

# FUTURE OF THE KOSHI BASIN

Thinking about water in an age of uncertainty

ICIMOD



FOR MOUNTAINS AND PEOPLE



The Koshi river basin – shared by China, India, and Nepal – is home to iconic peaks, including Mount Everest, as well as significant water resources stored in glaciers, snow, and glacial lakes. These resources help make the Koshi basin the largest contributor of water flow to the mighty Ganges River. Spanning 88,000 square kilometers, the transboundary basin has high global ecological significance and is a source of water and livelihoods for over 40 million people.

## ISING WATER DEMAND, DISASTER RISKS AND AN UNCERTAIN FUTURE

The annual demand for water in the Koshi basin is 26 billion cubic meters and rising. The basin's future will include action to address climate change-related challenges and their impacts on water resources and disaster risks. Projected changes in snowfall and loss of glacier volume, erratic rainfall, intense water stress and extreme drought will have adverse effects on communities in the basin, as well as the region's economy.

## OPPORTUNITIES WE CAN TAKE

Action research, pilot initiatives, and knowledge forums for decision makers, researchers, and development practitioners undertaken by ICIMOD and its partners at sub-national, national, and regional levels highlighted a number of opportunities that we can take today to improve the wellbeing of local communities and promote the sustainable use of ecosystem goods and services in the basin.



Improving the management of water-related disasters through knowledge sharing and collaborative action across borders.



Building resilience of at-risk communities through action research on community-based flood early warning systems.



Improving water security and enhancing linkages between upstream and downstream areas through participatory planning processes, institutionalizing benefit sharing mechanisms, recharging drying springs in the mid-hills, and promoting gender and social equity in water use decision making.

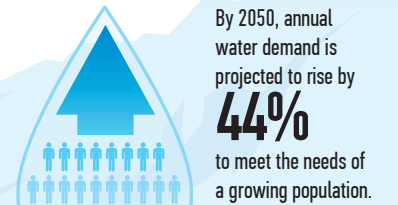
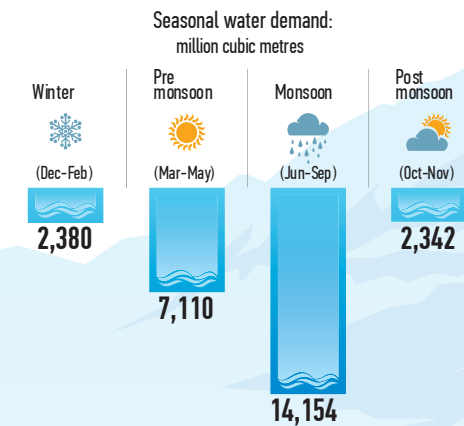
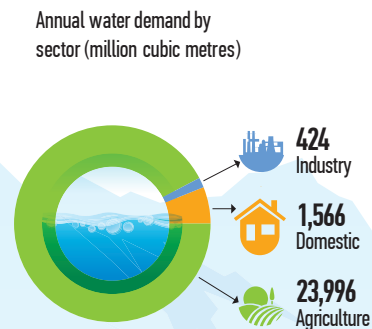
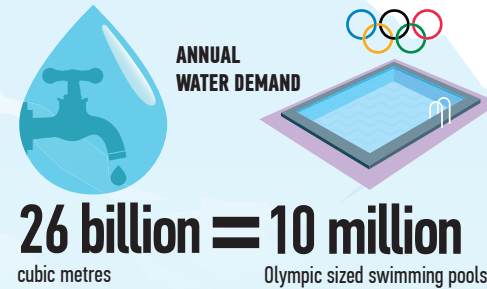
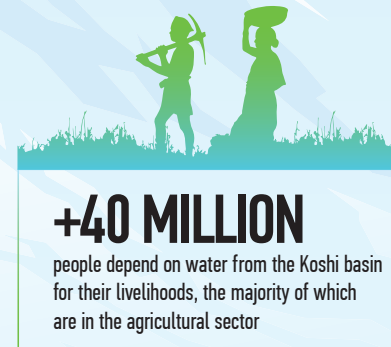
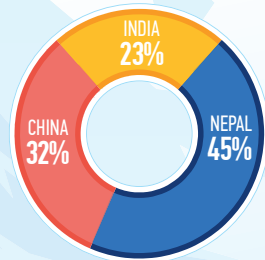
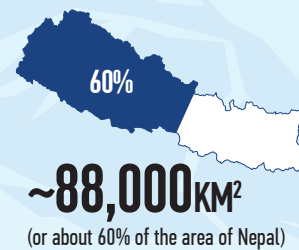


Meeting off-season water demand, preventing floods and droughts, and generating hydropower to spur economic development by developing water infrastructure.

