

Notes on Atlas

Challenges of River Conservation (A Case of the Koshi River)

ISET-Nepal

The Koshi River

The Koshi River is one of the largest tributaries of the Ganga River. It has seven tributaries in Nepal: Indrawati, Tama Koshi, Dudh Koshi, Likhu, Sun Koshi, Arun and Tamor. They all meet at Tribeni and thereafter the river known as Sapta Koshi flows southwards into Nepal's Tarai and then into India. The Sapta Koshi joins the Ganga at Kursela, Bihar India. It extends from the plain of Bihar to Himalayan range in Nepal, the abode of Everest, Lohtse, Nupse and Gaurishankar all of which are over 8,000 meter high. The Sapta Koshi basin covers diverse geography, ecology and socio-culture.

The Koshi's avulsion of the surrounding land, caused by its shifting courses and annual flooding, has historically affected large geographical areas and populations both in Nepal's south-eastern plains and north Bihar. The Koshi River has shifted its course westward many times. Since 1730, it has shifted about 115 kilometers towards the west. The shifting has caused suffering for the people living in Bihar and Nepal. In Bihar flood affected victims also raise their voices to build measures to control floods.

The Koshi Treaty

In 1954, the governments of Nepal and India signed the Koshi Agreement. The agreement set the stage for construction of flood control embankments on both sides of the river, a barrage at Nepal-India border to regulate river flow and two canals from the barrage to irrigate lands in Bihar. A low-head hydropower plant was built in the eastern canal. Later, canals were built to irrigate land in Nepal's Sunsari, Morang and Saptari districts. Building the barrage and embankments were completed in 1964. The Koshi Agreement, faced criticism in Nepal for its inequitable benefit-sharing arrangement. In 1966, the agreement was revised and some of the contentious issues addressed, but dissatisfaction in Nepal continues to prevail even today. On the Indian side, too there are dissatisfaction against various unmet provisions of the agreement and on the low quality of services. The state agencies on both sides of the border often blame each other for deficit in the operation and maintenance of the infrastructure.

Flood Control

The flood control objective is not met. In the past, the embankments have breached many times. The breach of the Koshi embankment in 2008 in Nepal's Kushaha village caused major damage to areas along the eastern side of the Koshi River in Nepal and Bihar. Following the breach, the Koshi River began flowing initially through Nepal's Sunsari District, and then through the six districts of Supaul, Madhepura, Saharsha, Arariya, Purnia and Khagaria in Bihar towards the Ganga. It also carried with it sediment, deposited in the bed. The sediment-laden river led to widespread inundation, taking several human lives, adversely affecting livelihoods and affected socio-economic landscape. The floods deposited sand on a large tract of agricultural land in Sunsari district of Nepal and parts of the six districts of Bihar India. The sand-covered agriculture land remain unsuitable for crop cultivation for several years after the breach, and they remain unproductive even today.

Emerging Context

Today, both in Nepal and India, the social, political and ecological landscapes are different from 1954, when the two governments signed the Treaty. The expansion of roads, railways, communication and industrial complexes have provided some delivery of goods and services, and improved connectivity. But local ecology has been grossly fragmented and livelihood lost. Over the years, the marginalized people have faced major economic, social and environmental costs. Today Climate Change induced changes such as flood and droughts have introduced new constraints. The basin, because it is in a seismically active zone, faces the inherent risk of high magnitude earthquakes, and a risk that has implications for the design and cost of hydro-engineering structures. Decisions to develop riverine water resources of the basin, therefore, need to take cognizance of the inherent and new risks.

The Challenges

The basin faces following water management challenges:

- i) Multiple uses and users;
- ii) Sectoral approach in management;
- iii) Diverse interest of people and state; and
- iv) Diverse interests at transboundary level.

