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INDIA'S RIVER LINKING PROJECT: POSSIBLE IMPLICATIONS FOR BANGLADESH

Abstract

Low-lying, deltaic Bangladesh is a country of rivers where life, living and ecology are critically dependent on their waters. The unique nature of the country's water availability characteristics – plenty in the monsoon period and scarcity in the dry season - and its lower-riparian location in the Ganges-Brahmaputra-Meghna (GBM) river basins render Bangladesh precariously dependent on India for perennial fresh water flow. Bangladesh has been facing the brunt of steady reduction in water flows, particularly in its southwestern region, mainly due to the insensitive diversion of the Ganges waters at Farakka in India. This paper presents the details of India's river-linking project (RLP), highlighting both its Peninsular and Himalayan components. Having as a backdrop the prolonged adverse impact of the upstream withdrawal of the Ganges waters by India, the paper focuses on the likely socio-economic, environmental, political and other implications of the

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Indian mega-project for Bangladesh, particularly if and when it is implemented in its Himalayan segment. It has been argued here that India's RLP is highly likely to have disastrous consequences for Bangladesh even in greater magnitude and scale covering the whole of the country. It has been observed in the paper that regional cooperation is an important instrument to address the current situation in the GBM basins by working together for national development, collective gains and sustainable ecosystem. And, an all-round basin development approach in the eastern Himalayas could be an example of regional cooperation like in the Mekong river basin.

1. INTRODUCTION

Bangladesh is a land of rivers, sustaining life, livelihood and ecosystem of the country. An innumerable number of large, medium and small rivers, including the Ganges/Padma, the Meghna, the Brahmaputra/Jamuna, the Teesta, the Karnaphuli, the Surma, the Kushiara, and their tributaries and distributaries have criss-crossed the country. The total catchment area of the Ganges-Brahmaputra-Meghna (GBM) river systems is about 1.75 million square kilometers (km), of which Bangladesh accounts for 7%, China 9%, India 63%, Nepal 9%, and Bhutan 3%.¹ Out of 57 international rivers flowing through Bangladesh, 54 have originated in the Himalayan region and other parts of India. The rainwater in Bangladesh accounts for only 7% of the total fresh water flow. The remaining 93% come from transboundary river sources fed with rain and ice-melting flowing into the riverine system of Bangladesh.² All these facts starkly show the dependency of Bangladesh on the upper riparian countries in terms of water resources. Bangladesh is at the bottom of GBM river systems and, therefore, faces the brunt of both excessive and low water flows, occurring alternately during the monsoon (June to October) and the dry season (January to May). India is located in an advantageous position, as it is an upper riparian

¹ Qazi Kholiquzzaman Ahmad, "Indo-Bangladesh Cooperation on Transboundary Rivers: Revisiting the the Unrealized Opportunities and Unmitigated Challenges", *Asia Pacific Journal of Environment and Development*, Vol. 10 No. 2, 2003, pp. 45.

² Qazi Kholiquzzaman Ahmad, "Water Water Everywhere, How Much Do We Have To Drink", *The Daily Star*, 19 February 2006.

with most of the catchment area and as it surrounds Bangladesh on three sides. As such, India has taken advantage of this geo-physical factor in managing the water resources³ within its territory.

The upstream diversion of the Ganges water at Farakka in India during the dry season has been a major cause for the steep reduction of fresh water flows to southwest Bangladesh, salinity intrusion, desertification, arsenic contamination, and so on. India's recent plan for inter-linking transboundary rivers to create a new national water grid seeks to provide increased amount of surface water to different parts of the country. If the river-linking project (RLP) of India is implemented, it might bring some benefits to India but it is likely to add to the water-related miseries and sorrows in Bangladesh. Some Bangladesh scientists have estimated that even a 10 to 50 percent reduction in the water flow to the country could dry out great areas for most of the year. More than 80 percent farmers of Bangladesh grow rice and depend on water that has flowed from India.

Water experts and environmentalists from different parts of the world have expressed deep concerns about the RLP of India on environmental, socio-political, technical and legal grounds. Agriculture, forestry, fisheries and the entire ecosystem of Bangladesh are dependent on the flow of GBM rivers. It is feared that the very livable existence of Bangladesh would be threatened, if the RLP is implemented as proposed. There are examples of countries such as Russia, the United States of America, China, Spain, etc. that have implemented such country-wide river-linking projects and are paying environmental and socio-economic costs for those links. As such, the major objective of this paper is to assess the likely environmental and socio-economic impacts of the Indian RLP on Bangladesh as well as its political implications for India and other countries such as China, Nepal and Bhutan.

³ India constructed and commissioned 2256 dams during 1971-1990 out of the total 4291 dams. Detailed project report for Tipaimukh dam on the Barak in Manipur and Sapta Kosi dam project with Nepal have been completed. Furthermore, there are negotiations taking place between India and Nepal for Mahakhali (Pancheswar) and Karnali high dam project in Nepal without any concern for Bangladesh as a riparian country.

The paper is mainly based on secondary information and sources. As the RLP has not yet been implemented, the considered impacts and implications for both the upstream and downstream areas are only in the realm of possibility. In fact, the study is a reflection of the apprehension and concerns in Bangladesh triggered by the very proposal of RLP by India. The paper is likely to advance an understanding in Bangladesh of the merits and demerits of the Indian project. The second section of the paper gives an overview of the present status of the RLP, while the third section explores the magnitude of the possible implications of the Indian scheme for Bangladesh as also the GBM region. The last section posits some policy options for Bangladesh in terms of national measures and in the context of regional cooperation for water resources management.

2. INDIA'S RIVER-LINKING PROJECT: AN OVERVIEW

India's land area is about 329 million hectares (2.45% of the earth) and its population is about 1118.5 million, which is about 5.95%⁴ of that of the world. The present availability of utilizable surface and ground water is 690 km³ and 432 km³ respectively.⁵ The disparities in availability of per capita water utilization are significant between western and southern states of India. Irrigation is the biggest water consumer in that country. In the year 2050, it is likely to consume about 74% and India's food grains requirement by that year is estimated at 450 million tones. Again, the Government of India has projected that the total demand for water for various uses for 2010, 2025 and 2050 would be 813 km³, 1093 km³ and 1447 km³ respectively.⁶ Water experts of India have found a huge gap between the availability and requirements of water resources. They have considered that this gap cannot be diminished by conventional water resources management. As such, they hold the view that river inter-

⁴ Strategic Analysis of India's National River Linking Project, International Water Management Institute, available at: <http://nrlp.iwmi.org/main/Default.asp>, accessed on 12 June 2007.

⁵ C.P. Sinha, "Interlinking of Indian Rivers", in M. Feroze Ahmed *et al* (ed.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al.*, Dhaka, 2004, p. 58.

⁶ *Ibid.*

linking is the only tangible option for India's water resources management.

The proposal for interlinking of rivers is not new. The history of the proposed project as a concept goes back to the British-Indian government. Sir Arthur Cotton first mooted it in 1839 primarily for promoting inland navigation. He was concerned mainly about navigation, although irrigation was also part of it. The concept did not make any headway during the British Raj. K. L. Rao revived the idea of the Ganges-Cauvery link proposal in 1972. Obviously, the focus shifted from navigation to the issue of water scarcity in the south of the country.⁷ He prepared a proposal for the national water grid, which came to be known as the Ganges-Cauvery link. The proposal consisted of a 2,640km-long link that envisaged withdrawal of 1,680m³/s of flood flows of the Ganges near Patna, pumping of 1400m³/s of this water over a head of 450m for transfer to the peninsular region and utilizing the remaining 280m³/s in the Ganges basin itself.⁸ However, the proposal was dumped by the Ministry of Water Resources, as the Central Water Commission found it to be grossly under-estimated. In 1977, Captain Dastur proposed construction of two canals, named Garland canal (9,300km long) and Himalayan canal (4,200km long and 300m wide). The southern Garland canal would connect the two systems through pipelines near Delhi and Patna. However, all these proposals were given up due to lack of techno-economic feasibility.

