

Chapter 2

The Teesta River and Its Basin Area

Abstract This chapter shows a pen-picture of the Teesta River and its basin area. The spatio-physical nature, geomorphic and hydrological characteristics of water use systems at the downstream of the Teesta River have been discussed. Besides these, salient features of the Dalia barrage projects of both in India and Bangladesh territory have been cited. General features of the two barrages on the Teesta River: Dalia and Gazoldoba, and on the basis of using Teesta water and land productivity, total and marginal productivity under the both targeted irrigation area have been discussed. Disastrous effects on agricultural production in Bangladesh caused by the Gazoldoba barrage, problems created by excessive discharge of water and deluge (for example, effects of recent severe flooding) have also been discussed. Some whole news on the severity of the problem at Dalia and major concerns published in various news media since 2003 to August 2015 have been cited directly.

2.1 The Teesta River and Its Basin Area

2.1.1 *The Origin of the Teesta River and Its Present Status in Bangladesh*

The Teesta originated from the Teesta source Glacier – Pauhunri Glacier, Teesta Kangse near Khangchung lake (27.59°N; 88.48°E at an elevation of 7128'/2173 m) (Hanif 1995) above mean sea level within the Eastern Himalayas, Sikkim of India. From the Pauhunri Glacier (a great snow peak in the Himalayas), the Teesta (Trisrota/ chumbu chu/ chhombo chho/ three channels) finds its way through the Darjeeling ridge (2000'–2450'/610–747 m m.a.s.l) in a narrow and deep gorge with a meandering course. It follows for approximately 100 miles/160 km. Please see a map of rivers of India and Bangladesh at the appendix.

Through the mountainous area before emerging at Sivoke on the alluvial plains of North Bengal (India) across which it follows in a braided course for a further 50 miles/80 km, and then crosses the Bangladesh India border. After a further length of 100 miles/160 km, it joins the Brahmaputra River at Kamarjani village

Table 2.1 Catchment area of the Teesta River

Area	Plains	Mountainous
Sikkim	6600 km ²	7650 km ²
Darjeeling	2300 km ²	4000
Bangladesh	2750 km ²	–
Total	11,650 km ²	11,650 km ²

Source: Hanif 1995

near Chilmari Thana (Mukhopadhyaya 1982). Out of its 250 miles about 100 miles (170 km) lies in Bangladesh (Hanif 1995). The catchment area occupies almost all of Sikkim, Darjeeling district of India and northern part of Bangladesh is about 4500 miles² (11,650 km²) in total with the following break up (Table 2.1):

The flow of the Teesta River first moves south from Jalpaiguri (India) in three channels, namely the Karotaya to the east, the Punarbhaba to the west and the Atrai to the centre. These perhaps account for the name Trisrota and ultimately the Teesta. The name Teesta, it may be mentioned, has been derived from the Sanskrit word Trisrota (three currents), and the river according to Hindu mythology is said to flow from the breasts of the goddess Parvati (Rahman et al. 1994).

The Teesta was the most important river of the Northern Region till 1787 and was the principal source of supply for the Karatoa, Atrai, Jobuneshwari and other rivers. Considerable structural changes in the Barind Region affected the Karatoa, which rapidly dwindled. The Teesta with a large amount of water left over could not pass down the Atrai without causing floods. The excessive rains of 1787 suddenly brought down a vast flood of sand and choked the Atrai channel, with the result that the Teesta burst into very small Ghaghat River, and not finding sufficient outlet, overflowed the swept nearly the whole Rangpur district. The flood, or rather deluge, happened in a single day, August 27, 1787. Nearly a sixth of the population of the Rangpur district died in that year mainly due to the flood (Verghese 1990). The Teesta found a new outlet for itself and it has kept more or less to this channel since then. The frequent changes of this course has left a legacy in the shape of numerous stagnant cut-off channels in the west of Rangpur, most of which are known as Mara (dead) Teesta, Buri (Old) Teesta, Chara (Beel) Teesta, etc. The present channel within Bangladesh is about 177 km long and varies from nearly 300–550 m in width.

2.1.2 The Spatio-physical Nature of the Study Area

The Teesta dependent area is one of the largest sub-regions of the Bengal basin, which covers almost the entire greater Rangpur district. In Bangladesh portion, the Teesta flood plain is bound by latitudes 25.30° to 26.18°N' and longitudes 88.52° to 89.45°E', which includes the present districts of Lalmonirhat, Nilphamari, Gaibandha, Kurigram and Rangpur, located in the north-eastern part of the country. It covers an area of about 1062 mile²/ (2750 km) square (Survey of Bangladesh,

1981). Teesta is one of the longest rivers of the northern part of Bangladesh and makes a total run of about 170 km from its entrance into Bangladesh to the Kamargani Mouza of Gaibandha where it merges with Brahmaputra River just south of Chilmari Thana of Kurigram district.

Before 1787, Teesta was the main stream of North Bengal and it is still an important river in this region. After 1787, though the Teesta River has changed its course as well as the system as a whole, it has had direct and indirect impact on its river systems and the entire floodplain (Hanif 1995).

The Teesta region is bound by the Himalayan terraces in the north and north-west, the Barind (lies in the Dinajpur-Bogra district, characterized by low nearly level to gently undulating, uplifted terrace landscape of low ridges, separated by nearly level areas) in the West and South-west, the Ganges floodplain and the river Jamuna in the South and East, respectively. (Please see the Appendix) Teesta is the main active river of this area which is responsible for the active land formation process.

2.1.3 A Brief Description on Geomorphic and Hydrological Characteristics of the Teesta River

Bangladesh is almost a plain part of the Bengal basin. It primarily consists of a large alluvial floor with quaternary sediments deposited by the great river system of the world like the Ganges-Jamuna-Brahmaputra-Meghna and their hundreds of tributaries and distributaries. The great river systems formed mainly three important and distinct geomorphic features. These are flood plain areas terrace areas and hill areas. Though some authors distinguish the country in different physiographic basis, it is very difficult to differentiate between geomorphology and physiography.

Whatever it is, the Teesta floodplain is one of the largest geomorphic units of Bangladesh formed by the big river course of Teesta, Dharla, Dudhkumar, Karotoa, Deonai, etc. covering more or less fourteen northern districts of Bangladesh. It extends from a little high elevated sandy levees of the Dinajpur-Karotoa to the right bank of the Brahmaputra and the south a long outlier reaches down to Sherpur (Bogra) along the course of the ancient Tista¹ The relief is of medium- to low-level ridges and shallow basins and most of the areas are shallowly flooded. Physiographically, the whole region may be sub-divided into the following:

1. *Active and very young Teesta floodplain*
2. *Active and young Teesta floodplain*
 - (a) Active and young Dudhkumar floodplain
 - (b) Active and young Dharla floodplain
 - (c) Active and young lower Teesta floodplain

¹ The English spelling of the Teesta River was *Tista* in the past.

3. *Older Teesta meander floodplain*

- (a) Older Dudhkumar meander floodplain
- (b) Older Teesta meander floodplain
- (c) Lower Teesta meander floodplain
- (d) Nalea Teesta meander floodplain
- (e) Bangali-Karotoa floodplain

4. *Young Himalayan piedmont plain and Barind Tract*²

The hydrological characteristics like river flows, rainfall, stages of the river, duration of floods, sediment characteristics, ground water etc. have great influence on the Teesta River. River supplies are derived partly from snowmelt, particularly during April and May. Thereafter, Monsoon rainfall becomes the major contributor. On the other hand, water in the rivers during dry season is derived generally from ground water fed by the previous season's precipitation.

2.2 Water Use Systems at the Downstream of the Teesta River

2.2.1 *The Irrigation and Water Delivery System of the Dalia Barrage*

The Dalia is a gravity irrigation project and so there is an automatic flow of water at all the stages through barrage regulation. No pumping and electric cost is involved in it. Various types of hydraulic structures such as barrage, flood by pass, silt trap, regulators, escapes, syphons, aqueducts, check-cum drops, field turnouts, bridges and culverts with canal network have been provided. The 4500 km long network of canal system has been supplying irrigation water to the field. Improvement of the internal drainage system (about 5000 km) will remove drainage congestions from the project area. The farmers receive water from the canals through being a member of a cooperative society of a respective irrigation zone. To derive early benefits, the whole project has been divided into phase-I and phase-II. The salient features of the project can be shown in the following (Table 2.2):

²The high plain land of northern Bangladesh is called as *Barind Tract*.

