Geopolitical Implications of Transboundary Rivers in South Asia Region

Kumari Nishu Yadav

Abstract

The Contemporary era is Characterised by intensified competition for water resources among the nations, in the twenty – first century's global order, hydro-politics emerged as a crucial enemy that significantly impacted the strategic landscape and national security has become closely linked to several geopolitics' factors. South Asia is grappling with numerous internal issues, the three major river systems the Ganges, Indus, and Brahmaputra River basins serves as the geopolitical tensions in the region. The research examines the historical context and ongoing conflicts between India, Pakistan, China, and Bangladesh over these critical water resources. It investigates the causes of disputes, such as dam development and water-sharing agreements, as well as their implications for regional stability. The analysis emphasizes the critical need for collaborative management and long-term solutions to solve water security and promote regional harmony.

Keywords: Hydro-politics, *Transboundary water disputes, Geopolitical implications, South Asia, Conflicts*

Introduction

Water covers two-thirds of our world, yet only around 2.5 percent of it is fresh. The Nile, Rhine, Danube, Indus, Ganga, Brahmaputra, Columbia, and Mekong basins are only a few of the 276 transboundary rivers that contain around 60% of the freshwater supply on Earth. Forty percent of the world's population lives along these transboundary rivers, which occupy forty percent of the planet's land area. In Africa, transboundary rivers and lakes make up around 90% of the total, whereas in the Middle East, transboundary basins supply more than 60% of the household water supply. [1] Although it might be claimed that there is enough fresh water on Earth to cover everyone's basic needs, this water is not distributed equally. Largely populated areas, like the Middle East, North Africa, western parts of the United States, and northern parts of China, for example, all face severe freshwater shortages. Insufficient investment in hydrological infrastructure causes other states, like Pakistan, Afghanistan, and India, to face economic water scarcity. This is because these states are unable to collect water during the monsoon season and utilize it during the remaining dry season. As this, 1.6 billion people worldwide live in physical water scarcity, and by 2030,

[1] (UNESCO World Water Assessment Programme [554], UNESCO. Director-General, 2009-2017 (Bokova, I.G.))

this number is expected to rise as the world's population is predicted to live in water-stressed environments. A shortage of affordable water affects 1.6 million people.[2]

The worldwide quest for water is a transnational, non-traditional security problem in international politics that seriously threatens regional stability. Water is a basic human need that involves survival and basic nutrition. Rivers are especially divisive because they span political boundaries and are therefore the target of conflicting interests. Rivers are considered a national resource that governments have sovereign rights to employ as they think suitable for their interests. Most nation-states view themselves as sole owners of the segment of the river that flows through their territory. Because they might limit the number of water resources accessible to another riparian, dam construction, and water diversions by one riparian frequently create intense emotions in individuals who are negatively impacted by such actions. Conflict and tension frequently arise.[3]

> The Nile, Rhine, Danube, Indus, Ganga, Brahmaputra, Columbia, and Mekong basins are only a few of the 276 transboundary rivers that contain around 60% of the freshwater supply on Earth.

Rivers are controversial because they are an important resource that has played a significant role in human evolution throughout history. Extreme poverty can be lessened by utilizing water resources. Millions of people who depend on rivers for their livelihoods and who live near them are supported by river economies. Rivers are a renewable energy source with a variety of uses. They provide drinking water and are crucial for transportation, navigation, agriculture, flood control, and the production of hydropower.

Geopolitical Theories and Transboundary River Governance in South Asia

South-Asia Transboundary Rivers

A long history of human settlement and a diverse physical environment combine to create South Asia's rich cultural landscape. This region was probably inhabited by early people hundreds of thousands of years before modern humans approximately 75,000 years ago. In the Indus River basin, the first significant civilisation in South Asia emerged at around 3300 BCE. This civilisation, which was cantered in northwest India, Pakistan, and Afghanistan, depended on the monsoon rains to replenish the Indus River.

