

Conflict resolution and institutional arrangements for flood disaster management on Indo Nepal fringe: Focus on Kosi basin

N.M.P. Verma¹⁵

Ambedkar University

Introduction

Trans-boundary conflict is one of the chronic riparian problems in the Indo-Nepal region of South Asia. The construction of a barrage and canal system for irrigation in Nepal and India was initiated in 1953. An afflux bund was executed upstream of the barrage. Indian Government has also initiated eastern and western canal system along with embankments and powerhouses. The construction of embankment reduced loss of livelihood, facilitated irrigation, and enhanced employment, earnings and eco-security in the region. Despite this, problems have occurred in several areas including drainage congestion, rising riverbed and water-logging, severe floods, and recurring maintenance problems. A huge resource crisis has prevented the governments from adequately undertaking promotional and protective measures. Lack of coordination between the two countries has constrained agricultural development and enhanced economic insecurity in the region of upstream and downstream. Several contentious issues need attention. Examples include land dispute, flood planning, water discharge, and water management.

The purpose of this paper is to highlight riparian conflicts in Kosi basin of Indo-Nepal region. The paper focuses on characteristics of the basin, intensity of conflict, conflict minimization process, and areas of joint venture. It finds that institutional reform for minimum common governance (MCG) may yet lead to a sustainable solution. The paper proposes the modalities of MCG and its modus operandi and discusses plan appraisal, ex post evaluation, monitoring, and resource sharing. Planning by a single country may not solve this chronic problem.

The river Kosi originates in the Himalayas in Nepal. Its long tributaries merge together in Nepal. The river flows another 58 km before it enters India. Two hundred sixty km further down, it finally merges into the Ganga. In India, Kosi mainly passes through northern Bihar. Severe flooding during monsoon produces lateral shifts of uncertain directions up

¹⁵ Professor and Head, Department of Economics, Babasaheb Bhimrao Ambedkar University, India, email: nmpverma@rediffmail.com.

to 20 km a year which begets its name '*the river of great sorrow*' in South Asia. The river carries enormous silt loaded discharge during flood and spills into the plains of Indo-Nepal border. About 1,295 sq km of land in Nepal and 7,770 sq km of land in India have become unusable because of sand deposition.

Implications for agricultural development are severe because of sudden underflow or overflow of water in the catchment areas. Droughts or flooding can seriously affect production and cause immense damage to crops. This changes gross cropped area, and cropping pattern, and destabilizes production. This has potential to raise Indo-Bangladesh dispute over the Ganga water because of Farakka barrage project in West Bengal.

Similarly, projects on the Kosi and Gandak generated riparian conflicts between India and Nepal that were further accentuated by Tanakpur Barrage Project. Later, it was resolved slightly through Mahanadi Treaty 1996. Yet, the resolution to the Pancheswar Project is still not in sight. Conflicts may result from misunderstanding among the parties based on principles, sensitivity, ignorance, or indifference in information sharing. Disaster politics for electoral benefits have not been rare.

Characteristics of Kosi Basin

River Kosi is known as "river of immense sorrow" in India. It originates at an altitude of over 7,000 meters above the mean sea level in the Himalayas. The upper catchment is 62,620 sq km (85% of total area) which lies in Tibet and Nepal. Remaining 11,410 sq km falls in India and mainly passes through northern Bihar. The meandering flow of the Kosi has rendered about 1,295 sq km of land useless in Nepal and 7,770 sq km in India because of deposition of sand. The river is especially known for lateral migration and has shifted west. The river has shifted up to 20 km in a single year. As a result the river has ravaged lands to the tune of around 3,000 to 15,000 sq km in North Bihar and 800 to 1,000 sq km in Nepal. It has also generated huge scattered swamps. There are at least three factors responsible for the Kosi led flood in Indo-Nepal region. The river hardly passes a well-defined flood plain. Silt discharge is enormous. And, there is also excessive fluctuation in daily discharge during flood season, which ranges from 5 thousand cusecs to 26 thousand cusecs. The riverbed has silted up considerably over the years. At several points the ground level is lower than the river bank. The problem becomes severe when the Ganga and other rivers start overflowing.

In 1950, it was decided to construct a barrage and canal system for 1.65 million hectares of land for irrigation in Nepal and Bihar. However, only after 1953 a barrage across Kosi in Bhimnagar could be initiated. Also afflux bunds were executed upstream of the barrage in Nepal. India initiated eastern and western canal system along with enlargement and powerhouse and constructed 468 km of embankment. Irrigation has been assured to 1.30 million hectares of land in India and Nepal, and further 0.35 million hectares of the irrigation project is in process. Also, 1.015 million hectares flood prone area has been protected. Flood prone area in India is 40 million hectares. This constitutes about 25 percent of cultivable land. This magnitude is much higher in frequently flood prone states and regions including North Bihar. Flood water conservation can be very useful for irrigation of rabi crops after monsoon is over, and for aquaculture. But in order to store and consume flood water public private partnership is quite essential.

