

Riparian Relations between India and China: Exploring Interactions on Transboundary Rivers

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Abstract

Riparian tensions have arisen as one of the major factors complicating overall relations between India and China in the 21st century. The absence of a treaty or mechanism regulating shared river waters between India and China has created a situation where cooperation or conflict between these two nations can ensue over freshwater resources. China, being the upper riparian country, unconstrained by legally binding commitments to maintain the current level of flow or direction of the transboundary rivers (mainly Tsangpo/Brahmaputra), is being perceived by India as being in an overtly advantageous position as it controls the availability of freshwater in its North-eastern region, thereby not only holding immense strategic power over India, but also causing an immense imbalance of power in favour of China. This paper will examine riparian relations between India and China by exploring two facets of the issue: first, the hydro-related doctrinal understanding in both countries will be examined as this informs their discussion on transboundary rivers and thereby underpins their stands on the issue; second, the external implications of the domestic water-diversions plans of both nations like the River Linking Project of India and the North-South Water Transfer project of China will be explored in order to assess the external dependence and impacts of both these projects and thereby assess possible reactions to these projects in these countries which will impact their riparian relations. In conclusion it was found that the overall riparian relations of India and China remain unpredictable albeit shy of outright war as despite the absence of stated principles and doctrines about water sharing; both countries possess common traits with regard to managing transboundary rivers. It was found that both nations have a proclivity towards cooperation rather than conflict when it comes to managing riparian relations with neighbours, but it is best to understand riparian relations in a continuum rather than as conflictive or cooperative.

Keywords: *Riparian relations, transboundary river, India-China relations, water sharing*

1. Introduction

Freshwater resources, which account for 2.79 per cent of the global water resources, are coming under increasing strain in several parts of the world (Padowski and Jawitz, 2009). Fast growing world population, industrialization requirements, and climate change are some of the reasons responsible for the increasing strain on freshwater resources. By 2015, it is estimated that nearly 3 billion people will be facing uncertainty in terms of availability of freshwater, and it is predicted that this scarcity could translate into heightened competition for water at the intra-state and inter-state level (Wolf, 2009: 20).

There are about 263 watersheds that cross the political boundaries of two or more countries. These international river basins cover 45.3 per cent of the land surface of the earth, host about 40 per cent of the world's population, and account for approximately 60 per cent of global river flow (Khalid, 2004: 553). These international river basins have been transformed into tense arenas for competitive exploitation of water by riparian nations which are in dire need of freshwater resources. Consequently, international disputes, over harnessing the potential of transboundary river water, have arisen in several parts of the world. However, transboundary nature of rivers has, in the past, induced riparian nations to cooperate over water management, even as disputes rage over other issues (Wolf, 1999).

Riparian relations of India and China are examined in this paper with an emphasis on the hydro-related doctrinal understanding in both countries and the external implications of the domestic water-diversions plans of both nations. The main research questions which are posed in this paper include the following:

1. Is there strain on the freshwater resources in India and China and the subsequent riparian concerns which arise from this strain?
2. What will be the transboundary impact of India and China's water diversion projects?
3. What are the riparian attitudes of India and China in the context of their level of adherence to international doctrines of river water management?

2. Freshwater Strain in China and Riparian Concerns

China is facing acute freshwater strain as it has to support 20 per cent of the world's population on 5 per cent of the world's renewable freshwater (KPMG, 2012). Water shortages are felt in the agricultural, industrial and municipal sectors (Rosegrant, *et al.*, 2002). Sustained economic growth in China is threatened by depleted freshwater resources, inefficiency in its use and pollution (Gleick, 2008: 79). Chinese leaders recognize the need to move away from coal, which currently supplies 70 per cent of the country's electricity, to

clean energy sources like hydroelectricity (Turner, *et al.*, 2013: 12). Adding to China's water woes is the uneven distribution of its water resources. China's northern regions are densely highly populated and industrialized yet water-starved while its west and south have abundant water resources.

