Climate services in the HKH region for informed decision making

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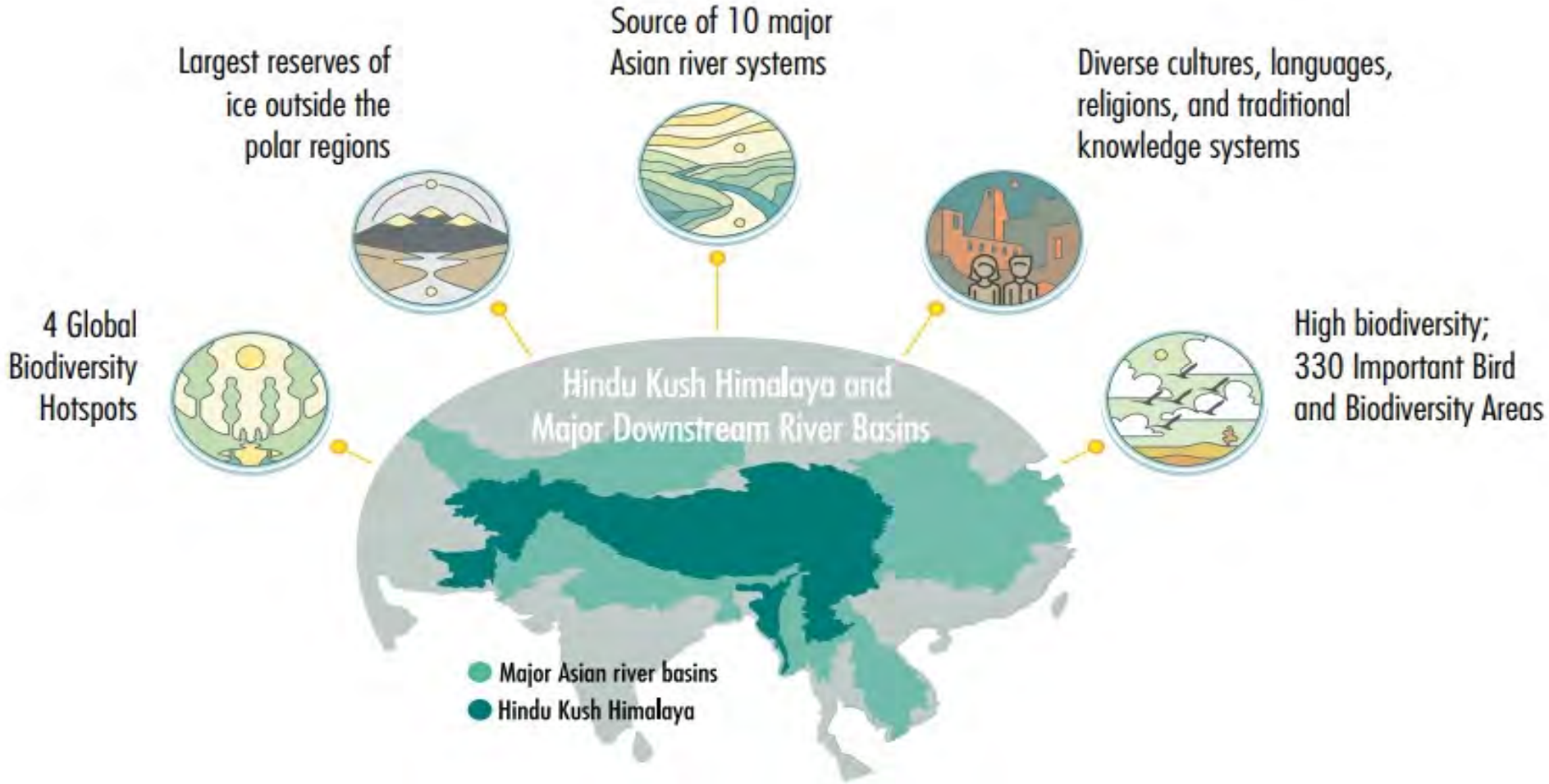
International Centre for Integrated Mountain Development

