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Transboundary Water Management: Analysing India-Bangladesh Policies and Their Environmental Consequences on Bangladesh

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Effective water management is crucial in the 21st century, particularly for transboundary resources. Bangladesh and India share 54 rivers, which profoundly influence Bangladesh's ecological and socio-economic conditions. Regulating water from the Ganges, Brahmaputra, and Meghna basins poses environmental security issues since India has built dams and diverted water from other rivers without formal agreements. The Teesta River is a sensitive matter exacerbated by India's river management initiatives. Agriculture and energy in both countries significantly rely on these shared resources, which also support vital ecosystems, such as the Sundarbans, a UNESCO World Heritage site, highlighting the necessity for fair water management. India's water policies, such as the National Water Policy 2012, River Boards Act 1956, and Water Act 1974, strive for sustainability but frequently encounter obstacles owing to the dual governance of state and national authorities. The 1975 Farakka Barrage, constructed to improve navigation, has diminished river flows to Bangladesh during arid seasons, adversely affecting the environment and agriculture. The 1996 Ganges Water Treaty regulates water distribution but has compliance challenges, resulting in Bangladesh frequently getting less water than stipulated. Negotiations about the Teesta River are impeded by political and regional disputes. In Bangladesh, legislation such as the Bangladesh Water Act 2013 and the National Water Policy 1999 advocates for sustainable and equitable transboundary water management. The Environment Conservation Act 1995 pertains to water quality and pollution control. Increasing salinity in rivers and coastal regions, coupled with modified water flows, adversely affects biodiversity and agriculture. The recent flooding in Mymensingh, Cumilla, and Sylhet is ascribed to upstream dam operations in

India. This highlights the pressing necessity for cooperative water management to tackle common difficulties encountered by both nations.

Keywords: *transboundary water management, environmental impact, bilateral negotiations, ecosystem, climate resilience.*

INTRODUCTION

In the twenty-first century, water management is an essential component of the global agenda.¹ The economic, social, and environmental well-being of communities worldwide is influenced by transboundary water resources. Challenges persist in the integration of water resource management that is shared across national and international borders despite their interconnectivity (nationally & internationally).²

A total of 54 rivers are shared between Bangladesh and India. The environment and socio-economic conditions in Bangladesh are significantly influenced by the water-sharing dynamics between India and Bangladesh. The management of transboundary water resources, particularly those from the Ganges, Brahmaputra, and Meghna basins, has raised concerns about environmental security and ecological sustainability.³ India began the construction of dams or the diversion of water from numerous transboundary rivers, including the Teesta, Gumti, Khowai, Dharla, Dudkumar, and Monu, without any agreement with Bangladesh. India had reportedly blocked numerous rivers, including the Muhri, Chagalnaiya, Fulchari, and Kachu, which flow into Bangladesh from Tripura.⁴ The Teesta River has become a source of discord since the Ganges issue was resolved. The dry season poses significant challenges for

¹ United Nations, *Global Sustainable Development Report, 2015 Edition* (2015) pg 1-202

² Patricia Wouters, 'International Law - Facilitating Transboundary Water Cooperation' (2013) Global Water Partnership, TEC Background Papers No 17

<<https://www.gwp.org/globalassets/global/toolbox/publications/background-papers/17-international-law---facilitating-transboundary-water-cooperation-2013-english.pdf>> accessed 13 October 2024

³ Dr Biswajit Mohapatra, 'India-Bangladesh Trans-boundary Rivers: Management and Conflict over Water Resources' (Conference - North-Eastern Hill University, Shillong 793022, India, 2019)

⁴ Md Shariful Islam, 'Water Scarcity and Conflict: A Bangladesh perspective' (2011) 5(6) FORUM
<<https://archive.thedailystar.net/forum/2011/june/water.htm>> accessed 13 October 2024

residents of the Teesta basin. Bangladesh also has concerns regarding India's River Linking Project and Tipaimukh Dam Project.⁵