During the 1980s and 1990s, the Chinese government implemented coast-biased regional development policies which aggravated regional inequality. In order to correct this imbalance, China adopted the "Great Western Development" (GWD) strategy in 1999 (Hong, 2012). Among other policies of the GWD, it was expected that the western region could help ease water shortages in the northern region by way of water transfer schemes and hydroelectricity projects on rivers originating in the west (Lai, 2002: 448). Recent reforms to address China's water problems, including the 2011 No. 1 Central Document outlined plans to invest US\$600 billion over the next decade to fund water supply projects (Lagos and Jiang, 2011).

Water stress and the increasing number of droughts in the northern provinces have led to the construction of dams and water transfer projects in China. China has constructed several grandiose long-distance water transfer projects. These have included projects involving transfers from the Biluhe River to Dalian, the Huanhe to Qingdao, the Lanhe to Tianjin, and the Luanhe to Tangshan, among others.

The Tibetan plateau, which is also known as the third pole, has enormous amounts of freshwater potential which China is looking to harness to ease the water scarcity it faces. China is currently undertaking numerous water projects in Tibet. Ten of Asia's largest rivers by volume originate in the Tibetan Plateau and serve 47 per cent of the world's population (Pomeranz, 2013: 5). These rivers are transboundary in nature and several of the Chinese dam and water transfer projects are on these rivers. The potential adverse impact of China's projects is the basis for the transboundary tensions which are brewing between China and its riparian neighbours.

The South North Water Transfer Project (SNWTP) is the most ambitious water transfer project which China is constructing. It plans to transfer surplus water from the southern region in China to its northern areas. Ideas of such a diversion were present as early as 1952 when Mao Zedong is said to have remarked that the south has plenty of water and the north lacks it, so if possible why not borrow some. The term for the project – *nan shui bei diao* (South-North Water Diversion) – appeared in a Political Bureau directive in 1958 (Biswas, *et al.*, 1983).

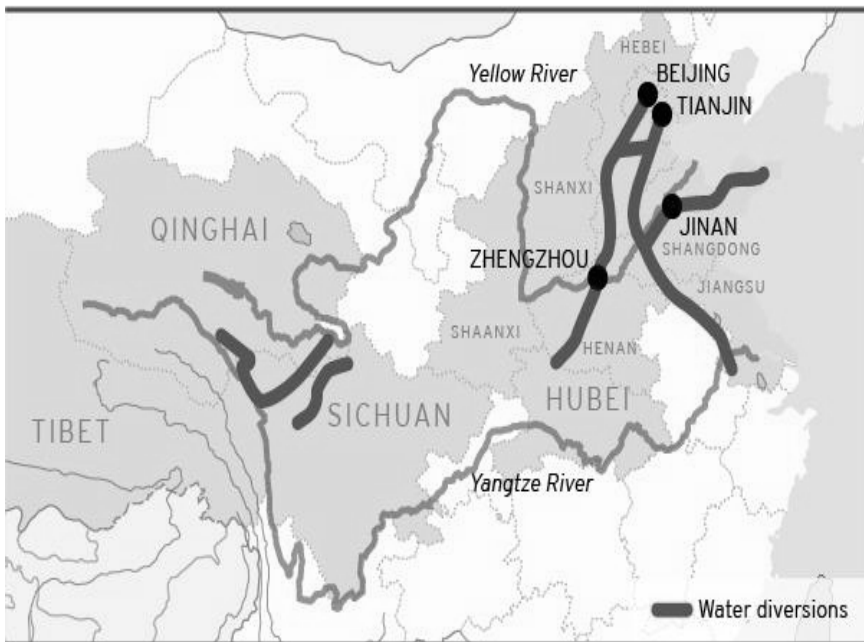
The Chinese government did not seriously consider the project until severe droughts hit the Northern provinces in the 1990s. In 2000, President Jiang Zemin stated: "In order to radically alleviate the severe water shortage in the north, it is necessary to implement the South-North Water Transfer Project" (cited in Yang and Zehnder, 2009: 339). In 2002, Li Ling published

the widely read book *Saving China Through Water From Tibet*, which listed various causes and options for tapping the rivers of the southern region. The SNWTP was formally approved in 2002.