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



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

Key Issues in the HKH region

Multi-hazard environment

Upstream-downstream linkages

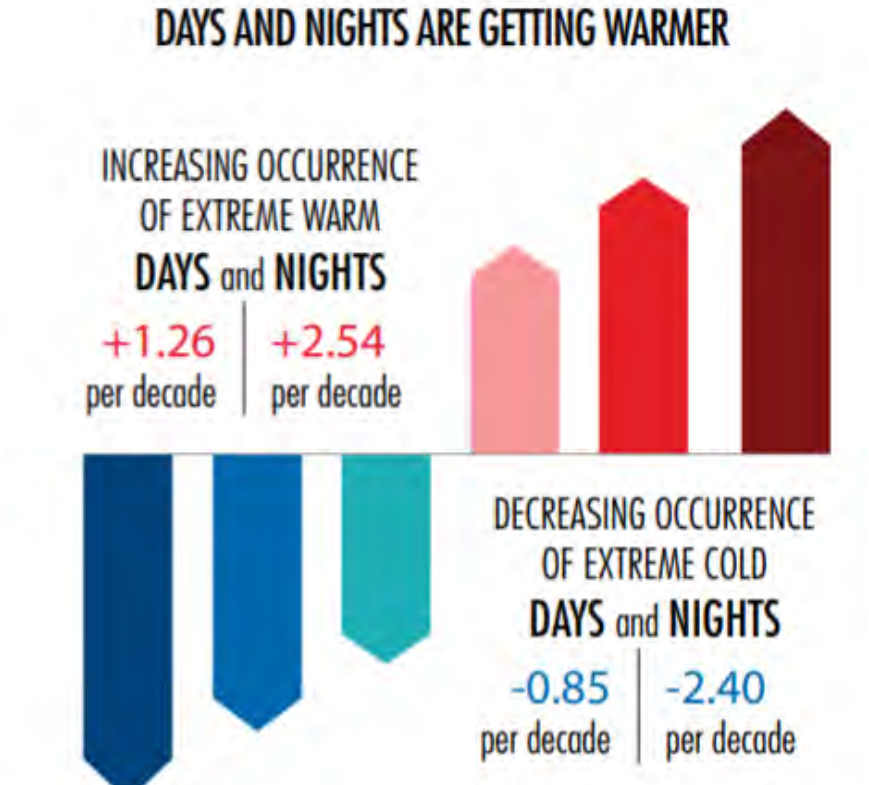
Climate change and variability

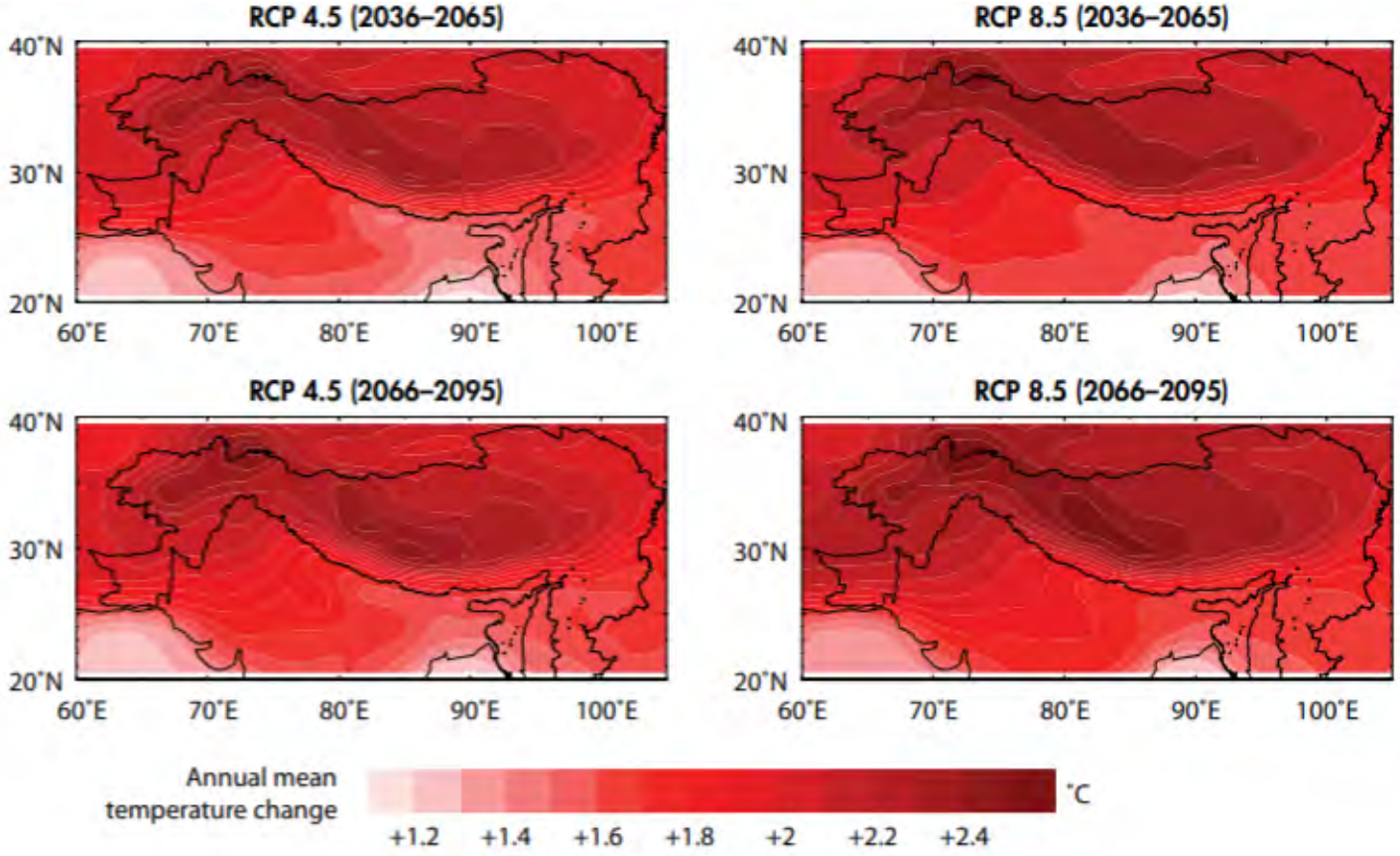
Connectivity and physical access

Governance

The Climate Context

In a 1.5˚C world, warming will likely be at least **0.3˚C higher in the HKH**, and at least 0.7˚C higher in the northwest Himalaya and Karakoram.