Table 2.2 Salient features of the Dalia Barrage Project

Salient features of the Dalia Barrage Project			
Items whole project	1st phase	Items whole project	1st phase
1. Benefited area: 750,000 Ha	182,000 Ha	9. Main canal: 34 km	34 km
2. Irrigable area: 540,000 Ha	132,000 Ha	10. Branch canal: 275 km	120 km
3. Barrage (515 M) 1	1	11. Secondary canal: 450 km	360 km
4. Canal head regulator (110 M)	1	12. Tertiary canal: 2720 km	590 km
5. Closure dam (2470 m) 1	1	13. Drainage canal: 50,000 km	960 km
6. Flood by-pass (610 m) 1	1	14. Irrigation structure: 1512	391
7. Silt trap: 1	1	15. Drainage structure 2320	
8. Flood embankment: 80 km	80 km	16. Turn out: 15,000	5000

Source: Teesta Barrage project, BWDB 1993

2.2.2 Increasing Trend of Agricultural Production After Starting of the Dalia Barrage Project in Bangladesh

Northern Bangladesh is a plain and 90 % of its population relies on some form of agricultural production. Due to lack of water, they cannot cultivate the land in the dry season. Every year they face drought and lose a high proportion of crops and hence suffer from poverty. The successful implementation of the Teesta Barrage (Dalia) project was a dream come true for the poverty-stricken people who should have had been able to hope for a better future. The trend of increasing crop production can be shown as in Table 2.3.

Table 2.3 calculates the marginal productivity of the targeted land area in Bangladesh in terms of various agricultural products. The above trend of crop production has been calculated following the formula $\frac{\Delta Q_1}{\Delta L_1}$ = The change of rate in production by using additional land in period-1; $\frac{\Delta Q_2}{\Delta L_2}$ = Change of rate in production by using additional land in period-2 which estimates the marginal productivity of the land in terms of various agricultural products and these values are calculated in the last column in terms of US dollars. The result shows an increasing trend in crop production using additional land and its monetary value increased approximately upto US\$ 27 million in the period-2. This trend is observed when only 22 % of the total target area had been brought under cultivation. If the total target area of 750,000 ha could have been cultivated, then the average monetary value would increase upto more than US\$ 230 million per year.

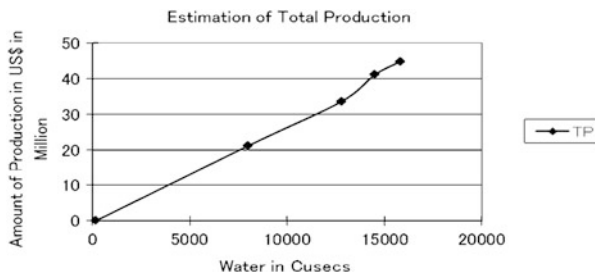
2.2.3 Total and Marginal Productivity Under the Dalia Target Area

Table 2.4 shows the marginal productivity of various agricultural products in terms of US\$ at various usage levels of water resources in cusecs of water based on a

Table 2.3 Increasing trend of crop production after starting of the Dalia Barrage Project

Crop	Period-1 additional land available for crop production ΔL_1 (in hectares, in 1994)	Period-2 additional land available for crop production ΔL_2 (in hectares, in 1995)	Period-1 increase in production ΔQ_1 (in tonnes, in 1994)	Period-2 increase in production ΔQ_2 (in tonnes, in 1995)	$\frac{\Delta Q_1}{\Delta L_1}$	$\frac{\Delta Q_2}{\Delta L_2}$	Monetary value increase in US\$ in Period-2
Paddy (HYV)	92,000	20,000	6500	48,000	0.07	0.42	8 million
Tobacco	50,000	22,000	1700	3000	0.03	0.04	12 million
Wheat	20,000	32,000	1200	22,000	0.06	0.42	5 million
Potato	10,000	2000	20,000	32,000	0.5	2.67	0.5 million
Ground nut	7000	500	1220	1860	0.17	0.24	0.3 million
Sugarcane	7500	9100	19,000	47,000	2.5	2.83	0.8 million

Fig. 2.1 An estimation of total production



recalculation of Table 2.3, which focuses on data of the Bangladesh barrage site (Table 2.4).

This can also be shown by Figure 2.1:

Figure 2.1 shows that when water is available at the 15,000 cusecs level, crops worth US\$44 million can be produced, and at the level of 14,800 cusecs, crops valued at US\$41 million can be produced. The 13,800 cusecs level can produce US\$23 million worth of crops and at 8000 cusecs level only US\$20 million worth of crops can be produced. If the barrage flow is less than 4000 cusecs, the system cannot operate. Using the data of the figure, we can estimate the value of total production in the Dalia target area.

However, Figure 2.2 shows that at the initial stage of the usage of water resources, the marginal productivity was increasing and unstable. The possible reason could be that the use of barrage water for irrigation was still at the initial stage. According to the principle of production function, at a certain point, the marginal productivity is likely to be stable at a pick and thus goes down word (Table 2.5).

If we draw the figure using the data above then the MP points are as shown in the following figure:

Figure 2.3 shows a typical marginal productivity curve that has phases of stable and decreasing marginal productivity with the availability of irrigation water putting amount of water in horizontal axis and production in the left vertical axis.

In other way, if we see the MP curve is linear for both of the countries we can assume the function below following the true condition. We choose four probable cases and try to observe the situations which would bring optimal results. Figure 2.4 shows that cases 1 and 4 dominate marginal productivity over the other country and are least observable. Cases 2 and 3 are “the cases” for a possible sharing.

The horizontal axis shows the amount of water and the left and right vertical axes show the measurement of total production B and marginal production b in Bangladesh. Similarly measurement of total production \bar{B} and measurement of marginal production \bar{b} in India.

Figure 2.4 shows that, for case 1 in which the marginal productivity of Bangladesh dominates that of India with any amount of sharing of water, sharing is not possible. Under this circumstance, Bangladesh would take the total amount of water and India will get none. On the other hand, in case 4 sharing are also not possible.

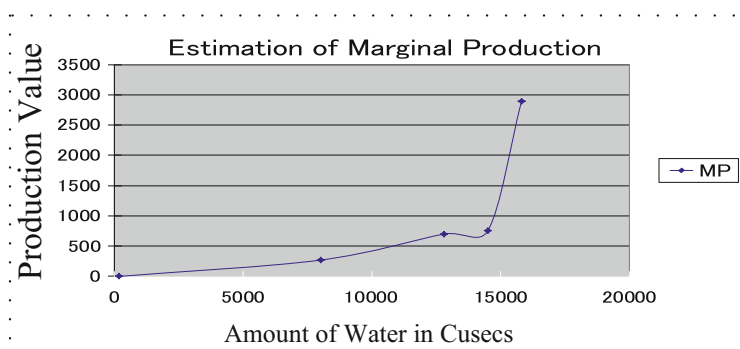


Fig. 2.2 An estimation of marginal production

Table 2.5 An estimation of total production and marginal production

Amount of water in Cusecs	Value of TP (US\$ in millions)	ΔW	ΔTP in (US\$ in millions)	$MP = \frac{\Delta TP}{\Delta W}$ (in US\$ in millions)
176	0	0	0	0
8000	21.1	7824	21.1	269.69
12,800	33.6	4800	12.5	700
14,500	41.1	2300	17.5	760.86
15,800	44.86	1300	37.6	2893.33

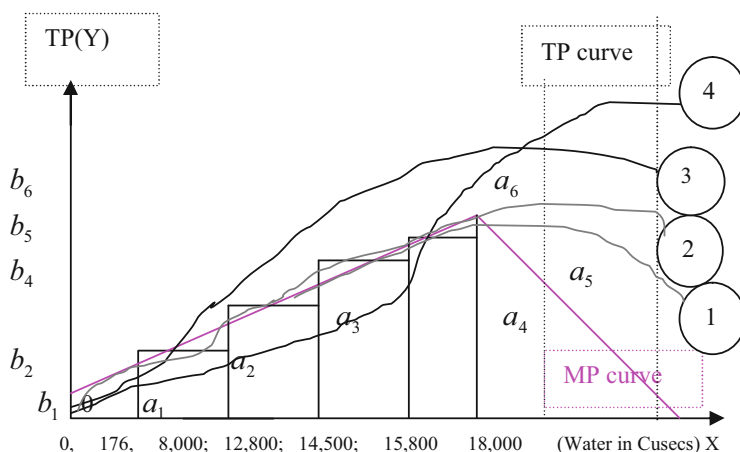
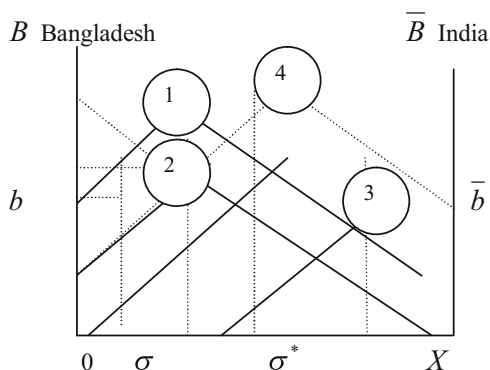


Fig. 2.3 An estimation of total and marginal production (Typical phases of marginal productivity)

In this situation, India would take the total amount and Bangladesh will get none. These two cases are almost impossible being based on an observable data. Hence 2 and 3 are “the cases”. Considering the land productivity and number of

Fig. 2.4 Probable cases for optimal result



affected people in the countries, to increase in the amount of share at Dalia barrage point is more rational, and I consider case 2 as the realistic or “true” situation.