The SNWTP is comprised of northern, central, and western routes designed to transfer water from the southern provinces to the parched northern provinces of China. In the Northern/East Route water will be diverted from the Yangtze River (Shao and Wang, 2003: 8). The Middle Route plans to divert water from the Danjiangkou Reservoir on the Hanjiang River to Beijing (Shao and Wang, 2003: 8). The western route will harness water from the upper reaches of the Yangtze, Yellow, Yarlung Zangbo, Nu, and Lancang Rivers to Lanzhou (Lai, 2002: 453). The project is slated for completion in 2050. The total cost of all the three routes is estimated at around 60 billion US dollars (Shao and Wang, 2003:9). The total diversion capacity is estimated to be 45 billion m³ (Hong, 2005).

There are several supporters of the SNWTP in China, ranging from politicians to engineers. They state that water stress in the northern region will be alleviated by the project; it will lead to flood control and several energy requirements of China will also be met. However, another faction in China protests the move to undertake such massive water transfer projects.

Figure 1 The Three Routes of the South-North Water Transfer Project



Source: www.brookings.edu

They stress that it could lead to adversarial ecological impacts like decreasing wetlands, saltwater intrusion, habitat destruction, floods and droughts. There are also concerns over whether the water transferred will be clean enough to use when it reaches its destination (Schneider *et al.*, 2011). There is also the issue of possible water shortages in the south, apprehensions of earthquakes, threats to biodiversity hotspots and the fact that the Himalayan glaciers are shrinking rapidly, which complicates the transfer of water from Tibet (Pomeranz, 2013: 7).

China's water-diversion projects are a source of major concern to the countries downstream, which complain about Beijing's lack of transparency and reluctance to share information. China does not have any water-sharing agreements with downstream countries (Pomeranz, 2013: 4). China's 12th Five-Year Plan (2011-2015) calls for an increase in the use of hydroelectric power which the downstream countries have interpreted as indicating that China will be accelerating its damming and diverting activities on its transboundary rivers (China's Energy Policy, 2012).

China has built more dams on its rivers than the rest of the world combined (Chellaney and Tellis, 2011). China began building the first series of dams on the Mekong River in 1986. Since then, it is claimed that, Chinese dams have lowered water levels, disrupted sediment flows, and damaged the health of fisheries in Myanmar, Thailand, Laos, Cambodia, and Vietnam (Turner, *et al.*, 2013: 13).

The Western line of the SNWTP is the most controversial of the three lines as far as India is concerned. It includes building a dam on the Great Bend of the Yarlung-Tsangpo, where the river curves into the Assamese plain of India and becomes the Brahmaputra (Malhotra-Arora, 2011). China intends to dam "...the Yarlung-Tsangpo/Brahmaputra at the Great Bend near the Shuomatan point... – by channeling a total of 200 billion m³ of water annually and linking up with the central and eastern routes of South to North Water Transfer Project. Although there has been no official confirmation that the construction of the 'Great Western Route' will go ahead, it continues to be a debated option to solve China's emerging water crisis" (Svensson, 2011). According to several reports, China has already constructed 10 dams on tributaries of the upper Brahmaputra, with three more under construction at Dagu, Jiacha, and Jiexu on the middle reaches of the Brahmaputra. It is also constructing a 510-megawatt dam at Zangmu in the middle reaches of the Brahmaputra (Shah and Giordano, 2013: 29).

China insists that the dams it is building on the Yarlung-Tsangpo are "run of the river," which operate without storing or diverting water. China has vehemently downplayed the likelihood of the western diversion due to the difficult terrain and associated technical challenges (Turner, 2013: 15). New Delhi, however, harbours fears that Beijing's dams are not "run of the

river” but will instead store and divert water preventing and/or controlling its flow into India. Adversarial ecological and environmental outcomes are other reasons which have led to protests among the lower riparian nations over China’s transboundary designs.

Prime Minister Manmohan Singh of India issued a statement on 4 August 2011, stating that Chinese leaders had assured him that no such diversions plans were imminent. Although China provides limited hydrological and flood data to India through a memorandum of understanding renewed in May 2012, Singh emphasized the need for a joint mechanism for sharing information on transboundary projects (Turner, 2013: 15). India harbours suspicions about China’s diversion projects as in the past there have been fatal floods in Arunachal Pradesh and Himachal Pradesh which were traced to unannounced excess water releases by China (Shah and Giordano, 2013: 30).

