



**CICERO**

Senter for klimaforskning

Center for International  
Climate and Environmental  
Research – Oslo

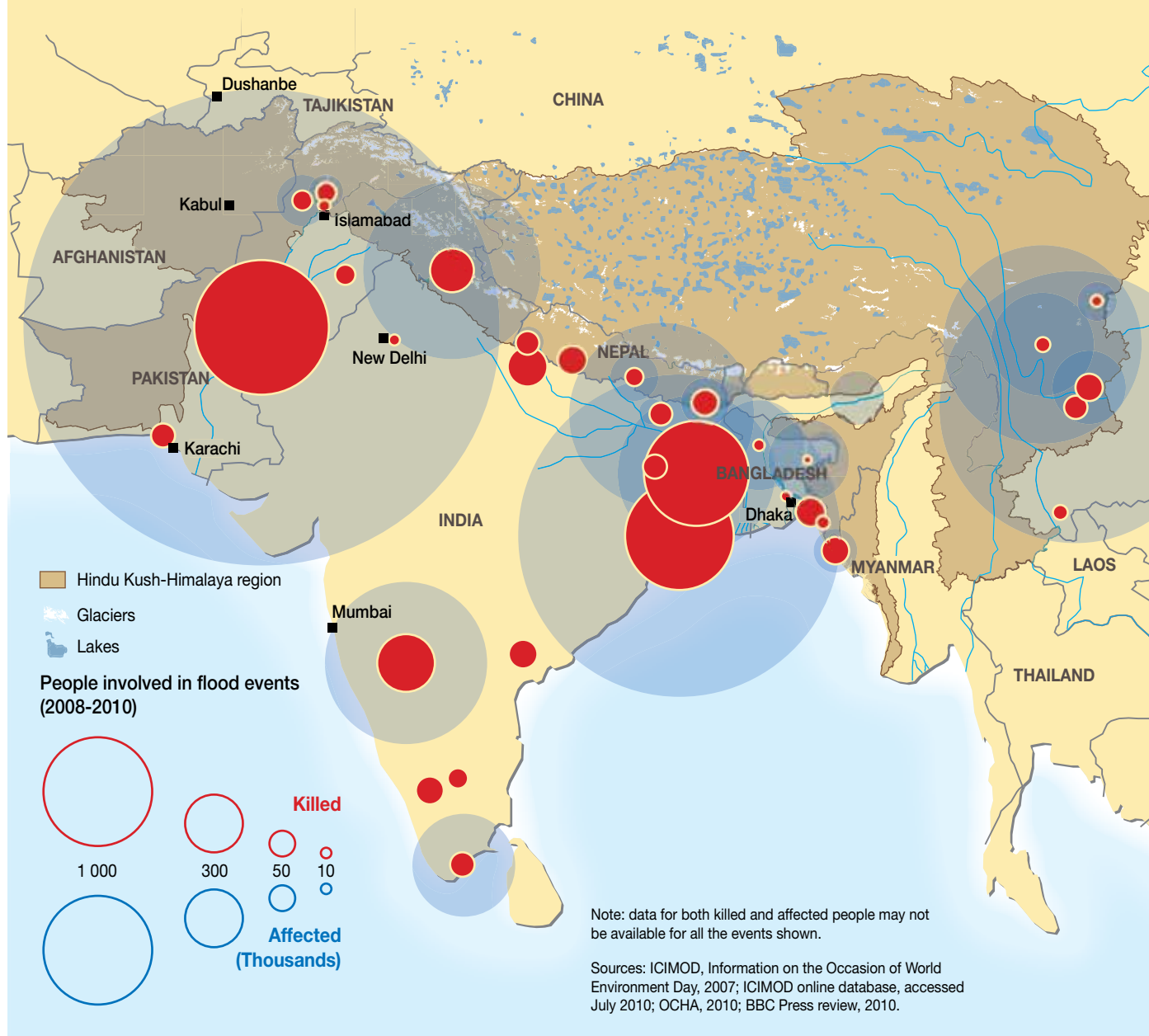
**ICIMOD**

HICIA FEASIBILITY STUDY 2007–2010 AND PROGRAMME 2011–2015

# TOO MUCH TOO LITTLE WATER

**ADAPTATION TO CLIMATE CHANGE IN THE HINDU KUSH-  
HIMALAYAS AND CENTRAL ASIA**

## Recent flood events in the Hindu Kush-Himalaya region



# TOO MUCH TOO LITTLE WATER IN ASIA'S MOUNTAIN REGIONS

The feasibility study concludes that time is limited in terms of coping with dramatic challenges to livelihoods in the region. A cross-boundary collaborative programme needs to prioritise and focus on adaptation already by 2011–2015. Strengthening and developing national and cross-boundary adaptation strategies to too much and too little water is urgent, particularly with regard to floods, drought and subsequent food security.

