

# Strategic Analysis Paper

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## India, Bangladesh and the Farakka Barrage

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### Key Points

- The Farakka Barrage was created by India in 1975 to divert water from the Ganges River system.
- Bangladesh is a lower riparian country that heavily relies on the flow of the Ganges to meet its food and water demands; any change in the flow of the Ganges significantly affects it.
- The Ganges Water Treaty has a limited ability to meet the current needs of both India and Bangladesh.
- If agreements over other transboundary rivers can be achieved – particularly the Teesta River – then it may be possible for the countries to improve water sharing goodwill and collaboration. Alternative methods for co-operation must be explored.

### Summary

The Ganges Water Treaty determines the water-sharing arrangements between India and Bangladesh, however, its ability to suitably divide riparian water rights and foster co-operation is limited at best. India's construction of the [Farakka Barrage](#) has, in part, soured the bilateral relationship between the two countries. Both India and Bangladesh face increased pressure to meet rising water demands. There is little effective water agreement to sustain a co-operative bilateral relationship while meeting these demands.

## Analysis

### The Farakka Barrage

The Ganges River originates in the Tibetan Himalayas. The river flows through northern India and enters Bangladesh where it becomes the Padma River. Once the Padma reaches the centre of Bangladesh, it joins with the Brahmaputra, or Jamuna, as it is known in Bangladesh, where the two join and form the Meghna River. The Meghna River then branches into a set of distributaries which eventually drain into the Bay of Bengal.



Source: <http://www.bdembassyuae.org/bd-geo.html>

The Farakka Barrage was created by India in 1975 to divert water from the Ganges River to the Bhagirathi-Hoogly river system. The barrage diverts water from one of the most populated basins in the world, the Ganges-Brahmaputra-Meghna basin. There are 54 transboundary rivers between India and Bangladesh. Given the river's long route throughout several countries, any source of tension between India and Bangladesh threatens food and water security for millions of people who rely on the Ganges and its tributaries.



The transboundary rivers of India and Bangladesh. Source: Wikimedia.org

## Food, Water and Co-operation

### *India*

India is predicted to be water-stressed by 2025 and water-scarce by 2050. If the Indian Government cannot meet domestic, agricultural and industrial demand, the risk of domestic unrest will be heightened. With nearly half of all surface water contaminated, water quality is an issue. India has turned to groundwater extraction as an alternative to contaminated surface water; however, it has extracted groundwater unsustainably. With little incentive for water conservation, groundwater has been overexploited. These three issues are the greatest water challenges faced by India.

A lack of investment in water quality and sanitation poses a serious threat to future water security. India's decentralised approach to water management is failing to insure against long-term strategic issues. Between 2011 and 2015, India's gross domestic product increased by [7.3 per cent](#) and it is expected to continue to expand. India's population is [expected](#) to reach almost two billion by 2050 and is predicted to surpass that of China. India's rapidly growing economy and expanding population is likely to place unprecedented pressure on its limited natural resources.

FDI has [previously noted](#) that India experiences strong competition between farmers, industrialists and the general population for diminishing water supplies. Farmers are threatened by a double burden of water security. If farmers do not seek alternative sources of water, they may find it increasingly difficult to grow crops, but alternative sources of irrigation are often too expensive and will drive farmers to the point of bankruptcy.

Food insecurity is relatively equal in urban and rural areas of India. Despite decades of economic growth lifting many out of poverty, a large percentage of the population continue to be food insecure. While the number of hungry people decreased from 240 million in the 1990s to 217 million in 2012, in 2006, [43.5 per cent](#) of children were classified as underweight. Food insecurity is clearly still a major concern.

India maintains an advantageous position over Bangladesh at Farakka, however, it is a lower riparian of China. India has a high dependency on rivers originating in the Chinese-controlled [Tibetan Plateau](#) (particularly the [Brahmaputra](#) and the [Ganges](#)). Chinese damming in Tibet has a flow-on effect downstream. India's apprehension about its future food and water security – particularly as a result of upstream actions – has an effect on the decisions it makes for the waters within its own region, which ultimately affects Bangladesh's water supply further downstream.

