WATER SHARING ISSUES IN SOUTH ASIA AND ITS IMPACT ON NATIONAL SECURITY OF BANGLADESH

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INTRODUCTION

Nearly three-fourths of the world surface is water which while extremely critical for the earth's survival, is not fit for direct human consumption or for economic activities. Soft water fulfils this need. Soft water is comprises of surface water of rivers, inland lakes and wetlands and ground water.[1] Unfortunately, soft water is unevenly distributed over space and time, eg between years and between seasons within a year.

Uncoordinated and poor water management activities by individual countries, ever increasing demand for irrigation, urbanization and industrial development and exponentially growing population have resulted in an increasing demand for water resources.[2] To meet up this increasing water demand, engineering interventions, eg dam-construction, water storage etc. have taken place in many part of the globe by individual countries. Engineering interventions though have meet up increased water need of some countries but at the same time it has created dispute among many countries of the world.[3] In order to resolve water disputes and to share waters of common international rivers, many countries have entered into water treaties. A general principle in all these treaties and international water law is that the available water must be equitably shared between nations and that the harm to the lower riparian countries should be minimised. But defying international law and disregarding the rights of the lower riparian country, India built a dam in 1970 on the Ganges River, just 17 Kilometres from the border of Bangladesh.[4]

Bangladesh is a land of rivers. Rivers provide the life-blood to the people, that is to say water being provided by rivers is central to the way of life in our country. Agriculture, the mainstay of our economy, inland communication, fisheries, industries etc. depend on water. In fact they provide employment to millions of poor people of the country and our economy mostly depends on water. This valuable soft water largely obtained from rivers originating from Ganges-Brahmaputra-Meghna Basins (GBMB).[5] These trans boundary rivers are our major sources of soft water. Out of 57 trans boundary rivers, 54 originated in India and 3 in Myanmar.[6] Therefore, any activity interfering with their flow will affect water-availability in Bangladesh.

1. Dr A T M Shamsul Huda, Sharing Water-Regional and International Aspects. Lecture Note, NDC 2000. p. 1
2. M. Habibur Rahman, Water Law Network: Bangladesh Perspective, BIISS Journal, Vol. 23, No. 2, 2002, p.228
3. Ibid.
4. India and the Farakka Dam, Washington Post, March 1997, p. 25
5. M. Habibur Rahman, No 6, p.219
6. Ibid, p.220

Farakka Barrage has added a man-made disaster to Bangladesh by diverting the Ganges water into India's Bhagirathi - Hooghly River. One researcher estimates that the water diversion causes annual losses of more than $ 4 billion in "one of the world's poorest countries."[7]

When Bangladesh was still fighting to restore and minimize the adverse effect of Farakka Barrage then the devastating news of Indian River Linking Project came. The project will unilaterally divert one-third of the Brahmaputra River water annually to its northern and southern regions drought-prone areas.[8] It is likely to be another looming disaster for Bangladesh.[9]

These projects already have and will severely affect our national economy. National economy directly relates to national security. Therefore, Farakka Barrage has in fact created a severe negative impact on national security of Bangladesh. Diversion of trans boundary rivers water will also have negative effect on our military operations too. For example, it will reduce our defence potentiality which is based on river obstacles. Therefore, the defenders paradise Bangladesh may turn into attacker's paradise. More so, counting waterway, as one of the most important main supply route for military operation may not remain a viable option in future. In view of this situation, a long-term solution to water sharing problems between Bangladesh and India and other concern regional country is imperative. Without regional cooperation between the co-riparian nations, any major inter basin development activity is impossible.

This paper highlights the water sharing issues in South Asia with special emphasis on Indo - Bangladesh water sharing issues and ultimately boils down to suggest strategy and measures to resolve Indo - Bangladesh water sharing problem. The paper examines the international law on the uses of international watercourses and important case study to see how other nations of the world have resolved their water disputes. It also highlights the impact of scarcity of soft water on national security of Bangladesh and military operations.

AIM

The aim of this paper is to highlight the water sharing issues in South Asia and its impact on Bangladesh and suggest measures to mitigate the impact on national security.