The Norwegian Ministry of Foreign Affairs funded a feasibility study during 2007–2009 entitled Hindu Kush-Himalayas Climate Impact Assessment (HICIA). The pilot study investigated the feasibility and need for establishing a programme on adaptation and assessment of climate change in the Hindu Kush-Himalayas given scientific, institutional and political challenges in the region. The study was led by the Center for International Climate and Environmental Research-Oslo (CI-CERO), UNEP/GRID-Arendal and the International Centre for Integrated Mountain Development (ICIMOD)

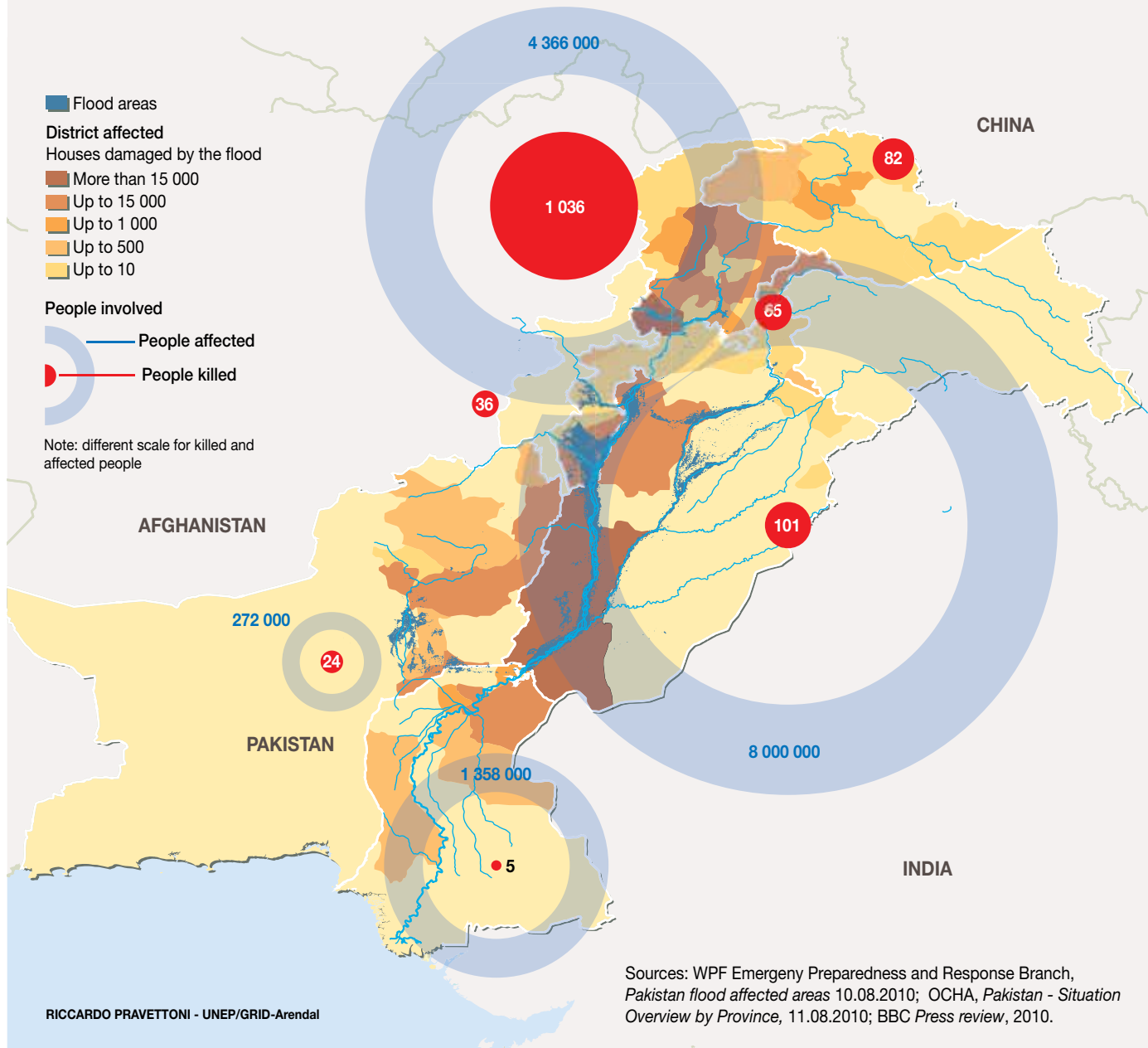
The project has revealed great need for improved coordination and evolution of adaptation strategies to too much and too little water in the region. The pilot study has successfully relied on the approach of building and strengthening existing approved channels of collaboration between Nepal, India, People's Republic of China and Pakistan through ICIMOD and fieldwork was conducted in all countries involving 12 key institutions.