Water resources are a shared feature among South Asian countries, with transboundary water resources has in common. For all the South Asian mainland countries, transboundary water resources are more important. Most of the rivers in South Asia have international basins as they traverse one or more political borders. 20 significant rivers are shared by mainland countries, excluding the island nations of Sri Lanka and the Maldives. The Indus basin is shared by China, Afghanistan, Pakistan, and India, whereas the

[2] (The Governance of Transboundary Rivers Across the World)
[3] (Introduction to 'Transboundary River Cooperation: Actors, Strategies and Impact')

Brahmaputra and Ganges River basins connect China, India, Nepal, Bangladesh, and Bhutan. Nepal and India are joined by the rivers Kosi, Gandaki, and Mahakali. There are 54 major rivers between Bangladesh and India, including Brahmaputra, Ganges, and Teesta.[4]

India is the world's third-largest emitter of carbon dioxide in addition to ranking third in the construction of dams.

South Asia's great rivers are its cultural and economic pillars. Millions of people today rely on the Ganges, Indus, and Brahmaputra for their daily sustenance. These rivers helped some of the earliest civilisations in history to flourish. The river basins of South Asia, the majority of which originating in the Himalayas, sustain abundant ecosystems, and irrigate millions of hectares of land, contributing to some of the world's greatest population densities. Geopolitically, South Asia is a vast territory that has been divided and passed down by multiple nations. The populous South Asian nations of Bangladesh and Pakistan are not source of any significant rivers. Through India, they all enter Pakistan and Bangladesh. India's size—both geographically and demographically, as well as its economic and military ability—has given it the capacity to exert hegemony over its smaller neighbours. Furthermore, India benefits from the physical distance between its neighbours. The smaller governments have frequently felt envious, and suspicious of these geopolitical asymmetries. Since their colonial past, the smaller governments in the area have been increasingly aware of concerns related to national sovereignty, identity, and autonomy as well as the real possibility of cultural and economic domination by their more prominent neighbours.[5]

Climate Change and Transboundary Rivers Dynamics in The Region

Over time, the geopolitics of South Asia's transboundary rivers have been significantly shaped by the melting of glaciers. In South Asia, building dams in higher riparian areas is regarded as one of the main obstacles to settling transboundary water disputes. After the United States and China, India is the third-largest dam-building nation in the world.[6] Experts firmly believe that building dams haves the potential to negatively impact both human and ecological life, including the climate. They contended that when a reservoir is first water-logged, trees and other plants produce significant amounts of carbon dioxide, which causes the plants to weaken. When water passes through the dam's turbines, the plant drop litter that had been collected in the reservoir's basin rots and releases concentrated amounts of dissolved methane into the sky.[7] Because of these artificial water reservoirs, carbon dioxide is converted into the more harmful gas methane in the atmosphere, causing an increase in global warming which is 24 times more powerful than

[4] (Transboundary River Management in South Asia: The Exigency of Multilateral Institutional Framework)
[5] (Geopolitics of Water in South Asia)
[6] (Building of Large Dams and the Rights of Tribes in India)
[7] (Geopolitics of Water in South Asia)

that of carbon dioxide. India is the world's third-largest emitter of carbon dioxide in addition to ranking third in the construction of dams.[8]

Himalayan glaciers are retreating at a startling rate because of climate change. When we consider the increasingly severe effects of climate change— the most significant catastrophe of our time—the seriousness of the water insecurity scenario becomes apparent. The hydrological landscape of South Asia is changing because of this crisis in frightening and unheard-of way. 74% of people live in an area that is already known to be among the most water-stressed in the world, and they are facing extreme water stress.[9]

Transboundary collaboration can strengthen resilience against disasters, which are predicted to occur more frequently, as well as avoid and/or widen the body of information regarding adaptation strategies. The necessity of cooperation in adapting to climate change may catalyze more cooperation in transboundary basins.[10]

Water is a cross-cutting issue that requires attention at all levels and sectors. Water challenges are multifaceted and include various parties with competing needs that span political, institutional, disciplinary, and geographical boundaries.[11]