Effective governance and international collaboration are crucial since Bangladesh is highly dependent on upstream water imports, which leaves the country susceptible to choices made by other parties.⁶ Not only do varied ecosystems rely on these common rivers for water for farming and drinking, but they are also essential for these uses. Millions of people rely on fisheries and riverine trade for a living and the GBM basin is also crucial for controlling floods and preserving biodiversity.⁷ Agriculture heavily depends on water resources, especially for the irrigation of crops like rice, wheat, and sugarcane, which account for about 17% of India's GDP⁸ & in Bangladesh, the contribution of agriculture to GDP is 13.5%.⁹ Also, by hydropower generation, India constitutes about 12% of the country's energy mix.¹⁰ Despite Bangladesh's limited dependence on hydropower owing to its flat terrain, water resources are essential for achieving its future renewable energy objectives. Furthermore, the natural gas industry, which predominates Bangladesh's energy composition, needs water resources for processing and cooling purposes.¹¹ The rivers jointly support the Sundarbans mangrove forest, a UNESCO World Heritage Site, which is shared by both nations.¹² The ecological interconnectedness of India and Bangladesh underscores the necessity of equitable water management. Alterations in river flows resulting from water extraction, dam building, or climatic influences may result in

⁵ Fahmida Aktar, 'Water Diplomacy and Water sharing problem between Bangladesh and India: a Quest for Solution' (2021) 8(1) International Journal of Research and Scientific Innovation <<https://rsisinternational.org/journals/ijrsi/digital-library/volume-8-issue-1/223-229.pdf>> accessed 13 October 2024

⁶ M Monirul Qader Mirza, 'Global warming and changes in the probability of occurrence of floods in Bangladesh and implications' (2002) 12(2) Global Environmental Change <<https://www.sciencedirect.com/science/article/abs/pii/S095937800200002X>> accessed 13 October 2024

⁷ Stephen Brichieri-Colombi and Robert Bradnock, 'Geopolitics, water and development in South Asia: cooperative development in the Ganges-Brahmaputra delta' (2003) Geographical Journal <https://www.academia.edu/3982534/Geopolitics_water_and_development_in_South_Asia_cooperative_development_in_the_Ganges_Brahmaputra_delta> accessed 10 October 2024

⁸ 'Agriculture, forestry, and fishing, value added (% of GDP) - India' (World Bank Group, 2023) <<https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=IN>> accessed 10 October 2024

⁹ Ministry of Planning, *Statistical Yearbook Bangladesh 2021* (41st edn, 2022) pg 1-4

¹⁰ Ministry of Power, *Annual Report 2022-23* (2022) pg 1-220

¹¹ 'Renewables 2022 Analysis and forecast to 2027' (International Energy Agency, 2022) <<https://iea.blob.core.windows.net/assets/ada7af90-e280-46c4-a577-df2e4fb44254/Renewables2022.pdf>> accessed 11 October 2024

¹² Guy Broucke et al., *Report on the joint UNESCO/IUCN reactive monitoring mission to the Sundarbans, Bangladesh from 9 to 17 December 2019* (Law Com No 44, 2021)

significant repercussions, including diminished agricultural productivity, biodiversity loss, and heightened susceptibility to floods and droughts in both nations.¹³

INDIA'S WATER LAWS AND POLICIES RELATED TO TRANSBOUNDARY RIVERS

India has several laws & policies to manage water distribution internally & water sharing between neighbouring countries. National Water Policy (NWP), River Boards Act 1956, and Water Act 1974 are some important Acts & policies for water management internally & internationally.

Transboundary water sharing is addressed in India's National Water Policy (NWP) 2012, particularly in the context of cooperation with neighbouring countries, as stated in Section 1.3.¹⁴ Transboundary water-sharing practices offer only general guidelines rather than detailed regulations. In section 12.5, the policy underscores the necessity of sustainable and equitable water management¹⁵, accounting for India's substantial shared river systems with neighbouring countries such as Bangladesh, Pakistan, Nepal, and Bhutan. Under the provisions that address international cooperation, the NWP 2012 specifically addresses transboundary Rivers. Additionally, section 12.1 delineates the importance of effective water management of international rivers in the context of regional stability and development.¹⁶ Section 12.3 promotes bilateral and multilateral agreements, highlighting the importance of achieving equitable sharing of river waters¹⁷, prioritising ecological considerations in Section 12.4¹⁸, and facilitating mutual benefit through cooperative water-sharing frameworks.