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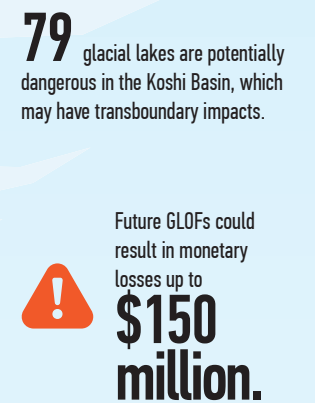
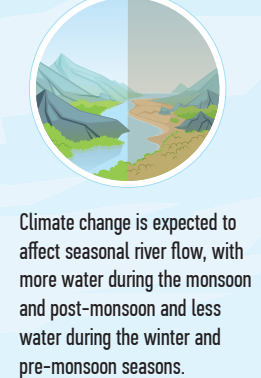
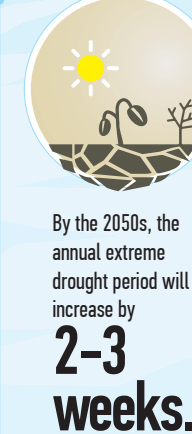
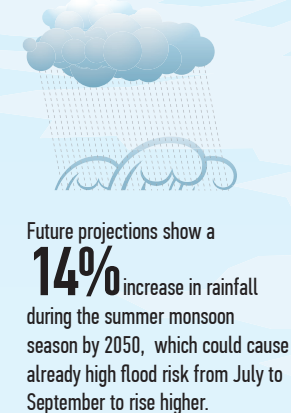
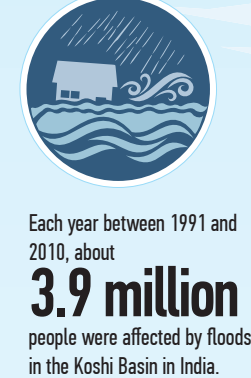
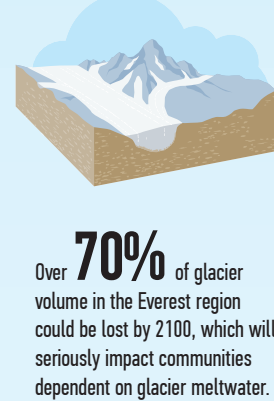
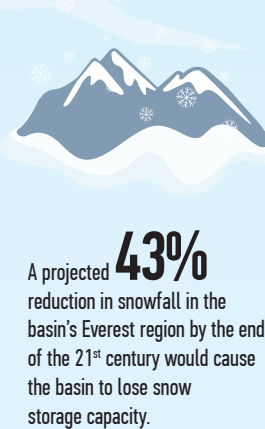
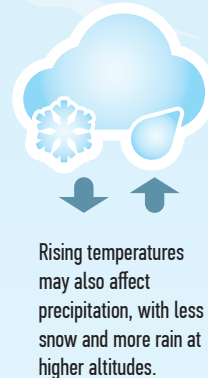
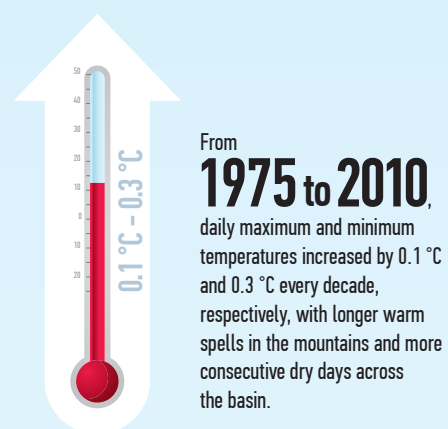
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## 1 WHAT WE KNOW ABOUT THE KOSHI RIVER BASIN



## 2 CHALLENGES WE FACE

Climate change is a major challenge to the Koshi basin's water resources and the lives of those dependent on them. The frequency and intensity of water extremes has increased, which has had a major impact on the region's water resources. Warming at higher altitudes also has direct impacts on glacier and snow melt, which may drastically change future water availability.

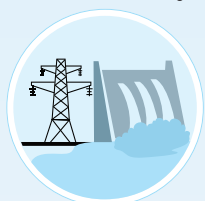


## 3 OPPORTUNITIES WE CAN TAKE

Potential changes in water availability can be effectively managed through water infrastructure development, greater regional cooperation, and better local planning and management of water resources.

Eleven planned or existing water infrastructure in Nepal can store excess monsoon water in the mountains to meet water demand in other seasons and reduce the risks of floods and droughts.

**8.4 billion**  
cubic metres of water, enough to satisfy the basins' projected demand by **2050**.

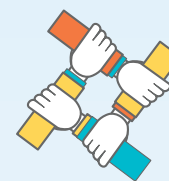


**30,000 GWh**  
of electricity – over 4.5 times Nepal's current annual demand and 2.5 times the projected demand in 2028

Cooperation between countries can help manage increasing water-related disaster risks.



A regional flood outlook system is helping governments in Nepal and India share knowledge and provide riverine flood warnings to at-risk communities.



Collaboration between China and Nepal to monitor GLOFs and landslides will help save lives and build the resilience of mountain livelihoods.



An approach combining scientific and community knowledge has helped communities in the midhills revive drying springs – vital sources of water in rural villages.



Local water use management plans that recognize the linkages between upstream and downstream villages and prioritize gender and social equity can improve local water planning and water security.



The Koshi Basin Programme at the International Centre for Integrated Mountain Development (ICIMOD) is supported by the Australian Government through the Sustainable Development Investment Portfolio for South Asia, as well as core funds of ICIMOD contributed by the governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Switzerland, and the United Kingdom.

The Koshi Basin Programme aims to contribute to inclusive poverty reduction in the Koshi basin by evaluating the range of possible water-related development pathways through evidence-based decision making and basin-wide cooperation considering climate change, hazards, and the provision of sustainable freshwater ecosystem services.

**For further information:**

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