Additionally, it is stated by experts like Jayanta Bandopadhyay that the SNWTP is mostly about damming and diverting China’s domestic rivers and the flow of the Brahmaputra River will not be impacted as most of its water comes from the tributaries like Subansiri, Lohit, Dhansiri, Kopili, Namdang, Bhoroli which originate in India. Furthermore, on the basis of hydrological budgeting it has been established that “...the Yarlung Tsangpo is a minor contributor to the total flow of the Brahmaputra. Further, snow and glaciers supply about 34% of its total flow” (Bandyopadhyay, 2013). Additionally, it has been scientifically established that “...Tsangpo discharge is primarily derived from rainfall (~80%)...” (Bookhagen and Burbank, 2010).

3. Freshwater Strain in India and Riparian Concerns

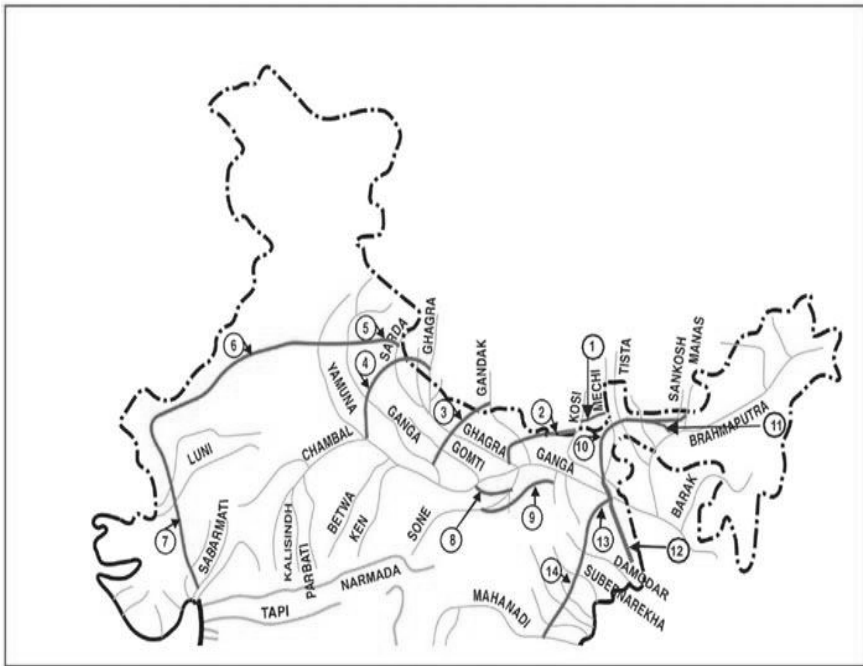
India faces a plethora of freshwater related problems. Apart from acute water scarcity, India faces issues of food insecurity, drought, floods, inter-State river-water disputes, unresolved issues relating to rivers with riparian neighbours, groundwater depletion, arsenic poisoning, shrinking of wetlands; and the uncertainties arising from predictions of climate change. One of the main predicaments facing water resources management in India, like in the case of China, is the unevenly distributed freshwater water supply throughout the country. India’s North and North-East have abundant water supply while its South remains water-starved. In an effort to deal with this uneven distribution of water, the nationwide plan of Interlinking Rivers (ILR) of India has been proposed. It intends to link the rivers of India with a view to transfer excess/surplus water of the northern rivers to the south rivers.

Sir Arthur Cotton, since the early decades of the 19th century had thought of a plan to link rivers in southern India for inland navigation (National Water Development Agency, 2006). K.L. Rao, the then Minister of Irrigation, in 1972 had mooted the idea of interlinking of rivers by connecting the Ganga

with the Cauvery River. In 1977 Captain Dastur initiated the concept of a “Garland Canal” around the Himalayan, Central and Peninsular India. The then Ministry of Irrigation (now Ministry of Water Resources) and Central Water Commission formulated a National Perspective Plan (NPP) for Water Resources Development in 1980, envisaging inter-basin transfer of water from surplus basins to deficit ones.

