupad Choudhury
**International Centre for Integrated
Mountain Development**





2007 IPCC AR4 Report

Climate change is the most prominent force of global change in the modern era

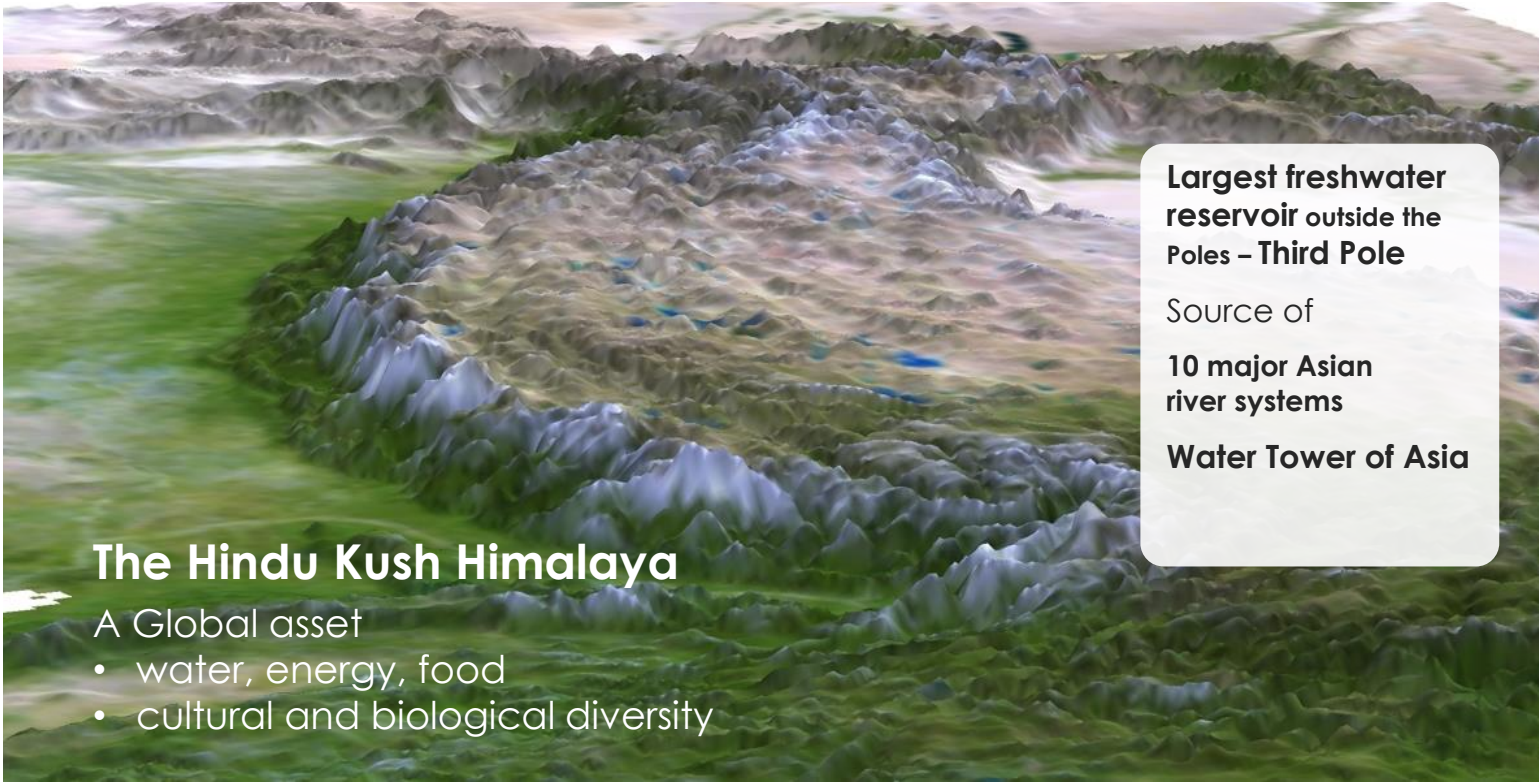
HKH region is seen as 'a data gap' area, lacking consistent long-term monitoring

