

Impact assessment of Farakka barrage on environmental issues at Bheramara Upazila, Bangladesh

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Abstract

Different problems have been created on the downstream territory, especially on Bheramara on the bank of mighty river Padma. The study is preferred to assess the impacts on river flow of Ganges water, and on fisheries, agriculture, irrigation, groundwater, livelihood, and biodiversity because of Farakka Barrage. Information were collected from various respondents among which 42% is farmer, 12% is fisherman, 36% is businessman and 10% is service holder. It is evident from this study that 65% of crops production were directly affected by Farakka Barrage, in which 34% crops were damaged due to scarcity of water, lowering the ground water level, less access to rainwater, etc. and 66% crops were invent for increasing char land, increasing soil fertility for the use of agrochemicals. Irrigation has been adversely affected because of 35% insufficient flow of water and 65% lowering the ground water level.

Key words: Farakka Barrage, Ganges River, Bheramara

Introduction

Bangladesh lies at the receiving end of the tributaries of the Ganges and Brahmaputra rivers. At least 57 international rivers flowing on Bangladesh which leads 93% of the total water flow over the Bangladesh. The Ganges is one of the major rivers in Bangladesh. It is an international river shared by China, Nepal, India and Bangladesh. With regard to the distribution of the 109.5x106 ha basin area, India has 79%, Nepal 14%, Bangladesh 4% (this is equivalent to 37% of Bangladesh) and China 3%. The Ganges-Brahmaputra delta, of which Bangladesh is a part, has been created by deposition of river-borne sediments (Singh 1987). The river has great importance for the socio-economy of the co-basin countries (Verghese and Iyer 1993).

In 1975, India completed the Farakka Barrage about 11 miles from the borders of Bangladesh to divert 40,000 cfs of the Ganges water into the Bhagirati-Hoogly River with the ostensible purpose of flushing the accumulated silts from the bed of the river and thereby improving the navigability at the Calcutta Port (Banerjee 1999). Near about 79 rivers and canals remain dry throughout the year by the impact of Farakka Barrage. Also 75 thousands ponds, lakes and haors suffer from scarcity of water throughout the

half-time of a year. The monsoon discharge in the Ganges in Bangladesh has increased while in the dry season it has decreased (Asafuddowla 1993). The inadequate supply of water in the Ganges system during the dry season has caused significant socio-economic impacts through disrupting agriculture, fisheries, forestry, navigation and enhancing salinity intrusion further inland from the coast (MOEF 1995). Due to the continuous withdrawal of water through Farakka Barrage for the last 31 years a significant number of rivers in the Ganges (Padma) basin of Bangladesh has already turned into dead rivers (Ahmed 2005). From the record book of Water Development Board, in 1974, the flow of in the Hardinge Bridge point was 100500 Cusec. At present, it has downed in 59 thousand Cusec. For the impact of Farakka Barrage, within the 230 rivers there are 80 rivers of Bangladesh has been waterless. After the 12th December 1996, 30 year Water Treaty, during the lean period, for the last few years, the flow of water at Hardinge bridge points comes down to 10 thousand cusec, even sometimes as low as 5 thousand cusec (Ahmed 2005). In post Farakka period the ground water in many places of these regions is registering very high Arsenic content. To assess several important consequences of Farakka Barrage on Bheramara, a study was made- i) to know the physio-hydrological condition of Ganges river, ii) to identify the consequences on fisheries, agriculture, livelihood, and biodiversity due to Farakka Barrage.

Materials and methods

Primary data about the various types of impacts were collected through survey and observation. FGD, PRA, and RRA techniques were also used in collecting data. Qualitative and quantitative data about the hydro-morphological condition, agricultural, livelihood and biodiversity conditions were also collected by semi-structure questionnaires and field observation, and also information about these aspects were collected by personal interview as a secondary data from the Ganges-Kobotak (G-K) irrigation project; Bangladesh Water Development Board, Kustia; respectively. Finally, the data were arranged reflecting the objectives of the study.

Results and discussion

The key consequences of Farakka Barrage on fisheries, agriculture, livelihood, river flow, and biodiversity are given in Table 1.

Impacts on river flow

River navigation, the heart of Bangladesh's transport network was seriously affected. Due to upstream withdrawal of water, the country already lost about 15,600 km inland navigational route and another 3,300 km has become risky for navigation. Presently Bangladesh has only about 6,000 km inland navigational route (Ahmed 2006). The study results revealed that 93% of the local people of the study area argued that 100% flow of the Ganges river water has changed seriously during post Farakka periods and

they were directly or indirectly affected by it because adversely effected on riverine and estuarine fisheries.