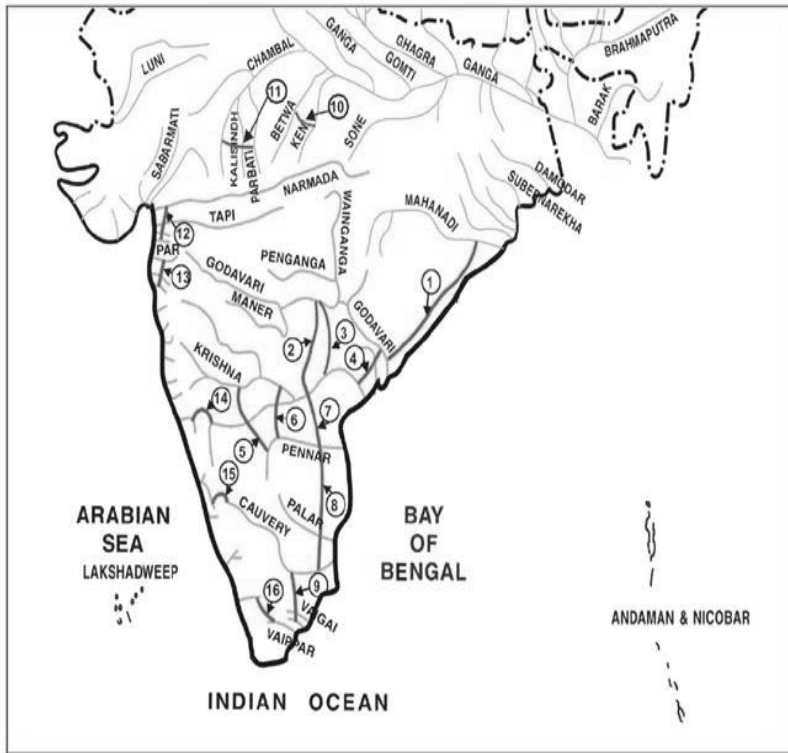
The National Perspective Plan comprised of two components viz. Himalayan Rivers Development and Peninsular Rivers Development. Himalayan Rivers Development Component envisages construction of storage reservoirs on the principal tributaries of Ganga and Brahmaputra rivers in India, Nepal and Bhutan along with interlinking of river systems to transfer

Figure 2 Proposed Inter Basin Water Transfer Links – Himalayan Component



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| 1. Kosi – Mechi | 8. Chunar- Sone Barrage |
| 2. Kosi – Ghagra | 9. Sone Dam – Southern Tributaries of Ganga |
| 3. Gandak – Ganga | 10. Manas – Sankosh - Tista - Ganga |
| 4. Ghagra – Yamuna * | 11. Jogighopa – Tista – Farakka (Alternate) |
| 5. Sarda – Yamuna * | 12. Farakka – Sunderbans |
| 6. Yamuna – Rajasthan | 13. Ganga (Farakka) – Damodar – Subernarekha |
| 7. Rajasthan – Sabarmati | 14. Subernarekha – Mahanadi |
- * FR Completed

Figure 3 Proposed Inter Basin Water Transfer Links – Peninsular Component



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| 1. Mahanadi (Manibhadra) – Godavari (Dowlaiswaram) * | 9. Cauvery (Kattalai) – Vaigai – Gundar * |
| 2. Godavari (Inchampalli) – Krishna (Nagarjunasagar) * | 10. Ken – Betwa * |
| 3. Godavari (Inchampalli) – Krishna (Pulichintala) * | 11. Parbati – Kalisindh – Chambal * |
| 4. Godavari (Polavaram) – Krishna (Vijayawada) * | 12. Par – Tapi – Narmada * |
| 5. Krishna (Almatti) – Pennar * | 13. Damanganga – Pinjal * |
| 6. Krishna (Srisailem) – Pennar * | 14. Bedti – Varda |
| 7. Krishna (Nagarjunasagar) – Pennar (Somasila) * | 15. Netravati – Hemavati |
| 8. Pennar (Somasila) – Palar- Cauvery (Grand Anicut) * | 16. Pamba – Achankovil – Vaippar * |
- * FR Completed

Source: nwda.gov.in

surplus flows of the eastern tributaries of the river Ganga to the west, apart from linking of the main Brahmaputra and its tributaries with the Ganga; and the Ganga with Mahanadi. Peninsular Rivers Development Component is divided into four major parts, viz. 1) Interlinking of Mahanadi-Godavari-Krishna-Cauvery rivers, 2) Interlinking of west flowing rivers, north of Bombay and south of Tapi, 3) Interlinking of Ken-Chambal, 4) Diversion of other west flowing rivers.