A national perspective for water development was framed by the Ministry of Water Resources of India in 1980. National Water Development Agency (NWDA) was created in 1982 and registered under Societies Act to carry out surveys and prepare feasibility reports on RLP. National Water Policy stated in September 1987 that its prime goal was to inter-link national rivers. National Commission for Integrated Water Resource Development Plan prepared a report for RLP in 1999. Former Indian President A.P.J. Abdul Kalam in his Independence Day speech in 2002 urged the concerned authorities to complete the project within the scheduled time frame. The issue got momentum in political, legislative and civil domains after the

⁷ *Ibid.*

⁸ *Ibid.*

Supreme Court of India, in connection with a public interest litigation, passed an order on 31 October 2002 for completion of the project of inter-linking of rivers within a period of 12 years. The orders that were passed by this Apex Court for putting the feasibility reports on website were dated 26 April 2004, 01 November 2004 and 08 April 2005. The advantage of putting the feasibility reports on the website was also indicated in the order dated 08 April 2005.⁹ The Bench gave targets for completion of a detailed project report by 2006 and implementation of the same by December 2016. The Bharatiya Janata Party (BJP)-led National Democratic Alliance government came up with a revised National Water Policy in April 2002 and appointed a Special Task Force in December 2002 to monitor the project of inter-linking India's major rivers, with Suresh Prabhu as its Chairperson. The Task Force had the following terms of reference:¹⁰

- To provide guidance on norms of up-raising of individual projects in respect of economic liability, socio-economic impacts, environmental impacts and preparation of re-settlement plans;
- Devise suitable mechanisms for bringing about a speedy consensus among the states;
- Privatise different project components for preparation of detailed project reports and implementation;
- Propose suitable organizational structures for implementing the projects;
- Consider various funding, modalities; and
- Consider international dimensions that may be involved in some components of the project.

A full-fledged cost benefit analysis would follow the feasibility studies and detailed project reports. The Task Force came up with an immediate action plan by mid-2003. The position of the Congress-led alliance government of India on the RLP is not clear to Bangladesh. However, it is certainly understood in Dhaka that New Delhi has not abandoned the project.

⁹ Indian River Linking in Supreme Court, available at: <http://nwda.gov.in/indexmain.asp?linkid=978&langid=1>, accessed on 15 February 2007.

¹⁰ Task Force for Indian River Linking Project, available at: www.sdnpsd.org/river_basin/bangladesh/national_workshop-river_linking_project_india.htm, accessed on 10 September 2006.

The RLP has spawned a series of research programmes involving a broad alliance of some 100-120 Indian researchers and institutions. NWDA has completed 137 water balance studies of basins/sub-basins, 71 water balance studies at diversion points, 74 toposheet studies of link alignments and 31 pre-feasibility studies of links out of which 30 links have been identified for preparation of feasibility reports¹¹. NWDA has completed feasibility studies on seven links of the Peninsular component and even provided some technical and environmental information on the rest of the links. The feasibility studies of the fourteen Himalayan links were expected to be completed by December 2005. However, no information is available on those links.

The National Perspective Plan of India for RLP comprises of 2 components, namely – Peninsular Rivers Development and Himalayan Rivers Development.

1. Peninsular Rivers Development: The Peninsular rivers development consists of 16 link canals.¹² This development is expected to provide additional irrigation of about 13 million hectares (ha) and is expected to generate about 4,000 megawatt (MW) of power.¹³ The scheme is divided into four major parts, such as

- a) Inter-linking of Mahanadi-Godavari-Krishna-Cauvery rivers and building storage at potential sites in these basins: This part involves major inter-linking of the river systems where surpluses from the Mahanadi and the Godavari are intended to be transferred to the needy areas of the south.
- b) This scheme envisages construction of as optimal storage as possible on these streams and inter-linking them to make available appreciable quantum of water for transfer to areas where additional water is needed. The scheme provides for taking water canal to the metropolitan areas in Maharashtra.

¹¹ *Report on River Linking*, Institute Water Modeling 2004, available at: <http://nrlp.org/main/reports.asp>, accessed on 16 September 2006.

¹² India's National River-Linking Project, available at: <http://nrlp.iwmi.org/main.asp>, accessed on 05 January, 2007.

¹³ The National Perspective of India, Ministry of Water Resources, Government of India, available at: <http://wrmin.nic.in/>, accessed on 05 January, 2007.

- c) Inter-linking of Ken-Chambal: The scheme provides for a water grid for Madhya Pradesh and Uttar Pradesh and inter-linking canal backed up by as many storages as possible.
- d) Diversion of other west-flowing rivers: The high rainfall on the “Western Ghats” runs down into numerous streams which discharge into the Arabian Sea. The construction of an interlinking canal system backed up by adequate storage could be planned to meet all requirements of Kerala as also for transfer of some waters towards east to meet the needs of droughts.

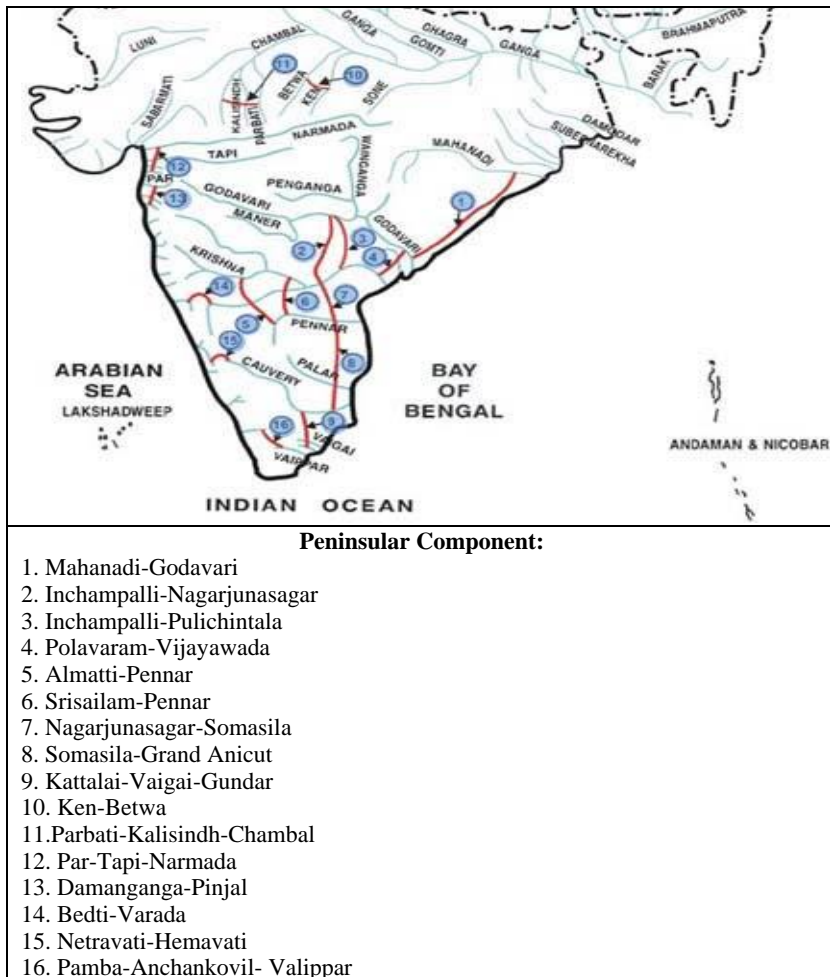


Figure 1: Links of the Peninsular component of RLP.