2.3 Sharing of the Teesta Water

2.3.1 General Features of the Two Barrages on the Teesta River: Dalia and Gazoldoba

The Dalia Barrage is the largest irrigation project of Bangladesh. It stands across the Teesta River at Doani-Dalia point in Lalmonirhat district of Bangladesh. The Teesta Barrage is located at 16 km downstream from the Bangladesh boarder in Dali-Doani point. The barrage is 615 m long and has 37 gates each 12 m wide. The designed discharge is about 350,000 cusecs (9915 cum/s). The danger level, rise of water beyond which leads to overflowing, and consequently floods, is at 50 m above marginal sea level (MSL) at Dalia point. The minimum discharge is 4000 cusecs and the maximum is around 35,000 cusecs (WSP 27).

Although the project was started in 1960, its actual implementation began in 1979. The building of the canal system started in 1984–1985 (Teesta Barrage Project, BWDB 1993). The barrage was completed successfully in August 1990 and its operation commenced in 1993. The total cost of the whole project was US\$ 220 million (Teesta Barrage Project, BWDB 1993). There is a 4,500 km long network system of canals for supplying irrigation water to the fields. It is a gravity irrigation project and there is an automatic flow of water at all stages through the barrage regulation. No pumping cost is involved in it. In the first year of the operation of the Dalia barrage in 1993, an area of about 65,000 bighas (16,000 acres) had been brought under High Yielding Variety (HYV) paddy cultivation in the dry season. The project also had the aim of flood control and drainage for a target area of 750,000 ha, of which 540,000 ha were irrigable. The Teesta project covered seven districts of northern-Bangladesh.

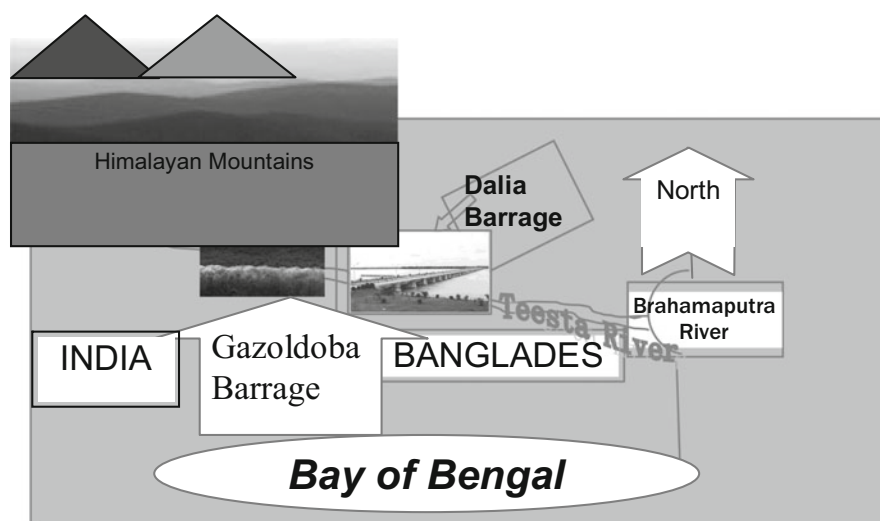


Fig. 2.5 Location map of the Dalia and the Gazoldoba areas

While Bangladesh's Teesta Barrage Project was designed for the utilization of the water within this river basin, India's "Tista Multipurpose Project" aims at transferring water from the "Teesta" to the Mahananda River, which forms the part of a different basin (the Ganges basin) (Abbas 1984). This action is likely to have adverse effects on the natural environment. At the initial stage of the implementation of India's project, a barrage has been built at Gazoldoba in Jalpaiguri district, situated about 66 km upstream of the Dalia Barrage site (Daily Ittefaq, March 23, 1998). Below is the location map of two barrages on the Teesta River (Fig. 2.5).

The total target area under the Gazoldoba barrage is 228,000 acres of land. The district wise land potential can be shown in the following table (Table 2.6):

The barrage was established with an aim to irrigate the above-mentioned land area and to generate hydropower to develop the power supply of the West Bengal (Teesta Barrage Project, West Bengal 1987). However, the irrigation system has been implemented only in 30 % of the target area so far (till 2000).

A socio-economic survey carried out on the target area [from November 19th to December 27th, 2000, through a sample survey on 16 villages of the Ambari, Falkata and Bhaktinagar Panchayats (Local administrative area) of Jalpaiguri district of West Bengal in which out of 2072 of total beneficiaries, 293 farmers (head of households) were interviewed through a scheduled questionnaire] shows that the water absorbing capacity of the land was very low, as 74 % of the respondents opined that the rice field become dry only 618 h after inducing water. The barrage authorities do not supply water every day and it is not possible to supply water through the canal system everyday in an area. Most farmers accused that they have lost their previous natural irrigation system due to unplanned digging of canals on their lands. Because, through the deep canals, even the rain water trickles

Table 2.6 District wise distribution of ultimate irrigation potential under the Gazoldoba Barrage

Name of the districts	Land in thousand acres
Jalpaiguri	4.42
Darjeeling	0.40
West Dinajpur	9.37
Cooch Beher	5.66
Maldah	2.95
TOTAL	22.8

Source: Teesta Barrage Project, West Bengal 1987

down and makes their land drier. Prior to the introduction of the canals, they could cultivate at least one crop in a year but after introduction of the canal systems, they are losing all opportunities. To prevent this trickling down tendency of water, they should make concrete construction which is very costly, as the irrigation network is very far from the barrage and sometimes the distance would be a lot more than the Teesta project target area in Bangladesh territory. Therefore, the irrigation system through the sandy canals should stop. The different types of land in the surveyed area under the Gazoldoba Project are shown in the following (Table 2.7):

The Gazoldoba barrage started to withdraw water excessively in the dry season in 1996, when the Dalia barrage (Bangladesh) was in full operation for irrigation. According to the Bangladesh water development Board (Teesta Barrage Project, BWDB 1993), due to the operation of the Gazoldoba barrage (India), the water flow of the Teesta River decreased significantly, threatening the situation of the Bangladesh area. Exclusive control of Teesta's water in the dry season at Gazoldoba makes the Dalia Barrage useless, and furthermore, sudden release of excessive water through the Gazoldoba Barrage (India) in the rainy season causes floods and bank erosions, and leads to serious suffering of the people in the Bangladesh area of the basin (The Daily Ittefaq June 25, 2000). We can see the water situation of the Teesta River in following figure:

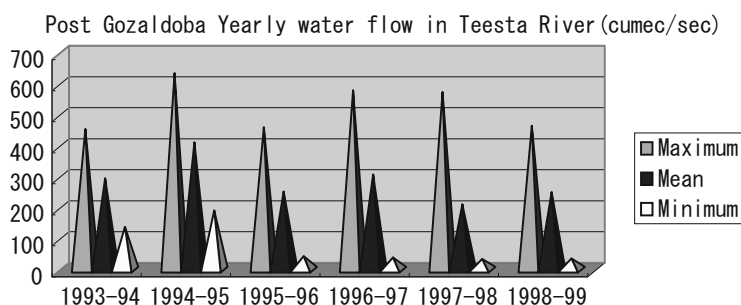
Figure 2.6 clearly shows that the minimum flow at the Dalia point in the dry season has drastically decreased after Gazoldoba barrage began its operation, while the maximum amount has been maintained in the rainy season. According to the figure, we can see that the present situation of the flow of water at Dalia point is very severe and the Dalia barrage is useless with the Teesta River remaining dry. This brings about a crisis situation in Bangladesh along with making the environmental situation worse.

2.3.2 Disastrous Effects on Agricultural Production in Bangladesh Caused by the Gazoldoba Barrage

There are various types of problems created by the effects of the Gazoldoba barrage such as damage of crops, damage to the environment, etc., and can be divided into "short-term" and "long-term" effects.

