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A History and Assessment of Transboundary Water Disputes of India

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Abstract: Transboundary water politics are affected not only by inter-government relations between India and its neighboring countries but also by dynamics on different scales, including the hydropolitics between Indian states within the basin. With the looming threat of climate change leading to a decline in rainfall in numerous states across India it has become important to efficiently manage the limited water resources available in the major rivers. Indian states also have significant influence over transboundary water governance, and at times this is at odds with India's central government. This paper describes the interdependencies between inter-state water conflicts within India, and the transboundary ones with India's neighbours.

Keywords: *Water conflict, Transboundary dispute, Cauvery dispute, Water War.*

I. INTRODUCTION

Management of transboundary water resources is expected to be one of the biggest challenges facing human development over the next decades (UN Water, 2008). In general, transboundary water resources can describe water shared across political, economic, or social boundaries (Beach et al, 2000). Shared water resources have always been a potential source of competition. The problem of acute water shortage affects many developing regions. Population growth and economic development, coupled with a rising scarcity of water, have led to increasing costs of water supply development. This is threatening the economy of many river basins, and thus drawing countries that share these basins into possible water conflicts (Spulber and Sabbaghi, 1994).

At present, scarcity of water and interdependence among water sharing countries have created several conflicts over shared water resources around the world. Moreover, these conflicts are expected to escalate as a result of industrial development, growing population, increasing urbanization, as well as the negative consequences of climate change. The increasing significance of water resources shared across political borders and the cause for conflicts have attracted considerable research interest in many scientific fields during the past years. Although transboundary water resources can promote hostility, the historical record has shown that cooperation has consistently prevailed over acute conflict with respect to global water resources (Wolfe, 2001).

In India, the most severe cases of water scarcity are faced by the states of Bihar, Rajasthan, Tamil Nadu, Karnataka and Madhya Pradesh, to name a few. Chennai, recently, had to import water in the summer of 2019 due to a lack of domestic water for the people. This affects not only public health but also the economic sectors profoundly. As states prioritize irrigation and household needs, this leads to a temporary shutdown of industries due to lack of water.

This paper aims to shed light on the recent transboundary water conflicts in India – both external and internal. It also aims to cite reasons for the various conflicts and the cooperative mechanisms that can be used for resolution of the same.

1) International Conflicts:

India-Bangladesh:

Three major rivers of the world, namely the Ganges, the Brahmaputra and the Meghna (GBM), have a common terminus into the Bay of Bengal and thus form a river system. This river system falls in a number of countries in the South Asian region, including China, India, Nepal and Bangladesh. Both Nepal and China are upper riparian countries and the tributaries originating in these countries, contributing to the GBM system, are not yet fully utilized. As a result, these countries do not face any contentious water issue with their lower riparian neighbours.

GANGES-BRAHMAPUTRA-MEGHNA SYSTEM- Source: Rashid et al. 1998.

The remaining two countries, Bangladesh and India, depend heavily on the waters from the GBM system. Due to the rapidly growing population and consequent increase in demand for agricultural, domestic and industrial water, these two neighbours face a growing list of water-related contentions. Although the region as a whole receives many times more water than is necessary over the year, the temporal and spatial distribution of the available water is very uneven. Thus, the decreasing supply of water in the dry season has become one of the critical issues between India and Bangladesh. The situation is particularly critical for Bangladesh, as about 80% of its annual freshwater supply comes as transboundary inflows through 54 common rivers with India. The issue has remained a subject of conflict for almost 35 years.

However, for many decades, India and Bangladesh failed to resolve issues of sharing the water of the Ganges River, particularly the dry season flow, as well as possibly augmenting the entire river flow through cooperation with Nepal. This situation developed into a serious water conflict

issue when, in 1975, India constructed a dam at Farakka on the Ganges River near the border with Bangladesh to divert water unilaterally for agricultural irrigation and to improve the navigability of Calcutta Port. The decline in water flowing to Bangladesh has, in turn, impacted its agriculture, fisheries, and river navigation downstream (Varghese, 1997). However, in 1996, India and Bangladesh signed a significant new agreement on water sharing, which is called the Ganges River Treaty.

