

Water Management at Gajoldoba: A Study on the Changes in the Environment and Bio-diversity

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Abstract

A number of dams and barrages have been constructed over the Teesta River on its 414 KM. journey to sea from its source in Sikkim. These include two hydro electricity dams in Sikkim; Teesta Barrage at Gajoldoba and Teesta Barrage at Lalmonirhat (Bangladesh). Besides referring the other projects over Teesta River the present paper will attempt to examine the project at Gajoldoba and its effects on environment around the locality of Gajoldoba and northern part of West Bengal. It is to be noted that the Teesta Barrage Project at Gajoldoba is one of the largest irrigation project of eastern India, supplying water to the six district of northern West Bengal and to date only certain sections of the project have been completed. However, the project resulted in the increase of sedimentation and siltation of the river, braiding, and growth of the chars (sandbars) in the river bed, in the lower wave, which have had a significant impact on local flora and fauna, and caused flooding and river bank erosion. It also affected the life of the fish stock and species of birds. As we know that a number of previously common fishes such as Boroli, Chitol, Boal, Maha soal, Shol, Gojar Baghari are no longer available today. Similarly the coming of the birds (White Bird, Red Crested Pochard, Bar Headed, Cormrents, Tufted Duck, Northern Lapwing etc) from the different parts of the world is decreasing due to several causes. Overall in this paper it is observed that the project resulted in terrible pressure on the environment.

Key words: Teesta River, Barrage, local environment, irrigation, biodiversity

Originating from Himalaya, Teesta, Jaldhaka, Torsa, Raidak Sankhos river flowing towards south through Jalpaiguri and Coochbehar all enter into Bangladesh. Among all these river Teesta is the largest one. This river has a great current and as every year it causes floods leading it to be called 'River of Horrors'. However, Teesta is the biggest and most significant river of North Bengal. This river has been originated from Bengal. Teesta river has been originated from Jemu glacier of Sikkim and flowed through Sikkim, Darjeeling, Jalpaiguri, Coochbehar and ultimately mixed into the Yamuna river of Bangladesh. Evidences show that the natural flow of all rivers is inherently variable, and that this variability is critical to ecosystem functioning and native bio-diversity. The flow of the rivers sometimes changes due to the geographical changes. It is a fact that when the people change the course of the river or playing mastery over the river course forcefully, it resulted in the rivers gradually losing their existence or some environmental changes occurred there with the effects on the flora and fauna. In this backdrop an attempt has been made in this paper to examine the environmental effects of the Gajoldoba Barrage made over the Teesta River in West Bengal.

A number of dams and barrages have been constructed over the Teesta River on its 414 KM Journey to sea from its source in Sikkim. Approximately 30 major hydropower projects have been planned on the river with a planned capacity over 5000 megawatts of electricity. The rapid construction of mega power projects in Sikkim and large parts of India's north east comes in the wake of the liberalization of India's power sector in 2003 and a significant drive by the Indian govt. to meet the countries energy need through hydropower generation.¹ Some of the major hydropower project in Sikkim include Teesta stage –II (330 megawatts), Teesta stage –III (1200 megawatts), Teesta stage-IV (520 megawatts), Teesta stage-V (510 megawatts), Teesta stage –VI (500 megawatts) and Panan HEP (300 megawatts).² These projects are 'run of the river' hydro electric project, which involved the construction of large dams to divert river water through tunnels and a power house before the river water is deposited downstream. The large scale construction of dams in the region has been controversial with local communities. Civil society groups, academics and environmentalists rising concerns about the ecological, environmental and socio-cultural impact of run of the river projects in the region. Groups and communities in the state of West Bengal have also raised concerns about the downstream impacts of these projects on agriculture navigation fishing, and other livelihoods.

In West Bengal, the Teesta Barrage Project (TBP) is one of the largest irrigation projects in eastern India with a planned target to irrigate 922,000 hectares in six districts of north Bengal and develop 67.50 megawatts of hydropower on completion.³ The three-phase project seeks to utilize Teesta River waters for "irrigation, hydropower generation, navigation, and flood control" through a network of barrages and canals on the river. While the project was initiated in 1976, to date only certain stages of the project have been completed, including construction of the Teesta Barrage at Gazaldoba in Jalpaiguri District of West Bengal and barrages on the Mahananda and Dauk rivers. In addition to the ambitious TBP, NHPC Limited is in the process of developing two "low dams" in Darjeeling District of West Bengal, i.e. Teesta Low Dam III (132 megawatts) and Teesta Low Dam IV (160 megawatts).⁴

The Government of India's controversial Inter-Linking of Rivers Program (ILR) also involves utilization of the Teesta River. Under the plan, water from India's Himalayan and peninsular rivers would be diverted through a series of inter-basin canals (30 in total) and dams to water scarce and drought prone areas of Southern India. The project is estimated to eventually irrigate 30 million hectares and generate 20,000-25,000 megawatts of power. The project has been criticized by groups in both India and Bangladesh. Officials in Bangladesh fear that it will increase flooding in the country and reduce the availability of water in the dry

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season. They have also argued that the project violates the 1996 Helsinki Rules on Water Resources and subsequent 2004 Berlin Rules on Water Resources on equitable sharing of river waters between co-riparians. Notably, in February 2012 the Supreme Court of India ordered the setting up of a special committee to expedite implementation of the project.