Table 2.7 Types of land in the target area of 16 villages under the Gazoldoba Barrage irrigation system

Types of land	Land in acres among the respondents	%
Doas (fertile)	12	.75
Doas clay (mixed fertile)	38	2.3
Sandy Doas (less fertile)	682	43
Sandy (not fertile)	856	54
Total	1597	100

**Fig. 2.6** Post Gazoldoba water flow in the Teesta River, Bangladesh

(A) *The short term or immediate effects are:*

1. Reduction in agricultural production due to insufficient water for irrigation in dry season and over flooding in the rainy season
2. Reduction in aquatic population (e.g. fish)
3. Transportation problems; boats render useless; tributaries are dry during dry season

(B) *The long-term impacts on Bangladesh:*

1. One fourth of the fertile agricultural land of northern Bangladesh will become wasteland due to shortage of water
2. Twenty Twenty-one million lives would be affected through environmental and economic ruin
3. An estimated annual economic loss of over half a billion dollars in agricultural, fisheries, navigation and industries
4. Frequent flash flooding and environmental imbalance due to changes in the natural flow of the Teesta River
5. Arsenic contaminated underground waters are being frequently used for irrigation and causing serious health hazards

(C) *Problems Created by Excessive Discharge of Water and Deluge (Effects of Recent Severe Flooding) are:*

Many rivers having their origins in the Himalayas have flown through Bangladesh and fallen into the Bay of Bengal. When there is excessive rainfall on the Himalayas, or the snow and ice on the mountain melt more than usual, the excessive water flowing through the Ganges, the Brahmaputra, the Teesta, the Dharla, etc. inundates the adjoining areas. This creates a yearly natural calamity. However, sometimes artificially caused flash floods also occur in the Padma and the Teesta. When excessive water in the rainy season exerts pressure on the Farakka and the Gazoldoba barrage and becomes threat to these barrages, the authority opens up all the sluice gates all at once to get rid of all the excessive water causing flash floods in Bangladesh. Had the barrage not barred the natural flow of the rivers (even with the excessive water from the Himalayas), these flash floods would not have occurred. The flash floods of March–April that have occurred in the last few years were basically artificial floods (Ahmad et al. 1989). In the March–April season before Gazoldoba, many farmers used to cultivate paddy (Boro), jute Kawon (one kind of food grains), peanuts, etc. in the lowlands, which helped in providing for food and employment.

Crop Damages. Bangladesh has experienced natural calamities of different severities during her history. But climatic events seem to be worsening in intensity, duration and frequency in recent years. One of the main causes of recent flooding is sudden release of huge amount of water through the barrage gates like Farakka, Mohanonda, Dahook, Gazoldoba, etc. When the authorities can't manage the excessive water on the upper part of their territory, they suddenly release them to Bangladesh through opening the regulators. The floods of 1998 in comparison with all previous floods in this country were of a very longer duration. In 1998, three quarters of a million hectares of agricultural land was submerged and most of the autumn rice crops were ruined. Crop losses have been estimated at around \$300 million. The country was airlifting supplies to remote areas after the virtual collapse of the country's road network, and with road communications being cut off in many parts of the country, the prices of food were soaring.

Due to the flood, the season for planting of Aman³ paddy was over without seeds having been planted. This raises the spectre of future food deficit. Farmers were not the only ones affected, as agricultural wage laborers also had been unable to earn an income.

Production of Rice. Bangladesh grows rice in three seasons on 11 million hectares of land. The cropping pattern shows that the major rice crop is Aman (57 %), followed by Aus (22 %) and Boro (21 %)⁴. The general trend of cultivation is shown in the following table (Table 2.8):

³ Autumn planting paddy depending on natural rains.

⁴ Boro-Summer planting High Yielding Variety (HYV) paddy by artificial irrigation system.

Table 2.8 The general trend of paddy cultivation in 1996 (in million tonnes)

Rice seasons	HYV	LV	Total	Percentage
Boro (dry season)	2.3	Nil	2.3	21
Aus (dry season)	0.9	1.5	2.4	22
Aman	1.5	4.8	6.3	57
Total	4.7	6.3	11.0	100
Percent	43	57	100	

Source: Alam 1998, *HYV* high yielding variety, *LV* local variety

Table 2.9 The general trend of paddy cultivation 1997 (in million tonnes)

Rice seasons	HYV	LV	Total	Percentage
Boro (dry season)	6.0	Nil	6.0	33
Aus (dry season)	2.3	1.4	3.7	20
Aman	4.0	4.7	8.7	47
Total	12.3	6.1	18.4	100
Percent	67	33	100	

Source: Alam 1998

If we take an optimistic average yield of HYV rice of 40 mounds (1 mound = 38 kg) per acre and local variety of 15 mounds per acre, the following table shows the production of rice in these seasons (Table 2.9):

This trend of production has been faced severe obstacles due to floods in 1998. A 50 % loss of production of Aman and Aus would account for a loss of production of five million tonnes. Actually, in the Dalia barrage targeted area, farmers' cultivated HYV types of paddy (which require irrigation) and the amount of production was average 80 mounds per acre. But the present situation at the Dalia Barrage project has compelled farmers to decrease HYV rice production.

2.3.2.1 Livestock

Besides the loses of human lives and crop damages, livestock had become a major victim of the floods. There was a severe crisis of both high ground and fodder; people were feeding their cattle water hyacinth, a poor substitute for fodder. Severe diarrhoea broke out within a few weeks. Prices of poultry feed had gone up by 20–40 % and many poultry farmers were facing huge losses.

2.3.3 *Severity of the Problem at Dalia: Major Concerns Published in Various Media*

The major newspapers of Bangladesh have shown their concerns, publishing various news articles on the Dalia barrage and the dryness of the Teesta River in the dry season. Some of them can be cited here as examples:

“The Teesta barrage project on verge of closure as water flow falls” – it was a heading in the Daily Star on November 22, 1997. Citing the reference of water Development Board (WDB), the Daily Star said, water flow near the barrage was recorded between 6000 and 7000 cusec during the first fortnight of 1996. But the flow virtually came down to 2500 cusec during the same period this year. This has posed a serious threat to irrigation, riverine transports and fisheries as the dry season is approaching when farmers of the region depend on both surface and underground water for cultivation of Irri and Boro crops.

The paper on August 30, 1998, reported that as a result of the unilateral withdrawal of the Teesta water by Indian authorities Bangladesh is getting only 10–15 % (3000–4000 cusec). The lowest flow recorded on January 13th was only 2600 cusec. But the country’s largest irrigation project, the Teesta Barrage, constructed at a cost of Taka 1000 crore, and its 34 km main distribution canal need at least 8000 cusec water in the lean season.”

“Teesta Project Stops Functioning” – it was a heading in the Daily Independent on April 24, 1998. The paper wrote the Teesta project has stopped functioning after providing irrigation facilities to only 25 % of the land under the project due to sudden fall in the water level of the river Teesta. The farmers of Khalisha, Jhumgara and Nautara unions under Dimla and those of Balagram, Douria, Gulmoda and Jaldhaka unions under Jaldhaka Thana started cultivating Irri-Boro crops on the 55,000 acres of land with a hope of getting irrigation facilities. But irrigation work has stopped due to sudden decrease in the water level in front of the Dalia barrage leaving 75 % of land uncultivated.

The Daily Sangbad (August 13, 1998) wrote citing the reference of Teesta Barrage Authority that “India has controlled the Teesta water constructing a barrage at Gazoldoba area only 100 km upstream of the Dalia Barrage on the same river which made the decrease in water flow at Dalia. So that the farmers are deprived from irrigation facilities.”

The Bengali Daily “Doinik Muktokontho” in its Internet edition (November 9 1998) wrote “India is responsible for floods in Bangladesh” reporting on the roundtable conference of the Nationalist *Mohila Dol* (women group). They said India has made dams on 54 international rivers near Bangladesh border which makes flood in Bangladesh during rainy season and cause droughts in the dry season as they control and regulate the flow of water unilaterally as they wish. Another prime Bengali Daily the Daily Inqilab made a report (by Minhazur Rahman, November 3, 1999) with a heading “Teesta Barrage Project *Moishal Bondhur* Teesta Pare”. The report said, “Teesta is an international river but India has barred its water. . . it is a violation of international law and human rights. . .” An important Bengali Daily the Daily Ittefaq reported (March 23, 1999) “the level of underground water has decreased, the minimum flow of the Teesta falls to only 176 cusecs”. The paper wrote on October 13, 2001, “Teesta Barrage Under Threat”. On August 12, 2002, the Daily Ittefaq wrote under this heading that “Bangladesh will propose to India to stop changing the course of Teesta Water”. The meeting told it “River Hijacking”. A high-level meeting of water and Foreign Ministry was held on August 11, 2002, at Dhaka decided to propose the above to the conference

of Joint River Commission (JRC) to be held in New Delhi on August 27th–28th, 2002.

The Daily Ittefaq again wrote (September 2, 2002) mentioning the above agenda that India was morally in agreement to discuss the issue of Teesta water sharing in the next ministry level meeting of the JRC. But the members did not elaborate on when and where the ministry level meeting will be held.

Other newspapers and periodicals such as the New Nation, Dhaka Courier, Daily Observer, etc. also reported on the issue. Four research papers have also been published in refereed journals.

2.3.4 Severity of the Problem at Dalia: Major Concerns Published in Various Media (up to August 2015)

This sub-chapter shows major concerns of inhabitants residing in the Teesta basin area Bangladesh regarding water crisis and socio-economic loss of the people. Concerns published in various newspapers have been collected and portrayed below during March 2003–August 2015. From hundreds of news published in both hard and soft forms in various nationals, local and international newspapers “*little important whole news are directly cited*” below:

1. Bangladesh not getting due share of Teesta water: West Bengal minister

Source: BDNEWS, Kolkata, May 19, 2005, by News Editor

Irrigation Minister of West Bengal Ganesh Mandal said that Bangladesh is unable to get sufficient supply of water from Teesta River as dams constructed in different areas under the Teesta barrage project obstruct the normal flow of the river. He said this recently in an exclusive interview with BDNEWS. The incumbent leftist government of West Bengal thinks that a new problem may arise between Bangladesh and India over the sharing Teesta River water. In this regard, Ganesh Mandal told BDNEWS Bangladesh is demanding 40 % of Teesta River water. The problem was non-existent before as Teesta River water would run down into Bangladesh with its normal and natural flow at that time. The Minister also said that though the construction work of Teesta Barrage Project started 30 years back it is yet to be completed. The target is to complete the work of first phase by 2008. The engineers of the Irrigation Department have doubts whether it will be possible or not as a new problem is created over acquiring lands for Teesta Barrage, he added.