Phase	Main activities	Remark
Phase I: 1951–1974	Discussion centered on respective claims by India and Pakistan (later Bangladesh) on the Ganges water and their justifications.	India assured that shares would be finalized before commissioning of the Barrage.
	Pakistan/Bangladesh claimed the entire natural flow of the Ganges reaching Farakka and indicated that reservoir(s) upstream of Farakka should provide any additional flow required for the Calcutta Port.	Bangladesh was born as an independent country in 1971.
	India on the other hand took a position that Bangladesh needs a small part of the historic flow and most of it being wasted into the Bay of Bengal.	Joint Rivers Commission was formulated in 1972 to facilitate water-related negotiations.
Phase II: 1974–1976	The issue of flow augmentation was brought in recognizing that after withdrawal for the Calcutta Port, residual flow will not be enough for Bangladesh. Bangladesh proposed that a number of dams could be built in India and Nepal to tap huge monsoon flow.	The Farakka Barrage began operating in 1975 with a test withdrawal of 11,000 to 16,000 cusec through a feeder canal for 41 days.
	India proposed diversion of flow from the Brahmaputra through a link canal to the Ganges. Bangladesh took to the United Nations and the General Assembly adopted a resolution according to which both the countries agreed to meet in Dhaka to arrive a fair and expeditious settlement.	In 1976 and 1977, India withdrew water unilaterally causing major water crisis in the southwest region of Bangladesh.
Phase III: 1977–1982	The first water sharing agreement was signed on November 5, 1977 for duration of 5 years. Water was distributed based on a schedule on 10-day basis in the dry season (January–May).	The agreement expired in November 1982.
	It was decided that a mutually agreeable flow augmentation method would be worked out within 3 years. However, no new options could be found and both side remained at their earlier positions.	Due to lack of progress on flow augmentation, the agreement was not renewed after its expiry.
Phase IV: 1982–1988	Two Memorandum of Understanding (MOU) were signed. The first one in 1982 for duration of 18 months covering the dry seasons of 1983 and 1984.	No progress could be made on the flow augmentation.
	There was no agreement for 1985. In November 1985, the second MOU was signed for a 3-year period.	The last MOU expired in May 1988.
	A joint team of experts from India and Bangladesh visited Nepal to collect data. Nepal showed keen interest in a tri-lateral initiative for the resolving the water crisis.	India refused Nepal's involvement as a third party emphasizing the bilateral nature of the negotiations between India and Bangladesh.
Phase V: 1988–1996	Discussions continued. Heads of states met in Delhi in September 1988. Secretaries of Water Resources were assigned the task of working out a formula for long term sharing of all the common rivers.	India's precondition on having an augmentation plan did not allow signing of any agreement.
	Between April 1990 and February 1992, 6 meetings were held in Dhaka and Delhi without much progress.	
	Prime Ministers of the two countries met in 1992 and several rounds of talks were conducted in 1995 at the Foreign Secretaries level.	
Phase VI: 1996–	After changes in governments in both the countries, a 30-year Treaty was signed in December 1996. The treaty has become effective from January 1, 1997.	Prevailing political mood has always been the main factor in successful conclusions of the negotiations.
	The treaty asks for finding a way for augmenting the flow of the Ganges in the dry season as well as sharing arrangements to be worked out for all common rivers.	

Availiability at Farakka	Share of India	Share of Bangladesh
70,000 cusecs of less	50%	50%
70,000-75,000 cusecs	Balance of flow	35,000 cusecs
75,000 cusecs or more	40,000 cusecs	Balance of flow

ANNEXURE II

Schedule (Sharing of waters at Farakka between January 01 and May 31 every year.)
If actual availability corresponds to average flows of the period 1949 to 1988, the implication of the formula in Annex-I for the share of each side is:

Period	Averageof totalflow 1949-88(cusecs)	India'sshare (cusecs)	Bangladesh's Share (cusecs)
January			
1-10	107,516	40,000	67,516
11-20	97,673	40,000	57,673
21-31	90,154	40,000	50,154
February			
1-10	86,323	40,000	46,323
11-20	82,859	40,000	57,673
21-31	79,106	40,000	39,106
March	74,419		
1-10	68,931	39,419	35,000
11-20	82,859	33,931	35,000*
21-31	64,688	35,000*	29,688
April			
1-10	63,180	28,180	35,000*
11-20	62,633	35,000*	27,633
21-30	60,992	25,992	35,000*
May			
1-10	67,351	35,000*	32,351
11-20	73,590	38,590	35,000
21-31	81,854	40,000	41,854