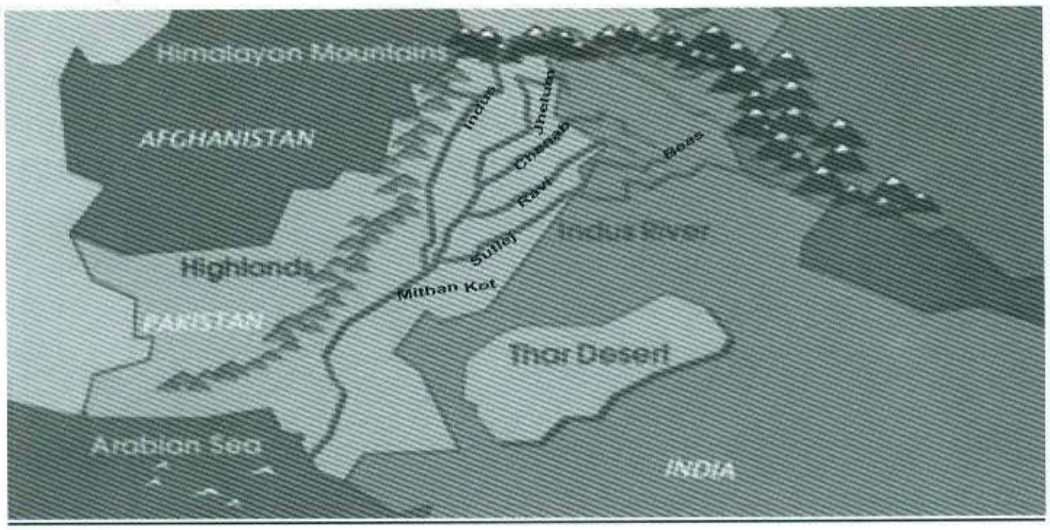
7. India and the Farakka Dam. Washington Post, p. 25
8. Crisis Looms as India Plans Water Diversion, The Daily Star, 07 April 2003.
9. River Linking Scheme: Looming Doom for Bangladesh. Bangladesh Today, 24 July 2004, p. 5

WATER SHARING ISSUES IN SOUTH ASIA

Indo-Pakistan Water Sharing Issues

The Indus Basin comprises of the Indus and its five main tributaries i.e. Jhelum, Chenab, Ravi, Beas and Sutlej (Map 1). They all combine into one river near Mithan Kot in Pakistan and flow into the Arabian Sea, south of Karachi. Most part of it lies in Pakistan and the rest, mostly in occupied Jamau and Kashmir and India.[10]

Map 1: Indus Rivers System



The emergence of India and Pakistan as separate states in 1947 has placed the headwater of the basin in India, while Pakistan received the lower part of the basin. This gave India the control of the water of Indus River. In 1948, during summer irrigation time a severe disagreement occurred when India diverted Indus water away from Pakistan.[11]

When all negotiation effort by effected countries failed then World Bank came as a saviour. In 1954, the World Bank offered a simple alternative: a division of the Indus and its tributaries, with India to receive the waters of three southern rivers (Ravi, Beas and Sutlej) and Pakistan the other three (Indus,

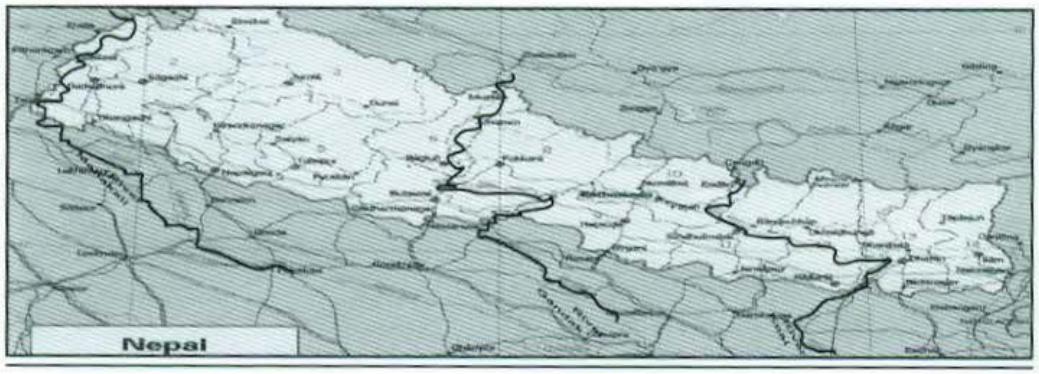
10. Water Issue in Perspective, Islamabad Policy Research Institute, Volume V, No. 9, September, 2003, p.17
11. Farzana Noshab and Nadia Mushtaq, Water Dispute in South Asia, Institute of Strategic Studies, Islamabad, p.3

Jhelum and Chenab).[12] The World Bank also arranged necessary funding for engineering measures required for the implementation of the agreement. Finally, the Indus Waters Treaty was signed in September 1960.[13] The treaty can be considered a success. It has defused a major source of potential conflict.

Indo-Nepal Water Sharing Issues

The major rivers flowing from Nepal to India are river Mahakali (also known as Kali or Sarada), River Koshi, River Gandak etc (Map 2). These rivers have tremendous potentiality to generate hydro electricity. Northern India has huge power deficit therefore, she wants to utilise Nepalese river water for producing hydro electricity.

Map 2: Major Rivers Flowing from Nepal to India.