Background



2014 IPCC AR5

HKH region still largely missing



Largest freshwater reservoir outside the Poles – Third Pole

Source of

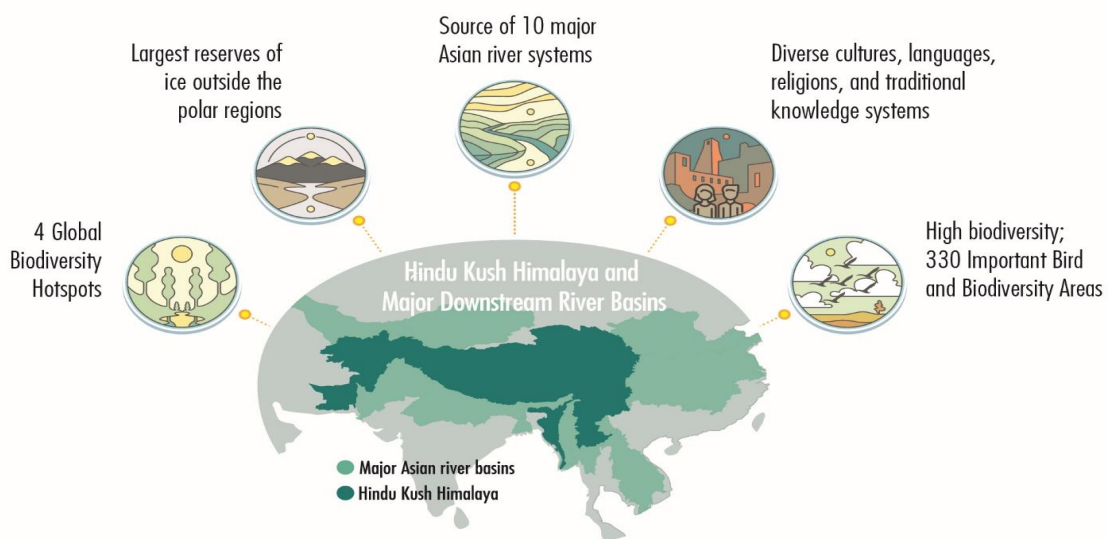
10 major Asian river systems

Water Tower of Asia

The Hindu Kush Himalaya

A Global asset