THE HKH WILL WARM MORE THAN THE GLOBAL MEAN AND MORE RAPIDLY AT HIGHER ELEVATIONS

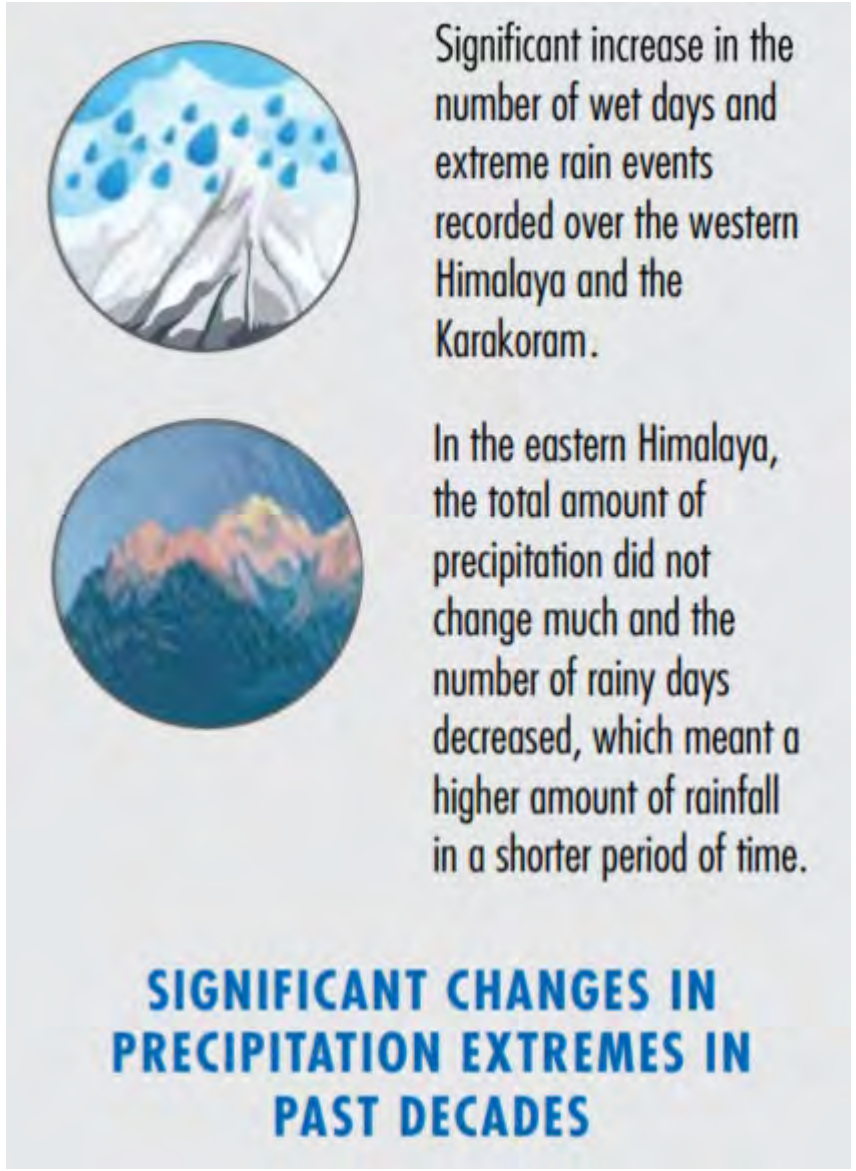
Source: P. Wester, A. Mishra, A. Mukherji, A. B. Shrestha (eds) (2019) The Hindu Kush Himalaya Assessment—Mountains, Climate Change, Sustainability and People, Springer Nature Switzerland AG, Cham.
Download the full assessment at https://doi.org/10.1007/978-3-319-92288-1

The Climate Context

Precipitation extremes increasing - **extreme and erratic rainfall**

Both warming and precipitation extremes to increase in the future:

2-4 degree C warmer by 2100
Elevation dependent warming
8-12% increase in precipitation
More **extreme precipitation**



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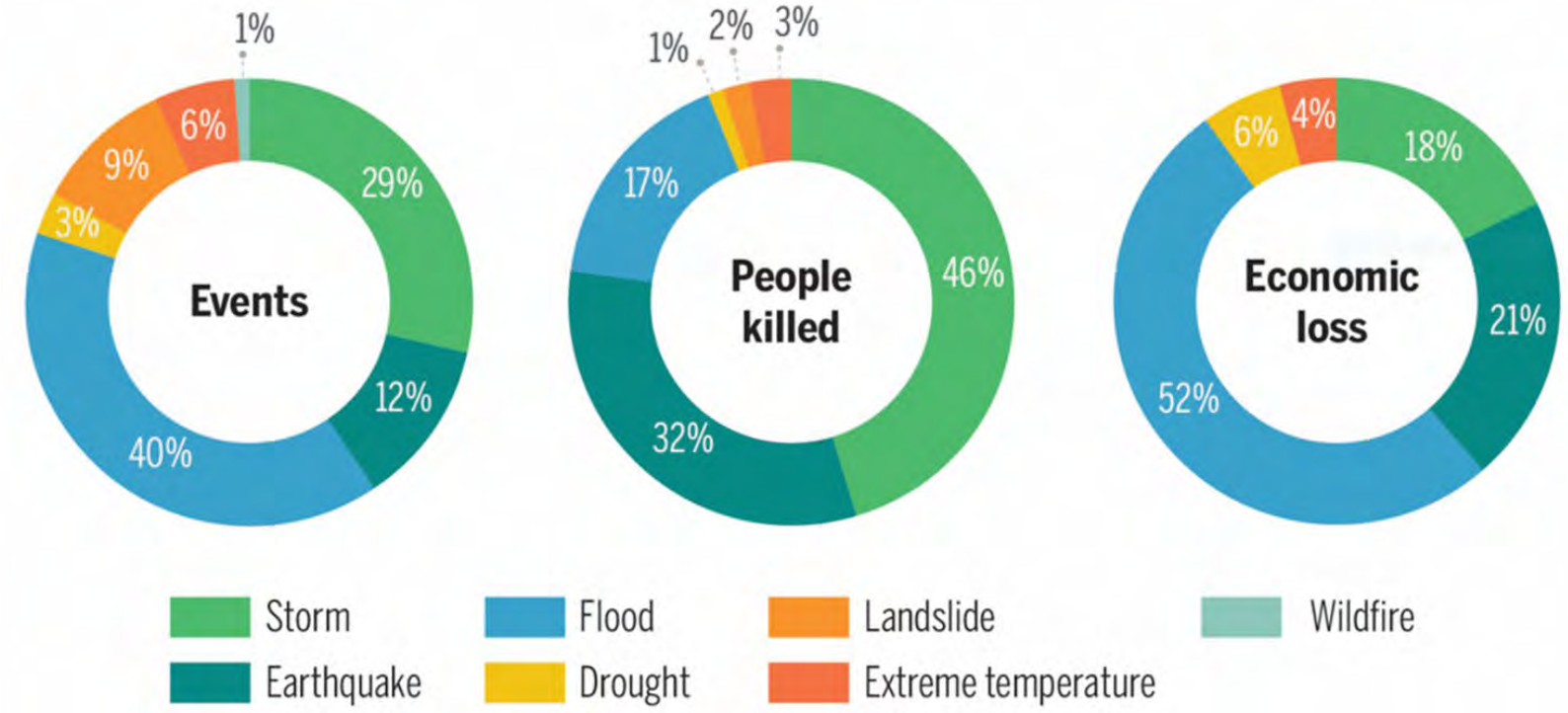
Hindu Kush Himalayan region is prone to disasters