The objective of the River Boards Act of 1956 is to encourage integrated management, which encompasses aspects such as pollution abatement, water conservation, and flood control across state boundaries. Although the Act mainly applies to interstate rivers within India, it indirectly affects transboundary water-sharing with neighbouring countries¹⁹, including Bangladesh. It

¹³ Asit K Biswas, 'Cooperation or conflict in transboundary water management: case study of South Asia' (2011) 56(4) *Hydrological Sciences Journal* <<https://doi.org/10.1080/02626667.2011.572886>> accessed 11 October 2024

¹⁴ National Water Policy 2012, s 1.3

¹⁵ National Water Policy 2012, s 12.5

¹⁶ National Water Policy 2012, s 12.1

¹⁷ National Water Policy 2012, s 12.3

¹⁸ National Water Policy 2012, s 12.4

¹⁹ River Boards Act 1956

assists India in fulfilling international water-sharing agreements, such as the Ganges Water Treaty, by ensuring that upstream river management aligns with obligations to downstream neighbours by facilitating coordination across state boundaries and transboundary Water-sharing as per section 6²⁰ and Integrated Water Management under section 2.2²¹ of the NWP (Government of India, 1956).

Under Entry 17 of the State List in the Constitution, water is predominantly a state subject in India. This provision grants individual states jurisdiction over water resources within their borders. On the other hand, Entry 56 of the Union List empowers the central government to regulate interstate rivers when it is in the public interest, thereby establishing a shared responsibility between the central government and the states.²²

Transboundary water management can be complicated by this duality, as states frequently prioritise regional interests, which can lead to conflicting approaches to river management. As an illustration, the quantity and quality of water that flows downstream to other states and, ultimately, into neighbouring countries such as Bangladesh can be influenced by the policies of upstream states. India's capacity to negotiate or fulfil international water-sharing agreements may be influenced by this dynamic, as state-level decisions regarding river management can influence the quality and availability of water for downstream countries.²³ However, India has failed to develop long-term master plans, and the internal water-sharing sector remains uncoordinated. They were unable to address the inefficiency and fragmentation in decision-making and execution, as well as the multiplicity of decision-making authorities in their internal water-sharing system.²⁴

²⁰ National Water Policy 2012, s 1.3

²¹ *Ibid*

²² Ministry of Water Resources, *Entry 17 under list II of seventh schedule* (2010) pg 1

²³ Chhatrapati Singh, *Water Rights and Principles of Water Resources Management* (N M Tripathi 1991)

²⁴ Prof Vijay Paranjpye and Prof M S Rathore, 'Position Paper on Understanding and Implementation of National Water Policy of India - 2012' (*India Water Partnership*, 2014) <https://www.gwp.org/globalassets/global/gwp-sas_files/cwp-reports/position-paper-on-understanding-and-implementation-of-national-water-policy-2012.pdf> accessed 10 October 2024

WATER RESOURCE PLANNING AND RIVER MANAGEMENT

One of the most significant water infrastructure projects in India, the Farakka Barrage, was completed in 1975 on the Ganges River in West Bengal. This project has had a significant impact on Bangladesh. It was constructed with the primary objective of diverting water into the Hooghly River to enhance navigation and prevent siltation in the Kolkata Port. Nevertheless, this diversion has resulted in a decrease in downstream flows into Bangladesh, particularly during the drought season, which has presented substantial ecological and agricultural challenges.²⁵ The Ganges Water Treaty was signed in 1996 to regulate water-sharing, which was the result of longstanding bilateral tensions and the impact of seasonal water scarcity on Bangladesh's agriculture, fisheries, and riverine ecosystems.²⁶