In 1988, India started constructing a barrage unilaterally, on Mahakali River in Uttar Pradesh, near Tanakpur, without having any dialogue/discussion with Nepal. The mid stream of the river is the western boundary between Nepal and India. In December 1991, India compelled Nepal to sign a Memorandum of Understanding, which allowed India the use of 577 meters of Nepalese territory for the construction of the barrage in exchange for 10 million units of electricity, as well as of 150 cusecs of water for irrigation.[14]

Though the Mahakali issue raised concern about Nepal territorial sovereignty but the treaty was ratified on 20 September 1996 by the Nepali Parliament under India and foreign pressure.[15]

12. Water Issue in Perspective, p.16
13. Ibid, p. 19
14. Farzana Noshab and Nadia Mushtaq, p.3
15. Ibid, p.8

INDO - BANGLADESH WATER SHARING ISSUES

The headwaters of the Ganges and its tributaries lie primarily in Nepal and India. The water flows downstream and passes through rivers of Bangladesh to the Bay of Bengal. Preliminary planning of constructing Farakka Barrage was conceived in 1950-51 when Bangladesh was still part of Pakistan.[16] On 29 October 1951, Pakistan officially requested India for information about plans to build a barrage at Farakka. Indian government responded that the project was only under preliminary investigation and their concern was hypothetical.[17] Over the next years, Pakistan requested India to consult her prior to operation of any scheme which would adversely affect East Pakistan but India never responded positively. In 1958, in respond to many proposal of Pakistan, India only agreed to hold expert level meetings between them. Thereafter, several meetings were held at expert and secretary level. The fifth secretary's level meeting was held on 16 July 1970.[18] In that meeting a few decisions were taken to preserve mutual interest. But those could not be implemented as domestic turmoil engulfed East Pakistan. In the meantime, India completed construction of the Farakka Barrage in 1970. Water was not diverted at that time because the feeder canal to the Bhagirathi- Hooghly system was not yet completed.

Bangladesh came into being in 1971 and by March 72, both the government agreed to establish Indo-Bangladesh Joint Rivers Commission to develop common rivers' water on a cooperative basis. On 16 April 1975, during a minister level meeting on water issues, India proposed that while discussions continue the feeder canal at Farakka be run on test basis. Both agreed to a limited trial operation of the barrage, for a ten-day periods only, under temporary agreement.[19] But without renewing or negotiating a new agreement, India continued to divert the waters throughout the 1975-76 dry seasons at the full capacity of the diversion (40,000 cusecs). As a result, there were serious consequences in Bangladesh resulting from these diversions.

16. Chandrika J. Gulati, Bangladesh Liberation to Fundamentalism, Commonwealth Publishers, New Delhi, p. 105
17. Chandrika J. Gulati, p.8
18. Ibid, p. 106
19. Iftekharuzzaman, The Ganges Water Sharing Issue: Diplomacy and Domestic Politics in BIISS Journal, Vol. 15, No. 3, 1994, p. 221

In January 1976, Bangladesh lodged a formal protest against India to the United Nations. On the 26th November 1976, United Nations adopted a consensus statement encouraging the parties to meet urgently for negotiations.[20] Spurred by international consensus, negotiations re-commenced which culminated in the signing of the Ganges Waters Agreement on the 5th Nov 1977.[21] The agreement was bilateral in nature and it laid down that in future any differences would also be solved bilaterally.[22] In Principle, the Ganges water agreement covers:

a. Sharing the waters of the Ganges at Farakka; and
b. Finding a long-term solution for augmentation of the dry season flows of the Ganges.

The treaty also made, the Joint Rivers Commission responsible for developing a long-term solution of the problems. But by the end of the five years life of the agreement, no solution had been worked out and the agreement expired in 1982. There after, water-sharing arrangement was renewed twice through Memorandum of Understanding (MOU). The last Memorondum of Understami MOU expired in 1988.[23] For the time 1988-96, there was no arrangement between the two countries. During this time the Ganges flow to Bangladesh reduced to as low as 9218 cusecs in 1993.[24] This has affected the entire southwestern region of Bangladesh. Realising the gravity of the situation Bangladesh accorded top priority to reach a long-term treaty with India. After intense negotiations, on the 12th December 1996, a new treaty was signed between the two countries.[25]

In April 1997, during the first season after signing the treaty, both actors were involved in dispute over cross boundary flow. Water passing through the Farakka dam dropped below the minimum provided in the treaty prompted Bangladesh to review the state of the watershed. In fact, the treaty has many draw backs. For example, Table 1, shows that Bangladesh receives lesser amount of flow as per 96 treaty than the 77 agreement and quantum of decrease varies from 7117 to 144 cusec during critical period from 21 Feb to 20 May. On the other hand, India receives more flow which varies from 14590 to 4180 cusec during the same time.