### *Bangladesh*

Bangladesh is highly dependent on the flow of three major rivers: the Padma, the Jamuna and the Meghna. These rivers contribute to Bangladesh's cultural identity and provide a critical water supply to farmers who comprise 60 per cent of the population. Fish from the three major rivers provide almost 80 per cent of the Bangladeshi diet. These waterways are integral to maintaining Bangladeshi food and water security.

Floods, water scarcity and poor water quality are the three most severe challenges to water security that Bangladesh faces. Both scarcity and quality – in urban and rural areas – threaten water security. In the 1970s, the country drilled four million wells to replace contaminated surface water. As a result of its poor water quality, Bangladesh experiences frequent outbreaks of water-borne and diarrheal diseases.

Bangladesh has high rates of poverty and population density. In 2010, the number of Bangladeshis living in poverty stood at [31.5 per cent](#). [FDI has noted](#) that Bangladesh's population of over 152 million places large pressure on its land and water resources, particularly considering that the country has a population growth rate of [1.6 per cent](#) per annum. Like India, Bangladesh has also severely depleted its groundwater. Poor surface water quality has pushed Bangladesh toward a greater reliance on groundwater, but falling water tables are evidence of significant groundwater depletion. By improving its irrigation practices, Bangladesh has increased its food security by enabling farmers to produce more food at a lower cost for consumers. The irrigation practices continue to be unsustainable, however, and have had a detrimental effect on groundwater levels.

Studies have been conducted on water supply before and after the construction of Farakka. It has been found that Bangladesh's water supply was much greater before the barrage was built. In some studies, evidence shows that the supply worsened after the Ganges Water Treaty (GWT) was signed and ratified. Until 1975, when the Farakka Barrage was created, water supply into Bangladesh was adequate. After the creation of the barrage, Bangladesh started to experience reduced water flow.

Any change in the flow of the Ganges through Farakka has the ability to significantly alter Bangladeshi agriculture, fisheries and livelihoods. The threats to food and water security that Bangladesh already experiences are made worse by Bangladesh's position as a downstream riparian and have been accelerated with the creation of the Farakka Barrage.

### **The Potential for Conflict**

Given its geographical position, India has a strategic advantage over Bangladesh. Ninety-four per cent of Bangladesh's surface water supply originates outside its borders. Bangladesh is extremely vulnerable to upstream decisions, particularly Chinese and Indian dam construction and operation. India relies on its military and economic strength to act unilaterally in water-sharing scenarios, especially with the creation of the Farakka Barrage.

While the barrage reduces salinity in Kolkata, the diversion of the Ganges has increased river salinity in Bangladesh. As rice paddies are sensitive to salinity increases, this poses a threat to Bangladeshi food security. Decreased river flow effects the Bangladeshi environment, particularly [the Sundarbans](#) mangrove forest. Forest degeneration has caused Bangladesh to reduce its timber production and has created an economic loss for the country.

Rising salinity levels also have a detrimental effect on Bangladesh's potable drinking water. Unfit drinking water increases the susceptibility of Bangladeshis to venereal diseases. Given that increasing salinity has a detrimental effect on the Bangladeshi environment, economy

and public health, this has the potential to increase tensions between the riparian neighbours.

India's creation of the barrage could be interpreted as an exercise of Indian influence over Bangladesh. It could be seen to grant India a means to influence the business and economic decisions of Bangladesh, particularly if India is able to control how much water flows into Bangladesh. While this view takes a cynical approach to transboundary water politics, the likelihood of a "traditional war" over water in the short-term appears low. There have been few incidents of traditional wars over water to-date. It is, however, increasingly likely that such events may take place in the long-term if there is not greater international co-operation over transboundary rivers.

Given the importance of food and water security, and the adverse effects that Bangladesh has experienced as a result of the Farakka Barrage, it is possible (although unlikely) that relations between India and Bangladesh may weaken in the short-term. As the two become more water-scarce, and population pressures further impact water availability, conflict may accentuate in the absence of a concrete water-sharing arrangement.

### **The Likelihood of Greater Co-Operation**

#### *The Ganges Water Treaty*

The origins of the GWT can be traced back to before Bangladesh was created in 1971. In 1951, when Bangladesh was still geopolitically East Pakistan, Pakistan raised concern over India's potential plans to create a barrage at Farakka. In 1960, Pakistan and India signed the Indus Water Treaty (IWT). India began construction on the barrage the same year Bangladesh was created. Between 1977 and 1982, the Ganges Water Agreement was signed between India and Bangladesh; however, it was not renewed. Communication over the river ceased between 1988 and 1992. The GWT was signed in 1996.

