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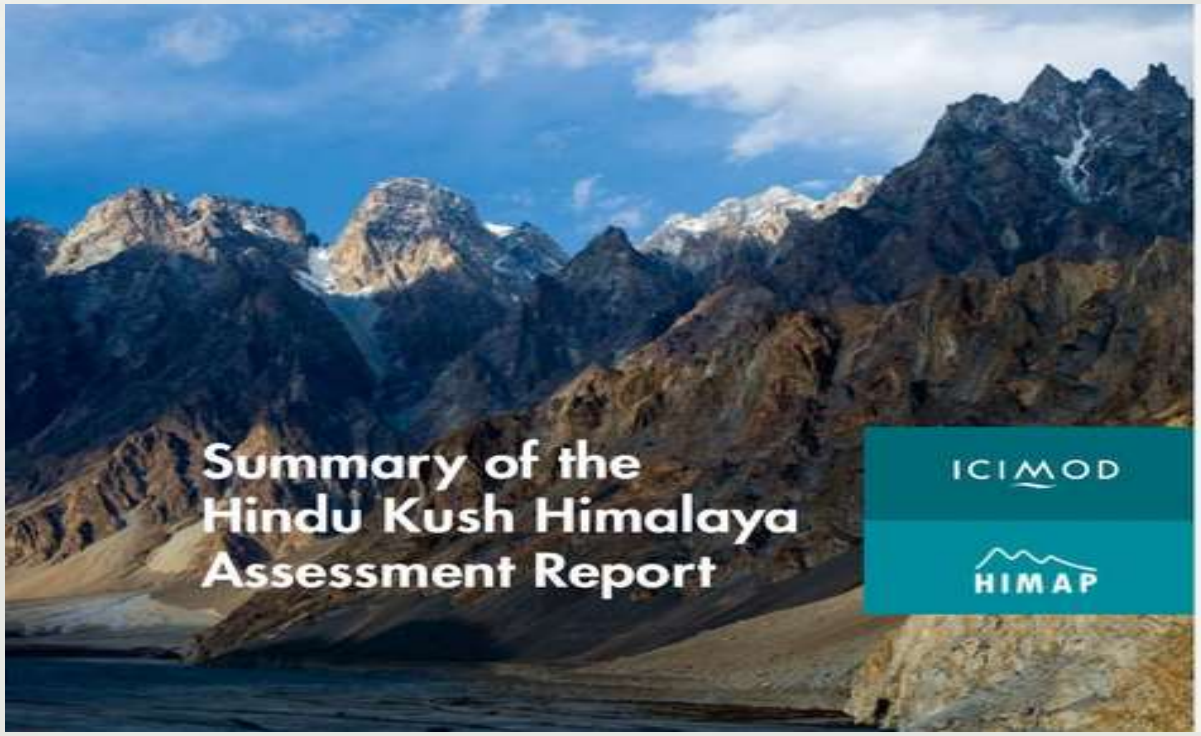
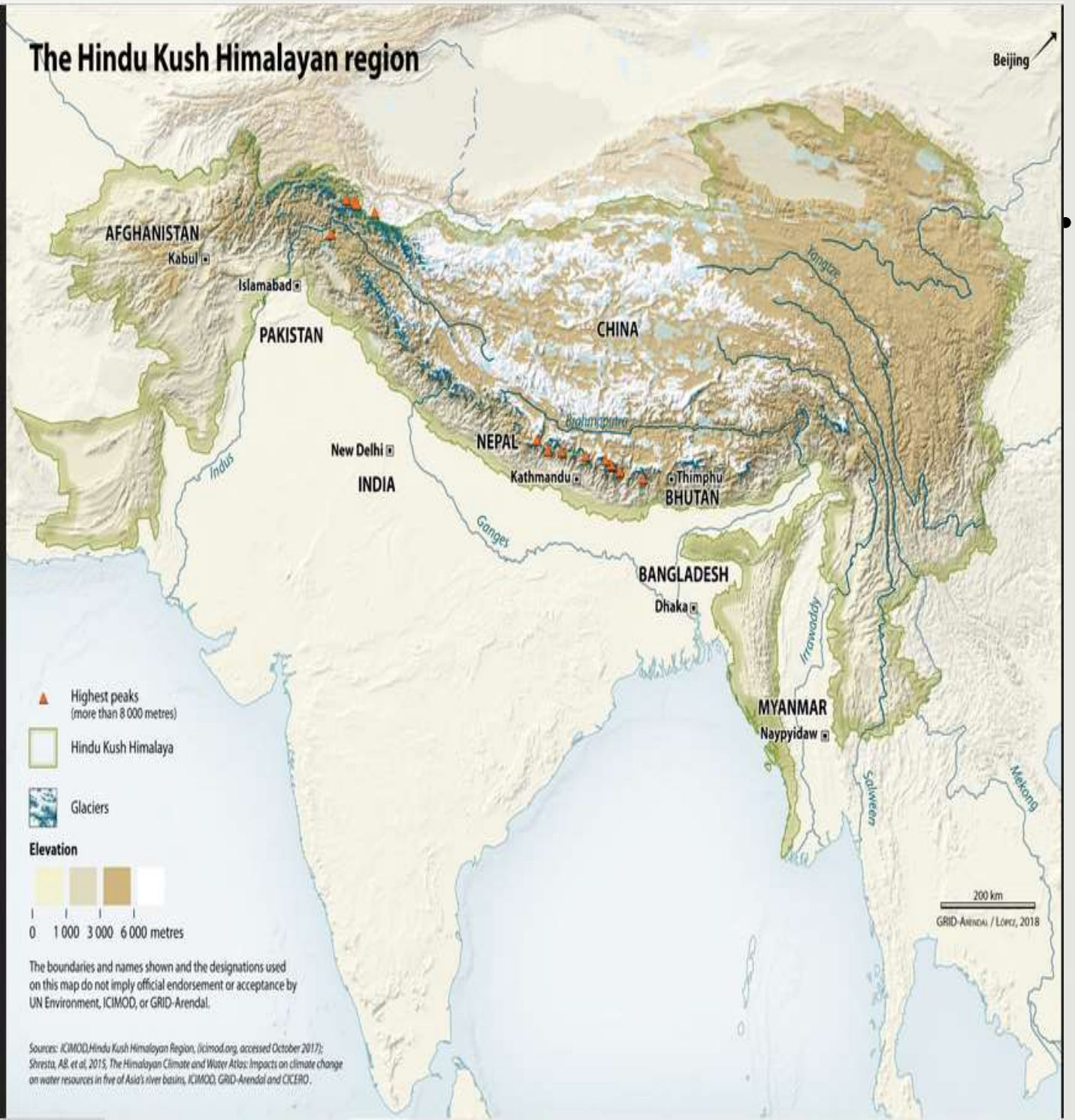
ICIMOD Report on Hindu-Kush Mountains