The study furthermore concludes that the institutional, scientific and technical capacity in the region is diverse, but deemed as sufficient for undertaking a large scale assessment, pending

support and cooperation with a community of international scientific experts and institutions. The study has also ascertained that it is politically feasible to conduct a large scale study in the Greater Himalayan Region with ICIMOD as a legitimate and well recognized hub and coordinator of activities in the region in collaboration with relevant international expertise and the UN.



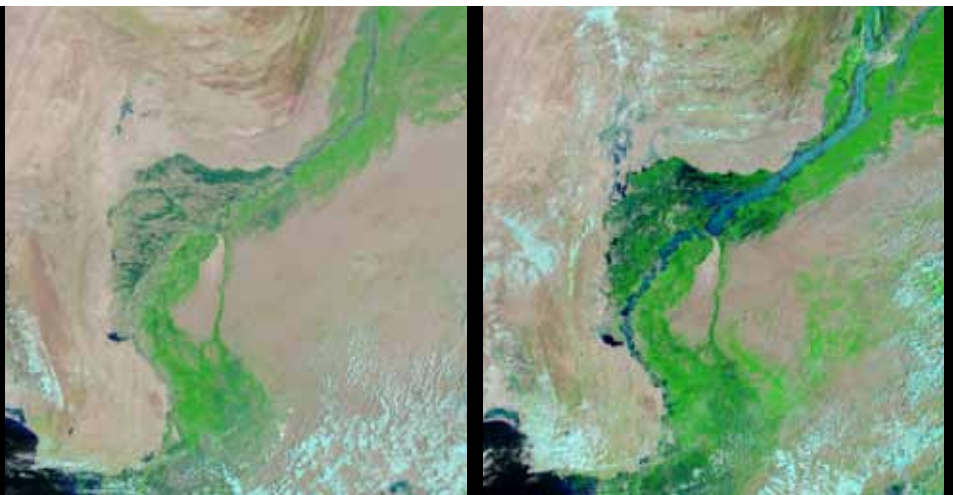
# Victims and affected people in Pakistan flood, August 2010





By early August 2010, two weeks of devastating monsoon rains had transformed the landscape of Pakistan, pushing rivers over their banks, inundating villages, washing away bridges and roads, destroying crops, and killing livestock. By August 12, 2010, more than 1,600 people had perished, according to news reports, and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) estimated that more than 14 million people had been affected in some way.

NASA images courtesy the MODIS Rapid Response Team at NASA GSFC. Caption by Michon Scott.