It is believed that the treaty has been an outcome of political altruism or good political relationships between the two countries (Bhaduri, 2005). However, a change in altruistic concern could induce India to divert water unilaterally. In addition, the current concern is that shortly, there may not be enough water flow in the Ganges River to fulfil the water requirements of both India and Bangladesh. Also, recognizing that the Ganges flows during the dry season are not adequate to meet the requirements of both India and Bangladesh, it was agreed by both the countries to cooperate with each other in finding a solution to the long-term problem of augmenting the flows of the river during the dry season.

India-Pakistan:

The partition of British India led to a conflict over the water resource of the Indus basin. The newly formed states were at odds over how to share and manage what was mainly a cohesive and unitary network of irrigation. Furthermore, the partional geography was such that the source rivers of the Indus basin were in India. Pakistan felt threatened by the prospect of India's control over the tributaries that fed water into the Pakistani portion of the basin.

During the initial years of partition, the waters of the Indus were allocated by the Inter-Dominion Accord of May 4, 1948. This accord required India to release sufficient water in return for annual payments from the government of Pakistan. The accord was passed to meet immediate requirements and was followed by negotiations for a more lasting solution. However, neither side was willing to compromise their respective positions. From the Indian perspective, there was nothing that Pakistan could do to force India to divert the river water into irrigation canals of Pakistan. Pakistan was keen on taking the matter to the International Court of Justice, but India refused, arguing that the conflict required a bilateral resolution.

Indus Water Treaty

The Indus water treaty was developed to solve the water dispute between India and Pakistan during the 1960s. This treaty mentioned how water from the various rivers is to be shared between the two countries. India was granted access to the Chenab, Jhelum and Indus rivers for purposes of developing hydro-electricity but not the construction of dams. However, India is expected to provide technical details of projects to Pakistan before commencing operations for development in these rivers to be acceptable. India has access to the Sutlej, Beas and Ravi rivers. For Pakistan, it is similarly expected to provide India with details before commencing operations and is also not allowed to develop dams along these three rivers. Although there have been numerous discussions on these disputable issues, the 1960 treaty has been insufficient in ending the conflict.

The Nimoo Bazgo plant on India’s section of the Indus. Source - downtoearth.org

Pakistan is one of the most water-stressed countries in the world. Estimates suggest that Pakistan will face a shortage of 31 million acre-feet of water by 2025 (Dawn, 2018). Pakistan uses about 104 million acre-feet every year for agricultural irrigation. Its underground aquifers are critically depleted from the over-extraction of groundwater, and the two largest dams—the Tarbela and the Mangla—have seen a decline in their storage capacity due to excessive deposits of silt. As such, any diminution in water flow will have severe consequences for the livelihoods of Pakistan's farmers, who have already faced, over the past few years, a dearth of fresh water during the critical season—just before the monsoon, when the summer crop is planted.

Baglihar Dam on the Chenab River, Source -Amit Gupta/Reuters

The conflict between India and Pakistan over water has continued for several decades. Currently, the conflict revolves around the construction of a hydro-electric plant along a tributary of Indus, which is the Kishenganga River. Although India is defending its right to construct the dam, Pakistan is raising several issues over the project. Pakistan stated that India is planning to divert the river course, and this is bound to have adverse effects on the people relying on the river. Pakistani officials explain that the capacity of the river would reduce by more than 30% during winter as a result.

There have been discussions about the threat of terrorism in Pakistan, and the water conflict may lead to a war if terrorists are of the opinion that it is a real cause worth defending. Any terrorist activity may easily lead to war between both countries as it will be perceived that the government supported the attack. Other countries that are either enemy of India or Pakistan may also influence the perception that the government supported these terrorist attacks. This may lead to a war between the concerned countries hence there is a need to resolve the water crisis.

