

SUMMARY

Elevating river basin management and cooperation in the Hindu Kush Himalaya region

Insights and Recommendations

The Brahmaputra, Indus, and Ganga River basins are vital lifelines for the Hindu Kush Himalaya (HKH) region, supplying freshwater and essential ecosystem services to millions of people living in both the mountains and the vast downstream plains.

These are shared basins that transcend the borders of multiple countries. To enhance water cooperation in the HKH, all basin countries need to work together to ensure governance arrangements that benefit upstream and downstream communities, helping them adapt to a changing climate.

This summary presents the key points from three reports published by the International Centre for Integrated Mountain Development (ICIMOD) and Australian Water Partnership, in 2024, on **'Elevating river basin management and cooperation in the Hindu Kush Himalaya region'**. These reports look into the basin governance in the Brahmaputra, Ganges and the Indus River Basins.



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Brahmaputra

Yarlung Zangbo-Siang-Brahmaputra-Drangme Chu-Jamuna River Basin

The Yarlung Zangbo-Siang-Brahmaputra-Drangme Chu-Jamuna River Basin¹, known as the Brahmaputra River Basin, is shared by China, India, Bhutan, and Bangladesh. Approximately 114 million people depend on the Brahmaputra River Basin for drinking water, electricity, food, agriculture, and fishing: 58 million in Bangladesh, 39 million in India, 16 million in China and 700,000 in Bhutan. It is one of the world's most densely populated and least developed zones. The river is 2,880 km long, with over half of the basin (50.5%) lying in China, 33.6% in India, 8.1% in Bangladesh, and 7.8% in Bhutan. The basin accounts for 30% of India's freshwater sources with two of the world's 36 biodiversity hotspots. Hydropower potential is among the world's highest, with both China and India seeking to develop this resource.

Key challenges

- Accelerated glacier melt and shifting seasonal rainfall patterns with increasing monsoon rains and decreasing winter rainfall.
- Water scarcity and flooding driven by reduced dry season flows threaten irrigation, groundwater recharge, and fisheries. In Assam in north-eastern India and in Bangladesh, frequent floods and erosion cause heavy economic and human loss, with an average of 8,000 hectares of land lost each year.
- Ecosystem and biodiversity degradation driven by pollutants from household and industrial waste are threatening aquatic ecosystems. Similarly, sedimentation brought down by frequent flooding is affecting productivity in agriculture and fisheries.
- No basin-wide treaty exists. Data sharing is minimal, with agreements like China-India-Bangladesh limited to data about monsoon flows. Governance is not homogenous, which blocks coordinated action; it is centralised in some countries, and state led in India.
- Weak and poorly designed infrastructure, such as embankments, often fail during floods. Flooding, erosion, and migration intensify poverty and displacement.
- Indigenous communities who are dependent on the river face high ecological and livelihood risks.
- Basin-wide development ignores Indigenous knowledge, and gender equality and social inclusion (GESI) issues.

Recommendations

- Leverage existing bilateral ties to build trust and move towards basin-wide cooperation.
- Use shared goals such as inland navigation, disaster risk management, climate action, biodiversity conservation, agriculture, fisheries, and groundwater as entry points for collective dialogue.
- Link river governance to multilateral trade and investment opportunities to align diverse economic interests and open collaboration pathways.
- Apply Integrated River Basin Management (IRBM) and science-based planning to address upstream-downstream dynamics, integrate Nature-based Solutions (NbS), and mainstream gender and climate resilience into river basin management.
- Empower local voices by supporting Indigenous, women-led, and community-based approaches to livelihoods and decision-making, and strengthen civil society organisations for inclusive governance.
- Invest in resilience by upgrading flood protection, prioritising erosion control, and mainstreaming these approaches in planning and budgets.
- Expand multilateral platforms like the Yarlung Zangbo-Brahmaputra-Jamuna Network to include local communities and recognise and integrate Indigenous and local knowledge in basin planning.

¹ While we acknowledge the various names used by local communities to refer to the river, we aim to streamline references to the basin by combining the names of its longest and most widely recognised mainstream

The Ganga River Basin

The Ganga River flows through China, Nepal, India, and Bangladesh. This river basin supports over 600 million people in India (nearly half its population, of which, over 200 million are below the national poverty line), over 29 million in Nepal, and millions more in Bangladesh. It is more than 2,525 km in length and 1,086,000 km² in area. Of the total basin area, 79% is in India, 14% in Nepal, 4% in Bangladesh, and 3% in China. This basin is home to some of South Asia's poorest and most marginalised populations, reliant on fishing, agriculture, tourism, and aquatic ecosystem services. The Food and Agriculture Organization of the United Nations (FAO) ranks the region as one of the poorest globally.