The needs for drinking water, irrigation, hydropower, ecosystem and other users compete with each other. The prevalent sectoral approach exacerbates competition and threatens the quality of aquatic health and biodiversity. Flood mitigation efforts using structural measures have caused localized suffering because of inundation, waterlogging and the deposition of unproductive sand. The fact that Nepal and India are at different stages of development and have different needs for water has affected how the two government choose to address emerging challenges related to the use and management of water, including that of the Koshi Basin. Bilateral mechanisms established to respond to common challenges are ineffective because these mechanisms include only government agencies and do not include other actors in the conversation. To adapt to these stresses, Nepal and India need to work together to create platform for dialogue and develop approaches sustainable management of transboundary river water.

Multilayered Dialogues

ISSET Nepal and GEAG India with the support from The Asia Foundation (TAF) conducted rounds of multilayered dialogues in upper and lower parts of the Koshi basin. The purpose was seeking commonality of views interest to address the emerging challenges in the Koshi basin. In these dialogues, following stakeholders were represented:

- Government;
- Ecologists;
- Private sector; and
- Local people.

Each had his/her own concern. Government complained that the private sector is not abiding by the rules laid out for environment protection; ecologists are concerned with the degrading ecology around the Koshi basin; the private sector is concerned about their investment and profit while the local people were worried about degrading river having that negatively impacted their livelihood. Recurring water induced disaster in the upstream and the downstream of the Koshi River threaten the local people.

Basically, two issues emerged key from the dialogues. They were:

- i) Increasing flood and inundation; and

- ii) Multiple users, multiple uses, multiple meanings and multiple values of water.

Perceptions of Different Stakeholders

a) *Flood and Inundation*

- **Government:** The Koshi River is managed as per the Nepal-India Treaty.
- **Ecologists:** Embankments have negatively affected the aquatic river ecology.
- **Private sector:** Flood, inundation, and river cutting deposit sand. It is not a problem. We can build hotel and resort in those areas like in desert areas.
- **Local people:** Flood and droughts event are recurring. We can do nothing. The government of both countries should seriously begin work for mitigating floods.

b) *Multiple use, Multiples users, Multiple layers and Multiple values*

- **Power Producers:** Hydropower is the source of energy for Nepal. It will replace use of fossil fuel and help in climate change mitigation with clean energy. Most of Nepali still use fuelwood for cooking and other needs. Hydro energy is needed to overcome energy poverty.
- **Environmentalists:** the river needs to be clean and flowing to sustain aquatic ecology.
- **Tourism Entrepreneurs:** Nepal's rivers are famous for kayaking and rafting. The rivers should be free and flowing. Many tourism related service providers depend on clean rivers.
- **Local People:** Water scarcity is becoming worse, and the ecological context is changing. It seems we do not know what will happen. Nobody attempts to explain us in the language we understand.

Common Perception

- In the downstream of the Koshi basin: Floods and droughts are increasing.
- Upstream of the Koshi basin: River should flow with clean water.
- Participant in all levels highlighted the need for a knowledge product of Koshi Basin in vernacular.

Atlas as a knowledge Product

The concern about the knowledge product led to the conceptualization of the Atlas.

The Atlas has following sections.

- Physical description, geography, rainfall and floods
- Ways of Responding to floods
- Koshi River Treaty
- Irrigation Details
- Embankment and Floods
- Nepal India cooperation
- Challenges of Management
- Sources and requirement of water
- Subject of the dialogue
- Convergence of views
- Balanced Management Framework
- Questions and Challenges and
- Concluding section

Achieving Balanced Waterscape

Water has multifaceted roles and importance; however, stakeholders do not have a solution to acknowledge and keep this importance. Hydropower is taking a center stage in the water resource development. Discussions on ways to keep rivers healthy is a continuous effort. Mechanism to regulate environmental impacts generated by haphazard hydropower development in upper Koshi basin is inadequate and there is no compliance to existing policies.

Different stakeholders have different views about rivers and how it should be used and managed. These views should be expressed in public dialogue in which various water users must take part. Such dialogue can help identify appropriate ways that can achieve economic development, social equity with ecological balance.

It is necessary to build partnership among various stakeholders of Nepal and India to achieve the goals of a healthy waterscape including the Koshi River. A systematic structured dialogue involving various stakeholders at the local, regional, national and transnational level is one way to achieve the goal of cooperative water management for maintaining quantity and quality of water for future generation.