2) Internal Water Conflicts in India:

A study by the NITI Aayog shows that around 600 million people in India face a severe water shortage, as 21 cities are likely to run out of groundwater by 2020. From the small towns and villages to cities leading economic growth, water woes plague every region and community in the form of floods and droughts, contamination, scarcity, inaccessibility, overexploitation and stakeholder conflicts. While the environmental and economic setbacks of these problems are immediately apparent, less noticed are their socio-cultural implications. Even rarer is the understanding that India's internal water woes are directly connected to its national security.

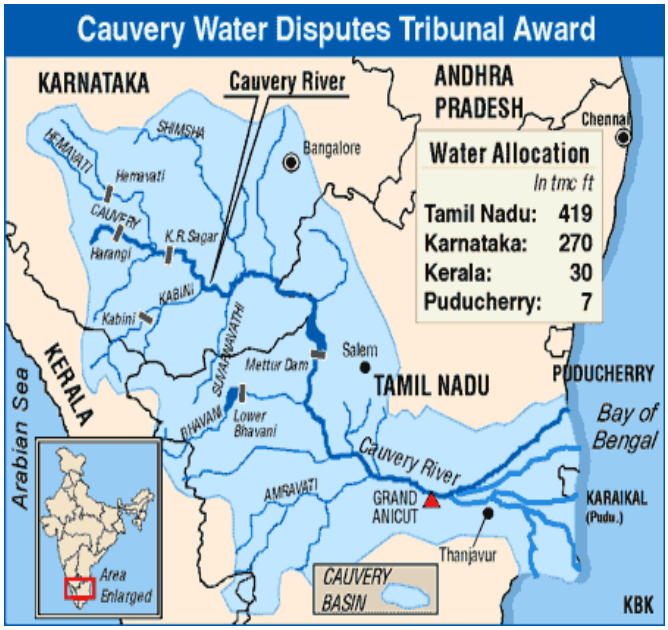
Delinking water issues from national security undermines the threat involved. For example, the local issues of a contaminated Bhima river flowing from upstream Pune to Solapur, or the contaminated Yamuna flowing from upstream Delhi to Agra. Compared with the national urban average of 30 percent, Delhi and Pune treat 40 percent and 66 percent, respectively, of the daily sewage they generate. In the absence of an adequate number of sewage treatment plants in both Pune and Delhi, the downstream populations of Solapur, Agra, and other towns and villages nearby face problems regarding clean drinking water, public health and hygiene and irrigation due to the untreated sewage.

In the case of Bengaluru, which, despite not being in the Cauvery basin, has been awarded a total of 4.75 TMC (thousand million cubic feet) of water annually for meeting the drinking water needs of its expanding urban population. A city once known for its lakes, Bengaluru is rapidly sinking into a chronic water crisis, but not a word of caution or reprimand was uttered by the Cauvery Tribunal; instead, precious water was transferred from small towns and villages to this city recognized globally for its impressive strides in the IT and start-up sector.

Another example of inter-basin transfer is the diversion of water from the dry and drought-prone Krishna river basin in western Maharashtra to the high-rainfall Konkan region of coastal Maharashtra. People in the Krishna basin, spread across Maharashtra, Telangana, Andhra Pradesh and Karnataka, suffered from depleting and polluted groundwater, recurring droughts and increasing difficulties in accessing safe drinking water. Whereas around 67.5 TMC of water was being diverted from Koyna sub-basin, plus 51.3 TMC from six dams owned by Tata Power in the Bhima sub-basin, to generate 450 MW of power for the city of Mumbai.

Karnataka -Tamil Nadu:

Cauvery is an inter-State basin having its origin Karnataka and flowing through Tamil Nadu and Puducherry before out falling in the Bay of Bengal. The total catchment of the Cauvery basin is 81,155 sq.km, of which the catchment of the river in Karnataka is about 34,273 sq. Km, that in Kerala, is about 2,866 sq. Km and the remaining area of 44,016 sq. Km in Tamil Nadu and Puducherry (Ministry of Water Resources).



Karnataka and Tamil Nadu have been involved in disputes over sharing the Cauvery waters for more than a century. The other two parties to the disputes are the Union Territory of Puducherry and Kerala. In the past, many attempts had been made to address this issue, but all of these efforts were unsuccessful.