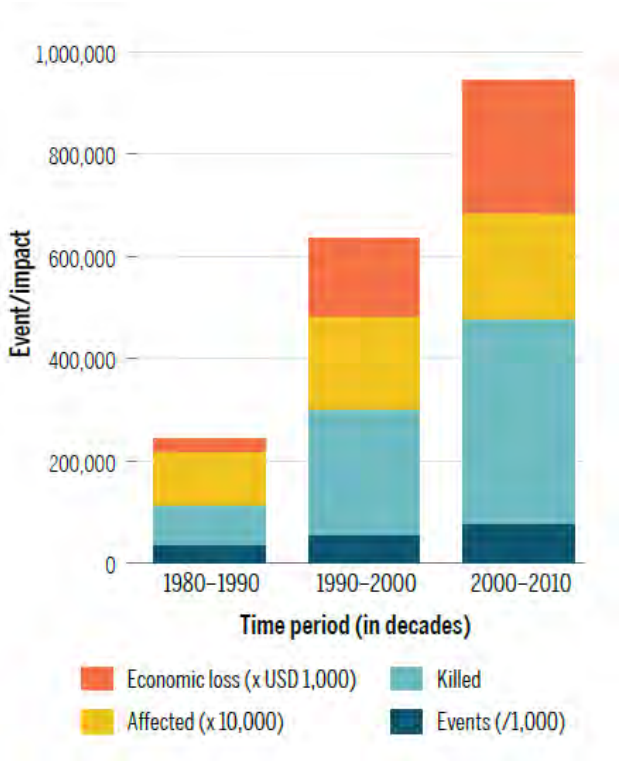


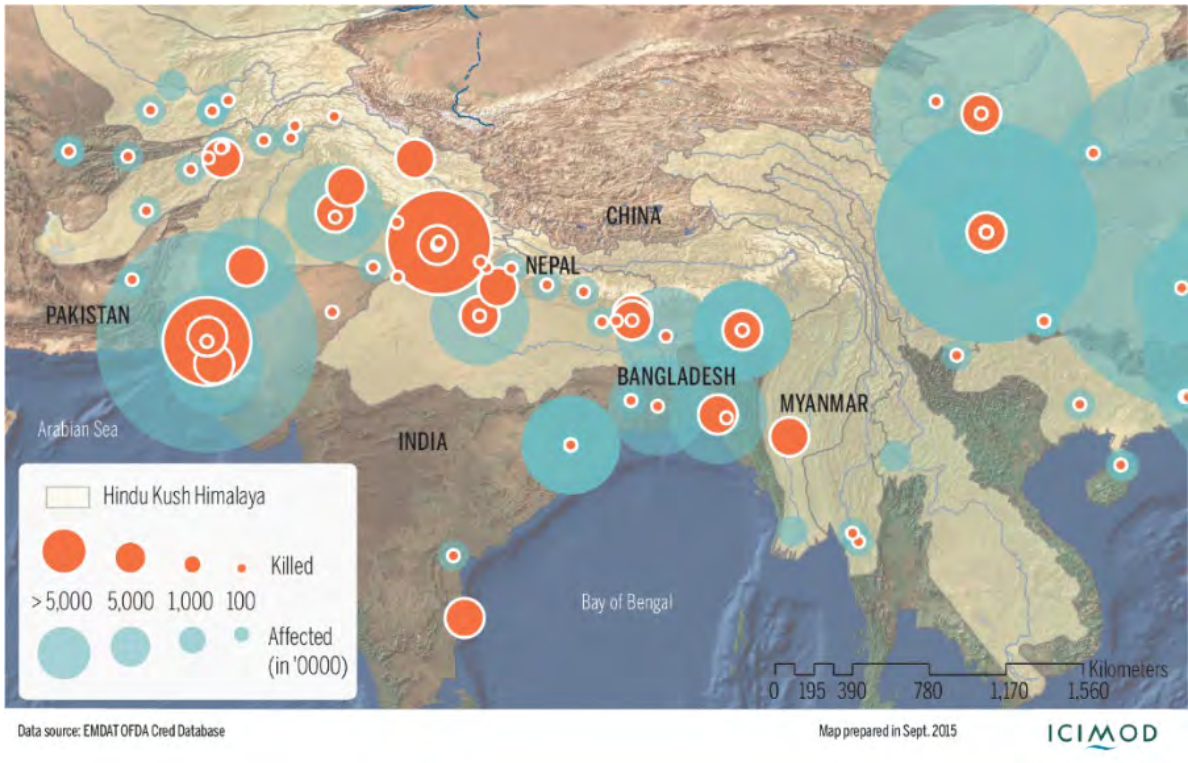
More than 1 billion people are at risk of exposure to increasing frequency and intensity of natural hazards