20. Ibid, p.223
21. Ashraf Mahmood Dewan and Khondoker Nizamuddin, Impact of Ganges Water Diversion on the South-West Part of Bangladesh: A Perception Study, BIISS Journal, Vol. 20, No. 2, 1999, p. 164
22. Chandrika J. Gulati, p.112
23. Iftekharuzzaman, p. 223
24. Ibid, p. 228
25. Dr A T M Shamsul Huda, p. 6

Table-1

Comparative Statement Showing Water Availability Under 1977 and 1996 Treaty

Period	Bangladesh			India		
	1977	1996	Increase/Decrease	1977	1996	Increase/Decrease
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1-10, Jan	58500	67516	9016	40000	40000	0
11-20, Jan	51250	57673	6423	38500	40000	1500
21-31, Jan	47500	50154	2654	35000	40000	5000
1-10, Feb	46250	46323	73	33000	40000	7000
11-20, Feb	42500	42859	-359	31500	40000	8500
21-28/29, Feb	39250	39106	-144	30750	40000	9250
1-10, Mar	38500	35000	-3500	26750	39419	12669
11-20, Mar	38000	35000	-3000	25500	33931	8431
21-31, Mar	36000	29688	-6312	25000	35000	10000
1-10, Apr	35000	35000	0	24000	28180	4180
11-20, Apr	34750	27633	-7117	20750	35000	14250
21-30, Apr	34500	35000	500	20500	25992	5492
1-10, May	35000	32351	-2649	21500	35000	13500
11-20, May	35250	35000	-250	24000	38590	14590
21-31, May	38750	41854	3104	26750	40000	13250

Other Upstream Water Diversion Constructions

Beside Farakka Barrage, Bangladesh faces at least 29 dams, barrages, and other water diversion facilities upstream on various major rivers (Map 3).[26]

Besides, recently India has undertaken Tipaimukh Hydro Electric Project, on Barak Rivers in the District of Churachandpur of Manipur State.[27] The dam will threaten the flow of water into two main rivers flowing into Sylhet. The work on the dam has already started.

India's River Linking Project

India is planning to unilaterally divert one-third of the Brahmaputra River waters annually to its northern and southern regions drought-prone areas. India's proposed mega river linking project may turn Bangladesh delta into a desert.

LAW OF NON NAVIGATIONAL USES OF INTERNATIONAL WATER COURSE CONVENTION 1997[28]

General

The 1997 UN Watercourses Convention[29] is the only watercourse convention that has global relevance.[30] It was negotiated by almost every member of the international community including Bangladesh and India and was adopted by a vote of 103 in favour including Bangladesh to 3 against with 27 abstentions including India and Pakistan.[31] The 1997 Convention consists of seven parts containing 37 Articles including Miscellaneous Provisions and Final Clauses.

26. Internet, athttp://jeq.scijournals.org/cgi/content/full/30/2/356
27. Tipaimukh Hydroelectric Multipurpose Project,at http://www.ben-center.org/RiverLinkingFAQ.htm
28. Environmental Impacts of the Ganges Water Diversion and Its International Legal Aspects, Dr. Md. Nazrul Islam, Professor, Department of Law University of Dhaka, Bangladesh, 2004.
29. The text of the 1997 Convention in 36 ILM 700 (1997).
30. MaCaffrey and Sinjela, (1998), 'The 1997 United Nations Convention on international watercourses', 92 AJIL 106.
31. UN, GAOR, 51st session, 99th plenary meeting, 21/5/97, Pp.7-8

Equitable Utilization and Other General Principles

Equitable Utilization. The principle of equitable and reasonable utilization is defined as 'fundamental rights and duties of states' with regard to the non-navigational uses of international watercourses.[32]

a. A watercourse State to exercise her rights to utilize an international watercourse in an 'equitable and reasonable manner'.

b. A list of factors to be taken into account in determining whether a utilization of international watercourse is equitable and reasonable. This enjoins the watercourse States with greater responsibility.[33]

c. A watercourse States 'to enter into consultation in a spirit of co-operation'.

No Harm Principle. Checking harmful effects of a use of an international river has usually been regarded as one of the factors of equity.[34]

a. It requires a watercourse State to 'take all appropriate measures to prevent causing of significant harm'[35] to other watercourse States.

b. If significant harm, however, is caused, the State causing such harm to give due regard and to consult the affected State in order to eliminate or mitigate such harm and to discuss the question of compensation in appropriate cases.

Principles Concerning Planned Measures. The Convention incorporates a comprehensive set of procedural principles concerning planned measures.

Exchange of Information. Rules of the convention define obligations regarding exchange of information concerning planned measures. Under this, watercourse States are required to exchange information, consult and, in appropriate cases, negotiate on the 'possible effects' of planned measures on the condition of an international watercourse. These obligations are unconditional, and irrespective of actual effects of planned measures.[36]

32. Para 1, Commentary to Article 5, 1994 ILC Report, Supra Note 19, p. 218
33. The Chairman of the Drafting Committee of the Working Group (in UN, GAOR, 51st Session, Sixth Committee, Summary record of the 24th meeting, 17/10/96, p. 4, para 14)
34. Utton, (1996), 'which rule should prevail in international water disputes: that of reasonable use or that of no-harm', 36 NRF 641.
35. UN, GAOR, 51st Session, Sixth Committee, summary record of the 16th meeting, para 35.
36. Para 3 of commentary to article 11, ibid. Pp. 259-60

Notification. A watercourse State implements planned measures which 'may have a significant adverse effect' upon other watercourse States, she shall provide such States 'timely' notification of the planned measures. Notification shall be accompanied by 'available technical data and information including the result of any environmental impact assessment'.