The dispute over the Cauvery water began in the 19th century between Mysore State (Karnataka) and the Madras Presidency (Tamil Nadu). In order to address their water problems, both Mysore and Madras planned various projects on the Cauvery. However, none of the projects were completed. As a result, both faced famine and drought problems at regular intervals. After an intervention by the Secretary of State, an agreement was reached between Mysore and Madras in 1924 that was valid for 50 years. As a result, the Krishna Raja Sagar dam was

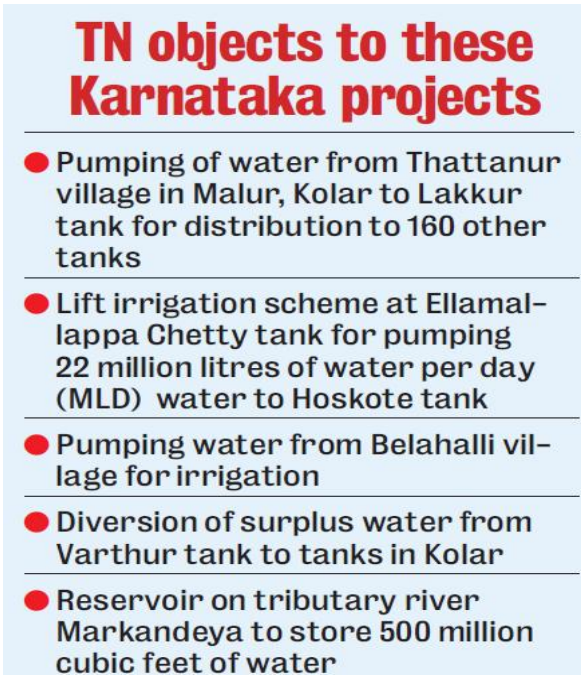
constructed in 1929 by Mysore and the Mettur dam in 1934 by Madras province.

In 1974, the water-sharing agreement of 1924 between Mysore and Madras lapsed. Consequently, the succesor states in independent India, Karnataka and Tamil Nadu respectively, found themselves at dispute over the Cauvery waters. To look into the matter, Tamil Nadu, under the Inter-State River Water Disputes Act, 1956 (amended in 2002) wanted a tribunal to be set up that was ruled out by the Union government. After an intervention by then Prime Minister of India, Indira Gandhi, Tamil Nadu withdrew its demand for a tribunal and started participating in negotiations with the riparian States. During the negotiations, the Union government presented two draft agreements in 1974 and 1976, respectively. Tamil Nadu rejected both.

Additionally, Karnataka allegedly dragged the negotiations by adopting tactics such as late responses to issues to gain enough time to build new dams in the upstream region. At that time, a crisis management system was set up for the following 15 years. Under this system, Tamil Nadu annually demanded sufficient water to save its crops in the delta region, which Karnataka declined initially, citing its own water needs. The Cauvery Water Disputes Tribunal (CWDT) was constituted by the Government of India on June 2, 1990, to adjudicate the water dispute regarding inter-state river Cauvery and the river valley thereof among the States of Tamil Nadu, Karnataka, Kerala and Puducherry.

In 1995, due to less rainfall, the issue of implementation of the interim order came up. The Supreme Court, following a plea by Tamil Nadu, ordered Karnataka to release 30 thousand cubic feet of water immediately to save the rice crop in Tamil Nadu. Karnataka ignored the order. Consequently, the Supreme Court requested the then Prime Minister, P V Narasimha Rao, to mediate. After discussions with the chief ministers of Karnataka and Tamil Nadu, Rao called for the release of six thousand million cubic feet of water and set up a committee to see to its implementation. The continuous interference from the Supreme Court, interventions from the prime minister and non-compliance with the orders by Karnataka made the CWDT a toothless body.

The 2018 Supreme Court Ruling on the Cauvery Water Issue:



The legal battle over the CWDT verdict continued in the Supreme Court. In January 2018, the bench of the Chief Justice of India, Dipak Misra, and Justices D Y Chandrachud and A M Khanwilkar found that enough confusion had been created over the Cauvery issue. In its order, the Supreme Court accepted Karnataka's contention that Bengaluru is a global city that needs water infrastructure. The Supreme Court also scrutinized the position of the CWDT, which confined the entitlement of Bengaluru's population in general to only one-third of their requirement because the tribunal found only one-third of the city is in the Cauvery basin region.