2. Himalayan Rivers Development: The Himalayan rivers component consists of 14 link canals. It envisages construction of storages on the principal tributaries of the Ganges and the Brahmaputra in India and Nepal, along with inter-linking canal systems to transfer surplus flows of the eastern tributaries of the Ganges to the west, apart from linking of the main Brahmaputra and its tributaries with the Ganges and the Ganges with the Mahanadi.

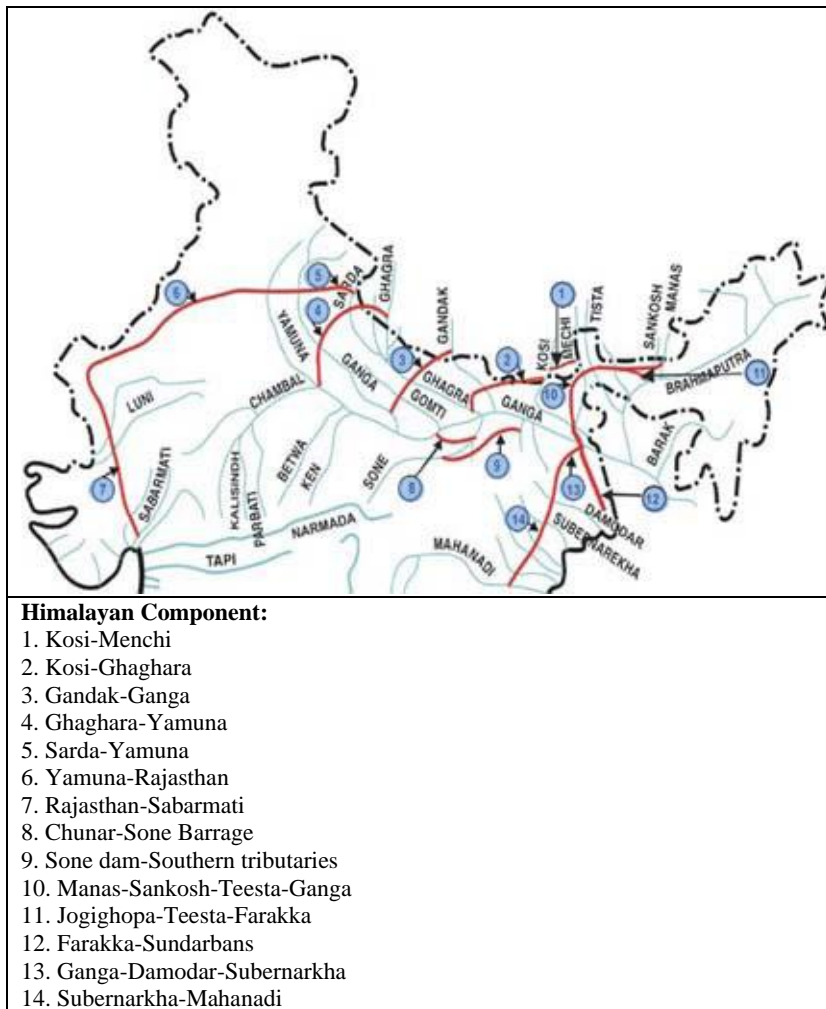


Figure 2: Links of the Himalayan component of RLP.

This component would provide additional irrigation of about 22 million ha and generation of about 30,000 MW of hydropower, beside providing flood control in the Ganges-Brahmaputra basins. It would also provide the necessary discharge for augmentation of flows at Farakka required to flush the Kolkata port and for the inland navigation facilities across the country.

The RLP has been designed for connecting 38 rivers through 30 links, 9000km-long canals, 74 reservoirs and several embankments by 2016.

The plan is estimated to cost between US\$112 billion to US\$200 billion. According to the speech of Indian President A.P.J. Abdul Kalam on the eve of Independence Day 2002, networking of rivers is under active consideration and first mission of Indian government. Thus, non-resident Indians and people of Indian origin have largely supported the RLP both by giving technical support and as lobbyists for collecting funds. The Indian engineers in the US, headed by Texan power engineer Sam Kannappan, are lobbying President Bush to persuade the World Bank to back the scheme of RLP.¹⁴ They have assurance of assistance from Congressmen of the US that they will assist in the implementation of the Indian project also through USAID. Furthermore, India has a strong lobby inside the World Bank.¹⁵ As a result, it can influence the water projects of the World Bank without any concern (both environmental and socio-economic) for the lower riparian country.

3. IMPLICATIONS OF INDIA'S RIVER LINKING PROJECT FOR BANGLADESH

The proposed RLP of India in its Himalayan section has significant impacts on the socio-economic, ecological, environmental, biological and eventually morphological

¹⁴ This information was given by the Union Minister of State for Water Resources, Smt. Bijoy Chakravarty in a written reply to a question from Shri B. Mallikarjunappa in the Lok Sabha, available at <http://www.rediff.com>, accessed on 6 December, 2006.

¹⁵ Jasim Uddin, "Upstream Water Diversion: A Disaster for Bangladesh", *The New Nation*, 11 September 2006.

characteristics of the river system in Bangladesh. The impacts that may come are discussed below.

3.1. Environmental Impacts

The natural system of Bangladesh is mostly dominated by its water resources. It is a key, strategic natural resource of the country. The major sources of available water are transboundary rivers (76.5%), rainwater (23%) and groundwater (1.5%).¹⁶ Demand for water allocation and extraction steadily increases due to the huge population growth in Bangladesh. Different stakeholders are competing for meeting up their needs. But due to water diversion by upstream countries (India and Nepal), inadequate quantum of water reaches down to the downstream Bangladesh. Notably, the unilateral and disproportionate water diversion at Farakka has severely affected the natural flow in the downstream reaches of the Ganges. The Ganges and most of its distributaries have been severely suffering from surface water deficit; even some of them have nearly died and some get dried up during the dry season.¹⁷ Agriculture, navigation, irrigation, fisheries, forestry, industrial activities, salinity intrusion of the coastal rivers, ground water depletion, riverbed aggravation, coastal erosion, sedimentation and other economic activities as well as society have been degraded greatly. The western half of Bangladesh has already been severely affected by the Farakka barrage constructed by India on its portion of the Ganges river. Diversion of the flow of the Brahmaputra and other rivers in Indian Himalayan region would spell even a greater disaster for the eastern half of Bangladesh, for the lower riparian receives much more water from these transboundary rivers than from the Ganges. This is likely to have adverse effects on the environment like the following.

¹⁶ NWMP, National Water Resources Management Plan, Bangladesh, Main Report, Vol. 2, July 2001.

¹⁷ Ainun Nishat and F.K. Pasha, "A Review of the Ganges Treaty of 1996", the paper presented at the seminar in the International Specialty Conference on Globalisation and Water Resources Management: the changing value of water, University of Dundee, 6-8 August 2001, available at <http://www.awara.org/proceedings/dundeed01/Documents/Pashafinal.pdf>, accessed on 12 March 2007.

3.1.1. Reduction in Water Flow of the River

The withdrawal of water by India at Farakka has induced significant changes in the hydrological system of the Ganges basin in Bangladesh. Up to 40% of the dry season flow of the Ganges has been diverted by India, following the completion of the Farakka barrage in 1974.¹⁸ It is also observed that groundwater sinking rate is at least 0.5 m/year and a total dropping of water table is about 10 metres in the southwestern districts of Bangladesh.¹⁹ The river-linking project would further reduce the inflow of freshwater from the upstream side. Reduction in quantity of surface water flow will also cause reduction in ground water level. Surface water pollution is one of the major problems for Bangladesh. The polluted rivers are the Buriganga, the Sitalakhya, the Balu, the Karnaphuli and the Rupsha.²⁰ Dissolved oxygen level of these rivers becomes very low during the dry season. The pollution level of these rivers has increased due to low water volume and inadequate flushing. The pollution level of the Jamuna and the Old Brahmaputra rivers may also increase due to decreased water flow once the RLP is implemented in the Himalayan segment.