Indus Water Basin

The Arabian Sea is the eventual destination of the Indus River basin, which extends from the Himalayan Mountains in the north to the arid alluvial plains of Sindh province in Pakistan in the south. Approximately 520 000 sq.km, or 65% of Pakistan's land area, is covered by the Indus River basin. This includes the entirety of the provinces of Punjab and Khyber Pakhtunkhwa, as well as the majority of Sindh province and the eastern portion of Baluchistan. The drainage area in India is approximately 440 000 sq.km, accounting for nearly 14% of the country's total area in Jammu & Kashmir, Himachal Pradesh, Punjab, Rajasthan, Haryana, and Chandigarh. Only around 14 percent of the basin's catchment area is in China, which covers only 1 percent of the country's territory, and 11 percent of Afghanistan's land area. According to estimates, the Indus Basin is home to at least 300 million people.[12]

The river flows are made up of glacier melt, snowmelt, rainfall, and runoff. The Indus River and several of its tributaries receive constant supplies from the glaciers, which serve as natural storage reservoirs.

[8] (Will Himalayan Dams Solve India's Energy Woes?)

[9] (The views expressed by Asia Society staff, fellows, experts, report authors, program speakers, board members, and other affiliates are solely their own.)

[10] (Water and Climate Change Adaptation in Transboundary Basins: Lessons Learned and Good Practices)

[11] (Water cooperation in action: approaches, tools and processes, report of the International Annual UN-Water Zaragoza Conference)

[12] (Transboundary River Basin Overview – Indus) FAO. 2011. AQUASTAT Transboundary River Basins – Indus River Basin. Food and Agriculture Organization of the United Nations (FAO). Rome, Italy

History

The Indus civilization, which dates back 4,000 years, was founded on irrigated agriculture. Canal irrigation development began in 1859, with the completion of the Upper Bari Doab Canal (UBDC) from the Madhopur Headworks on the Ravi River. Up until then, irrigation was performed by a system of stream canals, which was only used when river flows were particularly strong. These supplied water to kharif (summer) crops and retained soil moisture to rabi (winter) crops. *Figure:1* illustrates the distribution of the Indus River's tributaries and the geographical locations of basins shared by India and Pakistan.

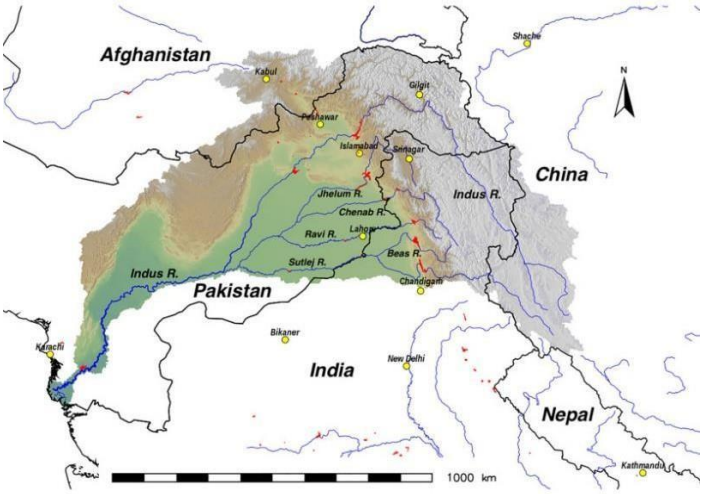

Figure 1: Indus River Basin

In the early 1900s, it became clear that the water resources of individual rivers exceeded potential irrigable land. The supply from the Ravi River, which serves as major area of Bari Doab, was insufficient, although Jhelum had an excess. The Triple Canal Project, an innovative solution, was built between 1907 and 1915. The project allowed excess water from the Jhelum and Chenab rivers to flow into the Ravi by connecting the Jhelum, Chenab, and Ravi rivers. The Triple Canal Project was a water resource management milestone, and it served as the foundation for the Indus Water Treaty (IWT), which was signed in 1960 to resolve India and Pakistan's dispute over the Indus River. [13]

The partition of India in 1947 divided the Indus River system and the enormous irrigation infrastructure within it between India and Pakistan. The Ferozepur and Madhopur headworks, which are critical for irrigation canals in Pakistani Punjab, were situated in Indian territory. In December 1947, a temporary agreement was made to allocate water from India to Pakistan. This agreement was due to expire in March 1948, when the two countries waged the first Kashmir War. On April 1, 1948, the Indian provincial