The economic and human impacts of natural disasters are increasing

1/3 of disasters are floods

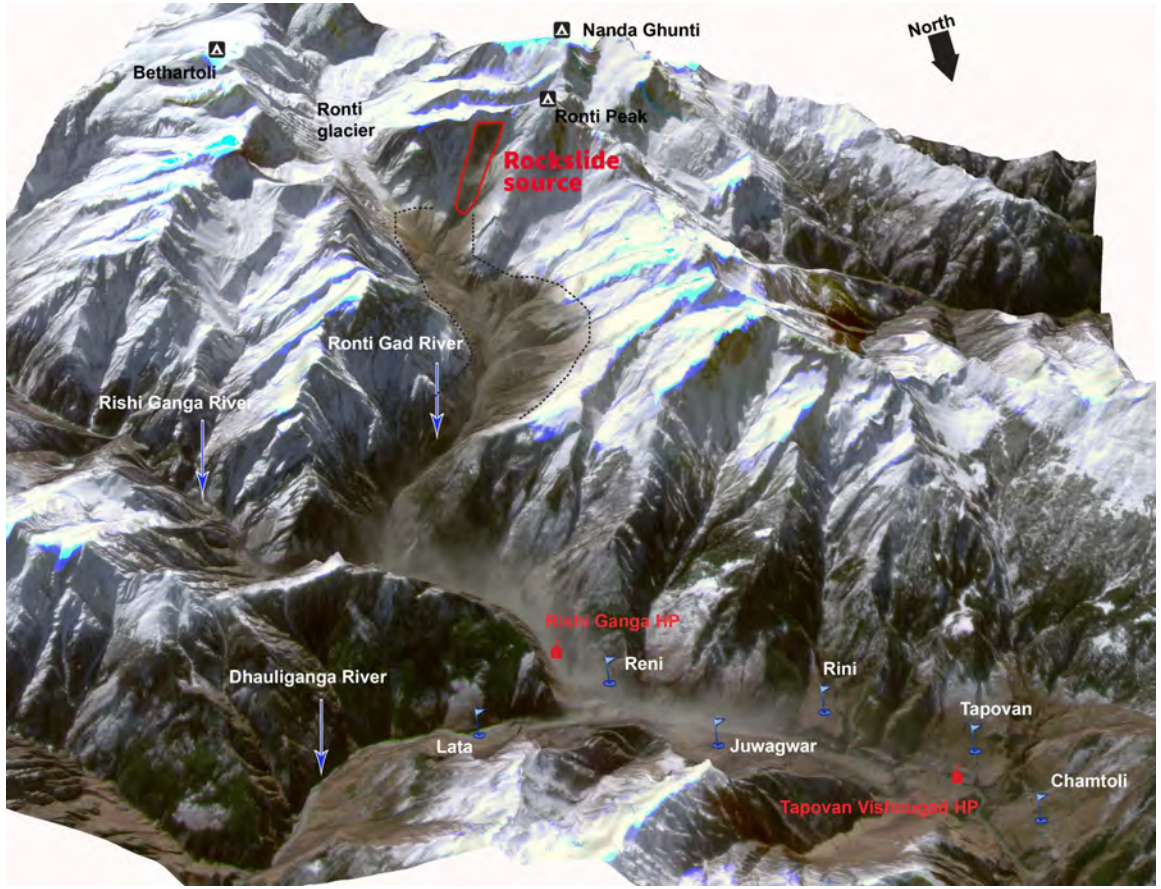
Transboundary floods - shared vulnerability across national borders





Source: Vaidya et al., 2019 (HIMAP report)

Cascading events resulting from a multi hazard environment have u/s d/s linkages often with transboundary impacts



Chamoli disaster triggered by Avalanche/Rockfall

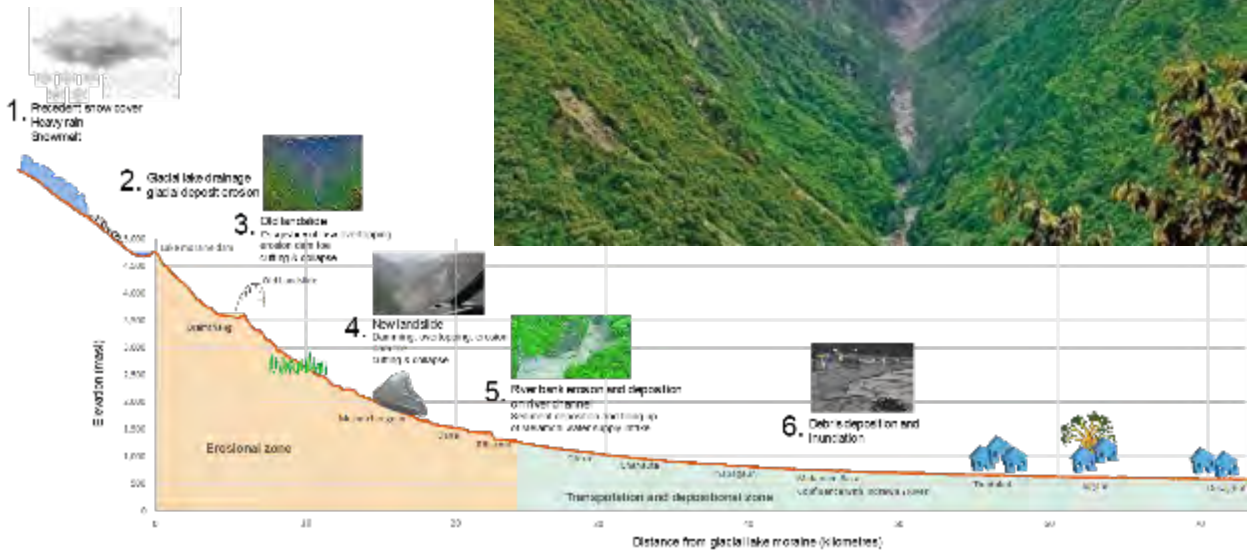
March 2021

Subsequent floods killed >150 people damaged the hydropower plants downstream

Melamchi disaster

Melamchi - 320 km^2 basin – 5200 m

Cascading hazards with GLOF, landslides, LDOF and impacts



Event: June 2021 GLOF- Pemdang Khola a tributary of Melamchi

Significant damage to d/s settlements, 6 bridges washed away, 15 meters of aggradation