2. Secretary-level talks on water sharing begins in Delhi – By M Shafiqul Karim

<http://www.bssnews.net/newsDetails.php?cat=0&id=95430&date=2010-03-18> BSS news

NEW DELHI, March 18 (BSS) – Water resources secretaries of Bangladesh and India began here talks on sharing of Teesta water and water management of common rivers at Oberoi Hotel prior to the Joint Rivers Commission meeting

later today. Water Resources Secretary Sheikh Mohammad Wahiduzzaman is leading the Bangladeshi team and his Indian counterpart UN Panjiyar heads the host's side. This will be followed by the first meeting of the ministerial-level Joint Rivers Commission after lunch where water resources ministers of the two countries Ramesh Chandra Sen of Bangladesh and Pawan Kumar Bansal of India will lead their respective delegations. The two-day talks are expected to be wrapped by a joint declaration and a media conference by the two ministers. The JRC meeting is a follow-up of Prime Minister Sheikh Hasina's visit to Delhi in January this year and the joint declaration issued at the end of her tour had said the Commission would meet in the first quarter of this year. The previous JRC meeting was held in 2005.

3. Bangladesh unhappy over postponement of Teesta deal

The Economic Times, PTI Sep 6, [2011](#)

The failure to sign a deal on Teesta water sharing on Tuesday cast a shadow over the two-day visit of Prime Minister Manmohan Singh here as Bangladesh summoned the Indian High Commissioner and bluntly conveyed its unhappiness on the issue. Bangladesh Foreign Secretary Mijarul Qayes called Indian envoy Rajeev Mitter to the Foreign Ministry this morning and sought a clarification on media reports about India deciding "at the last minute" not to sign the accord, sources here said. Mitter is understood to have told Qayes that the "internal discussions" on Teesta water-sharing in India were yet to be completed and New Delhi was not in a position now to ink the pact. He is understood to have expressed regret over the Teesta deal not coming through. Mitter, however, conveyed to Qayes that as soon as the internal discussions were over in India, the deal would be signed, said the sources. Qayes, on his part, conveyed to the Indian envoy that the "last-minute" scrapping of the move to sign the Teesta deal was "not acceptable". A spokesman of Bangladesh Foreign Ministry said Qayes conveyed to Mitter that India's decision not to ink the "crucial and long-awaited" Teesta pact is "very frustrating". Bangladesh, for which the Teesta pact would have been the most vital event of Singh's two-day visit, also reportedly threatened to retaliate by not signing the transit accord with India.

Teesta Water

4. Bangladesh must get its due share

[The Daily Star](#) Your Right To Know; Wednesday, October 17, [2012](#)

Considering the number of people dependent on the Teesta, Bangladesh should get an equitable share of the river water. Professor Dr. Fakrul Islam, a teacher of Rajshahi University, said this at an international meeting on "Framework for Cooperation on South Asian Trans-boundary Water" held in the capital yesterday.

He noted 21 million people in Bangladesh depended on the river while in India it was only eight million. But the neighbouring country keeps around 85 % of Teesta water during the lean period. In his presentation, he showed that the Teesta water did not cross 6000 cusecs over the lean period from 1993 to 1999 at Dalia point in Bangladesh as India had blocked the flow at Gazoldoba. Rangpur, where 70 % people live below the poverty line, becomes seriously affected by the shortage of

Teesta water in dry season. Donor organizations should place some restrictions on releasing fund for the construction of any barrage or irrigation projects which may harm riparian states. The feasibility studies before granting such funds should be made with foresights, he added. The two-day meeting, which began on Saturday, was attended by experts from South Asian countries.

The speakers said the environment flow approach of managing and sharing the Teesta water could save the dying river and resolve the decades-long disagreement between Bangladesh and India. Environmental flows can be described as the quality and quantity of flows required for maintaining sound health of a water body. Suresh Babu SV, director of River Basins and Water Policy WWF-India, presented a paper titled “E-flows: A Tool for Regional Cooperation”. He said cooperation should be the driving principle of sharing the trans-boundary waters. Sagar Prasal, deputy country director of Asia Foundation in Nepal, presented a paper on the role of civil society on the decision-making process for common rivers. He said civil society could first build trust among citizens as they can function without the constraints of foreign policy mandates. Dr MA Matin, general secretary of Bangladesh Paribesh Andolon, chaired the last session of the day.

5. *Teesta Water Pact a Difficult One: PM*

[The New Indian Express](#); Published: March 4th, 2014

By Arvind Padmanabhan,

Prime Minister Manmohan Singh Tuesday told his Bangladesh counterpart Sheikh Hasina that a pact on sharing Teesta River waters was “difficult” even as an agreement was desirable in the interests of the two countries. Manmohan Singh’s remarks came during a 25-min meeting with Hasina on the margins of the BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) Summit. “The Bangladesh prime minister did raise the issue of Teesta. Our prime minister said: ‘It’s a difficult one, we’re trying to resolve it’,” Indian foreign office spokesperson Syed Akbaruddin told journalists here. Nevertheless, the Bangladesh prime minister expressed happiness that some 600 MW of power had started flowing from Tripura to her country, sending positive signals to her people on ties with India, the spokesperson added. Manmohan Singh and Hasina were here in this capital city of Myanmar for the third BIMSTEC summit. Besides India, Bangladesh and Myanmar, the seven-nation regional grouping comprises Nepal, Bhutan, Sri Lanka and Thailand. Earlier, Hasina told the Summit that she hoped to finalise a host of water pacts with India – a subject of dispute between the two countries for decades. “Modalities need to be found for the sharing of water resources, especially of common waters,” the Bangladeshi prime minister said. “As, for example, Bangladesh and India are sharing the waters of river Ganga with the signing of the 30-year-old Ganges Water Sharing Treaty, with others to follow soon,” she added. As many as 54 rivers are shared by India and Bangladesh and tensions continue between them despite a Joint River Commission seeking solutions since 1972. The most recent dispute has been over Teesta River originating in Sikkim, for which India was on the verge of signing a pact with Bangladesh

but had to withdraw after West Bengal Chief Minister Mamata Banerjee declined to give her nod.

6. The bdnews24.com Published: 02-08-2013 said in a heading that, *‘Mamata shelves Teesta report.’*

The report said, “Believe it or not, the report on the Teesta River that West Bengal government had commissioned last year has been shelved unceremoniously. Hydrologist Kalyan Rudra submitted his ‘preliminary’ report to chief minister Mamata Banerji in person in early December, highly placed sources in the West Bengal government said. Mamata Banerji has not talked about it at all, not even acknowledged receiving the report, let alone share its findings with the media or the Union government, which is keen to push through an agreement on sharing the Teesta waters with Bangladesh. Rudra has kept himself strictly off limits from the media, saying he will not “utter one word” on the issue. But highly placed sources in West Bengal government say that the chief minister is unhappy with Rudra’s observations. Though the hydrologist has not been able to get full details on the Teesta from the Central Water Commission and has thus not been able to submit a “complete report”, he has based his observations on data he could garner from various sources including the West Bengal Irrigation department. Rudra has reportedly said that “in the interest of keeping the Teesta alive, it is important to maintain the normal flow of the river towards Bangladesh”.

He has said that towns like Jalpaiguri and Haldibari exist in the 72 kms stretch between the Gajoldoba barrage and Burigram where the Teesta enters Bangladesh. A combined population of around 1.5–2 million people, all Indian citizens, live in this stretch – so it would not be fair to deprive them of the use of the river by withdrawing much water from the Gajoldoba barrage for irrigation purposes. Rudra has reportedly observed that the Teesta River should be allowed to flow “as normally as possible” into Bangladesh – or else it will dry up if too much of its waters are withdrawn upstream. It is possible that this has not gone down well with Mamata Banerji. She has reportedly told Kalyan Rudra to be done with the report and not speak about it. Sources in West Bengal say the chief minister is not happy because she has not got a “complete report”. Kalyan Rudra reportedly told her a complete report was not possible unless some of the classified data on the Teesta (which originates in the Sikkim highlands near the border with China) is provided by the Central Water Commission – for which the West Bengal government has to chip in with a commitment to keep the data secret. That is what the West Bengal government has not done – ask the Central Water Commission for the classified data on the Teesta for use by the one-man Rudra committee. But those who know Kalyan Rudra well say the hydrologist, like many river specialists, is against random withdrawal of water in the upper stretches because that can threaten the normal flow of the rivers and lead to their drying up. This does not fit well with Mamata Banerji’s scheme of things – so the report has been quietly shelved and the West Bengal chief minister has not come out with her views on the Teesta water sharing treaty that Delhi is keen to sign with Dhaka at the earliest. Senior Indian officials responsible for drafting the treaty actually hold the view that has reportedly

been expressed by Kalyan Rudra – that random withdrawal of water at the upper reaches of Teesta may jeopardize the river itself. So though they factor in the hydro-electric projects in the Teesta's upper reaches in Sikkim and West Bengal, they say that the Teesta should be allowed to “flow normally” into Bangladesh which will by itself guarantee the quantum of water Dhaka is looking for.