[13] (Transboundary River Basin Overview – Indus)

government in East Punjab cut off the water supply from canals heading into Pakistan. This proved India's enormous strength over Pakistan, as its upper riparian power in the Indus Basin. The water flowing through the Indus and its tributaries provides almost all of Pakistan's water supply and the northwestern areas of India are heavily reliant on the Indus Basin, but not as much as Pakistan.[14]

Although the first Kashmir War ended in late 1948, it did not result in a long-term collaboration strategy along the Indus River basin. Negotiations began immediately after the war ended, but there seemed to be little progress made. Since 1951, the World Bank has served as a mediator and, proposed a solution in 1954. After six years of negotiations, Indian Prime Minister Jawaharlal Nehru and Pakistan President Mohammad Ayub Khan signed the IWT in 1960. According to former senior water adviser for the World Bank in New Delhi, John Briscoe.

The IWT divided the rights to use the Indus River system between India and Pakistan. In addition to the Indus River, the pact addressed its five major tributaries: the Jhelum, Chenab, Ravi, Beas, and Sutlej. India was granted rights over the latter three, which were labeled the Eastern Rivers. Pakistan was granted rights over the western rivers of Indus, Jhelum, and Chenab. In addition, Pakistan was given a one-time payment of 62 million pounds sterling when India took over the Eastern Rivers canals that led to Pakistan.[15]

Water scarcity is currently a major concern in India and Pakistan. The Indian government declared that millions of lives and livelihoods are in danger as the nation "is suffering from the worst water crisis in its history."[16] Indeed, India's water availability per capita has fallen drastically and, if no improvements in water management are accomplished, it is anticipated to further decrease by 40-50% by 2050. Similarly, Pakistan is now one of the countries with the most acute water shortages in the world, relying on only 0.45% of total global hydric supplies. Alarmingly, in 2021, the Pakistan Council of Research in Water Resources predicted that, if no steps are implemented, by 2025 the country will only have access to very little clean water, or none. Given the water challenges that India and Pakistan are currently facing, the Indus River represents vital support to guarantee water, food, and economic security to their populations.

Geopolitical tension in the Indus Water Treaty

The IWT is regarded as one of the most effective examples of transboundary water-sharing, with the dispute resolution process being its most notable achievement. In fact, despite the countries' ongoing political conflicts, the Indus Commissioners have always maintained cooperative relations, to the extent that the treaty was not repealed even during the Indo-Pakistan wars. Given the IWT's flaws, India and Pakistan's water conflicts remains unresolved, and unless further cooperative efforts are undertaken, it is projected to

[14] (Transboundary River Basin Overview – Indus)
[15] (The Indus River Basin, 1999-2008 : An intellectual history in hydropolitics)
[16] ("India faces worst long term water crisis in its history -government think tank")

grow into a direct military confrontation in the future. Considering the significant water issues that India and Pakistan are currently facing, water security is considered a crucial issue of national security. [17]

Fears of future water shortages caused by dam construction have sparked diplomatic tensions between India and Pakistan. Disruptive political narratives in both India and Pakistan are thought to have increase the possibility of violence. In India, the narrative of Pakistani-affiliated Islamic terror cells assaulting civilians has been used to justify withdrawing from diplomacy and even threatening to cut Pakistan's water supply[18]. Meanwhile, Pakistani nationalist media blamed the country's floods on India's poor water management. Pakistanis are also concerned that India may utilize its upstream dams to restrict how much water flows into Pakistan via the Indus. This underlying hostility and mistrust between the two states has also been used to generate anti-Indian sentiment in Pakistan, offering a fertile basis for additional resentment and conflict.

In contemporary times, In August 2021, Pakistan raised objections to a 624 MW dam project on the Chenab River in Jammu and Kashmir, alleging a violation of the Indus Water Treaty. The Indian government insisted the dam adhered to treaty norms. The dispute adds complexity to Indo-Pak relations, impacting regional stability. In 2016, Pakistan raised concerns about India's Kishanganga and Ratle hydroelectric projects. Every time India planned a hydroelectric project on of the western river, Pakistan has challenged it by calling it for international relation.