The water flow into Bangladesh has been similarly impacted by the Teesta Barrage in northern West Bengal, which is a component of India's initiatives to improve irrigation. Bangladesh's agricultural sector is significantly dependent on the Teesta River, particularly in the Rangpur region, which experiences severe water scarcity during the dry season. In Bangladesh, seasonal water-related challenges have been exacerbated, and food security and livelihoods have been impacted, as no formal water-sharing agreement has been achieved for the Teesta River despite ongoing negotiations.²⁷

BANGLADESH'S WATER MANAGEMENT FRAMEWORK

There are several acts in Bangladesh & those acts emphasise sustainable and integrated water resource management, aiming to protect water sources, regulate water usage, and control pollution. It also establishes a centralised regulatory body to oversee water resource development, ensuring that usage aligns with national priorities and environmental sustainability.

²⁵ Muhammad Mizanur Rahaman, 'Principles of Transboundary Water Resources Management and Ganges Treaties: An Analysis' (2009) 25(1) *International Journal of Water Resources and Development* <<https://www.tandfonline.com/doi/abs/10.1080/07900620802517574>> accessed 10 October 2024

²⁶ Ben Crow et al., *Sharing the Ganges: The Politics and Technology of River Development* (Sage Publications 1995)

²⁷ Ashok Swain, 'Displacing the Conflict: Environmental Destruction in Bangladesh and Ethnic Conflict in India' (1996) 33(2) *Journal of Peace Research* <<https://www.jstor.org/stable/425436>> accessed 10 October 2024

Section 3 of the Bangladesh Water Act, 2013 establishes a comprehensive framework for the management of the nation's water resources. Section 4 strengthens Bangladesh's negotiating position in the context of transboundary water-sharing with India by requiring equitable water distribution and sustainable management.²⁸ This is particularly important for rivers such as the Ganges and Teesta, where Bangladesh has emphasised the importance of equitable water sharing to address domestic agricultural, industrial, and ecological requirements. Section 7 of the Act acknowledges the necessity of collaboration with neighbouring countries regarding shared water resources despite the absence of specific directives for transboundary water-sharing.²⁹ This section reaffirms Bangladesh's dedication to cooperative water management practices, which are important in bilateral agreements such as those that involve the Ganges and Teesta rivers. Under Section 5, water allocation is prioritised for sectors that are considered essential for national interests.³⁰ By emphasising cooperation with neighbouring countries for shared water resources and prioritising water allocation for critical sectors, the Act strengthens Bangladesh's claims.

The National Water Policy (NWP) of 1999 in Bangladesh prioritises the efficient utilisation of water resources, equitable distribution, and sustainable water management. Key provisions include the prioritisation of water for essential purposes such as agriculture, drinking, and ecosystems, as well as the preservation of water quality, pollution prevention, and flood control. Additionally, it specifies collaborative endeavours with neighbouring nations to guarantee equitable water distribution from shared rivers.³¹

The sustainable management and development of water resources to address both current and future requirements is a critical aspect of the National Water Policy (NWP) of Bangladesh, particularly Section 2.1.³² This is due to the nation's dependence on shared rivers. Section 2.3 promotes the effective utilisation and equitable distribution of these resources, with a focus on

²⁸ Bangladesh Water Act 2013, s 4

²⁹ Bangladesh Water Act 2013, s 7

³⁰ Bangladesh Water Act 2013, s 5

³¹ Mahbub Mahbub, 'Water Management in Bangladesh: Challenges and Policies' (2022) Department of Political Science, University of Dhaka

<https://www.researchgate.net/publication/365484128_Water_Management_in_Bangladesh_Challenges_and_Policies> accessed 12 October 2024

³² National Water Policy 1999, s 2.1

essential purposes such as ecosystem maintenance, agriculture, and drinking.³³ Further, Section 4.3 emphasises that water allocation must be consistent with these fundamental human and ecological requirements, which is a critical factor in negotiations with India regarding equitable water distribution.³⁴ The policy also addresses flood management and pollution control in Sections 5.2³⁵ and 6.1, with the objective of reducing flood hazards and preserving water quality³⁶, which is essential for rivers that are shared with India, such as the Ganges and Teesta. Section 7.2 promotes international collaboration on transboundary water sharing³⁷, emphasising the significance of negotiating agreements with India to safeguard Bangladesh's socio-economic and agricultural interests, particularly in light of the seasonal flow variability. Lastly, Section 8.1 encourages the development of diplomatic negotiations and treaties³⁸, encouraging Bangladesh to advocate for agreements that take into account the ecological and seasonal requirements of the region.