Challenges

Increase in intensity and frequency of disasters

Inadequate climate observing network

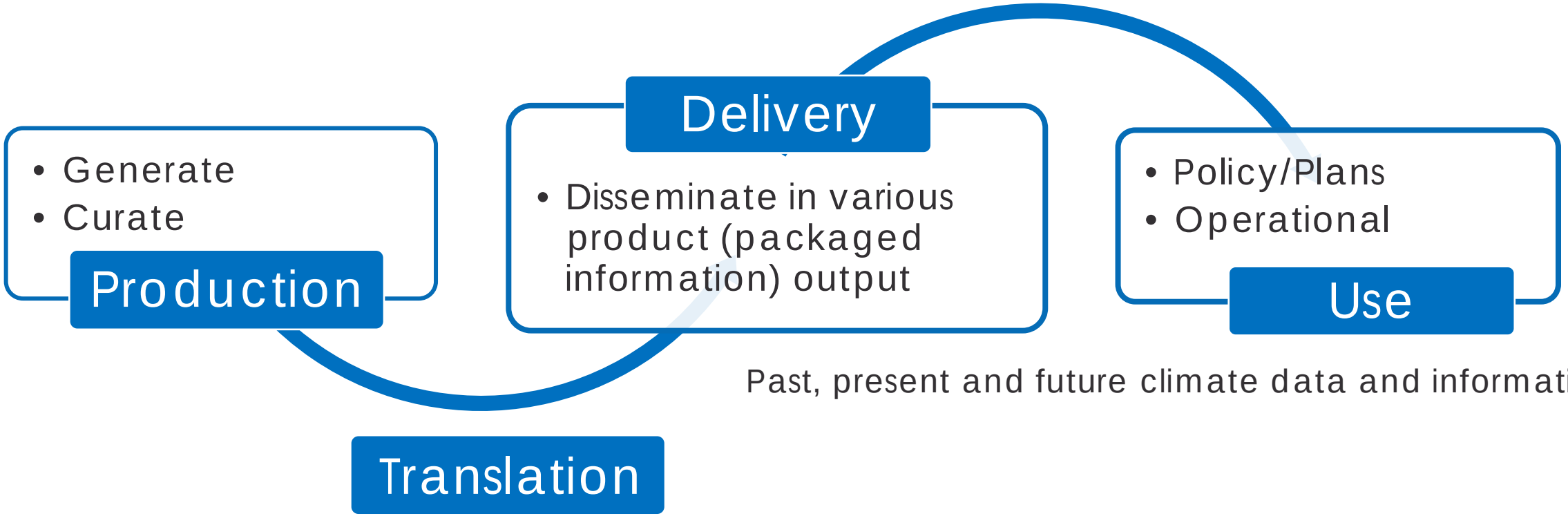
Lack of sharing of data and information

Inadequate and varying capacity

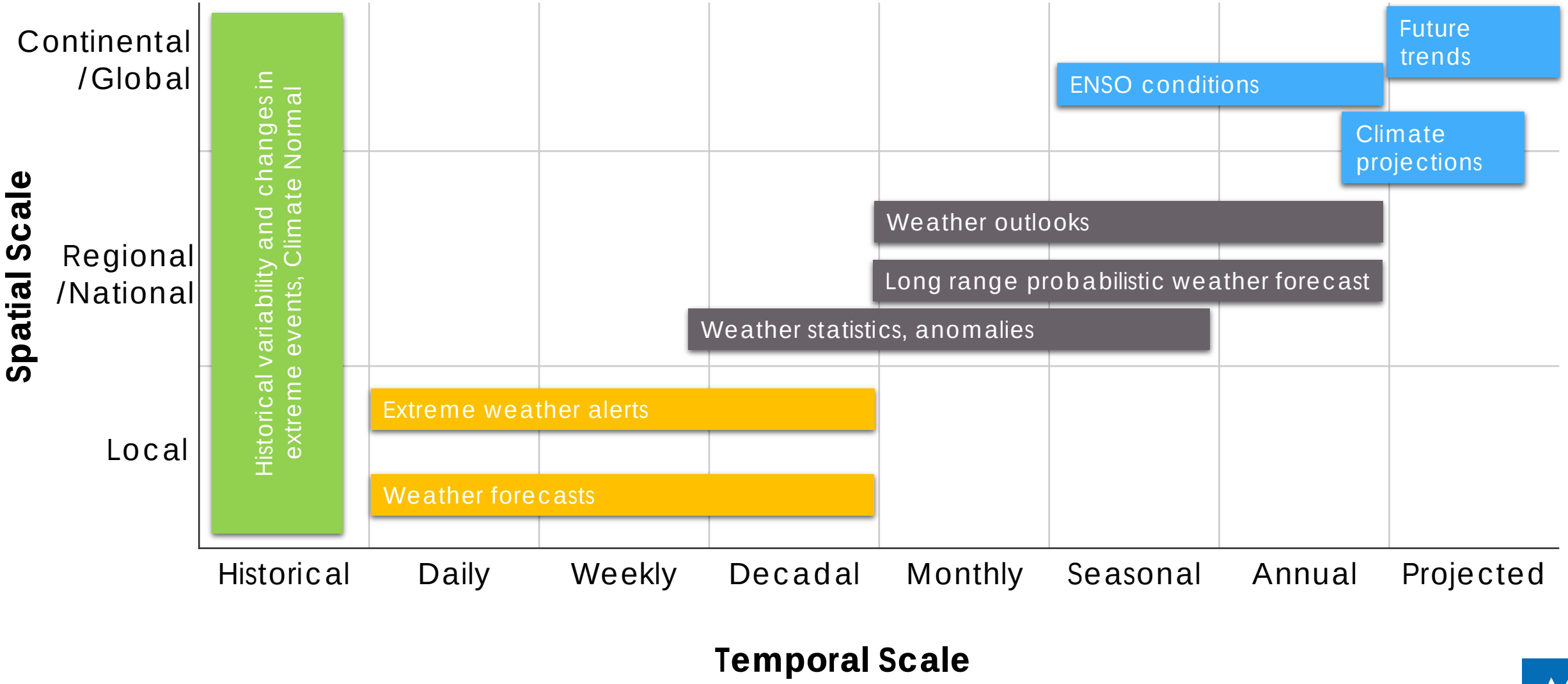
Limited tailored climate services that is actionable and gender responsive.