Why in News?

- The International Centre for Integrated Mountain Development (ICIMOD) released

Water, Ice, Society, and Ecosystems (WISE) report for the Hindu Kush Himalaya (HKH).



Hindu Kush Himalaya (HKH) region:

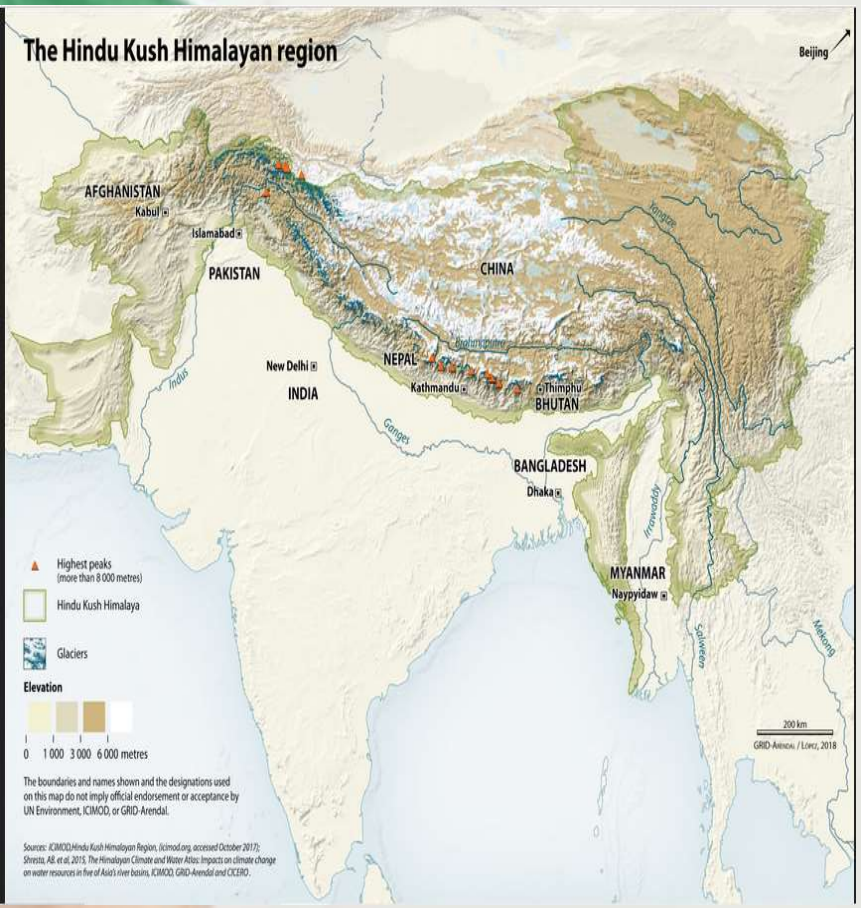
- mountain ranges **stretching 3500km** from **Afghanistan to Myanmar.**
- The region has **highest mountain ranges in the world**
- contains the **largest volume of ice** on earth **outside of the polar areas** and is **called "Asia's water tower".**