The Environment Conservation Act of 1995 serves as a fundamental legislative instrument for the regulation of water quality and pollution management in Bangladesh. This Act requires the safeguarding and enhancement of the environment by establishing water quality standards, regulating industrial discharges, and enforcing fines for violations. It established the Department of Environment (DoE) to supervise enforcement, guaranteeing the protection of water resources from pollution and overexploitation.³⁹

Section 4 of the Environment Conservation Act, 1995 mandates the implementation of comprehensive measures to safeguard and enhance the environment.⁴⁰ This section establishes environmental standards for the management of water resources in Bangladesh. The Act grants the government the authority to establish environmental quality standards, including specific

³³ National Water Policy 1999, s 2.3

³⁴ National Water Policy 1999, s 4.3

³⁵ National Water Policy 1999, s 5.2

³⁶ National Water Policy 1999, s 6.1

³⁷ National Water Policy 1999, s 7.2

³⁸ National Water Policy 1999, s 8.1

³⁹ Muhammad Mizanur Rahaman and Varis Olli, 'Integrated Water Resources Management: Evolution, Prospects and Future Challenges' (2005) 1(1) Sustainability Science Practice and Policy
<https://www.researchgate.net/publication/26404568_Integrated_Water_Resources_Management_Evolution_Prospects_and_Future_Challenges> accessed 12 October 2024

⁴⁰ Bangladesh Environment Conservation Act 1995, s 4

criteria for water quality, under Section 6.⁴¹ This is crucial for the management of pollution in both domestic and transboundary contexts. The control of industrial effluents is a topic that is particularly pertinent for transboundary water-sharing with India in Section 7, as industrial activities upstream can have an impact on the purity of water in Bangladesh.⁴² Bangladesh can advocate for healthier water supplies from shared rivers through this provision. Section 9 specifies penalties for entities that violate environmental regulations, thereby preventing pollution and guaranteeing compliance with water quality standards.⁴³ Under Section 3, the Department of Environment (DoE) is tasked with the enforcement of these provisions, the monitoring of water quality, and the protection of water resources from pollution and misuse.⁴⁴ Bangladesh's negotiating position with India to secure agreements that include pollution control measures on shared rivers is bolstered by the Act's promotion of safe and clean water flows from rivers such as the Ganges and Teesta, which indirectly impacts transboundary water-sharing discussions.

LANDMARK BILATERAL WATER AGREEMENTS BETWEEN INDIA AND BANGLADESH

The Ganges Water Treaty, which was ratified between India and Bangladesh in 1996, is a 30-year accord that is committed to the equitable allocation of water from the Ganges River during the dry season. Based on historical flow averages, the treaty establishes specific water-sharing arrangements at the Farakka Barrage. India and Bangladesh are required to share water at 35,000 cusecs when flows are between 70,000 and 75,000 cusecs and to divide water equally if flows fall below 70,000 cusecs. Although the treaty has promoted some stability, bilateral relations have occasionally been marred by issues such as seasonal water shortages and compliance concerns. In the interim, negotiations for a Teesta River Agreement have been halted despite a proposed framework that advocates for equitable water distribution. Bangladesh is seeking approximately 50% of dry-season flows to support agriculture, while India is striving to meet the needs of West Bengal. Progress has been impeded by political tensions, particularly

⁴¹ Bangladesh Environment Conservation Act 1995, s 6

⁴² Bangladesh Environment Conservation Act 1995, s 7

⁴³ Bangladesh Environment Conservation Act 1995, s 9

⁴⁴ Bangladesh Environment Conservation Act 1995, s 3

objections from West Bengal regarding potential impacts on local water availability. The agreement has been unable to be finalised due to political differences despite the framework's emphasis on joint administration and data exchange.