The GWT allows India to withdraw up to 40,000 cusecs of flow at Farakka between 1 January and 31 May each year. If the flow rate falls below 70,000 cusecs, water withdrawals are equally divided between India and Bangladesh. Ultimately, India has the upper-hand in this arrangement. Given that the upper Ganges flows almost entirely through India, if flow is reduced at Farakka there is little in the agreement that ensures India will not extract water further upstream.

Average river flows are calculated from information gathered between 1949 and 1988. Upstream withdrawals (particularly from the agricultural sector) have slowly decreased the average river flow, rendering the data the GWT is based on outdated and inaccurate. On several occasions, Bangladesh has not received the Treaty-agreed flow because the data that determines allocations has not been updated.

The existence of the GWT does not necessarily equate to meaningful co-operation between the parties. It does not factor in effects of upstream use on the availability of water at the Farakka Barrage and, with no consideration of Nepal, nor does it take a whole-of-basin approach. Given the high dependency on the Ganges' waters and Bangladesh's position as a

lower riparian, the arrangement between Bangladesh and India seems to favour India's hydro-interests.

Furthermore, the GWT lacks a strong method for dispute resolution. A Joint Committee, with equal numbers of representatives from India and Bangladesh, is tasked with examining disputes, but it is only required to meet if the river flow were to fall below 50,000 cusecs. Given that this baseline was established from outdated data, 50,000 cusecs is now considered to be at crisis point. In reality, however, current agricultural, urban and industrial water requirements mean that Bangladesh reaches crisis-point much earlier than under the terms of the GWT.

The GWT also only allows India to withdraw a maximum of 40,000 cusecs. Given that Bangladesh is a deltaic floodplain, the country is highly susceptible to flooding. Given the Treaty's restrictions, if the river flow were to reach two million cusecs at Farakka, not only would the river breach its banks, but the Treaty would not allow India to withdraw more water for flood alleviation.

These shortcomings indicate that the GWT is not a comprehensive water-management solution, but rather an arrangement for dividing up water allocations. It has not solved any of the issues that Bangladesh must address as a result of the Farakka Barrage and does little to ensure Bangladeshi food and water security.

#### *The Teesta Water Sharing Agreement*

The Teesta River is another transboundary river between India and Bangladesh. Like many transboundary river relationships, co-operation between the two riparians has been fraught with difficulties. The livelihoods of almost 21 million people depend on the Teesta River Basin. Agreement on the sharing of the Teesta River is important for Bangladesh because it depends on the river for irrigation, agriculture and the livelihoods of local communities. The Teesta Water Sharing Agreement was originally postponed in 2011 because of objections from West Bengal Chief Minister Mamata Banerjee. He refused to sign the agreement after claiming it would harm agriculture in the northern part of West Bengal. Banerjee's resistance to the agreement has the potential to threaten bilateral ties between India and Bangladesh.

While it has been difficult to secure the interests of both parties, an agreement would reduce the potential for significant adverse effects from upstream diversions. [FDI has noted](#) that the signing of the Land Boundary Agreement between India and Bangladesh in 2015 represents a significant hope for an agreement to be reached over the Teesta waters. A Teesta River agreement could have a positive influence on efforts to enhance co-operation at Farakka. Resistance to the agreement, however, risks further threatening bilateral ties between the two countries, particularly over co-operation at Farakka.

#### **Conclusion**

Given the interests of Bangladesh and the limited capacity of the Ganges Water Treaty, there is increased concern about the future viability of the Treaty and the allocation of water at the Farakka Barrage. Both India and Bangladesh are facing mounting pressure to secure some form of food and water security, particularly with demand-side pressures mounting.

Bangladesh could improve the management of its water resources by dredging its rivers and watersheds and employing better water-management techniques. Bilateral co-operation might also be enhanced by developing early warning systems for floods and droughts. Alternative methods of co-operation must be employed to ensure that the interests of both countries are achieved while reducing the potential for conflict.

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