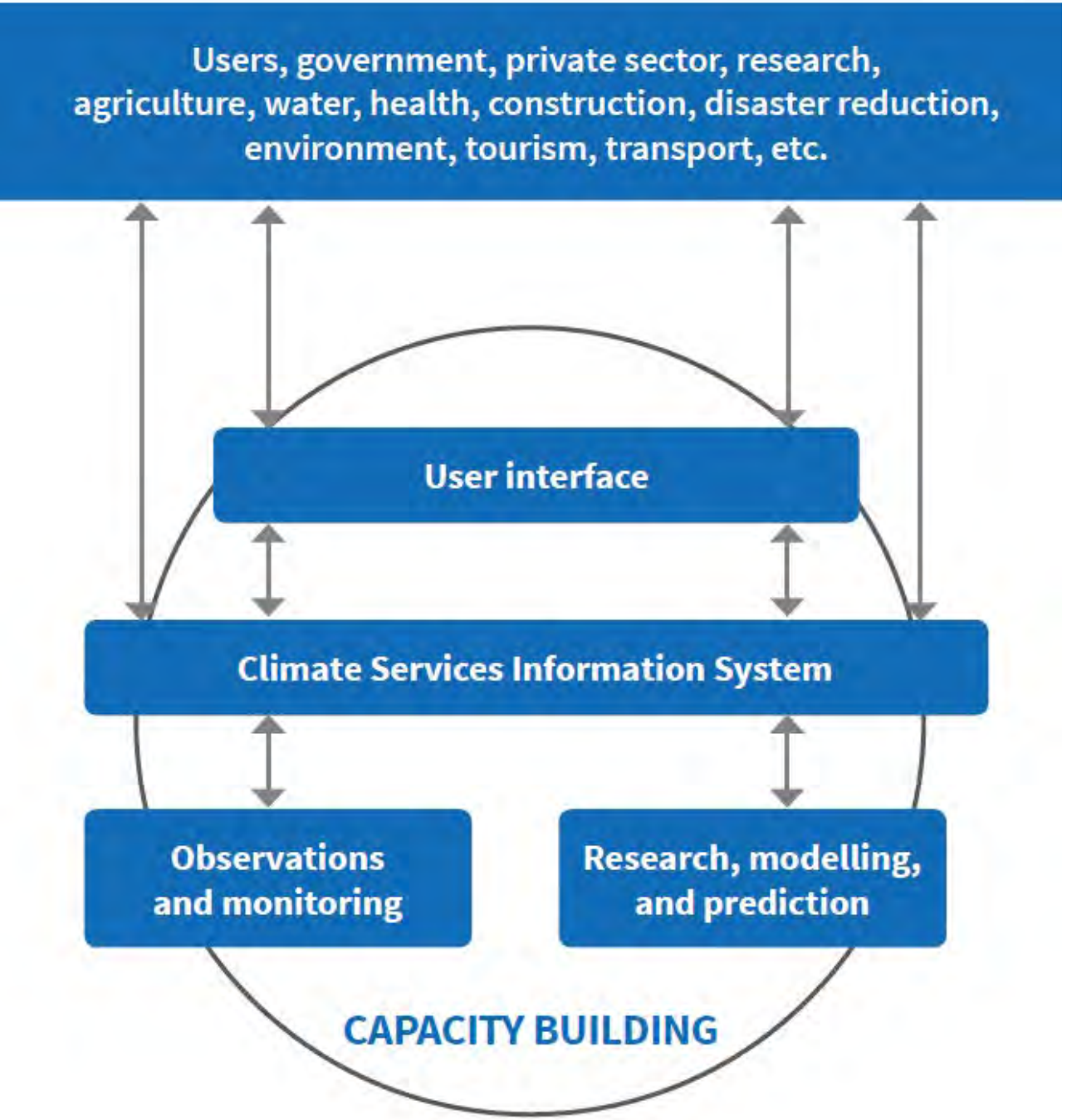
What is Climate Service?

Science-based information and forecasts that empower decision-makers at different levels to anticipate and manage climate related shocks and avail opportunities.



Climate services: Spatial and temporal





Global framework for climate services

five pillars of GFCS

to support more robust adaptation planning and policy decisions

increasing resilience to climate change

Implementation Plan of the Global Framework for Climate Services

Climate risk sensitive growth sectors

Agriculture: Climate change is detrimental to agriculture systems.