Not that Mamata Banerji has a particular reason to oppose it but analysts say she is actually trying hard to secure from Delhi a special financial package to bail out her cash-strapped government and the Teesta treaty is the one she has chosen to use as her chip in the federal bargaining. At stake is India's sovereign commitment to Bangladesh, who has been described by Indian foreign minister Salman Khurshid as a “dear neighbor” in recent weeks. Khurshid leaves for Dhaka on a 2-day visit on February 16 but his proposed meeting with Mamata Banerji to iron out the Teesta issue has not yet materialized. “The Indian government is however more or less confident of getting the Land Boundary Agreement through the parliament during its next session, for which it is trying to garner support of major opposition parties like the BJP and the Left”.

7. Target Revised Teesta Deal?

Daily Star, May 30, 2015; Dhaka

Pallab Bhattacharya, an eminent journalist wrote any analysis on Teesta water sharing issue in this news under the heading ‘Target Revised Teesta Deal?’. He said, æIndian Prime Minister Narendra Modi is making intensive efforts to make the Teesta water-sharing deal agreeable to both Dhaka and West Bengal. Chief Minister Mamata Banerjee has been included in the prime minister's delegation on his June 6–7 Dhaka trip. The Modi government is trying to explore the possibility of having a ærevised” Teesta treaty signed then. However, Bangladesh wants the original agreement, which could not be inked 4 years ago due to opposition from Mamata, to remain unchanged.

To help the issue, many proposals are on the table. They include a revised formula under which India and Bangladesh are looking at 46:46 % sharing of water. The rest of water will come from the regeneration of the river by the time it enters Bangladesh from India and reaches Dalia barrage in Lalmonirhat. Out of its share, West Bengal, under the revised formula, has to part with 21 % of water at Gazoldoba in North Bengal while another 25 % would be added through regeneration by the time it would reach Dalia barrage, sources in New Delhi said yesterday. To persuade Mamata, the federal Indian government is offering financial assistance to West Bengal for developing irrigation infrastructure in the state to use Teesta water particularly during the dry season. Sources pointed out that even now the state can only use 25 % of Teesta water due to lack of irrigation infrastructure. It is to be seen how Bangladesh and West Bengal would respond to the formula, sources added. It was not easy to convince Mamata of the revised formula on Teesta as water requirement for irrigation in vast areas of northern part of West Bengal is politically crucial for her.

The issue is crucial in view of the fact that if her government sacrificed the interests of North Bengal, it might cost her heavily in fresh assembly elections in the state. The polls are due by the first half of next year.

Mamata was unlikely to accept any formula on Teesta unless her government got any tangible assistance from the central Indian government in return. For this, India's External Affairs Minister Sushma Swaraj, who has good equations with Mamata, has taken a lead role in trying to bring the West Bengal chief minister on board signing the Teesta deal during Modi's visit to Dhaka, said the sources. Mamata's close aide and West Bengal Education Minister Partha Chatterjee and Bangladesh High Commissioner to India Syed Muazzem Ali are guarded on the possibility of signing the agreement. Chatterjee said, "I believe the chief minister will not come in the way of the [Teesta] treaty as long as the interests of West Bengal are not affected by the proposed agreement."

Muazzem Ali told senior journalists of *The Indian Express* that he was hopeful about a "positive outcome" of the talks in Dhaka on the Teesta during Modi's visit. He said if the internal discussions between the central government and those in West Bengal and Sikkim states, through which Teesta flows, reach a "conclusive decision," they would be very happy to sign the agreement. The original Teesta treaty was expected to be signed during former Indian PM Manmohan Singh's Dhaka visit in 2011. But the signing was cancelled at the eleventh hour due to opposition from Mamata.

8. ***'Mamata again plays the spoilsport as Modi ditches Teesta deal to bring her to Bangladesh'***

The bdnews24.com; 2015-05-29

The report said that, 'The Land Boundary Agreement (LBA), allowing exchange of enclaves between the countries, is likely to be given top priority. Home Minister Rajnath Singh's recent announcement in Kolkata that the water-sharing accord would be finalised soon had irked Banerjee, according to the 'Anandabazar Patrika'. The central government has assured the West Bengal chief minister that Modi would not talk about the deal during his June 6–7 visit. Singh, too, clarified that he did not mean the deal would be signed during the trip but in near future through mutual discussion, the report added. Banerjee's stern opposition had stalled the deal 4 years ago during then then Prime Minister Manmohan Singh's visit. But when she was in Dhaka in February this year, she had assured Bangladesh of her full support in resolving the outstanding issue'. æI'm not opposed to the Teesta deal but the agreement should not be signed depriving the north Bengal."

Anandabazar quoted Banerjee as saying. It said Banerjee had appointed hydrologist Kalyan Rudra to look into the issue and added that the state would take a final decision on the matter based on his report. Two years ago, Banerjee had unceremoniously shelved a report on Teesta River by Rudra, according to sources in the West Bengal government.

She said the old agreement had some faults and her chief secretary informed the Centre about them. The chief minister said she had told Prime Minister Hasina about her stance on the issue during her Dhaka visit. "Bangladesh and India have no

negative relations. But we cannot accept any one-sided decision because West Bengal's interest is my top priority," Banerjee said.

9. *'No Teesta deal during Modi's visit'*

The Daily Star online report, May 31, 2015

India's Minister of External Affairs Sushma Swaraj says "the Teesta water sharing agreement will not be signed during Indian PM Narendra Modi's upcoming Bangladesh visit." India today made it clear that the Teesta River water-sharing deal will not be signed during Indian Prime Minister Narendra Modi's upcoming Bangladesh visit. "There will be no deal on Teesta this time during the coming visit, because we have to take the state [West Bengal] government on board for this," Indian External Affairs Minister Sushma Swaraj said at a press conference. Swaraj, however, said the process of taking the state government on board for the Teesta deal was on. The announcement comes just days ahead of the June 6–7 Dhaka visit by the Indian premier. Meanwhile, West Bengal Chief Minister Mamata Banerjee yesterday said she would visit Bangladesh on June 5 and return home the next day after signing the Land Boundary Agreement". This means Mamata will travel to Dhaka from Kolkata separately, not with Modi who will fly in from Delhi on June 6. Talking to reporters at the state secretariat in Kolkata, Mamata said, 'I will be reaching Bangladesh on June 5 and will be back on June 6 after the signing of the Land boundary Agreement.'

On May 28, Partha Chatterjee, education and parliamentary affairs minister of West Bengal, said "Mamata would accompany Modi on his Dhaka trip. In September 2011, the much-talked-about Teesta water-sharing deal fell through due to opposition from Mamata. She refrained from joining the then Indian PM Manmohan Singh in his Bangladesh visit. Originating from Sikkim, the Teesta enters Bangladesh through Jalpaiguri in West Bengal and meets the Brahmaputra".

10. *Modi sings Mamata's tunes on Teesta issue: Was Bangladesh the ice-breaker they needed?*

-by FP Staff Jun 7, 2015; FIRSTPOST; August 20, 2015

Narendra Modi and Mamata Banerjee. Now, what are the words that come to your mind at the mention of these names together? Rivals? Headache? Enemies? BFFs not? Whatever they may be, "friends" is probably not a word that you're reminded of immediately when these two people are in question. The one day, you are greeted with this: a video of Narendra Modi and Mamata Banerjee, grinning ear-to-ear, while talking to each other. And last week, it was reported that Modi and Mamata will tour Bangladesh together, which they did. Not only did Modi tour Bangladesh with Banerjee, he even sang the West Bengal CM's tunes on the Teesta water sharing issue. The Prime Minister, who is not only known to have strong opinions on all issues, but is also known to wax eloquent about them in public, said the following about the Teesta issue: "I am confident that with the support of state governments in India, we can reach a fair solution on the Teesta and Feni rivers. We should also work together to renew and clean our rivers."

No wonder then *The Telegraph* had to say the following about Banerjee's state of mind when she left Bangladesh following the tour with Modi. "Mamata Banerjee boarded the flight back to Calcutta with a wide grin tonight hours after Prime Minister Narendra Modi said on Bangladeshi soil what she wanted to hear from him on the Teesta River."

The sharing of Teesta's water has been a bone of contention between India and Bangladesh for a while now, with Banerjee exhorting the neighbouring country to trust her judgement on the issue in the past. Back in 2011, [Manmohan Singh](#) had faced stiff opposition from Banerjee on the Teesta water sharing issue. Singh had wanted to sign an agreement which Banerjee alleged will not be in favour of Bengal. Teesta which runs through north Bengal and Bangladesh and how much water both countries get has always been disputed by the leaders of the countries.