Consultation and Negotiation. If the notifying State does not receive any reply from the notified State, she can proceed with the implementation of planned measures subject to her obligation under international law. On the other hand, if the notified State communicates to the notifying State that the planned measures would be inconsistent with the provisions of law, then both States have to begin consultation and, if necessary, negotiation.

Dispute Settlement: Compulsory Fact-Finding

General. International law contains dispute settlements procedures. It provides for bilateral as well as third-party dispute settlement including provision for third-party settlement was considered necessary in view of the limitations of bilateral efforts for a dispute settlement.[37]

Bilateral Settlement. The disputing States to enter into negotiation before making any effort for third party settlement. If negotiation fails, the watercourse States can make use of any existing joint watercourse institution established by them. Otherwise, resort to the optional third-party dispute settlement.

Optional Third-Party Settlement. It provides optional procedures of third-party dispute settlement, which are: mediation or conciliation by a third party or submission of the dispute to arbitration or to the International Court of Justice.

Mandatory Fact-finding Commission. Third-party settlement essentially depends on consent of all the States involved in the dispute. In contrast, law makes provision for submission of a dispute to a Fact-finding Commission, which can be established by any of the parties to a dispute. The purpose of such Fact-finding Commission would be to facilitate resolution of a dispute through the 'objective knowledge of the facts'.[38]

37. Rosenstock, the Special Repporteur of ILC, even proposed mandatory arbitration and judicial settlement of watercourse disputes. See YILC, (1994), I, p. 40
38. Para 4, ibid., p. 324

Customary Rules in the 1997 Convention

Some of the provision codified in the 1997 convention may be applicable to the Ganges case as customary international law. In the context of Ganges case, we may compare only on the principles of equitable utilization, no-harm and the procedural principles.

In this respect, as the ILC commentaries provide, regular exchange of data and information on the watercourse condition is 'the general minimum requirement'[39], data and information supply on new uses or on changes in existing uses amounts to 'general obligation[40]', notification of new projects is 'embodied' in various sources of state practice.[41]

The ILC commentaries thus suggest that:

a. Equitable utilization and no-harm principles are 'established' rules of international law.

b. The principle of negotiation for dispute settlement is an established rule. As these principles are inevitably related to the obligation of negotiation, they may well be regarded as 'general rules.'

c. The obligation to protect and preserve the ecosystems of international watercourses has been identified as general obligations of international law[42] and could therefore merit to be considered as established principles of international law.

The principle of equitable utilization, no harm and prior notifications have been widely endorsed in state practice and judicial decisions.[43] Some of the examples are 1995 Mekong River Treaty and the 1991 Protocol on Common Water Resources concluded between Argentina and Chile. The presence of similar provision in some global environmental treaties like the 1972 Ramsar Convention and the 1992 Bio - Diversity Convention etc.

39. Para 1 of the Commentary to Article 9, 1994 ILC Report, supra note 19, p. 250
40. Para 2 of the Commentary to Article 11, ibid., p. 259
41. Para 6 of the Commentary to Article 12, ibid., p. 262
42. 1994 ILC Report, Supra Note 19, p. 280
43. Eckstein, Ibid, p. 90

Global Environmental Conventions and Soft Law

General. Bangladesh and India are parties to a number of global environmental conventions.

Ramsar Convention. Contracting parties to consult each other in respect of trans boundary wetlands, shared watercourses and coord conservation of wetland flora and fauna. Sundarbands forest wetland is a Ramsar Wetland Anything affecting its conservation requires consultation between Bangladesh and India.

CBD and other conventions. The Convention goes beyond Ramsar by laying down the general rule that national sovereignty over natural resources is qualfied by the obligation not to cause trans boundary environmental harm. "States have, sovereign rights to exploit their own resources which do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction."

Damaging activities upstream. CBD require Parties, to cooperate for the conservation and sustainable use of biodiversity in respect of areas beyond national jurisdiction and on other matters of mutual interest.[44]

STATE DISPUTE SETTLEMENTS

There are a number of dispute cases which are settled through international mediation/arbitration in the light of international law/tribunal. Such as Faber Case - Award of 1903 and Gut Dam case etc.

