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From Conflict to Collaboration: A Study of Transboundary Water-Sharing Between India and Bangladesh

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Abstract:
The water disputes between India and Bangladesh are mainly concerned with the sharing of the common rivers basins such as the Ganges, Teesta River and Brahmaputra River, which is vital to the livelihood, agricultural, and economy of the two countries. The Teesta River has been one of the greatest causes of conflict since there are no conclusive agreements made that may help to ease tensions especially when it comes to the issue of water shortage during dry seasons. Though the Ganges Water Sharing Treaty that was signed between India and Pakistan in 1996 to some extent alleviated the situation, seasonal variations, growth of the population as well as climate change keep on complicating situations. Equally, the water security of Bangladesh is influenced by the Brahmaputra dispute, which is also complicated with the development of dams on the Brahmaputra River in India and China.

The plans to resolve these problems involve implementation of more fair water-sharing arrangements, increased use of technology in order to manage water better, and regional collaboration as a result of common commissions. Moreover, it is essential to adjust to the impact of climate change, i.e., erratic rainfall and floods, by means of flood control and groundwater recharge mechanisms, to ensure long-term sustainability. In spite of certain gains made in the diplomatic activities, political interest to solve and reconcile national interests is still a big obstacle towards having a holistic solution.

Keywords: water disputes, treaty, water security, water-sharing arrangements, climate change etc.

Introduction

India and Bangladesh have a number of major rivers such as Ganges, Teesta and Brahmaputra which are significant in the lives, agriculture and economies of these two countries. These rivers are source of irrigation, drinking water, and hydropower, and sustain millions of people of the two countries. In the case of Bangladesh, especially, these rivers are instrumental based on the fact that the land makes the country low-lying. In India, particularly in the West Bengal and the northeastern states these rivers are important in agriculture and industry, facilitating irrigation and hydropower production. There is Ganges River flowing across the two countries and Brahmaputra and Teesta that influence the development and sustainability of

the area. Both nations depend on these rivers as lifelines, and any interference in the water flow of these rivers has a great impact on the agricultural output and the economic stability of the countries (Ganguly & Pardesi, 2021).

The main conflict between the two countries over the water sharing is based on the Teesta River. Although there have been numerous clarification meetings, nothing concrete has been decided especially on water distribution in times of droughts. Some of the water-sharing problems were resolved with the Ganges Water Sharing Treaty that was signed in 1996 between Bangladesh and India yet seasonal changes in water flow, population increase and climate change effects still make the situation difficult. This has left the Teesta dispute unresolved, thus the inability to fully cooperate within the region (Sengupta, 2020).

Another important water source is the Brahmaputra River which is a river flowing into India and Bangladesh after originating in Tibet. The upstream activities of China such as dam constructions have also been a cause of concern regarding the possibility of decreasing the amount of water supply to Bangladesh and this has further escalated the tensions over water resources geopolitically. The issue is enhanced by the increasing need of water in the area which has complicated the management of shared rivers further (Rahman, 2019). The uncertainty of the climate change also poses a problem to both India and Bangladesh in terms of the rain flow, rivers, and flood management (Hossain and Rahman, 2021). Although, there has been some progress in the diplomatic talks, absence of political willingness to align national interests is a big huddle towards solving these water wars. In reference, water-sharing contracts such as joint commissions, fair allocation systems, and infrastructure investments also have been proposed but mostly not implemented.

Geographical Context

The common rivers that exist between India and Bangladesh comprise the Ganges, Brahmaputra and Teesta that have a very important socio-economic impact. The Ganges that flows into Bangladesh via India supplies the two countries with irrigation, drinking and fish resources. It is crucial in India, especially in agricultural areas such as West Bengal and Uttar Pradesh, and in Bangladesh, it is important to maintain rice farms (Sengupta, 2020). On the same note, the Brahmaputra that originates in Tibet, and flows in Bangladesh, supports agriculture and hydropower production. Millions of people live in its delta, the Sundarbans, which is one of the largest deltas in the world and supports the agricultural economy in the area directly (Rahman, 2019).

