

# A Knowledge Hub to Address Transboundary Disaster Risk and Water Security Issues in the Koshi River Basin

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## Abstract

*The Koshi River Basin is critical for the livelihoods of millions of dependent communities however, is also under increasing stressors. The projected change in climatic variables here has the potential to adversely impact the basin's important services. These impacts are often transboundary in nature. There is an urgent need for the basin countries to identify common challenges and shared solutions for joint targeted actions. The Koshi DRR Knowledge Hub (KDKH) could provide this opportunity.*

## 1. Background

The Koshi River Basin (KRB) is a transboundary river basin shared by three countries – China, India, and Nepal. It contains numerous diverse ecosystems and protected areas, which support a range of species and related ecosystem services for dependent communities (Zhang et al., 2011). The KRB plays an important role in sustaining the lives and livelihoods of millions of people; however, the Koshi River also presents a high frequency of varied natural hazards that annually not only cause widespread damage to infrastructure but also result in considerable loss of human lives in the mountains and in low-lying areas of Nepal and Bihar, India. During the period from 1954 to 2014, Nepal experienced 41 flood events which killed almost 6,500 people. On similar lines, floods in Bihar claimed 9,500 lives between 1979 and 2017 (Government of Bihar, Disaster Management Department, 2019).



*Photographed by: Jitendra Bajracharya*

Past studies carried out for the KRB project a 4°C likely increase in temperature by the end of the century (Nepal, 2016), and a 5-25% likely increase in monsoon precipitation (Rajbhandari et al., 2016). In addition, the length of the wet and dry spells are expected to increase and decrease respectively (Agarwal et al., 2014). There is a significant temporal and spatial variability projected within the basin for precipitation, actual evapotranspiration, and water availability (Bharati et al., 2016), and the climate change-induced hazards in upstream mountain and hilly areas may lead to severe impacts in both upstream and downstream (low-lying) areas (Rasul & Hussain, 2015). Extreme weather events attributable to climate change and variability and environmental degradation have cascading impacts and are expected to magnify in frequency and intensity over the coming decade. Climate change in the KRB may impact water resources, agriculture, food security, and local livelihoods (Hussain et al., 2016). Women and marginalized communities are most vulnerable as they lack access to information and the capacity to prepare for disasters and deal with their aftermath. Although there have been numerous past and ongoing efforts to improve disaster risk reduction (DRR) in the KRB, related policies and practices need to be further strengthened for a resilient KRB.

## **2. Importance of transboundary cooperation**

The KRB has the potential to contribute to economic growth across boundaries. The scale of damage caused by the disasters highlights the need to enhance the resilience of the basin. There is limited available knowledge on this subject, and information sharing and data generation in the basin presents significant challenges. Therefore, there is an urgent need for transboundary cooperation to address DRR in the KRB. Accordingly, it is critically important to establish a common platform where stakeholders (e.g., policy makers, scientists, practitioners, researchers, academics, media personnel, and private-sector institutions) from neighbouring basin areas can share their experiences, challenges, and success stories to address hazards related to upstream and downstream linkages.

## **3. Koshi DRR Knowledge Hub – towards a resilient KRB**

The Koshi DRR Knowledge Hub (KDKH) has been conceptualized as a platform, led and driven by members to foster transboundary collaboration and promote science, policy, and practice interlinkage. The hub was developed through a consultative process with various stakeholders between 2017 and 2018 to address DRR in the basin as a multifaceted, interdisciplinary, and transboundary issue. The consultative process was led by the Koshi Basin Initiative (KBI) at the International Centre for Integrated Mountain Development (ICIMOD) with support from several partners across the basin who have been collaborating to comprehensively understand the disasters in the basin and enhance its resilience. During the KDKH's inception workshop in December 2018 (organized jointly by the Bihar State Disaster Management Authority (BSDMA), Sichuan University, China and ICIMOD) the hub's common vision, success indicators, working areas, and possible governance structure were discussed. Workshop participants proposed that the KBI at ICIMOD be designated the KDKH's Secretariat. ICIMOD accepted this proposal.

The platform aims to facilitate integration of research, policy, and practice among transboundary stakeholders to develop collaborative activities and projects that will improve decision making related to the management of the KRB. For example, joint projects can lead to better transboundary cooperation. The KDKH will be mobilized through the Transboundary Working Groups (TWGs) to identify areas for cooperation and knowledge sharing between institutions and stakeholders across the basin and contribute to transboundary cooperation.

The KDKH also prioritizes the engagement of graduate students, private-sector institutions, and the media in promoting transboundary cooperation. This approach is critical as young researchers can provide a different perspective, are more future oriented, and can be influenced to focus on transboundary cooperation to enrich the KDKH, keeping the transboundary perspective intact in their research philosophy. Further, Private-sector partners can be the building blocks for on-site investments to enhance the adaptive capacities of local communities. In addition, science-based journalism can play an important role in reducing the spread of misinformation across borders and work towards improving understanding between upstream and downstream communities.

#### **4. Way forward**

It is important for the KDKH to gradually grow as a platform for collaborative science- and evidence-based decision making in the long term. Initiating such collaboration is a pressing need, and the KDKH can help to deal with the transboundary impacts of floods, landslides, glacial lake outburst floods (GLOFs), and increasing sedimentation. In addition, promoting the sharing of diverse knowledge and adopting and fostering good practices collectively can serve as a good foundation for cooperation. This can be complemented by data generation and timely sharing of vital information between upstream and downstream agencies for preparedness and coordinated response to minimize the possible impact of climate change and associated disasters (Gupta et al., 2018). Enhancing transboundary cooperation through hubs like the KDKH can also lead to improved mutual understanding between nations and address common transboundary disasters.

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