Faber Case - Award of 1903 Rendered by Henry M. Duffield[45]

General. The Zulía River rises in the Cordillera Oriental, west of Pamplona in Colombia. It flows North, past Puerto Villamizar, and across the international line, to Catatumbo River in the Maracaibo basin 4 miles West of Encontrados. The Catatumbo River rises in the Cordillera Oriental of Colombia, southeast of Ocana, and flows North through foothills, then East into the Maracaibo lowlands of Venezuela, where it receives Zulía River, and then into Lake Maracaibo.

Facts. The claimant Faber was a German. When Venezuela, by Executive decrees, suspended in 1900, 1901 and 1902 the navigation of the rivers Zulía

44. Ibid
45. http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/005/W9549E/w9549e08.htm

and Catatumbo, Germany intervened, forcing Venezuela to open the river traffic on these two rivers (the Zulía route) stating that there were German merchants in Cucuta who were injured by the Venezuelan decrees. By the Washington protocol of 13 February 1903, Germany and Venezuela established the Mixed Claims Commission, with Henry M. Duffield as umpire.

EFFECT OF SOFT WATER ON NATIONAL ECONOMY

Effect of Farakka. The massive withdrawal of dry season Ganges flow by India had a serious impact on every sphere of life in the Ganges dependent area of Bangladesh. This man-made hazard inflicted a crippling blow to the entire south-western region of the country. It forced Bangladesh to incur massive losses in agriculture, fisheries, forestry, industry, navigation and water supply. Direct damage caused to Bangladesh in these sectors amounted to about 3 billion US Dollars.[46] If indirect losses are taken into account, the amount would increase significantly.

Effect on Agriculture. Agriculture is the worst-hit sector. Prolonged inundation, increased drought, salinity and loss of land due to erosion are effecting irrigation system of Bangladesh tremendously.

Fisheries. The Gangetic water system supports over 200 species of freshwater fish and 18 species of prawns in the area.[47] Fish catches dropped and thousands of fishermen were consequently left without jobs.

Effect on Navigation. The Ganges flow reduction affected the navigation sector as well. More than 320 km of major and medium navigable waterways are rendered inoperative during the dry season. As a result, hundreds of boatmen were thrown out of their occupation.

EFFECT OF SOFT WATER ON ECOLOGY

Ecology and Environment. When water is diverted at an upstream point, downstream channels go through sever morphological imbalances. It leads to the siltration of river bed and then shifting of the channel. Each river has its own capacity to carry silt. When the rivers have to carry additional load of silt or water in the monsoon seasons, they start erosion of the river banks.[48]

46. Banglapedia National Encyclopedia of Bangladesh, Asiatic Society, Dhaka, 1st Edition, 2004.
47. The New Nation, 12 June 2003
48. Impact of Ganges Water Diversion- BIISS Journal, Vol. 20, No. 2 , 1999, p.51

Desertification. Bangladesh has always been known as a land of stunning greenery, and a land of rivers, fish and forest. Today this picture is undergoing a most unfortunate transformation. Certain vast areas of this beautiful country are in peril of desertification.[49] The falling of underground water level, the devastated irrigation projects are the symptom of the steady advances of desertification.[50]

Impact on Social Life. Ganges issues always played an important role in socio-political life of Bangladesh. The uncertainty of water has had direct adverse impact on several aspects of human life. Loss of seasonal work of millions who can not find sufficient surface and ground water to sustain themself during dry season are compelled to migrate to urban areas.[51]

Impact of Health (Arsenic Water). Use of contaminated arsenic water for irrigation and other purposes has resulted in surface water and soil contaminations in many parts of Bangladesh. This raises the possibility of accumulation of arsenic by microbes and plants and its transfer along the food chains and food webs.

Impact on Armed Forces. As Bangladesh is full of rivers and her land escape does not allow the potential adversary have the dominant role over the land force; therefore Bangladesh is known as defenders paradise. During war the Riverine Engineer (RE) Battalion would protect and defend vital river flanks of division and support division in delay battle as part of over all operational plans. Apart from that, RE battalion will transport troops, stores and equipment along inland waterways to support different formations. Due to diversion of the water resources of common rivers, most of the rivers in the north of the country will dry up. In such cases the RE battalions would lose the navigability of its boats and crafts and will not be able to perform its role as per the present plans. The unconventional warfare would be launched from certain bushes and jungles. Due to desertification close nature of the country would be lost and it would be difficult for the unconventional forces to launch attack on enemy from natural hideouts. It would be also difficult for armed forces to live off the ground during war due to acute shortage of natural drinking water. Due to shortage of river water total economy of the country will decline, the same would effect intangibly on the logistic system of armed forces.