- water, energy, food
- cultural and biological diversity



240 million

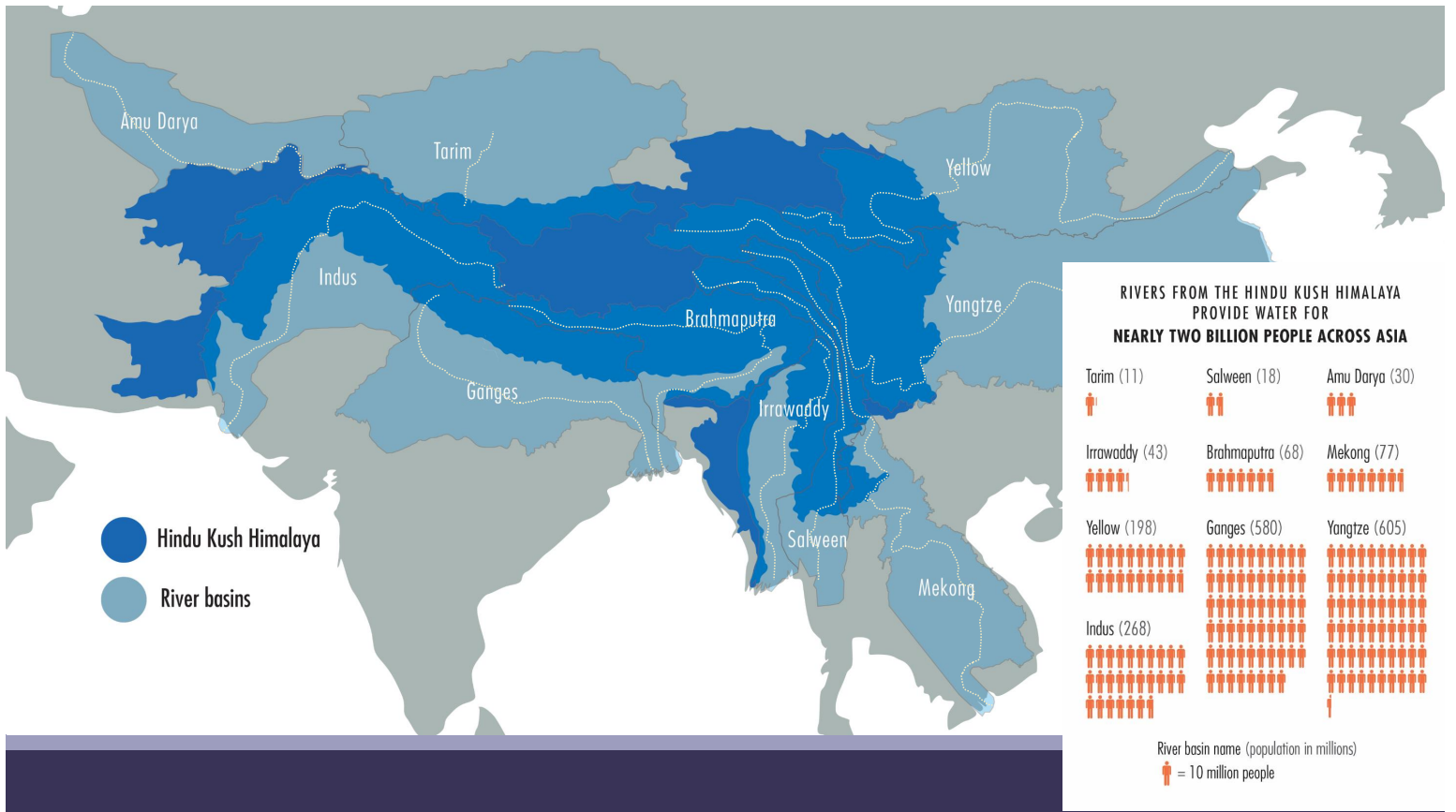
people depend directly on the HKH for their lives and livelihoods

1.9 billion

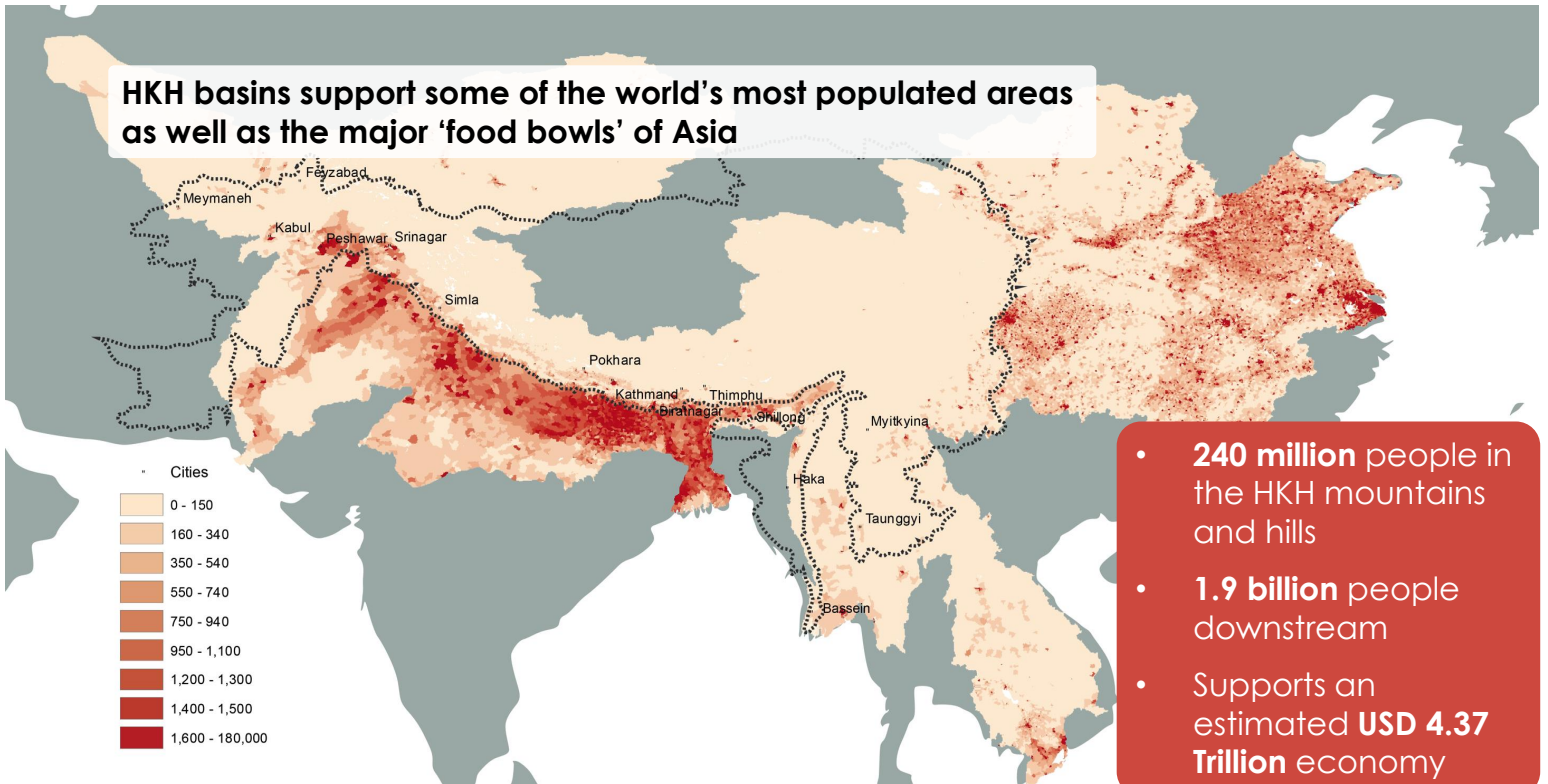
people depend on the HKH for water, food, and energy