IWT needs to be renegotiated, but the process comes with complications. However, if both countries handle the renegotiation appropriately, it may result in a superior version of the existing agreement.

Brahmaputra River Basin

The Yarlung Zangbo-Brahmaputra-Jamuna River Basin (also known as the Brahmaputra River Basin) is unique river system in South Asia. The river is the world's fourth largest in terms of yearly discharge. The river begins in China's Tibet Autonomous Region (TAR) and drains 580,000 km2 before flowing into the Bay of Bengal. China (which makes up 50.5% of the basin's total area), India (33.6%), Bangladesh (8.1%), and Bhutan (7.8%) share it. Despite being a significant river system in South Asia and offering enormous potential for regional development, relatively little progress has been made in managing this transboundary river at a regional level thus far. There is currently no international convention involving all four of the basin's countries for the management of the Brahmaputra basin. A few bilateral agreements, sometimes known as Memoranda of Understanding (MoUs), have been developed to address water-related challenges, like data exchange and flood forecasting. Negotiating a basin-wide management agreement for the Brahmaputra has been challenging due to the absence of a multilateral regional platform. [19]

[17] (Geopolitics of Water in India and Pakistan: Ongoing Tensions over the Indus River, 2022)
[18] (Water conflict and cooperation between India and Pakistan)
[19] (Water diplomacy as an approach to regional cooperation in South Asia: A case from the Brahmaputra basin)

Between the three riparian states, the river flows through a historically contentious area (see Figure 2- which illustrate the flow of the Brahmaputra River basin in the three-riparian state). The river has become securitised due to the contestation around boundary disputes and security concerns.

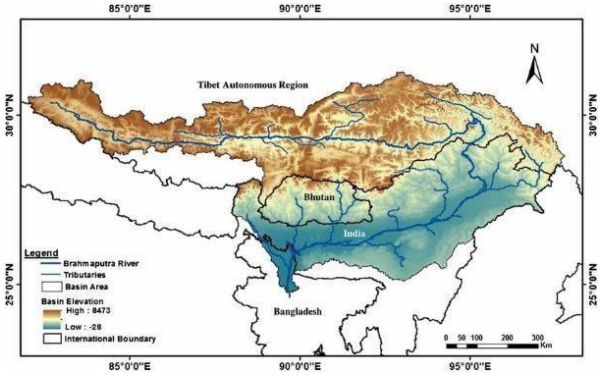

Figure 2: Map of Brahmaputra Basin.

Source: Indian Institute of Technology, Guwahati, India.

Hydro-Politics between Nations

The Brahmaputra Basin in South Asia has been identified as one of the basins most vulnerable to interstate water conflicts. Although there have been violent conflicts between China and India inside the borders of the Brahmaputra basin, there is little chance of a battle over water. This is partly because, despite its enormous volume, the river can do little to address India's serious water security issues, and partly because China contributes less to Brahmaputra's flow than is generally believed.[20] Due to adaptation measures implemented in India, the upstream Brahmaputra has been controlled and dammed, which will influence the lives of millions of people downstream of Bangladesh and India. Furthermore, there are more significant political and geographical problems at play in the water disputes between China and India. China concerning more general political and geographical challenges. China's intentions to build hydroelectric dams on the Brahmaputra River has led to increased mistrust in India. Both China and India are viewed as acting unilaterally and as being restrained from sharing information, especially when it comes to building dams.[21]

The wording in the Chinese government's November 14th Five-Year Plan framework, which outlines the country's growth objectives between 2021 and 2025, catalysed the most recent hostilities between China and India. "Implement... the downstream hydropower development of the Yarlung Zangbo River," according to the text, was the goal. Beijing refers to the first 2,840 kilometres of the river as the Yarlung as it winds through Tibet. After that, it crosses the Sino-Indian Line of Actual Control and becomes the

[20] (The Water Wars Myth: India, China and the Brahmaputra)

[21] (Transboundary water cooperation in South Asia: a case of Brahmaputra River Basin)

Brahmaputra, passing through a disputed region that China claims is southern Tibet and India considers to be Arunachal Pradesh. The river then flows 1,856 kilometres across Bangladesh and India before draining into the Bay of Bengal.