The 1996 Ganges Water Treaty between India and Bangladesh is a 30-year agreement aimed at equitable water distribution from the Ganges River during the dry season. The treaty sets specific water-sharing arrangements at the Farakka Barrage based on historical flow averages. It stipulates that when flows are between 70,000 and 75,000 cusecs, both countries share 35,000 cusecs, and if flows drop below 70,000 cusecs, they are divided equally.⁴⁵ While this framework has provided some stability, seasonal water shortages and compliance concerns have occasionally strained relations. Notably, despite limited local withdrawals allowed downstream of Farakka under Article II⁴⁶, Bangladesh often receives less water than expected. For example, from 2008 to 2016, shortages occurred approximately 55.5% of the time and 25% of the time from 2008 to 2011, with April being particularly affected. Between 1997 and 2016, Bangladesh failed to receive its guaranteed flow 65% of the time.⁴⁷

The treaty has also faced criticism due to the lack of a direct guarantee clause, unlike the 1977 Agreement, which ensured Bangladesh received at least 80% of the flow during low-flow periods. Although the Treaty indirectly assures Bangladesh of 90% of its allocated share if no agreements are reached, it offers limited protection during extreme low-flow conditions.⁴⁸ Article II mandates consultations if Farakka flows fall below 1,416 m³/s, indirectly addressing such situations.⁴⁹ A direct guarantee clause could better protect Bangladesh's water rights during critical dry-season periods by securing minimum flows and possibly limiting upstream withdrawals by India.

⁴⁵ Kazi Saidur Rahman et al., 'A Critical Review of the Ganges Water Sharing Arrangement' (2019) 21 Water Policy
<https://www.researchgate.net/publication/330369230_A_Critical_Review_of_the_Ganges_Water_Sharing_Arrangement> accessed 13 October 2024

⁴⁶ Ganges Water Sharing Treaty 1996, art II

⁴⁷ Rahman (n 45)

⁴⁸ *Ibid*

⁴⁹ Ganges Water Sharing Treaty 1996, art II

Historically, before the Farakka Barrage (1949–1974), dry-season flows at Hardinge Bridge were 16% higher than at Farakka due to local inflows⁵⁰, a disparity reduced to 9% post-barrage and further to 8% after the Treaty. From 1997-2016, Bangladesh received less water 31% of the time, with significant shortfalls during alternate 10-day cycles from March to May.⁵¹ These recurring issues highlight the challenges in maintaining consistent downstream flows for Bangladesh.

Parallely, the Teesta River Agreement negotiations, which call for equitable distribution, have stalled. Bangladesh seeks around 50% of dry-season flows to support agriculture, while India prioritises water needs in West Bengal.⁵² Political tensions, especially opposition from West Bengal regarding local water impacts, have hindered progress despite provisions for joint management and data sharing.

ENVIRONMENTAL IMPACT ON BANGLADESH DUE TO INDIA'S WATER POLICIES

The Farakka Barrage, completed in 1975, was intended to maintain navigability for Kolkata Port and divert Ganges River water for irrigation.⁵³ However, this diversion has led to reduced river volumes entering Bangladesh, especially during dry seasons, disrupting the hydrological balance of the Ganges and its tributaries and significantly impacting lower riparian areas in Bangladesh.⁵⁴

One major consequence is the increased salinity levels in rivers and coastal regions, primarily due to saline water infiltration from the Bay of Bengal caused by reduced freshwater flow.⁵⁵ This has adversely affected agricultural productivity and freshwater ecosystems, with some areas

⁵⁰ Rahman (n 45)

⁵¹ *Ibid*

⁵² Ainun Nishat and I M Faisal, 'An Assessment of the Institutional Mechanisms for Water Negotiations in the Ganges-Brahmaputra-Meghna System' (2000) 5(2) *International Negotiation* <https://www.researchgate.net/publication/233683513_An_Assessment_of_the_Institutional_Mechanisms_for_Water_Negotiations_in_the_Ganges-Brahmaputra-Meghna_System> accessed 13 October 2024