> 35%

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



HKH basins support some of the world's most populated areas as well as the major 'food bowls' of Asia

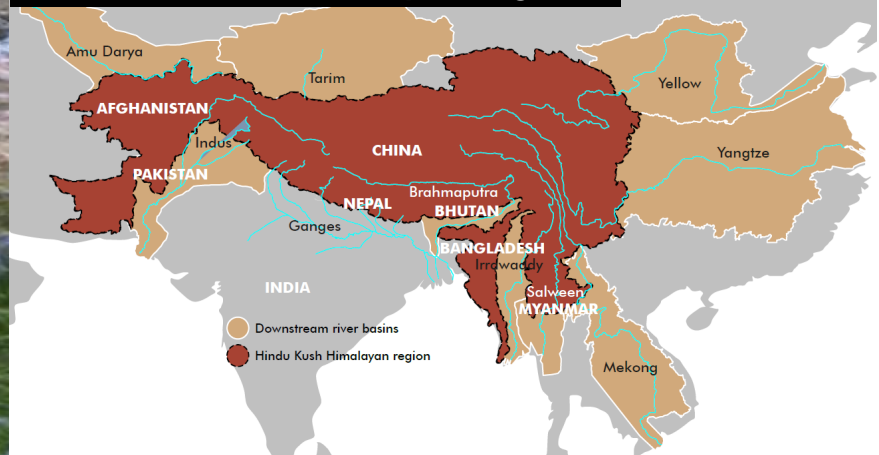


Inter-Governmental Institution – serving the mountain people in eight countries

ICIMOD

FOR MOUNTAINS AND PEOPLE

The Hindu Kush Himalayan Region



■ A regional mountain knowledge, learning and enabling centre devoted to sustainable mountain development for mountains and people

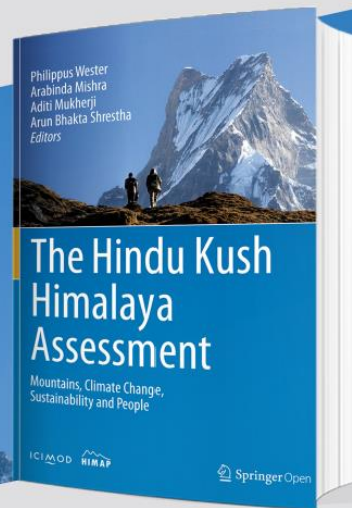
■ Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan

Extends over 3,500 km from Afghanistan to Myanmar and home to 240 million people





HINDU KUSH HIMALAYAN MONITORING AND ASSESSMENT PROGRAMME (HIMAP)



Scan 
to access

350

RESEARCHERS, POLICY
EXPERTS, AND PRACTITIONERS

22

COUNTRIES

185

ORGANIZATIONS

The first comprehensive assessment of the HKH outlines the critical importance of the region's distinct environment, people, and wildlife.



>350
People

210
Authors
30% women
80% from the region

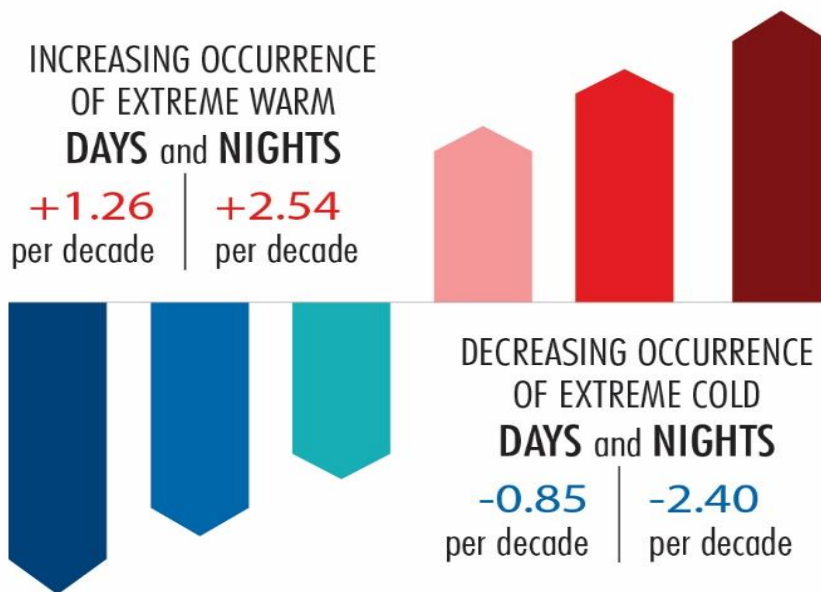
125
External Reviewers

20
Review Editors

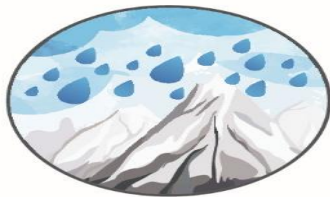
4
Write Shops
(Jan, June, Sept 2016
& Aug 2017)

Open Access
Published by Springer Nature

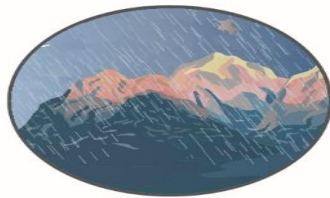
DAYS AND NIGHTS ARE GETTING WARMER



SIGNIFICANT CHANGES IN PRECIPITATION EXTREMES IN PAST DECADES



Significant increase in the number of wet days and extreme rain events recorded over the western Himalaya and the Karakoram.



In the eastern Himalaya, the total amount of precipitation did not change much and the number of rainy days decreased, which meant a higher amount of rainfall in a shorter period of time.