Ice and snow in the HKH are important sources of water for rivers that flow through 8 countries in Asia.

The region is undergoing "unprecedented and largely irreversible" changes triggered by global warming.

Significance of HKH

- Feeds major Rivers Ganges, Indus, Irrawaddy, etc.
- Regulates global climate system as the snow cover cools the atmosphere by reflecting sunlight.
- Provides economic opportunities through recreational activities.
- Cultural and spiritual importance, for example Gangotri glacier.
- Cryosphere components including permafrost and glacial lakes provide various ecosystem services.

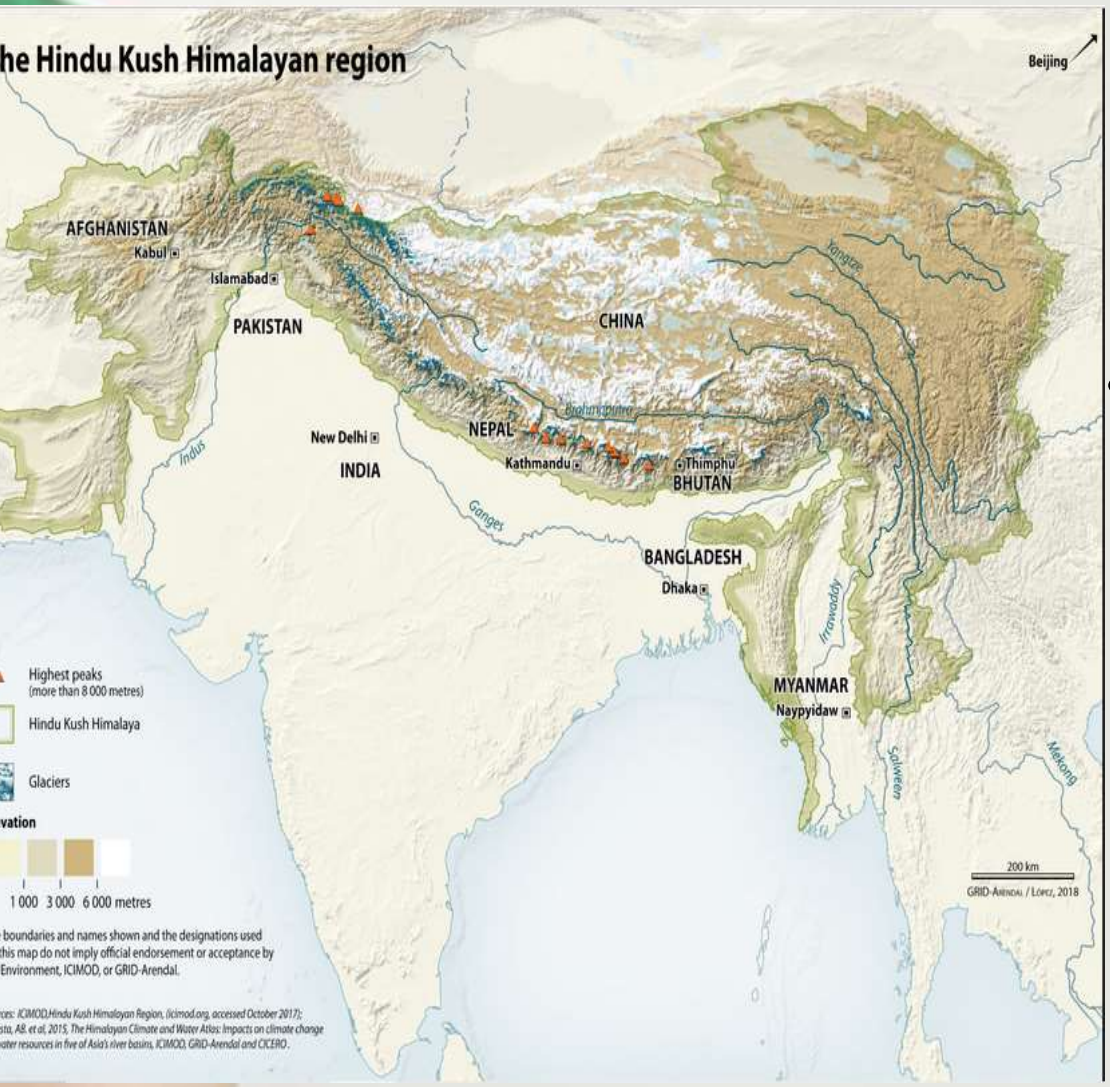


ICIMOD is an intergovernmental knowledge and development organization (established in 1983) that focuses on climate and environmental risks, green economies, and sustainable action.

ICIMOD headquarter –Kathmandu, Nepal

Members countries:

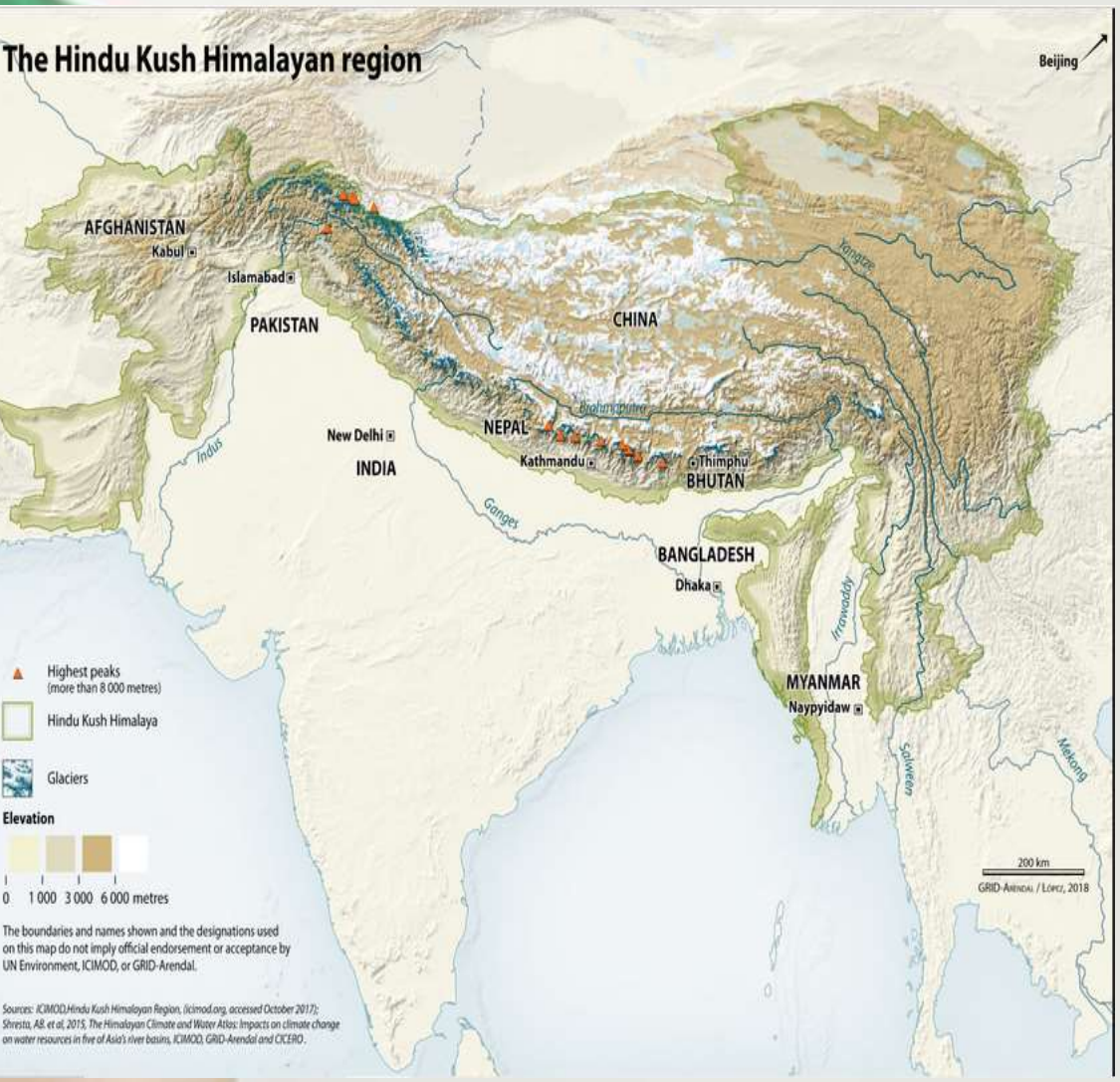
- **Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan are its members**