Aparna Ray writes for [Global Voices](#), "In 1983, an [ad-hoc water sharing agreement](#) was reached between India and Bangladesh, whereby both countries were allocated 39% and 36% of the water flow respectively. The new bilateral treaty expands upon this agreement by proposing an equal allocation of the Teesta River."

In fact, when Banerjee visited Bangladesh earlier this year, the neighbouring country's Prime Minister didn't forget to refer to the dispute in a roundabout way, even while holding a lighthearted conversation with Banerjee. [NDTV reports](#) that Banerjee had joked about not getting too many Hilsa fish from Bangladesh. Following which Hasina had quipped; the more water there will be in Bangladesh's rivers, the more fish will be bred. Anyone who is aware of the tension between Bangladesh and India over water sharing can immediately figure that this was a clever reference to the Teesta issue. However, over the past couple of months, Banerjee [has only reassured Bangladesh](#) that they will not get an unfair deal on water sharing, though no official announcement has not been made. Narendra Modi, given his history of discord with Banerjee, could have easily made a grand declaration about water-sharing, especially to prove a point to the Bengal CM. However, he did nothing like that and made it absolutely clear that the water-sharing issue will not be resolved without the state government's inputs. In fact, from what he said, it is clear that he indicated that Mamata Banerjee's opinion on the matter will be of prime importance while taking any decision on the issue. It is important to note here that while Teesta water-sharing may not been as significant as the Land Border Agreement in Modi's scheme of things and India-Bangladesh diplomacy, it is an issue that is very close to Banerjee's heart. Therefore, by letting Banerjee lead on the Teesta issue, Modi doesn't stand to lose anything. However, it is a rather convenient way to take a first step towards winning Banerjee's confidence. Banerjee, who is known to be a fairly egotistic person who doesn't take slights lying low, is obviously pleased. Banerjee and Modi's war has been one of egos but Modi had never directly engaged with Mamata Banerjee in the past, like the way Banerjee did. The West Bengal CM had called him Hitler and a "murderer", but Modi had only made references to the Saradha scam and talked about illegal immigrants in the state, never taking personal potshots at Banerjee. He left that to his aide Amit Shah, who had turned up in Kolkata and threatend to oust

Trinamool Congress from the state. In fact, Shah had famously said, “Didi, this is Amit Shah and I will oust TMC from West Bengal.”

However, with the recent by-poll and civic polls defeat, BJP may have learnt the hard lesson. They may have realised that making inroads into West Bengal’s politics will not be possible by sparring with Banerjee at the moment. Given that BJP’s presence in the state is negligible, it perhaps makes more sense to piggyback on Trinamool’s popularity to find an audience first in Bengal. With the state elections up next year, Banerjee too maybe swallowing the bitter pill and extending her hand of friendship for Modi. Bengal, which has been reeling under unemployment and lack of industrial development, most definitely needs financial assistance from the Centre if Banerjee had to show any “paribartan” (change) to the voters next year, as promised. While she has been at loggerheads with Modi for a better part of her tenure as Bengal’s CM, the impending elections may have helped her see sense. Broiled in many controversies and accused of being autocratic, Banerjee will need a strong development blueprint for the state to present to the voters next year. And that will become easier with Modi’s intervention. This Bangladesh trip may have acted as the peacemaker Modi and Banerjee desperately needed.

11. *BJP govt and the future of Teesta treaty*

bdnews24.com; June 22, 2014 By Md. Khalequzzaman is Professor of Geology at Lock Haven University, USA. (The opinions expressed below are those of the writer’s of this article and do not necessarily reflect that of bdnews24.com. bdnews24.com accepts no responsibility, legal or otherwise, for the accuracy or content of member comments.)

The lack of resolution over the sharing of water resources in transboundary rivers between India and Bangladesh remains as one of the major obstacles in the relationship between these two neighbouring countries. Although Bangladesh and India share 54 common rivers, the Ganges Treaty of 1996 is the only agreement on sharing of water during lean season. The lack of an agreement on the Teesta water sharing has become a source of frustration and anger for many people in dealing with the common rivers between India and Bangladesh. The stalemate in water sharing between the two countries has received extensive coverage in electronic and news media. Several political alliances in Bangladesh, both from the left and right spectrum, have organized human chains, protest rallies and long marches demanding a fair and equitable agreement on water sharing in the Teesta and other transboundary rivers. The possibility of signing a treaty for sharing water in the Teesta River has been hanging in the limbo for the last three decades. The latest attempt to sign such a treaty during the visit by the then Indian Prime Minister Dr. Manmohon Singh during his visit to Dhaka in September of 2011 was allegedly foiled by the Chief Minister of Pashchimbanga Mamata Banerjee. The Prime Minister of Bangladesh Sheikh Hasina blamed Banerjee for foiling the possibility of the Teesta treaty. With the recent change in the power in central government of India, the prospect for a water sharing treaty on Teesta water took yet another uncertain turn.

The newly elected Prime Minister of India Narendra Modi declared a few policy decisions of his government on matters pertinent to the interest of Bangladesh in general, and to the water resources management in transboundary rivers in particular. On assuming the power, the PM Modi reiterated his campaign vow to clean up the Ganges River, which is one of the most polluted rivers in the world. The Ministry of Water Resources in India has been charged with additional task to clean up the Ganges River. If the new Indian government succeeds in achieving this monumental goal of rejuvenating the Ganges then it will be seen as a milestone of success for PM Modi. A clean Ganges River will also benefit downstream Bangladesh. The Modi administration is contemplating the idea of setting a new ministry, which will work as a fulcrum for all things Himalayas. As per a report published in the *Economic Times of India* on May 31, 2014, among the key tasks this new agency is likely to focus on is coordination with China in the context of “less-spoken-of rivers” in the North-east. It is worth mentioning here that all major rivers that originate in various parts of the Himalayas and Northeast India, including the Ganges, Brahmaputra and Teesta Rivers, flow to Bangladesh. The economy, ecosystems, environment and the very survival of Bangladesh depend on natural flow of water and sediments carried by the Himalayan rivers; yet there is no mention in the objectives of the proposed ministry to what extent, if any, the interest of the downstream neighbour Bangladesh will be coordinated in the future. The inter-linking of rivers (ILRP) involving transfer of water from major Himalayan rivers, such as the Ganges and Brahmaputra, to Indian south and west through link canals has been highly contentious issue since 2003 between India and Bangladesh. The ILRP is a BJP’s pet project. As a result of protest by Bangladesh and opposition from within India, the ILRP has been put on hold for the last few years. However, following the recent Lok Sabha election, the national convener of BJP’s Water Cell Mr Sriram Videre wrote an article in the *Asian Age* on May 22, 2014, advocating to rejuvenate the ILRP project. Another news report published in a local daily reported that the newly elected Modi’s government is moving ahead with implementation of the Inter-linking of Rivers Project (ILRP) and the Tipaimukh multi-purpose dam project, which was suspended following objections from the government of Bangladesh in the past. The ILRP is a BJP’s pet project. Being directed by the Supreme Court of India, the last BJP-led government in 2002–2004 wanted to implement the ILRP on a “war footing”.

As of 2006, India has 16 hydel projects installed in NE states. During 2009–2013, the Technical Advisory Committee to the Ministry of Water Resources in India has given clearance to 38 dams and irrigation projects in NE India that have the design capacity to generate over 21,805 MW. There are over 100 proposed dams, barrages and irrigation projects at various stages of development in NE Indian states, including Tipaimukh, Teesta, Loktak, Subansiri, Debang, Kopili, Kameng, Myantru and Ranganadi projects. Plans for most of these projects are moving along smoothly without much objections from the government of Bangladesh. Since these dams are not a direct part of the ILRP, the people in Bangladesh are not as aware of them. The Brahmaputra Board makes recommendations and National Hydroelectric Power Corporation, NE Electric Power

Corporation (NEEPCO), Central Electric Authority (CEA), Department of Development of NE Region (DONER), etc. along with the state governments are involved in those projects. As per a report, the lack of transparency and accountability in making the data about these projects available for public remain as a standard norm of functioning for the Indian Ministry of Water Resources. It is the responsibility of the Joint River Commission to make these data available to public.

All of these hydroelectric and irrigation projects in NE India have the potential to alter the natural flow in rivers downstream and cause detrimental impacts on floods, agriculture, fisheries, wetlands (beels, mangroves, etc.) on a long run. As per the UN Convention on Non-navigational Water Courses of 1997, which will become a law in August of 2014, India is obligated not to cause significant harm to the environment downstream and is supposed to exchange information with Bangladesh on all projects on transboundary rivers that have the potential to impact the environment and economy. A prior consent from Bangladesh is also warranted under the convention. The existing Ganges Treaty of 1996 also have a similar provision in Section IX, "Guided by the principles of equity, fairness and no harm to either party, both the Governments agree to conclude water sharing Treaties/Agreements with regard to other common rivers." No such steps were known to be taken. However, in 2013, India has signed a Memorandum of Understanding with China to exchange data on rain, river flow and flood conditions in the upper reaches of the Yaluzangbu/Brahmaputra River. It is important that the government of Bangladesh signs similar MoU with all countries in the GBM basins to share hydrologic data.