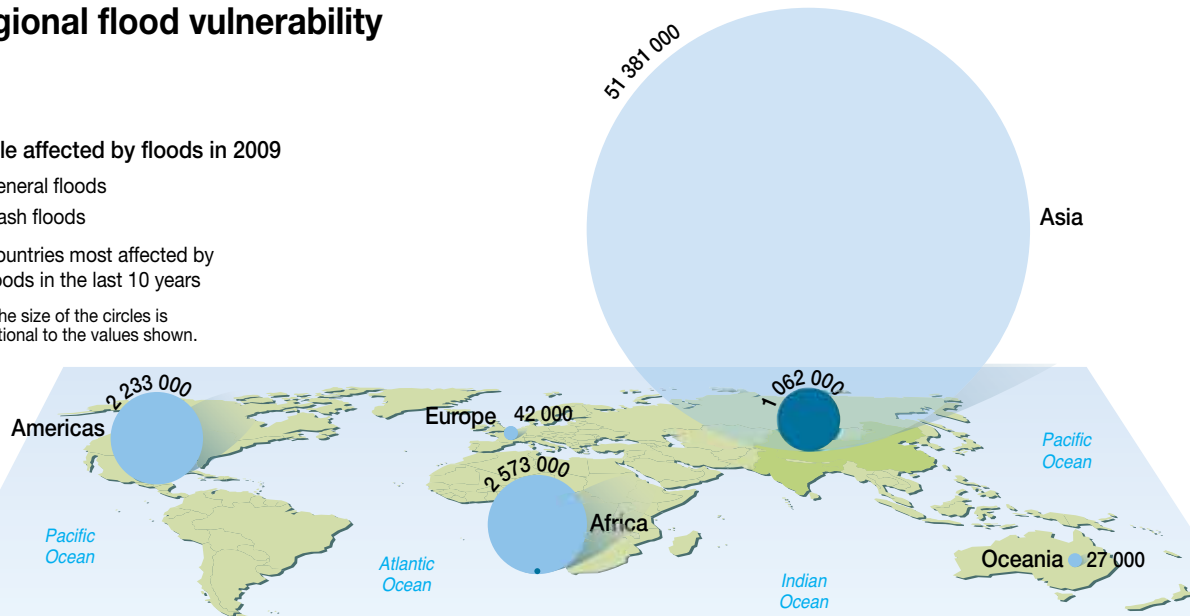
*Nowhere in the world are so many people affected so much by floods as in Asia – between 80 and 100 million people are every year considered vulnerable or affected directly or indirectly by floods in Asia.*

## Regional flood vulnerability

### People affected by floods in 2009

- General floods
- Flash floods
- Countries most affected by floods in the last 10 years

Note: the size of the circles is proportional to the values shown.



Source: "EM-DAT, The OFDA/CRED International Disaster Database.