3.1.2. Impact on River Morphology

Almost all the rivers of Bangladesh are characterised by its small bed slope and shallow but very wide section. The combination of erosion and sedimentation in the river channel and on its floodplain causes uplifting of riverbed. As the flow decreases, the power of a river to carry material decreases and the river loses its ability to transport large material. Rivers will gradually lose their water flow

¹⁸ A. K. Azad and J. Sultana, "Potential Impacts of Indian River-Linking Plan on Ecosystem of the Sundarbans", in M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, p- 175.

¹⁹ Tajkera Khatun, "The Ganges Water Withdrawal in the Upstream at Farakka and Its Impact in the Down Stream Bangladesh", in M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, p-231.

²⁰ A. A. Rahman *et al*, "Bangladesh State of the Environment 2001" UNEP, Bangkok, 2001, p. 55.

speed and deposit sediment in the riverbed. The sediment carrying capacity of the rivers will thus decrease day by day. Upstream water diversion will turn most rivers into narrow channels with their beds covered with huge sediment. As the steepness of the riverbank decreases continuously, the sediments become very fine consisting mostly of sand, silt and clay. This also causes riverbank erosion. A study on the Tetulia river has found that its riverbed has been lifted up in the course of last 10 years (1994-2004) by 2-3 feet.²¹ This observation is indicative of the future of river morphology in Bangladesh, if and when the Indian RLP is implemented.

3.1.3. Salinity Intrusion in Coastal Areas

Transfer of water by Indian RLP will cause substantial decrease in the fresh water flow to the downstream region in Bangladesh. As a result, the southern part of Bangladesh will be subjected to greater risks of saline water intrusion and water shortage. A study on the Brahmaputra river shows that decrease in the flows in January, February and March is respectively 40%, 45% and 30% below the 80% dependable flows.²² Such an extent of reduced flow would be extremely detrimental in terms of saline water. Results from this research indicate what a disastrous situation could arise due to transfer of water from the Brahmaputra basin to other basin in India

²¹ Md. Mashud Hossain and Kazi Madina, "Environmental Impact of Indian River Linking Project in Tetulia Distributary", in M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, p- 204

²² As per National Water Management Plan of Bangladesh, 5 months period from June to October is considered as wet season and 7 months period from November to May as dry season. In planning studies of Bangladesh, 80% dependable flow is used as a measure of water availability. Prediction of impact of water transfer has been made for 80% dependable flow of Brahmaputra at Bahadurabad by assuming water transfer at constant rate of 1000 m/s. Actual rate of transfer is likely to be much larger, see more in Jahir Uddin Chowdhury and Arpana Rani Datta, "Effect of Transfer of Brahmaputra Water by Indian RLP on Saline Water Intrusion", in M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, pp. 143-156

as proposed in the RLP.

Evidently, diversion of water through the Farakka barrage has drastically worsened the salinity problem in the southwest region of Bangladesh. Decreased freshwater flows down the Padma and its distributaries have resulted in increased saline intrusion, particularly in the dry season. Salinity front has, in fact, travelled up to 280km upstream from sea-coast.²³ The decreased supply of water through the Gorai river is largely responsible for the increase of salinity in the southwest region of Bangladesh. The RLP would further increase the salinity level of both river and ground water not only in the southwest but also across the entire southern belt of Bangladesh.

3.1.4. Arsenic Contamination

Arsenic contamination is a global problem, which now appears to be a serious problem in Bangladesh too. Groundwater of Bangladesh is naturally rich in hardness, iron and manganese. As ground water aquifers start to drop, oxygen immediately fills up the gap. This oxygen exposes for the liberation of arsenic from its complex pyrite (FeS_2) into water.²⁴ As the ground water table goes down, arsenic contaminated water will come up. Therefore, the content of arsenic in ground water would increase and the risk of arsenic poisoning throughout Bangladesh would also increase. Currently, as many as 61 out of 64 districts of Bangladesh are arsenic contaminated. About 1.5 to 2.5 million tube-wells are estimated to be affected and 35 million people are at risk.²⁵ A survey conducted by

²³ During 1975-1992, in the Khulna region, compared to pre-Farakka average, salinity has increased as much as 1800% for some months of dry season, see more in A. K. Azad *et al*, "Potential Impacts of Indian River Linking Plan on Ecosystem of Sundarbans", p-176.

²⁴ This hypothesis was given by Prof. Dipankar Chakrabarty, Jadavpur University with the advent of irrigation in the 1960s. It was quoted by Md. Abul Kalam Azad and Ashrafal Alam, "Environmental Impact of India's River Linking Project on Bangladesh", in M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, p. 215.

²⁵ Arsenic Contamination of Ground Water in Bangladesh, Final Report 2001, Vol 1: Summary, Department of Public Health and Engineering, Government of Bangladesh, Dhaka, pp. 1-15.

Ground Water Task Force reported that 7 out of 12 most arsenic contaminated districts are located entirely in the Ganges basin where more than 70% tube-wells exceed the permissible limits of 50µg/litre. The implementation of inter-basin river-linking project would only increase the risk to a greater extent.

3.1.5. Indian RLP and Climate Change

Climate change is only one of the multitudes of factors likely to affect the natural systems and thus the future development of human society. Rivers of the world are one of the most vulnerable environments that are going to be affected by the process of climate change. According to the United Nations Environment Programme, global average temperature has risen by 0.6⁰ Celsius in the last century. It is affecting the ice cover in the poles and the glaciers in the mountains. It is evident from different studies how global warming affects the ice and snow covers in the huge Himalayan river systems. The sea level rise in the Bay of Bengal is about 5 to 7 millimetres per year.²⁶ Sea level rise has both short-term and long-term influences. In the short run, water flow, storage and discharge will be increased tremendously in the entire river system but these will decrease in the long run due to receding of the mountain glaciers and snow cover in the Himalayan river basins. As much as it would be desirable to reduce flooding by any of the various engineering strategies, the frequency and intensity of flooding are likely to increase in the future.²⁷ A study on the upper Indus basin has established that the mean flow is expected to increase by 14%-19% in the first decades but it will decline by 30%-90% in the future.²⁸ The headwaters of the Brahmaputra will also decline gradually. The

²⁶ K. O. Emery and D.G. Aubery, "Tide Gauges of India", *Journal of Coastal Research*, Vol. 5, No. 3, 1989 p. 489.

²⁷ Md. Khalequzaman, "Flood Control in Bangladesh Through Best Management Practices", Feroze Ahmed (ed.), *Bangladesh Environment 2000*, Bangladesh Paribesh Andolon, 2000, pp. 523-535.

²⁸ See more details in K.W.G. Rekha Nianthi and Jahid Hussain, "Impact of Climate Change on Rivers with Special Reference to River-linking Project" in M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA, *et al*, Dhaka, 2004, p. 271.

situation will not be different in the Ganges basin either. As such, the efficacy of the Indian RLP comes under many critical questions.

3.2. Economic Impacts

The main objective of the RLP is to provide additional 22.20 million ha metres of water to increase irrigation coverage from 113 to 135 million ha in India. This will go a long way in producing more food and providing additional generation of about 34,000 MW of hydropower. As great benefits of this project, India is also expecting that this project will improve its flood situation and increase navigability. Furthermore, this will improve ground water level for which they will be able to irrigate an additional 0.8 million ha land. However, the scenario is different for Bangladesh. As mentioned, withdrawal of the Ganges water by India has severely affected the natural flow of the downstream rivers and its distributaries causing severe adverse effects on agricultural production, fisheries, forestry, industrial activities, inland navigation, biodiversity, wetlands, and so on in Bangladesh. This has, in turn, huge economic impact on Bangladesh's national income. The estimated total loss over the period 1976-2004 is about 8, 00,000 million BDT (Bangladesh Taka – BDT - is Bangladesh currency and the exchange rate was 1 \$US=58.50 BDT).²⁹

Admittedly, due to the lack of sector-wise data, it is difficult to forecast the total amount of economic loss due to the future diversion of water upstream. However, it is possible, in the light of the present situation, to say as to which sectors are likely to be affected more by Indian RLP. A sector-wise discussion follows.