The wording is important because it suggests that the intention is to shift the location of Chinese hydropower development closer to Indian territory. Leaders in China's hydropower sector have been speculating about the construction of enormous dams in the "Great Bend" for more than 10 years; they could surpass the 22,500-megawatt Three Gorges Dam. Despite hydrological difficulties, such as being in an earthquake-prone area, this is the stretch of the river that is closest to India and is, in theory, perfect for producing energy. Such conversations confirm Indian analysts' fears that Beijing's goal is to reroute the Yarlung to improve irrigation inside China and to obtain influence over New Delhi by being able to regulate the river's flow, like what China has done to downstream Southeast Asian nations by limiting water flow along the Mekong. China has previously claimed that Yarlung dams are only "run of the river" constructions that are unable to store or divert water to allay India's worries. Chinese diplomats attempted to persuade India that the building would not endanger downstream neighbours after the most recent declaration. The strategic value of a new dam's capacity to reroute water may be limited because most of the Brahmaputra's flow originates from rainfall along tributaries on the Indian side of the border.[22]

The construction of Chinese dams on the Brahmaputra River is raising concerns about security and potential conflict. Millions in India's northeastern states could face drought and flooding, threatening fertile agriculture. China's control over this transboundary river demands that India not only maintain bilateral ties but also firmly protect national integrity and the livelihoods of those dependent on the Brahmaputra.

Ganges River Basin

The Ganges River rises at an elevation of 7,010 meters in the Central Himalayas, flows across the alluvial Gangetic Plains, and empties into the Indian Ocean in the Bay of Bengal. Ganges is a transboundary river with India occupies the majority (79%) of the river basin's total area, which is shared by Bangladesh, China, Nepal, and India. (Figure:3 Illustrate the flow of the Ganga River Basin) Bangladesh, on the other hand, is the country located downstream in the basin and only makes up approximately 4% of its total area, however, that still accounts for 37% of the basin. [23]

[22] (BRAHMAPUTRA: A CONFLICT-PRONE RIVER TAKES A STEP BACKWARDS)

[23] (A critical review of the Ganges Water Sharing arrangement)