The WISE report highlighted the following impacts climate change on HKH:

Glacier:

- Water Glaciers disappeared 65% faster in the 2010s than in the previous decade.
- For global warming between 1.5°C to 2°C, glaciers are set to lose 30%–50% of their volume by 2100



Water Security:

- With accelerated glacier melt, 'peak water' will be reached around mid-century in most HKH
- Peak water is a stage in which the supply of fresh snow water due to glacier melt will be the highest ever.
- Many areas around the world have passed "peak water" and communities are dealing with less glacier melt water.
- For the HKH, the peak point has not been reached yet, but it is coming soon.

- As Himalayan glaciers melt due to climate change, water availability in the Indus, Ganges, and Brahmaputra is set to increase (through 2050) in the short term and decrease in the long term (~80% by 2100).

- The Eastern/ lesser Himalayas have fewer glaciers compared to their western counterparts. Hence, rivers in the region get less contribution from glaciers and are less likely to be affected overall.

Climate change is severely affecting biodiversity in HKH.

For example, the **habitat** of **Himalayan ibex** is **likely** to reduce by 33 to 64%.

OTHER IMPACTS ON HKH

- Adverse impacts on biodiversity like genetic and species loss, alteration in ecosystem structure, increase in invasive species, range shift etc.
- **Socio-economic impact** like crop loss and failure, fodder shortage, livestock deaths, migration, psychological impacts etc.
- Deposited **Persistent organic pollutants** (POPs) in glaciers such as **PCBs** (Polychlorinated Biphenyls) are released into the water cycle.
- **Decline in albedo will reduce** which will ultimately **impact the heat budget** of the earth.

Steps Taken to protect Glacial Ecosystem

India's Initiatives

- National Mission for Sustaining the Himalayan Ecosystem (NMSHE) is implemented by the Department of Science and Technology.
- It is part of the National Action Plan on Climate Change (NAPCC), launched in 2008.
- National Centre for Polar and Ocean Research (NCPOR) established by the Ministry of Earth Sciences (MoES).
- Research station 'Himansh' was established in the Chandra basin (Himachal Pradesh) in 2016.
- National Institute of Hydrology (NIH) is conducting several studies for the assessment of runoff from the melting of glaciers at catchment and basin scales.

Global Initiatives

- **ICIMOD's initiatives like Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP), Mountain Ministerial Summit, etc.**

- **Framework for regional cooperation by United Nations Development Programme (UNDP) and ICIMOD.**

- **UNESCO's World Glacier Monitoring Services.**

Way Ahead:

Regional and global cooperation are needed for-

- **technical and financial assistance to facilitate adaptation and mitigation,**
- **enhancing transboundary data and information sharing and**
- **effectively protecting mountain communities and biodiversity hotspots.**

Improve monitoring Network: Techniques such as in-situ measurements, remote sensing, satellite data, and modelling can be combined to generate high-quality products.

Building adaptation and early warning strategies taking into account the increased likelihood of multi-hazards and cascading events due to climate change.

Adopting Integrated Water Resources Management Approach: Governments should thoroughly understand water sources' contribution to river flows to anticipate future changes.

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