The Teesta River flowing through India in Sikkim and West Bengal and finally entering Bangladesh is a controversial one particularly because it has been used to irrigate lands including tea plantations in India and farmlands in Bangladesh. The lack of the agreement between India and Bangladesh regarding water-sharing of the Teesta River is still a problem obstructing economic development and agriculture (Mukherjee, 2018).

India and Bangladesh need a long-term collaborative strategy to attain a solution to water disputes between the two countries. The Teesta conflict especially requires an inclusive water-sharing agreement to solve the seasonal imbalances and provide equitable water access. Moreover, there is a need to have more

collaboration between India, Bangladesh, and China on the Brahmaputra water management problem to have a sustainable supply of water. Joint offers and more fair division plans are needed to solve the existing conflicts over water resources. With climatic changes causing uncertain rainfall and floods, flood control and groundwater management should be evaluated as a way of increasing long-term sustainability (Hossain and Rahman, 2021).

The experience has demonstrated the significance of collective action in solving common water problems through regional water cooperation by means of organizations like SAARC and BIMSTEC. Nonetheless, to make a substantial progress, the further diplomatic interaction, the willingness to fair solutions, and national interests reconciliation will be needed (Mohan, 2020).

Key Water Disputes

One of the greatest and persistent water-sharing conflicts between India and Bangladesh has been the Teesta River controversy. The river passes over the Indian states of Sikkim and West Bengal then into Bangladesh where it is of great importance in agricultural activities. The controversy occurs due to the different national interests; India wants to utilize the river to irrigate its lands in West Bengal; Bangladesh wants to have a fair portion of the river to cater to its agricultural and household interests. The two governments, as well as local communities in the two countries, relying on the river to irrigate their lands, are the major stakeholders in the dispute. Many efforts to address the problem such as a proposal that was made in 2011 have failed because of political issues in the two countries. The delays in search of a resolution indicate the issue of the priority between the regional interests and the national ones and the diplomatic relations (Mukherjee, 2018; Rahman, 2019).

The Ganges Water Sharing Treaty in 1996 between India and Bangladesh was an attempt to control the flow of the Ganges River especially at the lean season (March-May) when the water stream is low. Despite the fact that the treaty had solved certain issues, it has not solved every problem. The main issue is seasonal change in the water flow which is not usually sufficient to satisfy the demands of both the nations during dry seasons. Moreover, climate change increases water shortage especially in Bangladesh by decreasing the flow of the river at their most critical periods. The growth of population and greater agricultural need has further stretched water resources and equitable-sharing of water is even more hard. These obstacles explain why the treaty should be negotiated and updated on a regular basis to meet the evolving realities (Sengupta, 2020).

The other major point of disagreement between India and Bangladesh is the Brahmaputra River also referred to as the Yarlung Tsangpo in Tibet. On the upstream parts of the river, India planned to build a series of dams and this has been causing concern to Bangladesh on the impact that water flow may slow down especially during dry seasons. These dams may have immense effects on the water security of Bangladesh, which is a downstream nation and is dependent on the river to carry out their agricultural as well as household water. Despite the fact that the Brahmaputra is not controlled as the Ganges, it is an important source of water to Bangladesh, and its disturbance would be disastrous to farming and stability in the area. This matter is complicated by the geopolitical aspect of the situation where China has taken control of the upper parts of

the Brahmaputra, which puts an additional burden of tension to the conflict (Rahman, 2019; Hossain and Rahman, 2021).

Besides these big rivers, smaller water related disputes between India and Bangladesh also exist including the disputes over the Barak River. The allocation of the water of the Barak River, even though this is not as important as the bigger rivers, nevertheless creates tensions. Water quality and water quality concerns also emerge especially on common river systems where there is industrial pollution and sewage pollution are major concerns to the environment. These smaller conflicts along with the bigger water-sharing disputes underline the necessity of providing holistic solutions that would involve both quantity and quality of water resources in the context of transboundary management (Mukherjee, 2018).

Factors Contributing to the Disputes

The water conflict between India and Bangladesh is largely influenced by the political situation. Reform of government policies, elections, and domestic interests tend to complicate the process of water-sharing. Local political agendas often supersede national accord especially with regional governments in the West Bengal state and the northeastern state of India. This can be seen in the example of Teesta River where the state government of West Bengal has resisted the idea of giving up more water to Bangladesh since it believes that this will adversely impact the local agricultural output. In Bangladesh, political leaders are facing a dilemma of having to balance the needs of the local population, who rely on the river to earn their living, with national interests. Consequently, water conflicts can be postponed, because the governments are more concerned with the short-term electoral interest than the long-term collaborative resolution of the issue (Rahman, 2019; Pant, 2017).