IMJA GLACIER, 1950s



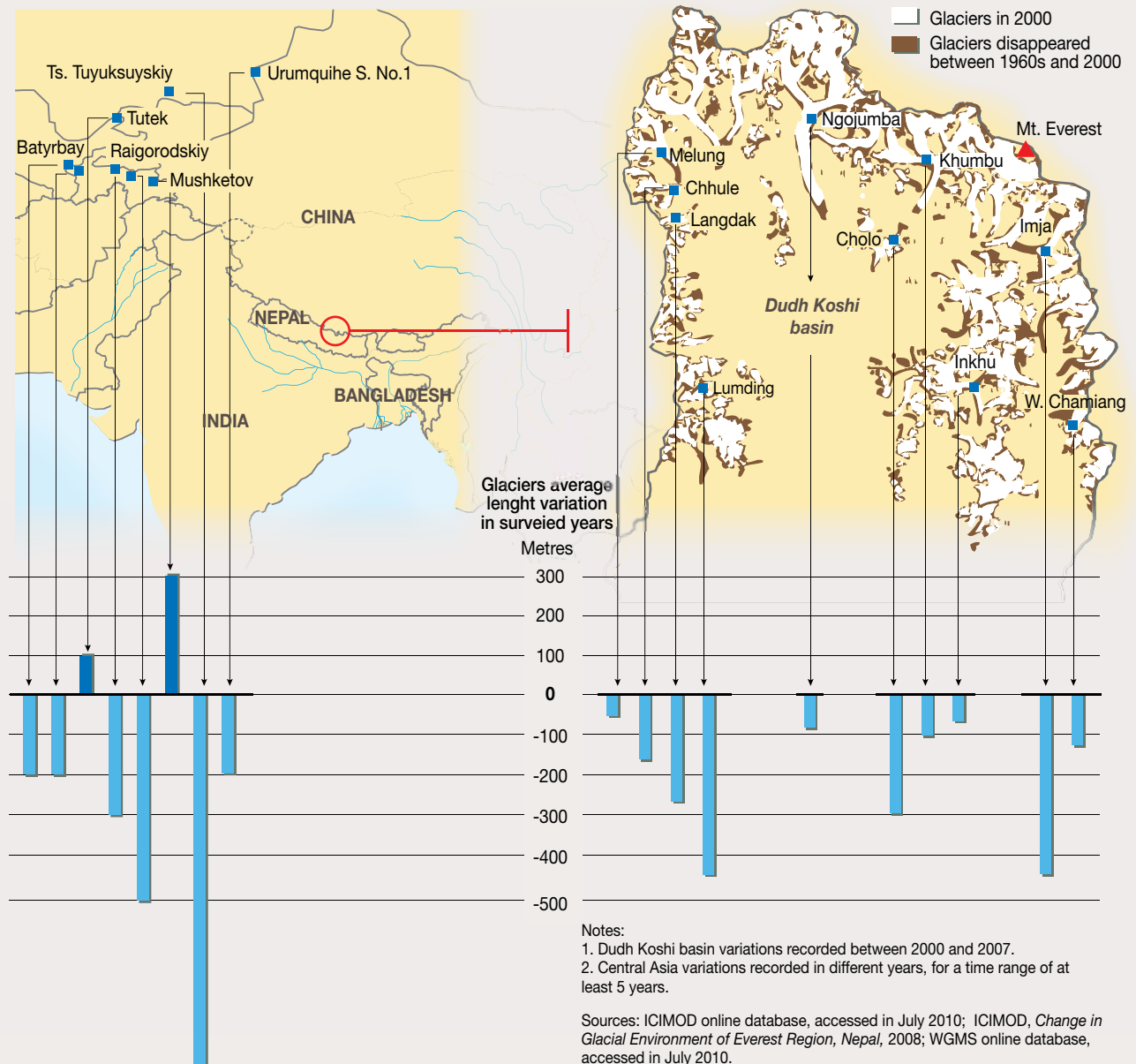
*Glaciers are generally receding in the Hindu Kush-Himalayas and Central Asia – with some exceptions in the Karakoram region.*