In this backdrop, it is obvious that Bangladesh needs to get involved in dialogue with the newly elected government in India as it pertains to sharing of water and sediment resources in all transboundary rivers in the Ganges-Brahmaputra-Meghna basins. Developing a culture of generating credible data on rainfall, river discharge, river-level and groundwater is very essential in negotiation. The ultimate goal for Bangladesh should be persuading all co-riparian nations in the GBM basins to work together and create a River Commission that will have the authority to formulate policies for integrated water resources development plan and to implements them. India has already made some advances with China by signing a MoU to exchange hydrologic data; now it is important to expand the sphere of cooperation among all countries in the GBM basins. As the experience shows, bilateral treaties on water resources sharing in the GBM basins are not enough to foster an environment of regional peace, security and prosperity. The climate change is adding additional challenges to the entire GBM basins, and it is time to think beyond bilateral approach to deal with water sharing during the lean seasons. Water and sediment resources will have to be managed on a regional scale on a long-term basis. Greater challenges demand broader approach, and climate change is such a challenge for the entire South Asian region. Only a basin-scale planning and management of water resources involving all stakeholders in the GBM basins will be a time-sensitive approach. Ratifying the UN Convention on Non-navigational Water Courses of 1997 by China, India, Nepal, Bhutan and Bangladesh as well as formation of the GBM Basin Commission involving all stakeholders will be the

most timely and visionary plan for long-lasting peace, security and prosperity in South Asia and beyond.

12. Oh, Teesta!

By-Pinaki Roy with Dilip Roy from Lalmonirhat at -Daily Star, June 6, 2015
Thin river to continue reminding Bangladesh about prolonged sufferings inflicted by India

Four years ago, when Bangladesh and India reached an understanding on sharing the Teesta water, people built their hopes up for an increased flow in the shared river. But soon what they saw in reality dashed their hopes: the much-needed Teesta deal fell through. In the meantime, with no headway towards signing the deal, the lifeline for millions in the country's northern region kept getting only leaner. "The Teesta faced the worst ever situation in the last lean period. The entire river went dry this year," said Feroze, convener of Teesta Rakkha Sangram Committee, an organization working to realize due share of the trans-boundary river. "Never before in my lifetime did I witness anything as such," said Feroze, who hailed from Purba Kachua village of Gangachara upazila in Rangpur. A water flow chart obtained from Bangladesh Joint Rivers Commission (JRC) also reflects his account. The JRC chart shows Bangladesh received only 232 cusecs (cubic feet per second) of Teesta water on March 22, the lowest in history. The average flow of the Teesta in the last 10 days of March, the peak of the lean period, dropped to 315 cusecs in 2015 from 550 cusecs during the same period in 2014. It was 2950 cusecs in 2013 and 3506 cusecs in 2012. Before the Gazoldoba barrage in India's West Bengal was built, the average flow of the river during the last 10 days of March was 6710 cusecs between 1973 and 1985.

The water flow statistics shows the water has started reducing in Bangladesh part of the river since the deal was finalised during former Indian Prime Minister Manmohan Singh's Dhaka tour in September 2011. However, the recent reports published in the Indian media suggest the Modi government is trying to explore the possibility of having a revised Teesta treaty signed. The Indian newspapers also published different formulas, one of which suggests 46:46 % sharing of the water between the two countries. According to the formula, West Bengal has to part with 21 % of water through Gazoldoba barrage while another 25 % would be added through regeneration by the time it would reach Dalia barrage. The Indian media reports also say the federal Indian government is offering financial assistance to West Bengal for developing irrigational infrastructure in the state to use the Teesta water, particularly during the dry season, in a bid to pursue Chief Minister Mamata Banerjee. Sources point out that even now the state can only use 25 % of the Teesta waters due to lack of irrigational infrastructure. However, officials in Bangladesh claim they do not have any clue to any new formulas on the Teesta deal. "The deal was already been finalized 4 years ago. Now we are just waiting for the deal to be signed," said a top Bangladeshi official who is involved in the process. "Now India is dealing with its internal problems," added the official, wishing not to be named. In 2011, it was finalized that Bangladesh and India would share the water of the Gazoldoba point equally after keeping a certain portion for the river. But the deal

could not be signed due to opposition from Mamata. As the Teesta completely dries up during the lean period, people like boatmen, fishermen and others dependent on the river have meanwhile been forced to change their profession. Farmers are also struggling hard to grow crops, the official said.

Boatman Abdus Samad, 50, of Char Rajpur village in Lalmonirhat Sadar said at least 3000 boatmen had been unemployed during winter. They had been facing such employment crisis for the last few years, he added. Two decades ago when water was abundant in the river around the year, we used to be very busy carrying people and goods from one place to another,” he said adding: “But now, many boatmen had already quit their profession. Jitin Chandra Das, 65, a fisherman of Dashpara village at Aditmari upazila said around 5000 fishermen like him in 24 villages in the district faced livelihood crisis in winter as they could not catch fish in the river.

“The fishermen are abandoning their ancestral profession every day,” he added. Farmer Nizam Uddin, 55, of Char Gokunda village in Lalmonirhat Sadar said they faced severe irrigational problems due to shortage of water during the lean period. “We cannot cultivate our land for producing crops as the river dries up around this time of the year,” he added. The underground water level also goes down during the season, making it very difficult for them to pump underground water into the fields, he said. According to Agriculture Extension Department (AED) officials in Lalmonirhat, no crops can be grown on around 30,000 acres of land in 90 chars and villages in the district during the lean period. In addition to this, the river without water causes another problem for the char people as they find it hard to walk for miles of sandy land. Class IX student Sathi Akhter, 14, of Char Dawabari at Hatibandha upazila, said she could not go to school every day in fear of walking two miles on the sand. “But I attend my classes every day during the monsoon as I can commute on boats then,” she said. Sabuj Khandaker, general secretary of Teesta Putra, a local movement to save the river in Lalmonirhat, said the around-three-kilometre-wide river in the monsoon turned into a 20- to 30-ft wide canal in winter. “If we can save our Teesta, we can save our agriculture and also save the livelihoods of more than one lakh people living in the shoal areas,” he said.

13. *The Independent* (June 9, 2015) said, **“Teesta deal goes unsigned for govt. failure: BNP”**

BNP on Tuesday blamed the government as the Teesta water-sharing agreement could not be signed during Indian Prime Minister Narendra Modi’s recent Dhaka visit. “As a nation, we’ve got frustrated as the Teesta deal couldn’t be signed. It’s government’s failure,” said BNP spokesman Asaduzzaman Ripon. He came up with the remarks while addressing a press briefing at the party’s Nayapaltan central office. Asked as to how BNP evaluates Modi’s visit, Ripon said, “It can’t be replied in one sentence as it may create confusion. We should first review the agreements and memoranda of understanding signed during the visit before making any comment on it. The government is yet to disclose information regarding those.”

The BNP leader further said, “It can be said now whether Modi’s visit was successful or not. We welcomed his tour and hoped it would open up a new vista of friendship and cooperation between the two countries.” He demanded the

government make public all the agreements and memoranda of understanding inked during the Indian Prime Minister's tour for transparency and people's understanding. Claiming that BNP always follows the policy of zero tolerance towards terrorism and militancy, Ripon said, "their leaders and activists accused in cases in connection with sabotage and violence will be found innocent if a fair investigation is carried out".

14. Finally, *Bangladesh hopeful of Teesta water-sharing treaty*

The Economic Times, PTI Sep 28, 2012

<http://articles.economictimes.indiatimes.com/2011-09-06/news/30119183>

Bangladesh is optimistic about a [Teesta water-sharing treaty](#) with India taking shape despite opposition from West Bengal, the country's Commerce Minister Golam Mohammad Kader said today. "The Indian Prime Minister has agreed to the treaty in principle and is trying to resolve the matter. We are not worried and we are hopeful that it will happen," Kader said on the sidelines of the AGM of the Bengal Chamber of Commerce. Erstwhile, UPA ally [Trinamool Congress](#) has vehemently opposed the treaty, arguing that it will harm West Bengal's interests and formed an expert committee to evaluate the issue. "My state has nothing against Bangladesh, but we have to look into our interests also," West Bengal's Industry Minister Partha Chatterjee said. He, however, pointed out that the differences with Bangladesh on the Teesta issue had made no effect on the bilateral relationship and trade. "While the bilateral trade is worth USD 5 billion, the import from Bangladesh is worth close to USD 500 million," he said. On the ban on export of Hilsa fish from Bangladesh, Kader said that his country was continuously monitoring the supply level of the fish, and once it improved, the ban would be lifted.

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