India and Bangladesh have considerable issues to do with economic growth, industrialization and urbanization which in turn leads to the diminishing and poor uses of the common water resources. In India, industrial centers have developed at a high rate and the growing demand of water in the urban centers has put a lot of strain on the river systems. Industrial and domestic water consumption, at the cost of agricultural and ecological water usage, has resulted in the change of the water distribution pattern. Likewise, in Bangladesh, the growth of the population and the augmentation of agricultural processes have augmented the demand of water, which results in the overconsumption of the river resources particularly during dry seasons. The combination of these pressures along with the attempts by the two countries to increase agricultural production and infrastructural development have led to water stressed economies. These difficulties are worsened by the fact that the short-term economic growth, but not sustainable water management is prioritized (Hossain and Rahman, 2021;).

The other major source of tension in the management of shared river systems is the environmental factors especially climate change. This has made the supply of water more unpredictable with a decrease in rainfalls, unpredictable monsoons, and a rise in floods and droughts. Bangladesh being a low-lying country is especially susceptible to such changes because with the increase in sea levels and floods, the quality and availability of river water are affected. Climate has also played a role in the melting of the glaciers of the

Himalaya region in India and this will continue to influence the water body in the rivers hence resulting to water scarcity during drought periods. Along with the seasonal changes in the flow of water, these environmental changes make the management of transboundary river resources complicated by both the countries (Mukherjee, 2018; Sengupta, 2020).

There is also the social and cultural aspect that is a critical factor in the water disputes. Ganges, Brahmaputra, and Teesta rivers are not only considered important sources of livelihood to millions of people in the two countries, but also closely linked to religious and cultural identities of the people. In Bangladesh, the rivers in the country are the focus of agricultural practices, whereas the rivers in India are focal to religious practices and farming, more so in other states such as West Bengal. Such cultural and religious attachment towards the rivers renders the local communities hard to embrace change in water-sharing mechanisms especially where they consider that the change is unjust. The issue of water management at the national level against the needs of the local people and international obligation to water management as a sustainable process becomes a major challenge in finding a solution to the water conflict (Rahman, 2019).

The problem thus is to strike a balance between the demands of the local communities and the need to develop sustainable water management policies that can address the interest of the countries of India and Bangladesh as well as the local community good. This should involve continuous diplomatic discourse, long-term water-sharing treaties, a collaborative attitude towards water resources management to the future generation.

International Agreements and Efforts to Resolve Disputes

Ganges water sharing treaty signed in 1996 is one of the major developments in the water cooperation between India and Bangladesh. This treaty attempted regulation over the water flow of the Ganges River especially during lean season (March-May) with a share of 40,000 cusecs of water being allocated to Bangladesh to use in its farming and domestic purposes. India was free to accomplish its needs in West Bengal as well. Although the treaty has led to coordination, there has been a problem of dealing with seasonal water changes brought about by climate change and intensified by unpredictable rainfall. The problem of inadequate water supplies during dry seasons has been caused by the rising numbers of upstream water use by India and has been a point of concern to Bangladesh. An overall deal in the allocation of water in low flow periods is one of the major shortcomings (Hossain and Rahman, 2021).

Similar dialogues have been going on between India and Bangladesh via the Joint River Commission (JRC) which was created in 1972. This is a bilateral institution that has been very important in the exchange of data and handling of the problem of floods. In spite of the activities of the JRC, domestic political influences and mainly the states such as West Bengal have impeded the signing of treaties. Local interests and interests Uber national agreements tend to override wider national agreements, particularly when it comes to water sharing allocations (Sengupta, 2020). Although there have been interim agreements on some of the rivers, e.g., the Kushiyara River in 2022, solutions that are more inclusive and binding remain elusive (The Hindu, 2022).