3.2.1. Loss in Agricultural Production

Soil fertility in Bangladesh has considerably deteriorated and, consequently, the crop yield has decreased. The annual loss from agricultural sector is estimated to be about US\$ 650 million. The government of Bangladesh estimated the loss to be in the region of US\$ 875 million, while the Bangladesh University of Engineering

²⁹ S.H. Badsha, "Disinterest of the Government from the Ganges Barrage Project of late Zia: re-initiative to continue the Garai River Project at twenty times cost", *The Daily Inqilab*, 16 June 2004.

and Technology gave a figure of about US\$ 625 million compared to the natural pre-Farakka productivity.³⁰ It was also estimated, more than a decade ago, that Bangladesh could have been in a position to produce an additional 3.6 million tonnes of food grains annually if there had been natural flow in the Ganges and its distributaries.³¹ Understandably, Indian RLP will further adversely affect the agriculture production in Bangladesh.

3.2.2. Loss in Navigability

Bangladesh being a riverine country, its waterways has been the principal mode of transportation in the country over the ages. Since the commissioning of the Farakka barrage, the waterways in the Ganges-dependent parts of Bangladesh has been crippled to a great extent, a good length of it having been put out of service. About 685km of waterways were available in the pre-diversion era, which has been reduced to 230 km. As a consequence, the Bangladesh Inland Water Transports Authority ferries are unable to ply in many places in the country. Due to the low flow, the rivers can hardly support the vessels to carry the industrial products and other cargo from one place to another, although waterways are the cheapest mode of transportation. The total loss in the industrial sector alone was estimated to be about US\$37 million for the period 1976-1993.³² During the pre-diversion period, the Ganges/Padma could be navigated by large steamers even in the dry season. But now, the Ganges can be crossed in some places on foot for 5 to 7 dry months of the year. The situation is the same for other rivers such as the Gorai, the Madhumati, the Bhairab, the Arial Khan, the Kapotakkha and the Mathabhanga. The navigability will be decreased further if

³⁰ See for details in M. Q. Mirza, "Diversion of the Ganges Water at Farakka and Its Impact on Salinity in Bangladesh", *Environmental Management*, Vol. 22, No. 5, 1998, p. 719.

³¹ Ainun Nishat, "Impact of Water Dispute on Bangladesh in Asian International Waters", A.K. Biswas and T. Hasimoto (eds.) *Ganges-Brahmaputra to Mekong*, Oxford University Press, Bombay, New York 1996, p. 70.

³² M. Q. Mirza, "Diversion of the Ganges Water at Farakka and Its Impact on Salinity in Bangladesh" *Environmental Management*, Vol. 22, No. 5, 1998, p. 720.

the RLP is implemented. In that scenario, the waterways in the eastern half are feared to be equally affected

3.2.3. Loss in Biodiversity

India's RLP will disrupt the entire coastal ecosystem and biodiversity of Bangladesh. The Jamuna river provides 80% of the dry flow of the Meghna estuary. So, upstream diversions of the main flow will have certain impacts on the coastal ecosystem of Bangladesh. Bangladesh has rich and diverse genetic resources of flora (about 5000) and fauna (1500). Out of the 1500 species of fauna, 86 are endangered, 64 are critically endangered and 51 are vulnerable in Bangladesh.³³ Thanks to the RLP, the endangered species will be extinct rapidly from the environment of Bangladesh for disturbance of the habitat and food chain.³⁴ The Sundarbans, the world's largest mangrove forest (6,000 km²), has been severely affected by the flow regulation of fresh water and the saline water intrusion. Many native species like Sundari (*Heritiera fomes*), Gewa (*Exoecaria agallocha*) Keora (*Sonneratia apelata*), Goran (*Ceriops decandra*), etc are now endangered due to inadequate flow from the upstream north and the consequent increase in salinity in the Ganges basin. There is a serious concern in Bangladesh that these valuable forest plants will disappear if the salinity level goes way above the tolerance limit. It may be mentioned that the timber production loss from the 'Sundari' tree was about 1.3 million cubic metres only for the period 1976-82 and the total financial loss from the forest sector was about US\$320 million since the operation of the Farakka barrage.³⁵ It may be recalled that, due to its significance with respect to global biodiversity, the Sundarbans was declared as a World Heritage site in 1997. And that beautiful, great site is now in danger. The Indian RLP would induce still more harmful changes in the

³³ IUCN 2000, "Red List of Threatened Animals of Bangladesh", *IUCN Bangladesh*, Dhaka, 2000, pp.17-18

³⁴ Md. Abul Kalam Azad and Ashraful Alam, "Environmental Impact of India's River Linking Project on Bangladesh", M. Feroze Ahmed *et al*, (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, p-218.

³⁵ M. Q. Mirza, "Diversion of the Ganges Water at Farakka and Its Impact on Salinity in Bangladesh" *Environmental Management*, Vol. 22, No. 5, 1998, p. 720.

hydrological ecosystem of the Sundarbans and drastically worsen its biodiversity.

3.3. Social Impacts

With the growth of population and economic development, demand for water has also grown considerably, creating stress on this finite resource. The satisfaction of one type of water need often makes it difficult to meet other needs. The relationship between people and water is inextricable and very complex. Water is not only essential to life, it is also an integral part of economy, society and ecology. It is not only a part of external situation of a particular society such as agriculture, fisheries, forest, etc but also a part of social organizations and networks. As such, diversion of water from major rivers would cause immense sufferings for the society as a whole.

3.3.1. Loss of Agricultural Practices

Most of the people of Bangladesh are dependent on natural resources for their livelihood. Any interference with the environment will also tell upon their normal life. Agricultural practices are their main occupation. As mentioned earlier, due to the diversion of river water, flow reduction and lowering of ground water level, agricultural production is diminishing in relative sense. Land is also losing its productivity due to salinity intrusion and low sedimentation carrying capacity of the rivers. One of the grave consequences of all this is that many people are losing their traditional occupations, while many are compelled to take up new trades without required skills. A farmer, rendered landless, is trying his hand in carpentry; an agricultural labourer is becoming a construction worker; yet another land-related person is in masonry. As the fish stock is dwindling gradually from rivers and wetlands, many fishermen are out of fish cultivation. Many boatmen are also out of profession, as some traditional waterways sections have gone dry or become unsuitable for the vessels or even country boats to ply. Shrimp cultivation across the southern, coastal saline zone is very destructive for environment as well as social structures. A study shows that a large number of people are now involved in non-river based activities like rickshaw pulling, etc. The number of professionals in agriculture has

dropped significantly with corresponding swelling of the ranks of rickshaw and van pullers in the countryside as well as in urban centres. For instance, the number of fishermen dropped from 6% to only 0.5%, while that of the rickshaw pullers increased from 1.3% to 5.9%.³⁶ Jobless and landless village people migrate to cities/towns. As a result, internal migration has assumed unmanageable proportions with multi-faceted ramifications. The impact will be manifold severe if the Indian RLP is implemented.

3.3.2. Increase in Water Transmitted Diseases

Water quality depends on the water flow of the rivers. People who are mostly dependent on the surface and ground water for daily use are suffering from some sort of infectious diseases. It is found that one in every four families and 10% of the families are commonly considered asthma patients. It is also reported that an adult daily inhales 20 mg of dust with 20 m³ of air in Rajshahi region because aridity prevails in northern region and more aerosol dust has been in the air due to indirect impact of low flow in the Ganges.³⁷ Furthermore, according to World Health Organization experts, 0.05 milligram/liter or 0.05 parts per million is the acceptable level of arsenic in ground water; in some areas of Bangladesh it is up to ten times higher. Many people are affected from drinking the arsenic contaminated water. Arsenicosis is not a single disease. Severe toxicity of arsenicosis causes skin cancer, liver diseases, peripheral vascular diseases, polyneuropathy, lung diseases, etc. Even arsenic can pass on from soil and water into the agricultural products. So, Indian RLP will further increase the arsenic contamination with its impact on health security of the people of Bangladesh.