Tourism

Water and energy

Health

Disasters – floods, droughts, forest fire, extreme temperatures/heat waves, air pollution

Results in loss of productivity, infrastructure, property and lives.

Opportunities

Enhance partnerships in science and delivery of products and services

Dialogues between users and stakeholders to co-design and co-develop services

Build capacity, learn and co-create innovative solutions to understand, interpret and use

Using EO and geospatial tools for monitoring, assessing, and forecasting

Harmonize climate data and information and its use across the HKH region

Support the implementation of the GFCS in the HKH region

Climate Services initiative

Impact: Improved livelihood and enhanced resilience of mountain communities as a result of reduced risks and vulnerabilities with the use of climate information services.

Outcome: Improved capacities of mandated institutions and understanding of end users in making best use of climate information services for decision making and long-term resilience building.

Change pathways:

- Build partnerships and user interface
- Co-develop services
- Strengthen capacity

Needs and priorities in the HKH (ARRCC)

To bridge the gap between climate information providers and users

- Strengthen capacity in the use of advanced tools in forecasting and data assimilation: impact-based forecasting, seasonal outlooks and climate projections
- Build Institutional capacities in the access and use of Climate change projections
- Co-develop and tailor climate information to the needs of specific users for societal benefits
- Awareness, enhancing capacity, communication and dissemination of climate information to various types of users (language, sociocultural norms and mode)

Understanding climate services landscape in Chitwan and Chitral

- Stakeholder consultations - types of users, needs, priority areas, type and method of service, their awareness, cultures, ability to use and capacity needs
- Understand and map the user landscape
- Identify the gaps and the needs

Institutional capacity building: climate projections

Stakeholder consultation and need identification

- Identification of the needs and priorities through regional and national consultations held in 2019
- Online survey for training need identification

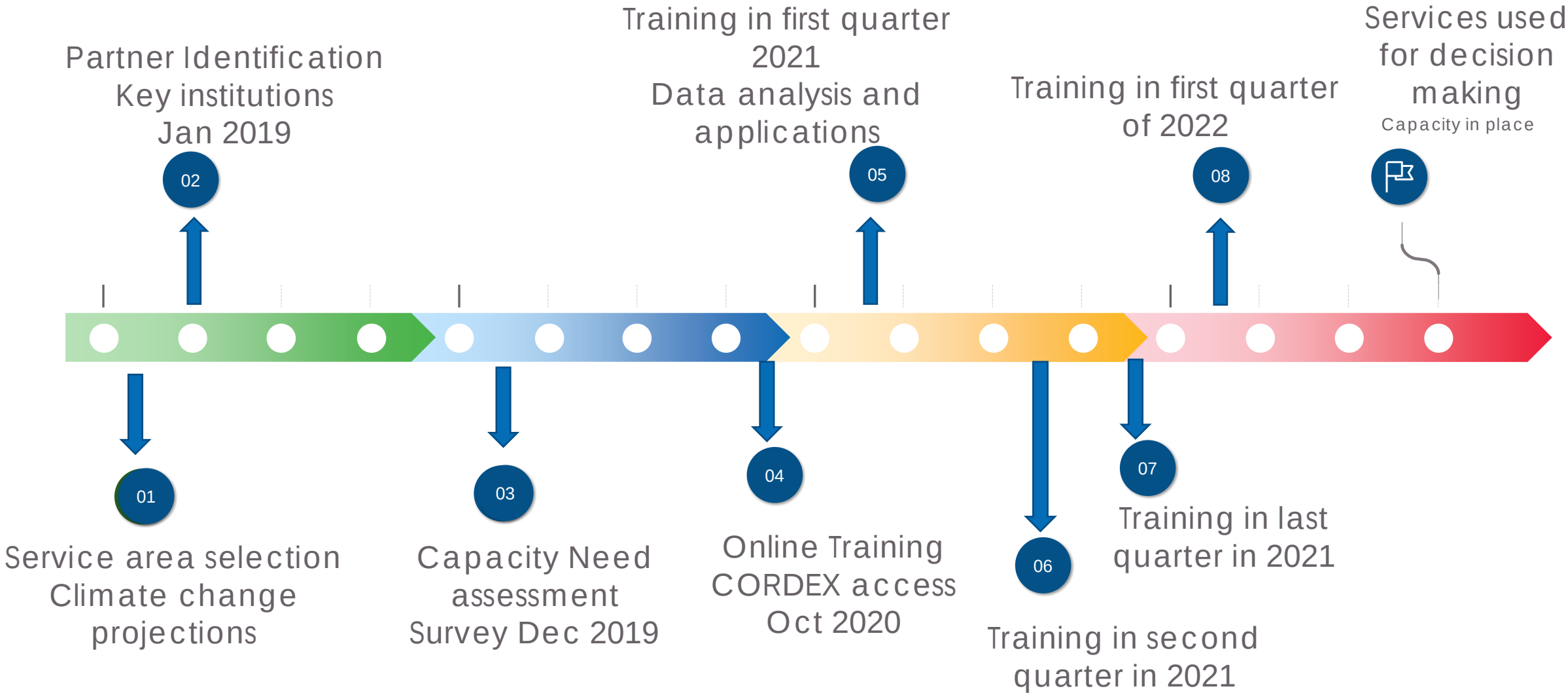
International and regional partnerships

- UK Met Office, World Climate Research Programm (WRCP), IITM-Pune

Dedicated institutional capacity building approach

- Partnership from the beginning (shared vision and commitments)
- National hydro-meteorological agencies on board (Afghanistan, Nepal, Bangladesh, Pakistan)
- Series of capacity building activities planned for 2020-2022
- Development of software's and tools
- **Co-generating knowledge** to develop national climate change projections and sectoral implications

Institutional Capacity Building Approach




Thank you
Let’s protect
the pulse.