Besides bilateral actions, the international organizations have also contributed to dialogue. The World Bank, as an example, has helped in technical support in the negotiation of the Ganges Water Sharing Treaty so that the two parties would communicate positively. The United Nations has always preached fair play of sharing water by pointing out the need to abide by international water law. But the intervention of these international institutions has not been much, with the elements of geopolitical sensitivity and the urge of both countries to resolve these issues bilaterally (Sengupta, 2020). The role of the World Bank in making sure that the two countries kept at the negotiating table played a central role in providing the Ganges deal (Financial Express, 2020).

Proposed Solutions

The water-sharing model between Bangladesh and India should be been a balanced and fair model that is holistic and flexible to take into consideration the variation of countries, season and the effects of climate change on river flows. The treaties initiated by countries are important in encouraging cooperation, which include the Ganges Water Sharing Treaty (1996), but they fail to consider modern-day issues, including the rising water shortages, unpredictable rain patterns, and pressures on populations, which are causing a change in water demand over time (Sengupta, 2020).

The other option is to develop an adaptive and dynamic allocation model that could use current hydrological information including the amount of precipitation, water consumption rate, and the agricultural requirement as reference to modify the water allocation. In this case, a third-party facilitator as the World Bank or UN Water could come in handy. Such organizations have the capacity to call in an element of science, offer an objective assessment of the availability of water and give a piece of advice that would be able to facilitate the creation of a long-term solution that manages to meet the needs of the two nations as well as be sustainable. Such professionals being engaged is essential to make sure the solution is informed by evidence and is not made on purely political grounds (Sengupta, 2020; Rahman, 2019).

Also, technological innovations will play a central role in enhancing water management. India and Bangladesh can explore creating a more efficient infrastructure such as dams, canals, and water saving mechanisms that can save water more effectively and allocate this water to the areas. Agriculture may also benefit and reduce the floods due to the erection of multipurpose dams that govern the water supply during the wet and dry seasons. Besides, it could use satellite-based systems to focus on water use, rainfall, and river flows to enhance predictions, and both countries should be able to predict water needs in agriculture and at home (Hossain and Rahman, 2021). These technologies can be used to enhance efficiency in water resource management particularly in solving shortages and surpluses of water that come with seasonality.

More close cooperation in the field of managing water will also be required to provide long-term water security. Through the improvement in joint research, dissemination of hydrological data, and increasing the depth of communication, India and Bangladesh will be able to make sound decisions, guided by the information provided jointly. This may derive into reducing disputes on water resources as well as enhancing flood management and prevention of drought. Continuous dialogue might be provided through

joint water-sharing committees or working groups where both countries may discuss the new problems and come up with new ways to solve the common water issues (Hossain & Rahman, 2021).

The mitigation and adaptation methods should be implemented to tackle climate change. As temperatures increase and the periodicity of rainfall changes are likely to worsen water insecurity over the next few decades, it is paramount to invest funds on the water storage system, rainwater harvesting system, and flood management programs. The dependence on river water especially when seasons are dry will be minimized as individuals work together to develop these systems. Also, seasonal floods that can interfere with economies can be reduced through shared flood forecasting systems and infrastructure to regulate the impacts of floods. Cooperation on groundwater recharge efforts on the regional level would also contribute to water supply by increasing the natural recharge of aquifers to act as alternative water source during times of surface water shortage (Mukherjee, 2018).

Case Studies

Established water-sharing models are always informative to India and Bangladesh when they focus on the long-term solutions to the current water conflicts. One of the outstanding cases is the Mekong River Agreement (1995) which resulted in the formation of the Mekong River Commission(MRC). This facility fosters the joint management of the collective water resources, free sharing of hydrological information and sustainable development of the riparian states of the Lower Mekong (Cambodia, Laos, Thailand, and Vietnam). MRC organization focuses on sharing of consultation, transparency, and collective planning that have aided in the predictability of seasonal floods and droughts in a complex shared basin (Dore & Lebel, 2010). Consequently, the Nile Basin Initiative (NBI) is an intergovernmental project of Nile neighbours (such as Egypt, Sudan, and Ethiopia) to encourage fair utilization of the river regardless of politics and historical enmity. NBI is concerned with utilization of water, environmental sustainability and economic cooperation on cross-border level, as an institutional platform of data sharing and direct joint planning (Sadoff and Grey, 2002). In such cases, it is indicated that sustainable transboundary water management can be enhanced through permanent joint institutional frameworks, a vibrant technical collaboration, and a transparent system.