³⁶ See more details in Tajkera Khatun, "The Ganges Water Withdrawal in the Upstream at Farakka and Its Impact in the Downstream Bangladesh", M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, p. 243.

³⁶ *Ibid.* 244.

3.3.3. Obstacle to Cultural Practices

The Hilsha (*Hilsha spp*) is the most popular fish in Bangladesh and it is the national fish of the country. Delicious as it is, Hilsha is part of the Bengali culture.³⁸ The Hilsha fish stock has dwindled by 99% in the upstream where it is now an anadromous fish. Even biologists are reported to have predicted that after 100 years from now, only a skeleton of this favourite fish will remain in the museum for school children. Other types of fish species will also diminish slowly. As a result, Bangladeshis may have to change their food habit, as fish with rice is their staple food. Rivers have been a perennial source of inspiration and constant subject in the country's literature, art, music and even philosophy of life. Much of the people's creativity and artistic imagination owes its richness and vibrancy from the riverine landscape and soul of the nation. Many Bengali writers have written lots of, and about, music, songs, poetry, literature, culture and philosophy reflecting the contributions of the rivers of Bangladesh. Indeed, they are a real portrayal of the life and livelihood of the people of the river basins.

For more than three thousand years, some rivers have been considered as holy for the Hindu community.³⁹ All this is threatened to be without a pulsating soul, with many watercourses and water bodies drying up and many related professions disappearing. Furthermore, the Ganges waters turn into natural facilities for swimming, angling, boat racing, and so on. However, these opportunities have rarely been observed since commissioning of the Farakka Barrage. One only shudders to think of the scenario in the event of the RLP implemented.

3.3.4. Gender Perspective on Impact of Indian RLP

In the patriarchal settings of Bangladesh, women generally tend to have a subdued voice in decision-making capacities (both formally and informally) and less access to resources. Economic hardship on rural families tends to disproportionately impact women and children

³⁸ First *Baishakh* (a Bengali month) is celebrated with *Panta Ilish*. It is a part of *Bangali* culture which is celebrated since long.

³⁹ The Hindu community usually takes their holy bath in the Ganges (or Padma) and the Shitalakhaya rivers near Langolbanda, Narayanganj.

in much of the Third World countries like Bangladesh. The relationship between women and nature are closely linked with each other. Interestingly, male counterparts oppress both of them. Women in flood-prone, arsenic-prone, salinity- and cyclone- affected, deforested and river-eroded areas are more vulnerable than men. Sometimes, men leave their families or sit idle at times of environmental disasters. But a woman as a mother cannot keep quiet when her children are starving. She collects tree leaves, twigs, food, medicinal herbs for family consumption and survival. Women have to spend more time collecting food, fuel and water. At times, it is too insecure for them. Again, there is a gender dimension in arsenic contamination in water. Women suffer more than men, as they deal with water much more than men. So, it is apprehended that the Indian RLP would intensify women's suffering and hardship.

Let us now discuss the political implications of the proposed RLP within India as also for countries like Bangladesh, Bhutan, China and Nepal.

3.4. Political Impacts

Flood-prone and drought-prone areas or states are considered, from India's RLP point of view, as "water surplus" and "water deficit" zones. The National Task Force (TF) for Indian RLP proposes to transfer water from the water surplus basins - the Ganges and the Brahmaputra, for example - to the water scarce states such as Haryana, Gujarat, Rajasthan, Tamil Nadu and some other southern regions of India. According to the TF, the RLP would greatly reduce the regional imbalance in the availability of water in different river basins and states. However, the impact assessment of massive transfer of water on the "water surplus" basin itself has not been done. Even some experts and donor states (meaning the "water surplus" Indian states] appear to have reservations about the idea of surplus water in international rivers.

3.4.1. Domestic Conflicts in India

Large areas of India are relatively arid and mechanisms for allocating water are critically important to the welfare of the citizens. Inter-state water disputes are a persistent phenomenon in India. Past experiences show that the central government has very little

influence in this regard over the federating states. Some of the Indian states are even lukewarm in responding to the Supreme Court notice regarding the RLP. The donor states may not be that enthusiastic about sparing the surplus water or even to agree that there are any surpluses. The fact of the matter is that the issue of inland river water in India is a prerogative of the state governments. Since rivers do cross state boundaries, disputes are unavoidable in a federal institutional setting. The Inter-State Water Disputes Act of 1956, legislated to deal with conflicts, included provisions for the establishment of tribunals to adjudicate where direct negotiations have failed. However, states have sometimes refused to accept the decisions of tribunals.

Recent examples like the dispute between the states of Delhi, Haryana and Uttar Pradesh over the Yamuna river, the dispute between Karnataka and Tamil Nadu over the water of the Cauvery, and the sharing of the Ravi-Beas water among Haryana, Jammu and Kashmir, Rajasthan, and Punjab provoked different incidents. Several other disputes over water are still unresolved.⁴⁰ Needless to say, not all disputes have had happy endings.

The proposed RLP has already encountered strong opposition.

⁴⁰ The disputes over water not been settled are:

- i. The Krishna - Godavari water dispute among Maharashtra, Karnataka, Andhra Pradesh and Orissa.
- ii. The Cauvery water dispute among Tamil Nadu, Karnataka and Kerala.
- iii. The Narmada water dispute among Gujarat, Madhya Pradesh (MP), Maharashtra and Rajasthan.
- iv. The Tungabhadra project issues other than the high level canal between Karnataka and Andhra Pradesh.
- v. The issue of extension of irrigation from the Rangwan Dam of Uttar Pradesh (UP) between UP and MP.
- vi. The Koymani river dispute between Bihar and West Bengal.
- vii. The dispute over the Keolari Nadi waters between MP and UP.
- viii. The Bandar Canal project, affecting MP and UP. The Krishna-Godavari water dispute among Maharashtra, Karnataka, Andhra Pradesh, MP, and Orissa could not be resolved in spite of negotiations and discussions. Here Karnataka and Andhra Pradesh are the lower riparian states on the river Krishna and Maharashtra is the upper riparian state. The dispute was mainly about the interstate utilization of untapped surplus water.

The examples of the water accord between Tamil Nadu and Kerala, the Narmada agreement, Sultej-Yamuna link project, Madhya Pradesh and Krishna proposal and many more can be cited to highlight the non-implementation or partial implementation of accords signed. The Tamil Nadu government did not abide by the terms and conditions of the Parambikulam Aliyar Project agreement in releasing water into Kerala. This non-compliance might be seen if and when the Indian RLP is implemented. The Kerala state assembly reacted strongly to the proposed linking of three rivers like the Pamba and the Achankvoli to the Valippar river of Tamil Nadu and described it as a discriminatory and unconstitutional scheme. The situation is similar with regard to the Sultej-Yamuna link canal. The Chief Minister of Haryana took the political opportunity and alleged that the Congress-ruled Central and Punjab governments were conspiring to enact an anti-Haryana legislation. He went a step ahead by threatening to cancel the agreement by which Delhi got a share of the Yamuna water from Haryana.⁴¹ Furthermore, the water disputes over the Tehri dam between Bihar and Uttar Pradesh and between Utranchal and Uttar Pradesh may not be ignored by the RLP authority.