The National Water Development Agency (NWDA) was set up in 1982 to establish the feasibility of the proposals of NPP. The plan was in cold storage until 31 October 2002 when it was brought to the fore once again by the Supreme Court of India, led by retired Chief Justice BN Kripal (Shankari, 2004). In 2003, the Supreme Court of India enjoined the Government of India to complete the ILR project by 2016. A task force was constituted to embark upon the Project and Suresh Prabhu was asked to lead it. The Supreme Court of India directed the executive government to implement the inter-linking river project in its final judgment dated 27 February 2012 (Ramaswamy, 2012).

According to the present proposal, the ILR will connect 37 major rivers via 30 links consisting of dams and canals. It is estimated to cost about 120,000 billion USD and will be the single largest water development project in any sector, anywhere in the world (Bandopadhyay and Sharma, 2006). According to the NWDA the Interlinking of Rivers (ILR) Plan would give benefits of 25 million hectares of irrigation from surface waters, 10 million hectares by increased use of ground water, totaling 35 million hectares and 34,000 MW of hydro-power generation (National Water Development Agency, 2006). In addition the likely incidental benefits will be drought mitigation, flood control, domestic and industrial water supply, navigational facilities, employment generation, fisheries, salinity control, pollution control, recreation facilities, infrastructural development and socioeconomic development (National Water Development Agency, 2006).

However, there are several detractors of this project. B.G. Verghese found the ILR as “frighteningly grandiose”, a “misapplied vision”, “extravagantly stupid”, “anihilatingly wrong”, a “subcontinental fiasco”, “a flood of nonsense”, a “dangerous delusion” or a case of “hydrohubris” (Verghese, 2003).

Several scientists and environmental experts view the project as posing a great threat to the environment and ecology of the whole region. According to Jayanta Bandopadhyay, the ILR could sound “the death knell” for mangroves in the delta region of West Bengal and Bangladesh. Salinity would also make inroads into the region, affecting thousands of hectares of arable land. Furthermore, thousands of fishermen would be jobless if the ILR is implemented (Khalid, 2004: 554). Wetland and groundwater recharge capacity would also decrease in the Brahmaputra Dependent Area (Khalid, 2004: 556).

Others argue that rainwater harvesting is a better solution than inter-basin water transfer (Shah, *et al.*, n.d.: 18). Many worry about the transfer of river pollution that accompanies inter-basin water transfers. Another view claims that “surplus” water is a vague concept as every drop performs some ecological service all the time (Shiva, 2003). According to one estimate, the ILR would displace about 5.5 million tribals and farmers (Vombatkere, 2003).

India’s ILR also includes plans for water transfer on rivers which are transboundary in nature. While Nepal and Bhutan are upper riparian nations;

Bangladesh is the lower riparian nation as far as India is concerned. Nepal has adopted a very cautious approach towards the interlinking proposal and has shown neither opposition nor support. Nepal's concerns revolve around the social and environmental costs of the ILR. Two of Bhutan's rivers Manas and Sankosh (tributaries of Brahmaputra) are included in the ILR, however, there have not been any protests from Bhutan as there does not appear to be any threats of inundation and population displacement to Bhutan (Bhaduri and Barbier, 2008: 376).

Bangladesh, being the lower riparian nation, is highly apprehensive of India's ILR. The ILR would interlink all but one of the 54 rivers Bangladesh shares with India. Bangladesh fears that the ILR would lead to adversarial ecological and environmental conditions. The ILR, it has been estimated, will upset the natural balance of water flow and those sedimentation processes that are vital to the survival and growth of floodplains and the Bengal delta. This may result in a rise in sea level in the Bay of Bengal which will result in submergence of land, displacing millions. This should also be considered by India as it risks the onslaught of climate refugees in case such submergence occurs. There are also fears in Bangladesh that construction of a dam at Jogighopa would provide India with an opportunity to control the entire amount of water flowing into Bangladesh, giving India an enormous strategic upper hand (Bhaduri and Barbier, 2008: 376). On the other hand, Bangladesh could benefit from the ILR plan, if the surplus water from Brahmaputra, which creates frequent floods, is diverted (Bhaduri and Barbier, 2008: 376). However, Dhaka would be at India's mercy if the ILR is completed without involving Dhaka as a partner in the project.