Damages Due To Heavy Rains And Floods During South West Monsoon In Bihar In 2002

Total Districts

38

Affected Districts

25

Taluks/blocks Affected

205

Villages affected

8,208

Areaaffected (Lakh Hectares)

18

Population Affected (Lakh)

158

Damagesto Cropped Area (Lakh Hectares)

8

Estimated Value of Crops (Rs. In Crores)

467

Damages to Houses (No. in Lakh)

3.96

EstimatedValues of Damages to Houses(Rs. In Crores)

451.98

EstimatedValues of Losses to Public Properties (Rs. In Crores)

296.21

Human Lives Lost

434

Cattle Lives Lost

1,380

Intensity of conflict

There are conceptual and divergent opinions for planning, design, construction and operations of joint projects on trans-boundary rivers. Both India and Nepal would naturally want to maximize benefits for themselves. In one case, a water treaty was signed and a joint project was set up to create a detailed database. Things work out fine sometimes but there is a lack of mutually agreeable regulatory mechanism which unnecessarily creates disputes. There is more rigidity instead of flexibility in deal-making. As with the Indus river basin between India and Pakistan and the Ganga basin between India and Bangladesh, a sincere agreement of mutual cooperation is required for India and Nepal. According to the views expressed by the local people of the countries, flood is not just a natural process. Often people cut the embankment for fear of floods in their own areas. Nepal is upstream and Bihar downstream. It is essential to take pre-flood measures, post-flood measures, and structural and non-structural measures. to reduce the depth and duration of a flood. The focus groups of local people have shown willingness to have joint authority in the area for safeguarding their welfare.

Conflict Minimization

From the viewpoint of hydrology and basin management, the political and geographical boundaries of the two countries could potentially be ignored and the whole basin or sub-basin may be treated as an integrated regional unit. A regional authority could be created consisting of technical and professional members from both the countries to plan for the development of the basin area. The finance for these purposes may be generated through proportionate contribution of the concerned countries. The regional body could have its own financial budget, time budget and may function as autonomous. It could be required to present its annual report to both the governments. The planning of the basin needs a comprehensive but flexible approach to develop a formula for water sharing for agricultural production, horticulture, animal husbandry, industrial growth, and growth of services including tourism and electricity. Nepal and India, like other countries of South Asia, depend for fresh water on monsoon which lasts about 90 days. The Kosi basin is basically a mono crop region. Due to monsoon floods, *kharif* crop is hardly grown.

Institutional mechanism for flood water conflict resolutions has become essential in these countries. There may be enough scope for consultations, convergence, mediation and adjudication.

The Indus water treaty between India and Pakistan for sharing the water of the Indus river has set up a permanent Indus commission. Despite political discords between these two nations it has been found that the commission has been working satisfactorily for the last 30 years. Similarly India and Bangladesh reached a long-term treaty on sharing of the Ganga water in 1996. With Kosi, places for possible storage of water flowing through the tributaries of the Ganga are in the political territory of Nepal. It has infrastructure for hydropower generation, irrigation extension, flood management and navigation. India and Nepal have already undertaken jointly the construction of the Pancheshwar project on the river Mahakali which is their common border in the west. The common minimum cooperation needs to be strengthened further in order to make the Kosi basin developed as well.

Areas of Joint Venture

There are several areas where Nepal and India could come forward for joint management of flood in general and economic development of the basin in particular. Construction of a major dam may be one option. The ecological and other effects of such a dam should be assessed at the planning stage. But a dam will help prevent chronic flood disaster that the region has seen. This may generate enough hydropower for economic activities like agriculture, industry and household consumption. A third area where both the countries can participate relates to surface irrigation. A major canal network may be constructed in such a manner that both the countries can develop agriculture, horticulture, aquaculture, tourism and encourage several other activities. It will facilitate the regulation of drinking water supply. The fourth area of development would be social forestry. This will help reduce soil erosion as well as provide a good source of earnings through production and sale of forest products. This system may be helpful along the railway track, canal and the catchments.

All these activities need heavy investment in water sector. An area of related investment would be setting up a water Research and Development Council jointly. South Asia is especially poor to carry out research in this sector which makes it desirable to create interdisciplinary regional institutions with a focus on water. A flexible and transparent institutional structure is the need of the day. Although the South Asian region does

have a few joint river commissions for management of water, new mechanisms should be placed to strengthen horizontal and vertical linkages which currently remain narrow and weak.

Conclusion

Flood disaster is a chronic problem for the Kosi basin of India and Nepal region. It is a tricky issue of trans-boundary water conflict. Both the countries are trying to resolve the contentious issues like pre-flood management, preparedness, post-flood management, structural measures and non-structural measures. But it has not been possible to manage flood disaster in the region. Economic vulnerability is further deepening, production losses and those due to social dislocation are on the rise and water saving devices to balance water access across different seasons are not available. An institutional change is direly required for resolving the trans- boundary conflicts. A joint authority needs to be set up. Enough authority should be granted to this body to deal with the most contentious issues, to put in place a minimum common program effectively, to seek the assistance of local beneficiaries, professionals and non-professionals in order to resolve the difficult issues first. In the second stage, the authority should formulate developmental water-related plans to promote regional environment. We hope the countries of South Asia can resolve the water issues in an eco-friendly manner.