In Bangladesh, the Teesta is critical to meeting the agriculture and irrigation needs of northern parts of the country that are water scarce and drought prone. Initiated in the 1970s, the Teesta Barrage Irrigation Project (TBIP) aims to increase agricultural production, food security, and employment opportunities in the country's northern districts. The two phase project covers 12 upazilas/thanas and has a total planned command area of 750,000 hectares and irrigable area of 540,000 hectares. Phase 1 of the project with a command area of 154,250 hectares and a net irrigable area of 111,406 hectares was completed in 1998. It covers the districts of Nilphamari, Dinajpur, and Rangpur (Rangpur Division), and consists of a barrage at Dalia in Lalmonirhat District, a canal head regulator, flood embankment, irrigation canal networks, and drainage channels.

Bangladesh has long argued that India's construction of the Gajoldoba Barrage upstream of Dalia has significantly reduced the availability of water in the dry season. Furthermore, the release of water during the monsoon season is also a cause of flooding and bank erosion downstream. The availability of water for irrigation, particularly in the lean or dry season, has been at the crux of the longstanding dispute between the two countries.

By dint of this project the irrigation management of Oodlabari, Gajoldoba, Panbari, Fulbari, Ambari, Kranti, Changmari, Kathambari, and adjoining areas have been greatly developed. As a result the agricultural crops of these regions specially the Boro paddy, potato have been meeting the demands of West Bengal and also other adjacent regions. In winter season by the water of the Teesta river there cultivated many crops specially paddy. As a result the economic condition of the cultivators enriched in a high position. In winter season due to the lack of rain the water of Teesta river is used for the tea gardens of Dooars. Naturally the importance of this river project has been increasing day by day. Because of this water management the labours of tea garden are able to life happily, and they can earn income through and all the year.⁵

There is a new tide in fishing sector of these regions. By the approved of the minister of Fishery, every year 4-5 quintal fish put into the river naturally the fishes of this river are sent to Jalpaiguri, Darjeeling and adjoining areas for commercial purpose. The increasing demand of fishes of this river helped the fisherman very much to have a definite income. Beside the edible fishes the colourful fishes of this river general a great income source. All these colourful fishes are used for aquarium purposes. These colourful fishes are sent to the other places also for the business purpose. As this river is filled by the meeting glacier therefore all the time the river is full of water throughout the year. As this river is full of water throughout the year therefore to some extend it also helps in the transportation and communication and for these reason many tourist spot and resorts has been set up besides the Teesta River. Naturally another income source has come forward.⁶

This wetland however, is surrounded by tea garden and revenue villages and as with all wetlands, threats to the survival of the rich bio-diversity come from unhealthy practices in around the wetland where other land uses like tea, cultivation and agriculture besides fishing

have come up. However, it is not a reality and the situation is harmful for the environment and biodiversity as we discussed below.

According to Professor Jeta Sankrityayan, former member State Planning Board, W Bengal and also a member of the landslide expert committee 1998, the presence of multiple dams on the river Teesta and its tributaries could accelerate earthquakes and increase the damages. The committee on landslides, which had also studied the tectonic plate movement, had handed over recommendations to the government of West Bengal in 2000. The committee had recommended that no constructions should be allowed on the rivers in this seismic zone. “It is very unfortunate that the Government does not pay heed to recommendations of its own committee for which the public have to suffer. Something more devastating can happen any day. It is time the public woke up and pressurized the Government to act more reasonably. Electricity in lieu of lives is not a very human option” said Prof. Sankrityayan. “A full scale inspection and study should be conducted by geologists and earth scientists into the recent quake, the damages and their relation with the hydro projects. It should be an independent probe not influenced by the Government. We should not be accelerating or bringing in such natural events otherwise we will definitely have to pay a dear price” he suggested.⁷

The Gajoldoba area is largely inhabited by communities that depend on farming and fishing for their livelihoods. In the focus group discussion, representatives of these communities described changes in the river and its regime over the last 20 years. These include increased sedimentation and siltation of the river, braiding, and growth of chars (sandbars) in the river bed, which have had a significant impact on local flora and fauna, and caused flooding and river bank erosion. Many villages in the area have been acutely affected by river erosion, forcing local communities to relocate to other areas. According to locals, large boulders carried down by the river from the mountains used to act as barriers to bank erosion and maintained the depth of the river; however, in recent years the quantity of silt and sand has increased, burying the boulders.⁸