IMJA GLACIER, 2006

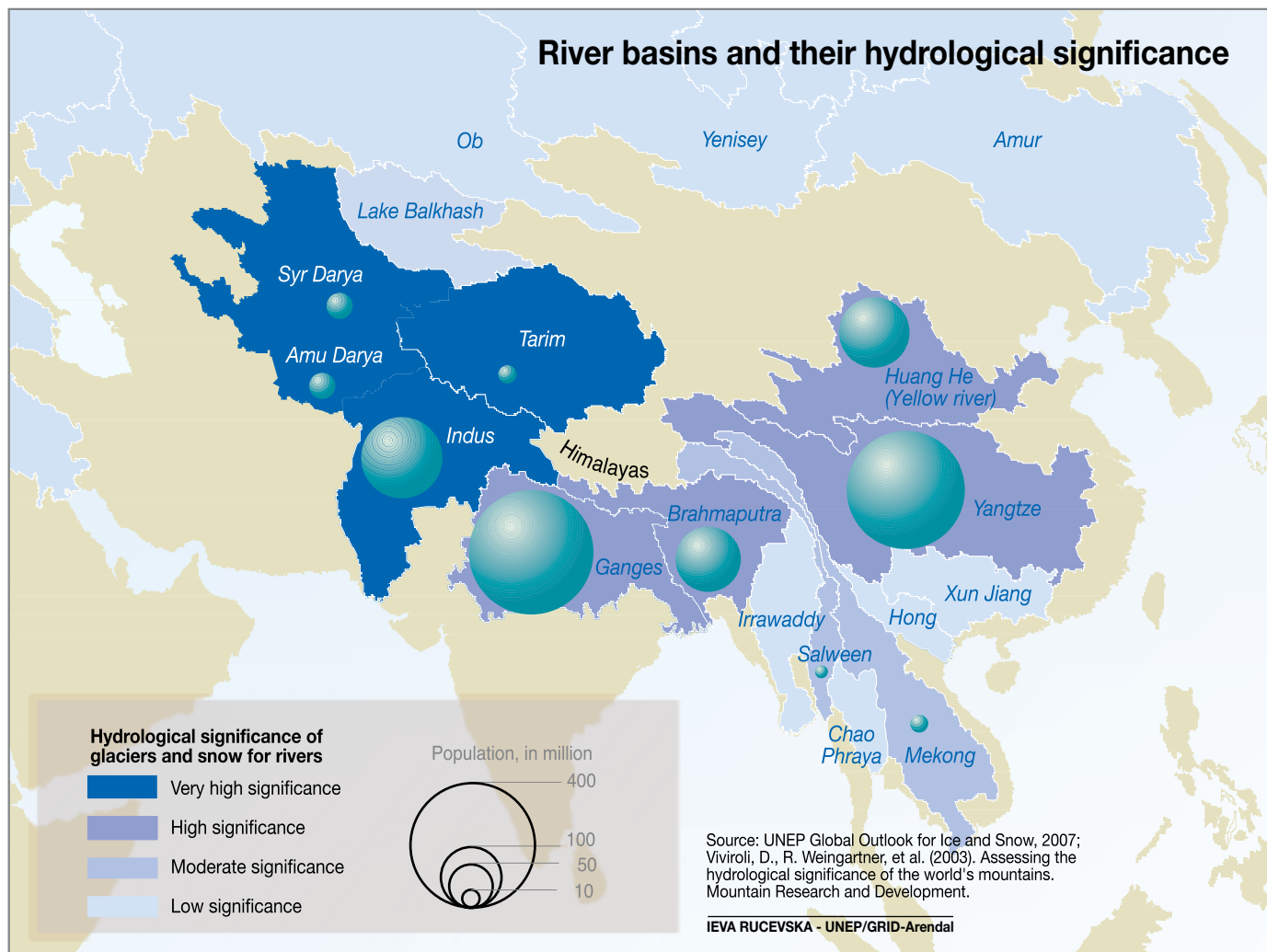




# Glacier recession and expansion in Hindu Kush-Himalayas and Central Asia



*The water resources play a substantial role in both regional and global food security, supplying water for over half of Asia's cereal production, and near 25% of World cereal production. The greater Himalayan region – “the roof of the world” – contains the most extensive and rugged high altitude areas on Earth, and the largest areas covered by glaciers and permafrost outside the Polar Regions. The water resources from this area drain through ten of the largest rivers in Asia, in which basins more than 1.3 billion people find their livelihoods.*











# TOO MUCH TOO LITTLE WATER

## HICIA ADAPTATION AND ASSESSMENT PROGRAMME 2011–2015

An adaptation and assessment programme 2011–2015 is urgently needed to address the rising challenges of how to adapt to too much and too little water in the Hindu Kush-Himalayas and Central Asia, covering five major responsibility sections as part of one holistic package requiring broad coordination with regional and sub-regional activities:

- 1) Improved scenarios for climate change variation and impacts;
- 2) Scenarios for water demand and availability;

- 3) Improved knowledge on climate change effects on biodiversity and ecosystem services;
- 4) Improved understanding of impacts on agro-ecology and food production systems and food security;
- 5) Critical factors for achieving sustainable adaptation.

A draft proposal for a large scale adaptation and assessment programme of climate change impacts with duration of approximately 5 years and a budget of USD 8 million is under development.





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