49. Combating Desertification, Ziaur Rahman Khan, Daily Star 19 September 2003.
50. New Age, November 25, 2004
51. Impact of Ganges Water Divertion- BIISS Journal, Vol 20, No. 2, 1999

POSSIBLE SOLUTION OF WATER SHARING IN THE REGION

Policy Option for Bangladesh

It is understandable that India has constructed the Farakka barrage for her interest. She will operate it, whatever may be its consequences to Bangladesh. Hence, it is obvious that if no measures are taken within the country, impacts caused by the barrage will aggravate day by day. Moreover, Bangladesh has very limited options to mitigate the impacts caused by the Farakka barrage. Therefore, living with India has two aspects; to continue negotiations for a permanent solution of increasing the Ganges dry season flow and adjust socio economic infrastructure with the existing scenario. We can take following measures:

Conjunctive Use of Ground and Surface Water. Water lost through percolation recharges the under ground aquifer. The water so lost may be recovered through recycling of water by conjunctive use of surface and under ground water, where such project is technically and economically viable.

Water Conservation. Part of the water that flows into the sea during the monsoon can be arrested by the construction of embankment and dams. A mass program for excavation of canals, haors, beels and man made ponds may be under taken. The additional depth of excavated canal, haor, beel and pond will allow the storage of monsoon water for irrigation.

Changing of Cropping Pattern. In the existing cropping pattern rice is still an overwhelmingly dominating crop. There exist market potentialities in the expansion of crops like wheat, maize, pulses, oil seeds and vegetables etc. These crops have high nutritional values. More over, they demand less quantity of water for their production compared to rice.

Population Planning. Population planning must take a more prominent role. One important agenda from water shortage's point of view is that to immediately arrest and then reduce the population size. The example of China may be instructive in this regard.

Digging of Canal. An artificial canal connecting the Ganges and Barhmaputra between Sirajganj and Bheramara would serve the same purpose for Bangladesh as the 209 miles link canal proposed by India. The length of the proposed Sirajganj-Bheramara link canal would only be 60 miles. The diversion of surplus flow of the Brahmaputra at Sirajganj will help to reduce the water flow velocity. This reduction in flow would reduce riverbank erosion downstream from Sirajganj.

Different Approaches of Negotiation

Bilateral Approach. Bangladesh has consistently been endeavouring to make India recognize the impacts on Bangladesh due to withdrawal of the Ganges water. The prolonged nature of differences, however, is not uncommon in solution of such disputes. The agreement on the utilization of the Rio Grande's water took 40 years. Bangladesh should further intensify her diplomacy to persuade India for a permanent solution of the problem.

Regional Approach. India would prefer to keep the negotiation of water sharing of the international rivers bilaterally with its neighbours. But to this date there were over 85 meetings between Bangladesh and India at various levels all of which have been unsuccessful. Bangladesh prefers to involve all the co-riparian nations in the designing of a regional water resources development plan. Without regional cooperation between the co-riparian nations any major inter-basin development activity is almost impossible.

International Approach. Facts clearly show that for Bangladesh, a new rational agreement is urgently needed. The international community such as the UN, UNEP, UNDP, G-7, and SAARC can come forward to solve the water sharing problem between Bangladesh and India by mediating negotiations. International involvement is needed to implement a management plan that will protect the water rights of Bangladesh on the Ganges and other common rivers prescribed by the Helsinki Rule of 1966. This issue is of tremendous economic and humanitarian concern to Bangladesh.

Future Challenges. Gradual exclusion of water from the Ganga, Teesta and Mohanada has increased our sufferings since many years. Our natural ecosystem has been gravely damaged by this iniquity, and its reflections can be viewed in all spheres of our life. Significant number of jute mills are closed, newsprint and paper mills shuttered, desertification process began in north and north-western districts, Sundarban mangrove forest shrunken, large number of birds and animal species diminished, many species of fishes at the verge of extinction and above all the increased intensity of flood, flash flood, cyclone, drought have been experienced. At this point of time India's huge project of diverting waters from the entire river channels failing into Bangladesh will further cause damage to Bangladesh with infinite natural and human catastrophe.

RECOMMENDATIONS

Following recommendations are made:

a. The water sharing treaty of 1996 needs to be reviewed.

b. Shortage of water during dry season may be lessened by formulating and implementing a suitable national water management plan.

c. Diplomatic effort should be made to solve the water sharing problem through regional cooperation, involving all co-riparian countries (India, Bangladesh and Nepal).

d. Frequent exchange of information through meeting, seminar, workshops etc among the co-riparian countries in light of international laws may be arranged.

e. Bangladesh Armed Forces defensive plan based on natural water obstacles may be reviewed.

f. Excavation of canals, haors, beels, and large man made ponds may be made; embankments and dams may be constructed to enhance water storage capacity within the country.

g. Crops those demand minimum quantity of water for their production may be adopted.

CONCLUSION

The unilateral diversion of the Ganges water by India at Farakka Barrage has caused a series of adverse environmental and ecological problems in Bangladesh. A long-term solution to water sharing problems between Bangladesh and India is imperative. Without regional cooperation between the co-riparian nations, any major inter basin development activity is almost impossible. However, a better physical control of the supply, accumulation, and dispersal of sediment and water can be applied to mitigate environmental and ecological degradation resulting from this unilateral diversion of the Ganges water. Increased use of groundwater can reduce the scarcity of water available for irrigation in Bangladesh as long as it is managed properly. International involvement can help to implement a management plan which will protect the water rights of Bangladesh to the Ganges and other common rivers.