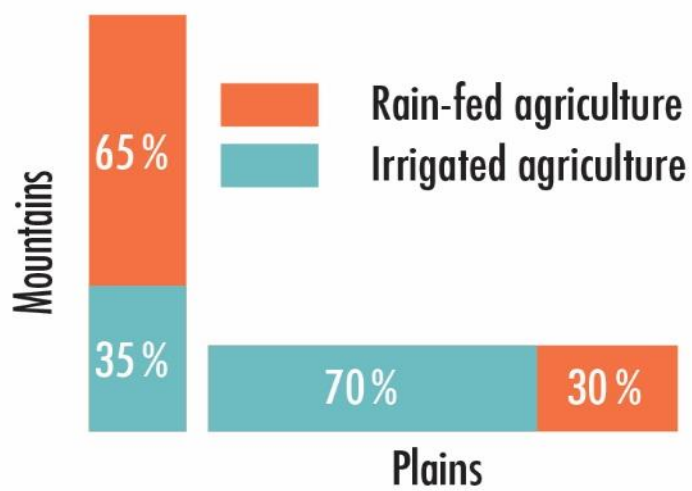
Climate Change and Agriculture

Agriculture and food production highly susceptible to climate change

Climate change is affecting all dimensions of food security and nutrition



DIFFERENCES IN THE MOUNTAINS AND THE PLAINS DEMAND DIFFERENT STRATEGIES FOR ENSURING WATER SECURITY





Climate Change and Agriculture

Small holder farmers are on the frontline of climate change

- *Most vulnerable habitats*
- *Climate sensitive natural resources*

Small holders are the main producers of food globally

- *60-70% food produced in developing countries*



HIMAP ICIMOD

EVEN IF GLOBAL WARMING IS LIMITED TO 1.5 DEGREES CELSIUS BY THE END OF THE CENTURY, THE HINDU KUSH HIMALAYA WILL WARM BY AROUND 2.1 DEGREES CELSIUS.

#HKHAssessment

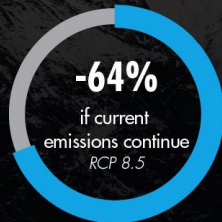
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1.5 Degrees is too hot for the Himalayas

Amplified by Elevation Dependent warming

ICIMOD



GLACIER MASS LOSS HAS INCREASED SINCE 2000, AND WILL ACCELERATE IN THE FUTURE. HKH **GLACIER VOLUMES WILL DECLINE SUBSTANTIALLY BY 2100.**

In a 1.5 °C world, HKH glaciers



WILL LOSE
36% ↓

of their current volume (by 2100)



HIMAP ICIMOD

**A 2 DEGREES
CELSIUS RISE IN
AVERAGE GLOBAL
TEMPERATURE BY
2100 COULD
MELT HALF THE
GLACIERS IN THE
HINDU KUSH
HIMALAYA,
DESTABILIZING
ASIA'S RIVERS.**

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Strong Seasonality

Too much and too little water

More extreme events

Longer dry periods, increased intensity of precipitation

Floods and droughts more frequent

Some floods are **transboundary** in nature



Food and nutritional security in major Asian breadbaskets will be **THREATENED**



HIMAP ICIMOD



**MIGRATION IS A
SIGNIFICANT
LIVELIHOOD
STRATEGY IN
THE HINDU
KUSH HIMALAYA
REGION.**

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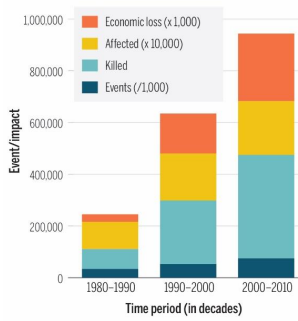
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11 SUSTAINABLE CITIES
AND COMMUNITIES