The NWDA's assessment that surpluses are available in the Mahanadi and Godavari basins are accepted by the Orissa and Andhra Pradesh governments. However, the states such as Bihar, West Bengal, Punjab and Maharashtra have already shown their disinterest in the project. Even Kerala and Karnataka may object to the idea of eastward diversion of the west-wing rivers. Indeed, Kerala, Bihar, West Bengal, Assam, Punjab, Chhattisgarh and Goa have so far opposed the RLP. Gujarat, Karnataka, Andhra Pradesh, Orissa and Maharashtra have only given a conditional agreement. They have agreed to links where they would receive water but are opposed to those links where they would donate the water. Only Haryana and Tamil Nadu have unconditionally supported the proposal, but then they will be only receiving water from outside.

⁴¹ Indrajit, "Negotiating Troubled Waters: River-Linking Shared Ecosystems and Regional Diplomacy", M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, pp. 429-430.

Another dispute likely to emerge is related to the issues of rehabilitation and resettlement of the displaced people, compensation for environmental and social harms, and equitable sharing of the cost and benefit of the proposed project. According to the Task Force, about 4, 98,241 people will be displaced due only to the 16 Peninsular links. India is a densely populated country. So, rehabilitation, resettlement and the amount of compensation will create another dimension to the dispute. People's movement due to water diversion is not a new experience for India. In such contexts, public debate on the RLP can only grow louder and keener.

There are examples when India's central government has forced⁴² some state governments to implement water related projects. The central government has sometimes intervened directly, but such interventions have been unsuccessful in most intractable cases. It will be even harder to implement such a huge work like the RLP.

3.4.2. International Water Disputes and Negotiations

There are two aspects to the issue of RLP for India to consider for its implementation - inter-state relations within India and international relations in the river basins. Bangladesh, as a co-riparian state and a possible aggrieved party, has expressed grave concerns over India's indiscreet plan to divert water from the Brahmaputra and the Ganges or their tributaries. India's continued insensitivity to the life-and-death issue for lower riparian Bangladesh is likely to aggravate the already strained relationship between the two immediate neighbours. After all, Bangladesh cannot perhaps be faulted if it applies the logic of the Supreme Court of India that has unconditionally ruled that Karnataka (upper riparian state) has to release water to Tamil Nadu (lower riparian state) and that the former cannot keep water for itself at the expense of the latter. The emerging estrangement is not confined to Bangladesh and India; the

⁴² In 1972, Chief Ministers of Madhya Pradesh, Maharashtra, Gujarat and Rajasthan had to sign an agreement stating that Rajasthan would be allotted 0.5 million acre-feet of the Narmada river water annually despite being a non-riparian state. Madhya Pradesh and Maharashtra still have reservations about the agreement and it is clear that they had signed under pressure from the Government of India.

Indian project also concerns the other countries of the GBM basins, such as Nepal and China.

3.4.2.1. Nepal

Nepal, an upper riparian vis-à-vis India, has also been encountering problems with its giant neighbour in the south on many water-related issues, including construction of dams in its territory. Nepal has serious reservations about the RLP proposed by India. Nepal's mistrust of India, beside other factors, has been reinforced by what it perceives to be various unequal treaties and agreements - the Sharada Dam construction (1927), the Treaty and Letters of Exchange of 1950 and 1965, the Koshi Agreement (1954), the Gandak Agreement ((1959), the Tanakpur Agreement (1991) and the Mahakali Treaty (1996). Again, without the creation of storage facilities in Nepal, Indian RLP (Himalayan component) is hard to materialize. Interestingly, India has so far not informed Nepal officially.⁴³

India has already built extensive canals⁴⁴ along the borders with Nepal. The infrastructures developed by India have had adverse impact, particularly inundation and flooding, in the bordering areas of Nepalese territories. Furthermore, the storage building planning in Nepal for Indian RLP will create another problem due to climate change. The average flow of the Himalayan rivers will increase due to ice melting process that can cause a huge disaster like reservoir failure. Nepal has yet to make its position clear on the proposed RLP on the ground that it has not been officially informed by the Indian government. It may be evoked as one of the major irritants in

⁴³ See for details, Dwarika N. Dhungel and Shanta B. Pun, "Impact of the Indian River-Linking Project on Nepal: A Perspective of Nepalese Professionals", M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al*, Dhaka, 2004, pp. 27-45.

⁴⁴ Such as Bihar's Saran canal, Ghodasan canal, Rajapur canal, Araria canal, Purnea canal, Janaki Nagar canal, Murali ganj canal, Sarada feeding canal, etc.

Nepal-India relations.⁴⁵ However, some of the Nepal-related RLP links are already in existence, while some of them are in the process of being linked up. Obviously, the primary concern for Nepal is to ensure that the RLP will not be prejudicial to its water rights both for the present and future Nepalese generations.

3.4.2.3. China

China plans to construct a dam at Yarlung-Tsangpo point on the Brahmaputra river in Tibet province to divert 200 billion cubic metres of water annually to the Yellow river.⁴⁶ The Yarlung-Tsangpo project is part of China's long-term river inter-linking project to divert water from south to north. China wants to build the dam as water flow of the Yellow river cannot meet up the increased water demand of the people on both sides. There is a possibility of diverting water from north to south for irrigation purposes. Bangladesh is already facing water crisis in its major rivers due to India's Farakka barrage on the Ganges. Some 17 rivers have already died and seven more are awaiting the same fate. About one-third of the water flow in the Brahmaputra-Jamuna would decline if China's dam project is implemented.

However, Bangladesh has not taken any diplomatic initiative up until now, as not much about the Chinese project is known to Bangladeshis, including concerned officials. India has already voiced her concerns about the possible adverse impact in its states of Assam and Arunachal Pradesh. Some experts of India are also concerned about the mega-water-routing of China as well as the dam project. Significantly, India is concerned about its status and rights as a lower riparian vis-à-vis China, while it is planning to implement its RLP in utter disregard for the same of Bangladesh.

⁴⁵ Dwarika N. Dhungel and Shanta B. Pun, "Impact of the Indian River-Linking Project on Nepal: A Perspective of Nepalese Professionals", M. Feroze Ahmed *et al* (eds.), *Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*, BAPA *et al.*, Dhaka, 2004, p. 35.

⁴⁶ Suranith Deabnath, "China Plans To Divert Brahmaputra Waters", *The Daily Star*, 08 May 2007.

3.4.2.1. Bangladesh

The Ganges Water Sharing Treaty of 1996 between Bangladesh and India should serve as the basis for regional watershed management dealing with international rivers between the two countries. According to article IX of this treaty, "...both governments agree to conclude water sharing treaties/agreements with regard to other common rivers". The expression "other common rivers" includes not only the Brahmaputra river but also the 52 remaining common rivers that flow through Bangladesh from India. As per a resolution issued by the Ministry of Water Resources of India, feasibility studies and detailed project reports on the RLP must have been completed by now,⁴⁷ although the Government of India has not officially provided any information about it to Bangladesh. This is a gross violation of international law, viewed in the light of the Ganges Water Sharing Treaty of 1996, as well as the current state practice. The Indian RLP has become not only another source of antagonism between the two countries but it also goes against the spirit of the principle of good neighbourly attitude and behaviour.

4. Bangladesh's Response to RLP

A general principle of the United Nations Convention on the Law of Non-Navigational Uses of International Watercourses and the Helsinki Rules represent that the available water must be equitably shared between nations. If the upper riparian countries initiate programmes that may have adverse impacts on the lower riparian nations, they must notify the stakeholder countries of the intended activities. The Indian RLP will transfer huge amount of water from north and northeastern parts to south. The programme has already generated a lot of controversy within India as to its merits and demerits. And, the Indian RLP is a life and death question for Bangladesh. Not only has the Indian government not provided any information about its mega-project to Bangladesh, it remains utterly insensitive to Dhaka's security, development and ecological concerns. Veena Sikri, former Indian High Commissioner to Bangladesh, told that the RLP project was at its conceptual stage,

⁴⁷ The National Perspective 2002, Ministry of Water Resources of India, available at: <http://wrimn.nic.in/interbasin/default8.htm>, accessed on 13 March 2007.

that an unexpected uproar was going on in Bangladesh about the project and that the problem of water sharing could be resolved through bilateral discussions not regional cooperation. She added that Bangladesh's water problem had to do with its mismanagement and that water crisis emerged out of rivers drying up due to silting, lack of dredging, and Bangladesh's incapacity of retaining water during monsoon⁴⁸.