4. Riparian Attitudes of India and China

China and India are upper riparian nations to a number of other nations. Their water transfer and water linking projects have the potential of impacting the ecology of the entire river basins which are international in nature and could have an adversarial effect on the population dependent on these rivers. Moreover, the lower riparian countries are unable to prepare for the potential fallouts of such projects as the damage remains, to a large extent, impossible to estimate or gauge. Neither China, nor India has satisfactorily dealt with the queries of their respective lower riparian nations. Being militarily and economically more powerful than the lower riparian nations, their perceived unilateralism on river issues has fuelled the sense of foreboding amidst lower riparian nations.

Doctrines and principles of International Water Law offer some remedies to tackle contingencies which may impact riparian nations. The following doctrines of International Water Law, if adhered to, will help assuage the

lower riparian nations and will, to a great extent, mitigate chances of disputes over activities of upper riparian nations from turning into conflicts: *The Doctrine of Absolute Integrity* which stipulates that a state may not alter the natural flow of waters passing through its territory in any manner which will affect the water in another state, be it upstream or downstream; the *Doctrine of Limited Territorial Sovereignty* which conforms to the general legal obligation to use one's property in a manner which will not cause injury to others; the *Doctrine of the Communality of International Waters* which assumes a communality or riparian communalism of interest between or among basin states, and treats the total volume of basin water as a shared resource; the *Doctrine of Correlative Rights* where the emphasis is on the most efficient utilization of joint water resources, rather than on ownership rights (Kliota, 2001: 233-4).

Along with the abovementioned doctrines, the following principles of International Water Law will also help alleviate tensions between riparian nations: the *Doctrine of Equitable Use* which requires the interests of all riparian countries to be taken into account when allocating and using the waters of international water courses; the *obligation not to cause harm* which includes the duty of preventive and cooperative action; the *Joint development of international rivers* which is understandably difficult to achieve because of questions of sovereignty, ownership of waterworks, jurisdiction, financing, scope of cooperation, etc. (Kliota, 2001: 234-5).

China was one of the three countries which voted against the 1997, UN Convention on the Law of Non-Navigational Uses of International Water-Courses (although not yet in force) which provides a common framework for cooperation within international river-basins (Malhotra-Arora, 2011). India abstained from voting on this Convention and remains a non-signatory as well. Article 5, contained in Part II of the Convention on the Law of the Non-Navigational Uses of International Watercourses of 1997 requires that a State sharing an international watercourse with other States utilize the watercourse, in its territory, in a manner that is equitable and reasonable vis-à-vis the other States sharing it (Convention on the Law of the Non-Navigational Uses of International Watercourses, 1997).

Apart from the Convention on the Law of the Non-Navigational Uses of International Watercourses of 1997 there are other international frameworks which can be adhered to by India and China in order to manage transboundary concerns. For instance, the Convention on the Protection and Use of Transboundary and International Lakes, also known as the Water Convention, is an international environmental agreement which aims to improve national attempts and measures for protection and management of transboundary surface waters and groundwaters. The Convention obliges "Parties to prevent, control and reduce transboundary impact, use transboundary waters in a

reasonable and equitable way and ensure their sustainable management. Parties bordering the same transboundary waters shall cooperate by entering into specific agreements and establishing joint bodies. The Convention includes provisions on monitoring, research and development, consultations, warning and alarm systems, mutual assistance, and exchange of information, as well as access to information by the public” (UNEC Water Convention, 1997).