1 NO
POVERTY



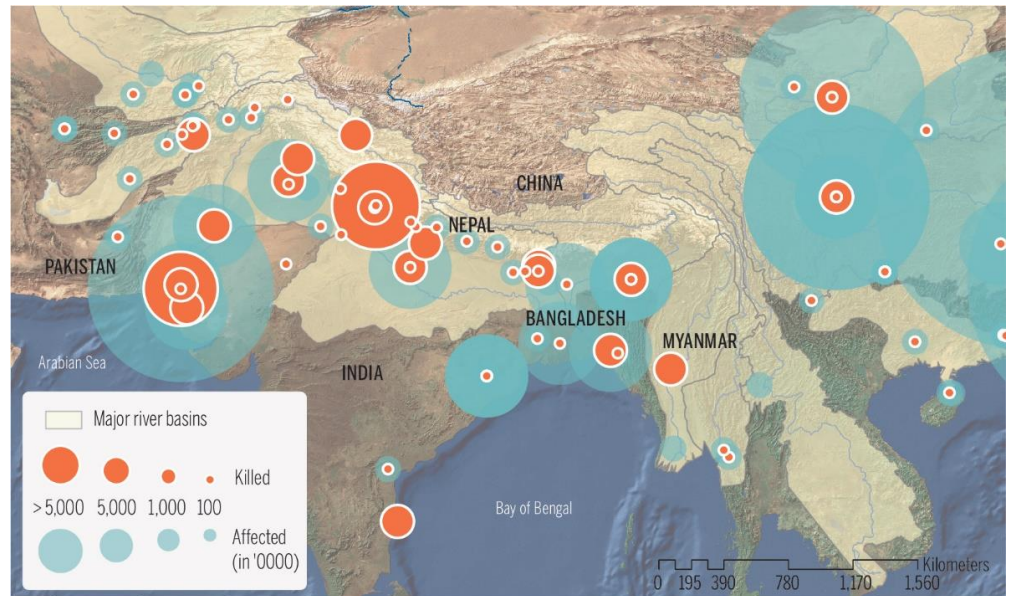


Disaster risk is increasing

Floods, droughts, landslides, glacial lake outburst floods

One-third of disasters are floods, many crossing national borders

Women more susceptible to natural disasters than men



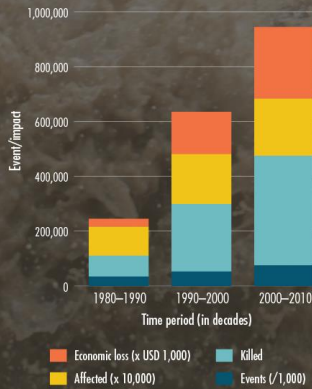
Data source: EMDAT OFDA Cred Database

Map prepared in Sept. 2015

ICIMOD



THE ECONOMIC AND HUMAN IMPACTS OF NATURAL HAZARDS ARE INCREASING



MORE THAN A BILLION PEOPLE ACROSS THE HKH ARE AT INCREASED RISK FROM NATURAL HAZARDS LIKE FLOODS, LANDSLIDES, AVALANCHES, DROUGHTS AND EARTHQUAKES.

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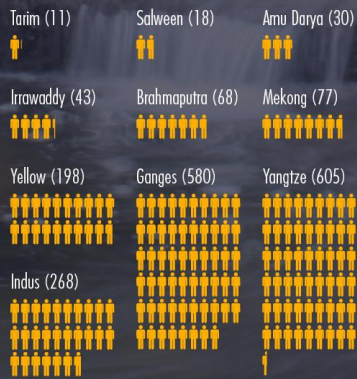
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13 CLIMATE ACTION

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



RIVERS FROM THE HINDU KUSH HIMALAYA
PROVIDE WATER FOR
NEARLY TWO BILLION PEOPLE ACROSS ASIA



River basin name (population in millions)
 = 10 million people

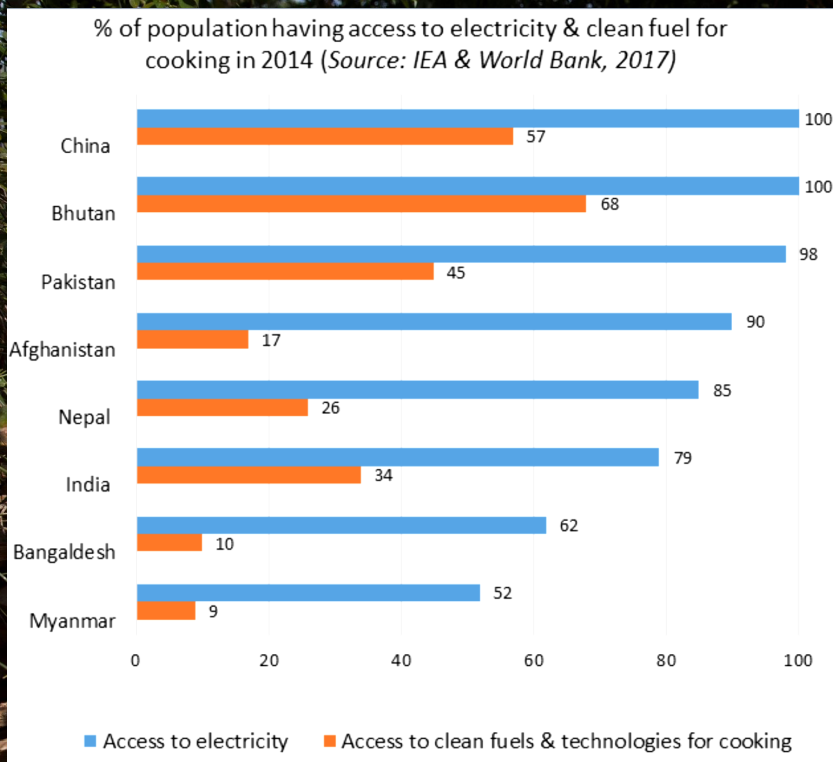
GOOD WATER GOVERNANCE IS NEEDED TO ENSURE WATER SECURITY IN THE HKH AND IT MUST BE POLITICALLY AND CULTURALLY TAILORED TO THE LOCAL, NATIONAL, AND REGIONAL CONTEXTS.