However, there are some non-governmental organizations that disseminate some information about the Indian RLP. International Farakka Committee, Bangladesh Environmental Lawyers Association, Bangladesh Unnayan Parishad, Asia-Pacific Forum of Environmental Journalists, Forum of Environmental Journalists of Bangladesh, Bangladesh Paribesh Andolon, Bangladesh Environment Network, Bangladesh Economic Association, Bangladesh Water Partnership, Bangladesh National Geographic Association, Asiatic Society of Bangladesh, Social Development Network, SAARC People's Forum, different educational institutions and civil society organization in Bangladesh are working on Indian RLP. They are trying to create awareness among the general people and concerned authority in Bangladesh by arranging workshops, seminars, developing websites on it, etc.

While Bangladesh expresses its apprehension about RLP, the Indian government tends to maintain a studied silence over it. What options for Bangladesh then?

4. POLICY OPTIONS FOR BANGLADESH

The water availability situation in Bangladesh is unique in its characteristics and nature. Considering the annual cycle of water, the country suffers from both surplus (during monsoon from June to September) and scarcity (during the lean season from November to May). Peculiarly, there may be short spells of drought even during the monsoon. There is, thus, an uneven distribution of water in Bangladesh, both spatially and seasonally, which severely constraints

⁴⁸ Veena Sikri told that in a meeting titled "Significance of the Water Sharing in the Ganges-Brahmaputra-Meghna Basin" organized by Bangladesh Institute of International and Strategic Studies (BISS) available at *The Daily Star*, 10 May 2005.

a planned development of the country. The problems for Bangladesh started to exacerbate as India had begun water diversion schemes on the Kosi and Gandak in collaboration with Nepal, the Sharda Sahayak project, the Farakka barrage and other programmes.

India's obsession with bilateralism in negotiations and agreements is a convenient policy of using its weight as a larger state with other neighbouring states in South Asia. But it does not hold in the development and management of international water basins under the UN Convention and for that matter in any inter-state relations in which a number of regional countries have stakes.

With regard to RLP, Bangladesh's strategy needs to be framed in such a way that it takes into consideration all possible contingencies that may arise in the future. Adequate response to safeguard the country's national, particularly economic and security, interests should be paramount in this strategy. Bangladesh may take international, national, institutional, and media level measures to strengthen her position vis-à-vis India in respect of the water related issues.

Let us briefly discuss some of the measures below.

International Level Steps

At the international level, the following measures may be taken:

- The management of international rivers primarily concerns the countries sharing the rivers. So, persistent and consistent negotiations and discussions between concerned governments are essential.
- Parliamentary and civil society delegations from India and other South Asian countries may be invited to see for themselves what is happening in Bangladesh due to the Farakka barrage and other upstream water diversion projects on international rivers.
- The government of Bangladesh may take diplomatic moves at the international level with a view to sensitizing the world public opinion about the problem resulting from the withdrawal of common river water by India through RLP.

- Bangladesh's efforts at resolving water problems may focus on the bilateral and regional levels and, in the event of failure, may lobby on the world stage.
- Bangladesh may take up the issues with international funding agencies in the event of India going further ahead with the project.
- Bangladesh may attempt and persuade India to sign on to the Convention on the Law of the Non-navigational Uses of International Watercourses. On both the countries becoming signatories to the Convention, consultation and negotiations could be easier between them.

Bangladesh's Measures at National Level

- An in-depth debate in Parliament resulting in a resolution condemning India's unilateral actions, including RLP. This could be one of the ways of displaying national consensus and united political will that is considered by informed observers to be of paramount importance in matters of bilateral and multilateral water resources management in South Asia.
- Bangladesh may strengthen and improve its internal water management. It may acquire the technology for preserving water in the country during the monsoon for use in the dry season. While doing so, the country may also keep in mind the imperative of flood control and of obviating the situations of reduced river flows resulting from upstream diversion by India.
- Conferences, seminars and workshops involving international and local experts could be organized in Dhaka for fixing strategies to meet the challenges of common waters management between Bangladesh and India.
- The government of Bangladesh may gather all necessary information regarding the Indian RLP. The ministries of Foreign Affairs and Water Resources may take the primary responsibilities in doing this. The collected information and data need to be then analyzed and discussed to find out the effects of the RLP on Bangladesh and craft future coping strategies and mechanisms for Bangladesh.

Measures at Institutional Level

- Currently, the Bangladesh-India Joint Rivers Commission (JRC) is not playing its role at the optimum level. Its functionality appears to have become hostage to the swings in the prevailing political mood in both the countries. The JRC lacks authority in identifying and implementing effective solutions. At present, it is simply a recommending body. JRC has to be a commission not in theory but in practice with all the organizational strength and implementing power and authority. In fact, there should be a commission on each of the major rivers concerning Bangladesh and India.
- Relevant research and other organizations in both Bangladesh and India may engage in regular collection and sharing of data on the quantity and quality of common waters. This is important for two reasons. One, it will develop collaboration and friendship between experts and other relevant people of the two countries. And, two, the collected information can be used to set the baselines on existing conditions that help monitor the performance of the treaties/agreements concluded and draft new ones for the future.

Media Level Steps

- Bangladesh may launch an all-out media campaign in the national and international press, radio, television, and web site about the Indian RLP and other water related projects and activities and their effects in Bangladesh. International journalists, television teams and human rights organizations could be invited to see for themselves the havoc created in Bangladesh so that they could screen the same for their viewers.
- The media might be in a better position to get to know and publicize the right and detailed information about the RLP, as the RLP is still not so clear to many. Indeed, the media in both Bangladesh and India could play an important role in awareness building about the project itself as also about its negative fallout on many of its stakeholders.

5. CONCLUDING REMARKS

India has shown scant regard for the sensibilities of her co-riparians as well as the domestic stakeholders while developing a gargantuan water scheme like river-linking project. Indeed, India has been less than discreet in terms of transparency about the project with its neighbours, leading to a host of misgivings and concerns within government circles and in the larger societies. The likely adverse effects of the RLP in Bangladesh are all too pervasive, as evident from the foregoing exposition. It is imperative on the part of Bangladesh to take effective steps at the national, institutional and international levels as well as seek cooperation from the media for India to reconsider and its river-linking project that is disastrous to Bangladesh and not beneficial to most stakeholders in India itself.

Bangladesh can create diplomatic pressure on China as per the United Nations Convention on the Law of Navigational Uses of International Watercourses.⁴⁹ The Brahmaputra is an international river. China cannot build dams on it without earlier consent of the lower riparians - India and Bangladesh. As such, India's proposed RLP and China's attempt to build dams are potentials for interstate conflicts in the GBM region.

Regional cooperation is an important instrument to redress the current situation in the GBM region by working together for national development, collective gains and sustainable ecosystem. There is already a long history of co-operation on water resource sharing in South Asia between India and Nepal, India and Pakistan, India and Bhutan and India and Bangladesh. India is common to all water resources co-operation arrangements in the region. Currently, there is no joint approach for water resources management involving all the concerned riparian states. Whatever co-operation is there, it is bilateral in nature. Therefore, an all-round basin development approach in the eastern Himalayas could be an example of regional cooperation like in the Mekong river basin.

⁴⁹ The United Nations Convention on Non-Navigational Uses of International Watercourses 1997 disallows countries from barring natural flow of water of any international river.