Impacts on agriculture

The findings revealed that 65% of crops were directly affected by Farakka Barrage because it has changed the agricultural pattern of the region in which 34% crops were extinct due to scarcity of water, lowering the ground water table, minimum access to rainwater, etc. and 66% crops were invent for increasing char land, increasing soil fertility for the use of agrochemicals and 5% of the total crop production (including alternative crops such as corn) was increased. In 1999-2000, the country produced 23.07 million tons of rice in about 26.46 million acres of land of which about 11.15 million acres land was under navigation. If the irrigation process totally stop due to non-availability of ground water, the rice production will almost come to an end (Ahmed 2006).

During the dry season when water is much needed in all areas of Bangladesh in particular for the irrigation of 200 thousand hectres of land in the Ganges-Kobotak (G-K) project. It provides the source of water for irrigation for the Kustia, Jessore, Magura and Chuadanga. The G-K project is the largest irrigation project of Bangladesh. It supplies water from the Ganges to 3 lakh acres of land. The project consists of 120 miles long main canal, 292 miles long branch canals and 62 miles long sub-branch canal. But scarcity of Ganges water has made the project ineffective. As the country will have to depend solely on ground water for irrigation, the ground water level will go down every year. For replenishment of ground water, rain contributes about 20% and river flow about 80%. If the river flow decreases and ultimately stops totally, the 80% of the replenishment process would also stop and if the ground water level goes down by about 5 meter from the present level all the shallow tube-wells will become non-functional. During the dry season when water is needed in all areas of Bangladesh, in particular for the irrigation of 200 hectres of land under the Ganges-Kobotak project, water becomes almost unavailable (Ahmed 2006). The 94% respondent has strongly represented the scarcity of water during the cultivation period that is adversely affecting the irrigation because of the insufficient flow of water through their main sources i.e., Ganges river water (surface water) 35% and 65% lowering the ground water table.

Impacts on livelihood

The study revealed that 65% of the fisherman, 24% of boatman, 3% of businessman and 8% of the farmer has changed their livelihood pattern during post Farakka period.

Impacts on biodiversity

The results revealed that 71% of the respondents would believe the population growth is responsible for the loss of floral composition due to the excessive utilization of resources and 29% also mentioned the scarcity of water or the insufficient flow of water is responsible for decreasing floral composition in this region. The result of the study also revealed that, 68% respondents would believe the loss of habitat is responsible for

decreasing fauna and 32% also mentioned that the scarcity of water or the insufficient flow of water is responsible for decreasing floral composition in this region.

Table 1. Key consequences with percentages of Farakka Barrage in the study area

Impact on issues	Key causes	Percentages (%)
River flow	Farakka Barrage	100
Crop production (increasing)	Increasing Charland	61
	Using more agrochemicals	39
Irrigation	Shortage of surface water	35
	Lowering the groundwater table	65
Crop variations	Invention	66
	Extinction	34
Livelihood	Fisherman	65
	Boatman	24
	Businessman	3
	Farmer	8
Flora	Shortage of surface water	29
	Increasing population	71
Fauna	Loss of habitat	68
	Shortage of surface water	32
Local climate	Shortage of surface water	33
	Global climate	67

Conclusions and recommendations

The unilateral diversion of the Ganges water by India at Farakka Barrage has caused a series of adverse environmental and ecological problems in Bangladesh. Only it would not affect on irrigation but also on biodiversity, agriculture, fisheries including livelihood, mangrove ecosystem etc. and increase the seriousness of major environmental problems such as drought, flood, salinity intrusion, dry disease of mangrove forest, scarcity of fresh water etc. A long-term solution to water sharing problems between Bangladesh and India is urgently needed for existence of Bangladesh. This issue is extremely tremendous environment, economic and humanitarian concern to Bangladesh.

Following recommendations may be considered to improve and prevent the present and future consequences of Farakka Barrage for saving the environment and survival of Bangladesh:

- The government should make decision, sets national strategies, implements policies and enforces compliance
- Bangladesh has many internationally reputed experts on Environment, Water resources management, Agriculture, Economics and Bio-diversity and also Water Rights activists including those of International Farakka Committee in home and abroad, government should incorporate those experts for the planning, management and solve the problems.
- The government should immediately form a Regional and National Committee including experts for assessing the impacts and monitoring legal water diversion that was signed in the Treaty.
- The government should facilitate research to assess the consequences and should open to all in home and abroad.

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