On the contrary, the Teesta River talks between India and Bangladesh show how bilateral negotiations do not work when local political forces and subnational interests are high. The negotiation on a holistic Teesta Water Sharing Agreement has been stuck during the last ten years primarily due to the resistance of political leaders in West Bengal to the arrangements they consider as unfavourable to the local interests of irrigation and agriculture. This standoff demonstrates the fact that it is challenging to reconcile national interests, domestic needs, and cross-boundary collaboration in reality (Hossain and Rahman, 2021). Also, there is a seasonal variability and lack of a flexible and enforceable treaty system across all common rivers increasing uncertainty on water availability particularly during dry seasons. As it is observed, the fixed systems such as the Ganges Treaty are not capable of handling the variable flows of rivers caused by climatic variability in totality (Sengupta, 2020). What is striking about this is the importance of adaptive institutional

arrangements that would be able to make proportions in response to the data of hydrology instead of annual quotas.

Future Outlook

The water conflict between India and Bangladesh will be a long-lasting process that will need the involvement of political goodwill and multi-level cooperation. Despite the fact that such accords as the Ganges Water Treaty (1996) mark certain breakthroughs in bi-lateral water diplomacy, domestic political interests and regional priorities tend to sluggish the process. An example of how subnational politics can influence national water policy is the views of political leaders in the West Bengal state of India, who are concerned that water distributions would adversely affect local agriculture (Hossain and Rahman, 2021). Similarly, the Bangladesh political constituencies are demanding guarantees of sufficient flows of rivers to sustain livelihoods and economy.

The climate under which negotiations over water take place is also determined by the popular view and communicative actions of the media. The rivers such as the Teesta and the Ganges form an integral part of the social and cultural life of both nations and any media story making a point about their lack or inequity may lead to the organizing of the popular will in a fashion that its effect only serves to solidify politics. The global practice indicates that the media initiative oriented towards collaboration results, such as better irrigation system, flood control, joint economic gains, etc., may be used to enhance the social legitimacy of long-term cooperation instead of confrontational positions (Zeitoun et al., 2011).

In the future, it can be assumed that shared water resources will be increased due to climate change, population increase, and urbanization. According to the records of Intergovernmental Panel on Climate Change (IPCC), the South Asian river basins are predicted to show the change in rainfall distribution trends, more severe floods, and longer dry periods which will make river flows more variable than usual in the past (IPCC, 2022). This implies that the old fixed very allocation models are no longer sufficient.

Conclusion

Indian and Bangladesh Water differences are an old problem which is majorly based on joint rivers like the Ganges, Teesta as well as the Brahmaputra. Millions of people in the two countries depend on these rivers as a source of livelihood and agricultural economies. The equitable water allocation, seasonality of water distribution, and the effect of upstream construction which involves the dam constructions are the main areas of contention. In 1996, the Ganges Water Sharing Treaty has offered certain framework through which people have collaborated though this context has not been able to tackle the entire picture taking into account the climate change that has resulted in growth in people and consequently, the demand of water (Sengupta, 2020). The Teesta River conflict is an unresolved one that is marked by the politics of India whereas the Brahmaputra dispute is entangled in the presence of China and the activity of the upstream developments in India (Rahman, 2019). Solutions offered are aimed at developing more flexible and data-driven water-sharing models, adopting modern technology in water management, and enhancing the cooperation between different

regions with the help of joint commissions and committees. Another important aspect of long-term water security is climate change mitigation, including flood control, and groundwater recharge.

Finally, it is important to note that the Indian-Bangladesh water conflict and its solution is not only important to the sustainability of two countries, but also to the stability and cooperation of South Asia. Water is a common good which needs to be managed collectively and successful completion of such negotiations will be a precedent, on how transboundary water is managed in the area in future. Through overcoming political obstacles, technology investing and climate changes respectively, the two nations can make sure that they still share the rivers to support the people in the country and still promote better bi-lateral relations. These disagreements must be solved to ensure the region of South Asia enjoys peace, economic growth, and environmental sustainability (Hossain and Rahman, 2021).

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