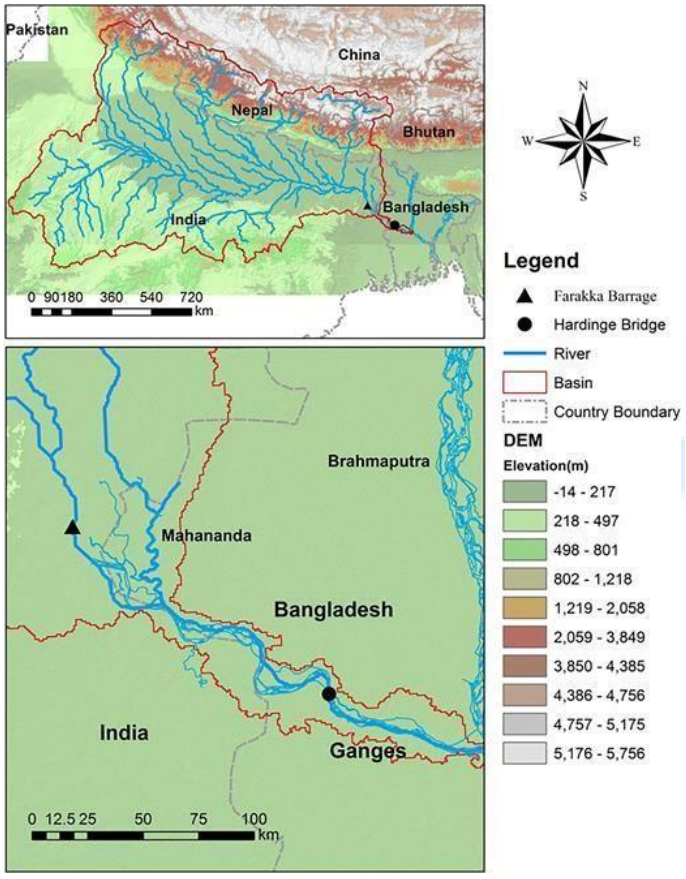

Figure 3: The Ganges River Basin

Up until 1975, Bangladesh's water needs were satisfied by Ganges' uncontrolled dry season flows. India's 1975 construction of the Farakka Barrage, which is located about 18 km upstream from the Indo-Bangladesh boundary, marked the beginning of the dispute between Bangladesh and India over Ganges water rights.[24]

History

The first significant Ganges water-sharing deal was reached in November 1977, just after India withdrew water unilaterally in June 1975 to November component of the 1977 Agreement was a guarantee clause that guaranteed Bangladesh 1977. It was for five years. The 1977 Agreement specified that the water would be shared in 10-day intervals during the dry season, which ran from January to May. A dry season flow schedule was developed using historical data from 1948 to 1973 which showed 75% availability of flow at Farakka. A crucial would get at least 80% of the planned flow if the actual flow at Farakka fell short of the schedule's stated amount. In 1983 and 1988, India and Bangladesh signed two "Memoranda of Understanding" (MoU) with minor modifications to the 1977 Agreement, following the agreement's expiration in 1982.

An Indo-Bangladesh Joint Rivers Commission (JRC) has existed since 1972. It was formed with the goal of maintaining communication to ensure the best efficient combined effort in maximizing the benefits of shared river systems.[25]

Resolution

An important step towards resolving a protracted dispute over the sharing of the Ganges water was taken with the signing of the Ganges Water Sharing Treaty (GWT, 1996) between Bangladesh and India on December 12, 1996, for a 30-year duration. The Treaty stipulated that during the dry season (January to May), the flow at Farakka would be divided into fifteen 10-day cycles and shared between India and

[24] (A critical review of the Ganges Water Sharing arrangement)
[25] (Ministry Of Jal Shakti, 2023)

Bangladesh following a special sharing formula. The Treaty also establishes the foundation for determining each nation's share of water using an indicative timetable that is based on the overall average historic flow at Farakka between 1949 and 1988. The fact that Bangladesh is the lower riparian state raises issues. This raises fears in Bangladesh that India, as the upper riparian and first to develop water resources, may have significantly more disproportionate influence over the rivers. Another major problem for nations is a lack of transparent data on transboundary rivers, which could lead to future serious conflict between the two countries. The river's physical distribution is such that it provides initial access to India, which is not India nor Bangladesh's fault.

One of the treaty's shortcomings was the unjustified assumption of future water availability at Farakka based on 40-year average flows. The treaty will expire in 2026 when the water-sharing arrangement between India and Bangladesh has been in effect for 30 years. As a result, the pact failed to enhance dry season water supply in Bangladesh significantly. Nonetheless, if modified through successful negotiations benefiting both countries' millions of citizens, the pact might still overcome water scarcity challenges and strengthen collaboration between riparian countries. [26]

Conclusion

Multilateral treaties that regulate transboundary rivers are lacking in South Asia. This is mainly because India, an intermediate riparian, employs several upstream and downstream concepts based on the river and the nation with which it interacts. Furthermore, the disputes over water between India, Pakistan, China, and Bangladesh revolve around shared rivers such as the Indus, Brahmaputra and the Ganges. China's upstream efforts, particularly dam construction, have raised worries in India and Bangladesh about reduced water flow and environmental damage. India's own dam projects heighten the tension in the Indus water Basin. Bangladesh, which is downstream, fears severe water shortages and flooding. Prospects are dependent on diplomatic diplomacy, collaborative river management, and sustainable practices to assure equitable water distribution and environmental protection. Strengthening regional cooperation and developing strong foundations for water-sharing agreements are critical to resolving problems and promoting mutual benefit.

[26] (A critical review of the Ganges Water Sharing arrangement, 2019)

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