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Energy Poverty

500 GW hydro potential = energy for half a billion homes

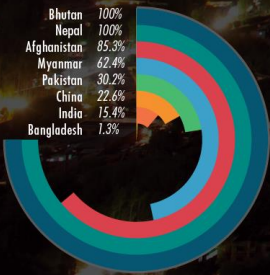
80% rural population in HKH countries lacks access to clean energy for cooking

Energy policy in the HKH too strongly focused on supply and growth—and not yet on sustainability, despite region's huge potential for renewables.

Regional energy cooperation is critical to achieve both rapid development and energy self-sufficiency.



SHARE OF RENEWABLES IN TOTAL ELECTRICITY GENERATION IN HKH COUNTRIES



THERE IS A NEED TO ACCELERATE THE PACE OF REGIONAL COOPERATION AND TRADE IN SUSTAINABLE ENERGY THROUGH A HIGH-LEVEL, EMPOWERED, REGIONAL MECHANISM.

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH



HIMAP ICI-MOD

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

13 CLIMATE ACTION



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

5 GENDER
EQUALITY



17 PARTNERSHIPS
FOR THE GOALS



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**REGIONAL
COOPERATION AND
ENVIRONMENTAL
GOVERNANCE
HOLD THE KEY TO
THE FUTURE OF
SUSTAINABLE
DEVELOPMENT IN
THE HINDU KUSH
HIMALAYA REGION.**

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17 PARTNERSHIPS
FOR THE GOALS



Three priorities for action



Concerted action is urgently needed to keep global level climate change to 1.5 degrees by 2100.

Recognize and prioritize the uniqueness of the HKH mountain people.

Cooperate at all levels across the HKH region for sustainable and mutual benefits.

Need for complimentary Regional Adaptation Plans for effective NAPs

- *Climate impacts – transboundary*
- *National NAPs maybe **inadequate** for addressing transboundary impacts*
 - Need to consider **Regional Adaptation Planning**
 - **Mechanism** for initiating **collective action**
 - **Upstream-downstream** information & **knowledge exchange platform**
 - **Regional Climate Action Forum/Alliances**



First HKH Assessment Report Publication and Summary for Policy Makers

First HKH Science–Policy Forum
November 2018

Policies and Regional Cooperation
Aiming for HKH Forum

Monitoring and Assessments

- Mountain Priorities Consistent with SDGs
- Roll-out of the HKH Assessment Report and HKH Call to Action with Governments and Stakeholders
- Annual HKH Science–Policy Forums
- Mountain-Specific Reporting on SDGs
- Contributions to CBD, UNFCCC, Sendai Framework, and SDGs
- Learning from the Arctic Council, Alpine Convention, etc

- Thematic Assessments
- Special Reports
- Topical Outlooks
- Sub-Regional Transect Assessments
- Contributions to IPCC and IPBES
- Periodic Comprehensive Assessments

HKH Forum

Science-Based Evidence and Knowledge