Key challenges

- Worsening floods and droughts with climate change, severe pollution with rising threats from plastics, microplastics, and pharmaceutical contaminants.
- Natural disasters (floods and droughts) disproportionately affect disadvantaged groups while pollution and declining river health deepen vulnerability.
- Absence of multilateral water governance in the Basin with most of the agreements either ongoing or outdated.
- Major data gaps and restricted access hinder cooperation and lead to duplication and fragmentation of efforts.
- Basin discussions and treaties do not consider gender equality, disability and social inclusion (GEDSI). Many are male dominated, while the voices of disadvantaged groups remain largely unheard.

Recommendations

- Delink basin-scale issues from basin-level politics to promote progress and collaboration at both the scientific and local levels.
- The shared interests of addressing climate change, river transport, cultural practices, greater resilience to natural disasters, and hydropower generation are valuable rallying points for wider cooperation within the basin.
- Develop climate resilience to cope with increasingly frequent and more intense floods and droughts as a unifying catalyst for collaboration between stakeholders across the basin.
- Develop a collaborative 'State of the Ganga' report to help bring together various data and knowledge streams to promote positive solutions and progress among stakeholders across the basin.
- Gather data disaggregated by gender, poverty, ethnicity, disability, and other forms of vulnerability to promote inclusion and water management throughout the basin.





The Indus River Basin

Rising in the mountains of the HKH region, the Indus River runs for approximately 3,200 km and is a major source of water for drinking, household use, irrigation, and energy production. The Indus River Basin is home to 268 million people; nine of Pakistan's 10 largest cities lie within 50 km of the Indus. The basin is 1.1 million square kilometres (km²) in total, of which 52% lies in Pakistan; 33% in India; 8% in China; 6% in Afghanistan. In Pakistan, the Indus feeds the world's largest contiguous irrigation system, which supplies irrigation water to over 80% of Pakistan's arable land.

Agriculture employs approximately 75% of Pakistan's workforce and uses about 90% of water withdrawals from the Indus River. The river winds from high mountains into plains, shaping agriculture and ecology. The basin has an estimated hydropower potential of 35,700 MW, but only 12% is currently harnessed. Major dams, such as Tarbela, are encountering challenges related to diminished capacity as a result of sedimentation.

Key challenges

- Riparian countries –Afghanistan, China, India, Pakistan – face increasing water variability and climate risks.
- Water demand in India and Pakistan may rise by 50% by 2047, with climate change driving 15% of this increase.
- Pakistan faces a severe groundwater crisis, despite its aquifers holding 80 times more freshwater than its top three dams.
- Rising temperatures and evaporation are pushing surface water users to overexploit groundwater.
- Seawater intrusion in Sindh, south-eastern Pakistan, situated around 30–50 km inland, is degrading groundwater, reducing farm productivity, and threatening livelihoods.
- The impacts of climate change in the Indus River Basin are disproportionately severe for women, youth, persons with disabilities, and other socially disadvantaged groups.
- Groundwater stress has resulted in increasing tension between urban and rural stakeholders.

Recommendations

- Adopt a whole basin approach for better water accounting, strategic planning, and climate resilience.
- Strengthen climate and science diplomacy and regional data-sharing to build trust and cooperation among basin countries.
- Engage key institutions and networks, including National Institution for Transforming India (NITI Aayog), Water and Power Development Authority (WAPDA), Pakistan, the Chinese Academy of Sciences (CAS), National Water Affairs Regulation Authority (NWARA), Afghanistan, and the Upper Indus Basin Network.
- Recognise the cultural identity of rivers and integrate traditional reverence with modern water governance.
- Engage local communities, especially women, Indigenous people, and persons with disabilities in dialogues for basin management.
- Promote inclusive climate and science diplomacy for advancing integrated river basin management

The Basin Governance report is a result of collaboration between ICIMOD, Australian Water Partnership, and leading Australian institutions: e-Water, Aither, and the Institute for Study and Development Worldwide.

ICIMOD and its Regional Member Countries gratefully acknowledge the generous support of Austria, Norway, Sweden and Switzerland for core and programme funding, and the Adaptation Fund, Aerospace Information Research Institute of the Chinese Academy of Sciences, Asian Development Bank, Australia, Canada's International Development Research Centre, Carleton University, Finland, Germany, Global Affairs Canada, Global Biodiversity Information Facility, Japan's Sasakawa Peace Foundation, Oxfam Novib, the United Kingdom, United Nations Environment Programme, and United Nations Development Programme and the World Bank Group for project funding.