Villagers reported a visible reduction in the lean season flow of the Teesta. Elderly villagers, observed that: The river now carries only one fourth of the flow it used to carry about thirty years back. Other villagers near Gajoldoba agreed that the river runs almost dry in the winter and navigation is difficult due to fragmentation of the river caused by siltation. It was also observed that rainfall in the region has decreased even as temperatures have increased. The ongoing construction of the series of dams on the river can be held partly responsible for a reduction of flow in the winter season when the base flow of the river is not augmented by rainfall. The series of proposed dams in the upper reaches is speculated to reduce the available discharge for irrigation as each hydro-power project is expected to consume at least five percent of the running water in the river. The receding of glaciers from the headstreams of the Teesta and many of its tributaries, as well as erratic rainfall, also partly account for diminishing discharge. It was also alleged that some tea gardens are directly pumping water out of the Teesta, thus violating norms.⁹

Changes in the river hydrology and morphology have resulted in the depletion of fish stock and species. While fish species like *Boreli* and *Mohasol* (hill stream fish) and local varieties such as *Bagar*, *Piyali*, *Khoksa*, *Baliagitu*, *Tapa*, *Chingri*, *Boal*, *Shol*, *Darengi* etc. were once plentiful, these have become increasingly rare. As a consequence, many fishermen have had to shift to farming. However, as landholdings among these groups are small, their livelihoods have been jeopardized.¹⁰

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Villagers also discussed the impact of the Teesta Barrage Project. While the water from the Teesta is diverted through canals towards the Mahananda and Jaldhaka basins in both western and eastern directions, communities living close to the barrage rely on sub-canals to get irrigation. These communities have been affected by the reduced flow in the river and have largely not benefited from the irrigation project. Villagers also complained about the erratic operation of barrage gates and the sudden release of large quantities of water, which has contributed to flooding, riverbank erosion, and the creation of sand bars in the river. In addition to floods and erosion, the erratic flow of the river has also caused water logging in some areas. Frequent changes in the river course have led to the submergence of many households.

Similarly it affected the life of the birds which came from the different parts of the world. There appeared a large number of migratory birds earlier (*White Bird, Red Crested Pochard, Bar Headed, Cormorants, Tufted Duck, Northern Lapwing, Little Grebe, Great Crested Grebe, Lesser Whistling Duck, Cotton Teal, Northern Pintail, Darter, Purple Heron, Great Egret, Intermediate Egret, Little Egret, Black Stork, Black Ibis, Red-breasted Parakeet, Alexandrine Parakeet, Greater Flame back, Green Bee Eater etc*)¹¹ but now a day the number of the birds from the outside of India enriched in a low level and in the current year there were only 12000 birds of 142 species of birds appeared there.¹² These are happening for the several causes such as gathering of the sediment over Teesta, landslides in the hill, decrease of the navigability of Teesta, spray of pesticide in the tea gardens of Dooars and adjacent regions, destruction of the Hogala jungles and the low density of the nearest forests (Apalchand, Salugara, Targhera) for which they faced the problem of hatch, black hunter, water pollution.

Notes and References:

1. The government of India has referred to India's north eastern region as the “future power house” of the country. 168 potential large dams have been identified in the Brahmaputra river basin region with the capacity to generate 63, 328 mega wats. In addition the government of India's ambitious “hydropower initiative” also focuses on the north east.
2. ‘Political Economy Analysis of the Teesta River Basin’, Report of The Asia Foundation, March, 2013, p.10.
3. Report of the Irrigation and Water Ways Department, Government of West Bengal, [http://wbiwd.gov.in/irrigation sector/major/teesta.htm](http://wbiwd.gov.in/irrigation%20sector/major/teesta.htm).
4. ‘Political Economy Analysis of the Teesta River Basin’, Report of The Asia Foundation, March, 2013, p.11.
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6. *Ibid.*
7. Rudra, Kalyan, Taming the Teesta’, *The Ecologist Asia*, vol. 11, 2003.
8. ‘Political Economy Analysis of the Teesta River Basin’, Report of The Asia Foundation, March, 2013, p.16.
9. *Ibid.*
10. The Daily Star, November, 03, 2006 and Interview with : Dilip Basak, Balbeer Singh, Nafsar Ali (NAS), Sambhu Biswas, Bhajan Malo, Anup Dey Sarkar (Gajoldoaba).
11. ‘Gajoldobar Pakhi’, published by the Nature and Wild Life Conservation Society, Northern Circle, Government of West Bengal.

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12. Ananda Bazar Patrika, February, 11, 2008 & March, 14, 2014; Uttarbanga Sambad, March, 09, 2014.

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