Although accusing India of diverting water unilaterally from common rivers makes sense, it may not by itself resolve the problems of Bangladesh. It seems that Bangladesh needs to be self-critical of its own actions during the last 33 years on water utilisation from its rivers. As a sovereign country, Bangladesh has to stand on its own legs and consider relevant water projects for mitigating floods and droughts in the country. The bottom line is that unless Bangladesh does for itself, no country will come to our aid for a situation in which Bangladesh has appeared to have overlooked its national interests. We live in a

world of hard reality. Self-interest rules the day. According to the British Prime Minister Lord Palmerston, "There are no permanent friends or enemies. What is permanent is self-interest and that has to be pursued vigorously."

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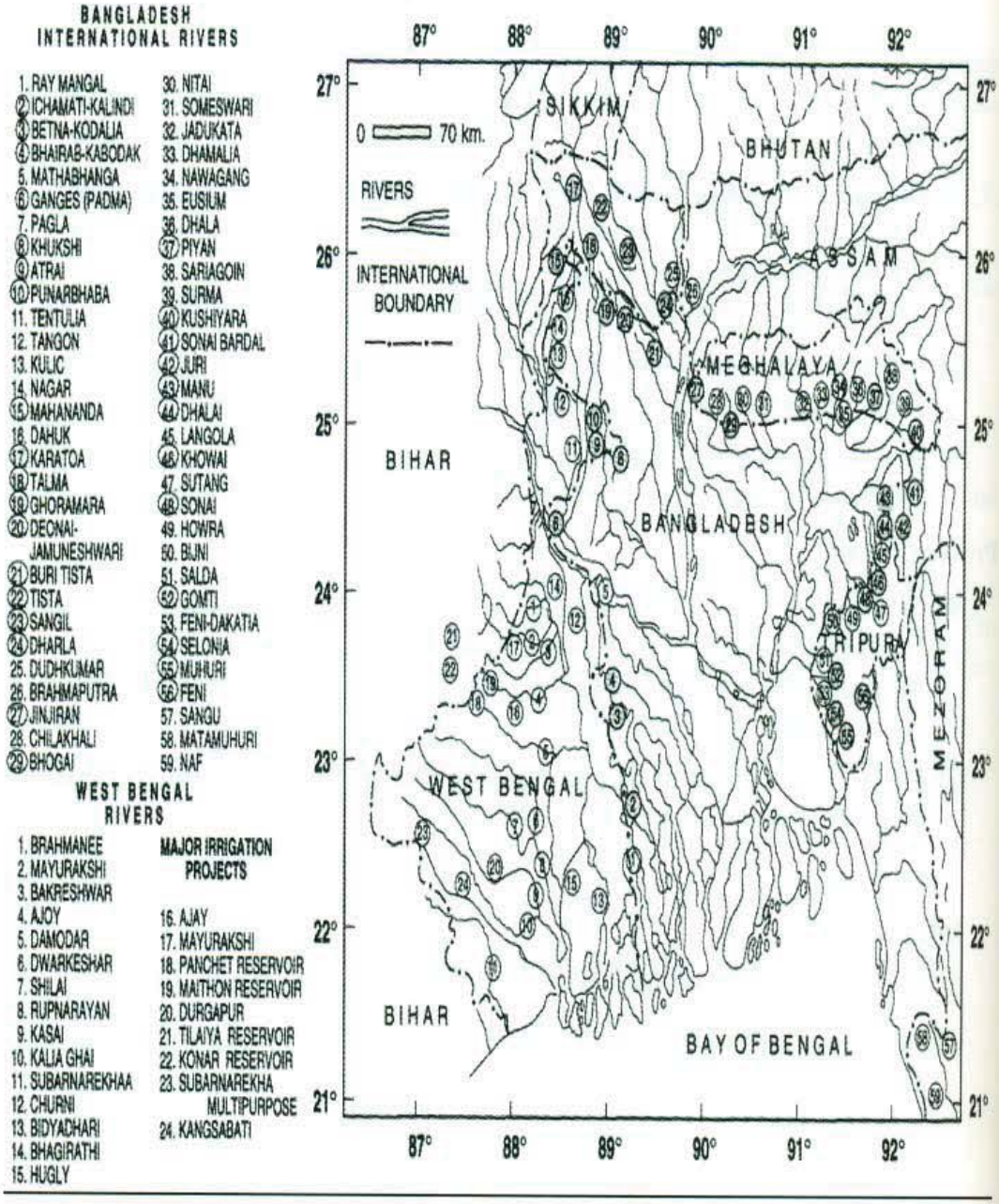
Map 3: Indian Upstream Water Diversion Constructions



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