CONCLUSION

Understanding how water resources are governed in India, and how inter-state water disputes are negotiated, illuminates transboundary water governance in the Ganges-Brahmaputra-Meghna basin. India's domestic water governance is fragmented and decentralized, which, among other problems, creates ambiguity over water ownership and thus leads to inter-state disputes. These disputes could, under law, be arbitrated in special tribunals established specifically for resolving water issues between India's states. Nevertheless, the tribunals are mostly ineffective.

Transboundary water issues, too, cannot be resolved by a higher authority, such as a River Basin Organization. Both transboundary water disputes and India's interstate ones are subject to intense politics. Within the Indian politics, however, domestic water issues divert political attention away from transboundary ones. Indian states also have significant influence over transboundary water governance, and at times this is at odds with India's central government.

As water-stressed States, Karnataka and Tamil Nadu depend greatly on the Cauvery River basin. The increasing gap of supply and demand in both the States has made them try all means to get as much water as they can from the Cauvery River system including legal and constitutional means to assert their rights over the Cauvery water. However, to lessen their dependence on the Cauvery waters, the two States should seek to make optimum use of adequately treated wastewater and invest in desalination plants along their coastline.

Unfortunately, India can treat only 37 percent of the 62 billion litres of sewage water generated daily by its urban areas. Bengaluru city generates around 1,400 million litres of wastewater a day. Out of this, only on an average of about 521 million litres are treated per day, though the capacity of the treatment plants in the city is around 721 million litres per day. Also, there are only a handful of tertiary treatment plants in India that supply water to the industries. Introducing this wastewater treatment technology will mitigate water problems in other cities, as well.

References

[1] UN Water. Transboundary Waters: Sharing Benefits, Sharing Responsibilities; UN Water: Zaragoza, Spain, 2008.

[2] Beach, H.L.; Hamner, J.; Hewitt, J.J.; Kaufman, E.; Kurki, A.; Oppenheimer, J.A.;Wolf, A.T. Transboundary Freshwater Dispute Resolution: Theory, Practice, and Annotated References; UNU Press: Tokyo, Japan, 2000.

[3] Spulber, N. and A. Sabbaghi (1994), 'Economics of water resources: from regulation to privatization', in A. Dinar and D. Zilberman (eds), Natural Resource

Management and Policy, Boston: Kluwer Academic Publisher, pp. 235–269.

[4] Dinar, Ariel, S. Dinar, S. McCaffrey, and D. McKinney. Bridges Over Water: Understanding Transboundary Water Conflict, Negotiation and Cooperation. World Scientific Series on Energy and Resource Economics - Vol. 3. Singapore: World Scientific Publishing Co., 2007, p. 255

[5] "Cauvery Water Disputes Tribunal", Ministry of Water Resources, River Development & Ganga Rejuvenation, Government of India. http://mowr.gov.in/acts-tribunals/current-inter-state-river-water-disputes-tribunals/cauvery-water-disputes.

[6] Crow, B. (1995) Sharing the Ganges: the Politics and Technology of River Development New Delhi, India: Sage Publications.

[7] "Waste water Treatment and Reuse", Urban Waters. http://bengaluru.urbanwaters.in/wastewater-treatmentand-reuse-49. Accessed on 3 March 2018.

[8] Amit Ranjan, ISAS Working Paper https://www.isas.nus.edu.sg/wp-content/uploads/2018/04/ISAS-Working-Papers-No.-293-The-Cauvery-River-Water-Dispute-in-India.pdf

[9] "Cauvery Basin: Rural Population", *India Water Portal*. http://archive.indiawaterportal.org/book/export/html/105. Accessed on 4 March 2018.

[10] The India Pakistan Water Dispute, Lawteacher.net, https://www.lawteacher.net/free-law-essays/international-law/the-india-pakistan-water-dispute-international-law-essay.php#ftn5

[11] India's Local Water Conflicts Are a Looming Threat, https://thediplomat.com/2019/05/indias-local-water-conflicts-are-a-looming-threat/