⁵³ Sumaiya Siddique, 'Sharing the Ganges: A Bangladesh Perspective on Environmental Impacts and Political Implications' (*Voice of International Affairs*, 20 April 2021) <<https://internationalaffairsbd.com/sharing-ganges-bangladesh-perspective-environmental-impacts-political-implications/>> accessed 14 October 2024

⁵⁴ *Ibid*

⁵⁵ Mohammad Abul Kawser and Md Abdus Samad, 'Political history of Farakka Barrage and its effects on environment in Bangladesh' (2016) *Bandung: Journal of the Global South* <<https://bandungjournal.springeropen.com/articles/10.1186/s40728-015-0027-5#:~:text=After%20commissioning%20Farakka%20barrage%20in,and%20wellbeing%20and%20so%20on>> accessed 13 October 2024

experiencing a significant rise in salinity, leading to declines in fish populations, particularly freshwater species.⁵⁶ A study indicated that the diversity of freshwater fish in certain regions dropped from 29 to 12 species due to higher salinity.

Altered flow conditions have also destroyed essential reproductive grounds for many aquatic species, resulting in decreased biodiversity. The Sundarbans, a vital UNESCO World Heritage ecosystem, has been harmed by decreased salinity and sediment movement, threatening its unique biodiversity.⁵⁷ Additionally, the reduced sediment load from water diversion negatively affects aquatic habitats, impacting fish populations and the broader aquatic food chain, as the Ganges historically provided essential nutrients and detritus for the ecological health of mangroves and wetlands.⁵⁸ The diminishing dry-season flow has contributed to the severe riverbed conditions in Bangladesh, contributing to an increase in catastrophic monsoon floods in the flood-prone region.⁵⁹ Overflow of the Brahmaputra River, where India has made at least four dams, has caused flooding in Mymensingh (The northern part of Bangladesh). Also, the overflow of water in Cumilla caused a flood because India opened a dam gate from Tripura.⁶⁰ Also, Sylhet or basically the north-eastern & south-eastern parts of Bangladesh was flooded.

CONCLUSION & RECOMMENDATION

The ecological decline of one country or region poses a challenge for the entire community of nations. Post-colonial nation-states have led to a perception of rivers as fragmented resources, allowing upper riparian states to exploit them for their own interests. This has caused tension among co-riparian nations worldwide. Successful bilateral negotiations can promote peaceful coexistence and shared water resource management. Water governance and management are significantly shaped by the internal political economies of the involved countries. Addressing water-sharing issues requires considering the historical development of political economies and recognising the entire river as an integrated unit.

⁵⁶ *Ibid*

⁵⁷ Swain (n 27)

⁵⁸ Kawser (n 55)

⁵⁹ *Ibid*

⁶⁰ M Inamul Haque, 'What made the flood so severe' *The Daily Star* (25 August 2024)

<<https://www.thedailystar.net/opinion/views/news/what-made-the-flood-so-severe-3686256>> accessed 11 October 2024

- Formulate adaptation plans for evolving climatic conditions and allocate resources towards infrastructure improvements to bolster resilience against floods and droughts.
- Mandate environmental impact evaluations for new infrastructure projects and formulate conservation strategies for vital habitats such as the Sundarbans.
- As both the country have Integrated Water Resource Management, the only issue that is due to be solved is political tension. Because the political dynamic of both these countries has immense differences even though both are democratic countries.
- Promote collaborative research activities and provide training programs for policymakers to enhance water management and conflict resolution competencies.
- Expedite the Teesta River Agreement and amend the Ganges Water Treaty to establish minimum flow guarantees for Bangladesh and clarify water allocation, particularly during drought seasons.
- Involve local people in water management choices and implement awareness programs focused on conservation and pollution mitigation.
- Collaborate with neighbouring countries to establish regional water management frameworks and request mediation and funding from international organisations.