The Espoo Convention of 1991 stated that the Parties shall take all measures to “prevent, reduce and control significant adverse transboundary environmental impact from proposed activities” (Espoo Convention, 1991: 2). It also stressed that the party of origin shall ensure that an “environmental impact assessment is undertaken prior to a decision to authorize or undertake a proposed activity” that is likely to cause a “significant adverse transboundary impact” (Espoo Convention, 1991: 3).

Instead of adhering to these doctrines and principles, the lower riparian nations claim that both China and India seem to be following the outdated and redundant *Harmon Doctrine of Absolute Sovereignty* in its riparian dealings. The doctrine claims the absolute freedom of a riparian state, often the uppermost riparian, to utilize the waters flowing through its territory, regardless of the effect of its actions on other riparian states.

China and India have both been callous about the sentiments of their lower riparian neighbours. India has not had any consultation with Dhaka in relation to its ILR project even though it plans to inter-link several rivers which eventually flow into Bangladesh, which indicates India’s inclination towards the Harmon Doctrine of Absolute Sovereignty in its river water dealings. In China’s case, in April 2013, Beijing rejected a proposal by India to create a new mechanism – for example, a water commission, an intergovernmental dialogue, or a formal treaty – for dealing with water issues between the two countries (Wirsing, 2013: 23). Similarly, India’s attitude towards Bangladesh with regard to riparian issues remains lacking in commitment and political will to solve contentious transboundary issues. China has rejected all proposals to join as a full member of the Mekong River Commission (it only has observer status) for managing water-disputes, and has stuck to its strategy to develop hydropower from the Mekong and Salween unilaterally without consulting other nations (Svensson, 2012: 12). These attitudes of China and India lend traction to the view held by the lower riparian’s that the former continue to heed the Harmon Doctrine and that they do not treat rivers, even those that are transboundary, as a shared resource which needs cooperative development mechanisms involving all concerned stakeholders.

As a redeeming fact, nonetheless, both China and India have a history, however small, of some water-sharing/diving treaties with their neighbours. India takes part in sharing hydrological data and welcomes collaboration in hydroelectric projects. For instance, in April 2013, Nepal, India, and

Bangladesh forged an important agreement to jointly exploit hydropower and manage water resources for mutual advantage, especially in the Ganges River Basin (Wirsing, 2012: 24). The 1960 Indus Waters Treaty (IWT) between India and Pakistan has survived over a half century, and effectively weathered the Bhaglihar and the Kishanganga disputes. Although the IWT, is not without its set of critics in both India and Pakistan, especially with regard to its implementation, it is however, without doubt, a successful water division treaty and is based on terms which are greatly favourably to downstream Pakistan.

The manner in which Kazakhstan got China to agree to a river water treaty could serve as an example for the other lower riparian nations looking to sign similar treaties with China. China had been diverting water from the Irtys River since the 1990s and planned, by 2020, to double the volume of water diverted from the river. Diverting the river led to reduced flow and increased pollution in Kazakhstan. The Kazakh press published a series of unfavourable articles that induced China to negotiate and resulted in agreements being signed over sharing water quality information in 2006. In 2007, Russia and Kazakhstan brought water usage and rights of international rivers as a discussion topic to the Shanghai Cooperation Organisation Forum and in 2011, an Agreement on Water Quality in Transboundary Rivers was signed (Economy, 2012).

The following are the agreements specifically signed on transboundary rivers by China: *China-Mongolia Agreement on Protection and Utilization of Transboundary Waters* (1994), *China-Kazakhstan Agreement Concerning Cooperation in the Use and Protection of Transboundary Rivers* (2001), *China-Kazakhstan Agreement on Water Quality Protection of Transboundary Waters* (2011), *China-Russia Agreement Concerning the Reasonable Use and Protection of Transboundary Waters* (2008), *China-Russia Agreement on Khanka/Xingkai Lake International Natural Reserve* (1996).

5. India-China Riparian Issues: Larger Questions, Broader Narratives

India-China water relations brings into question the idea of nation-state as it is known as many other narratives are brought into the frame when dealing with inter-state water issues. In the case of India and China and the Brahmaputra river it is pertinent to examine the narratives of Tibet in China and the Northeast region in India while considering the subject of water issues over the Brahmaputra instead of simply examining it as an India-China bilateral issue without giving attention to the finer aspects related to this issue like the regions concerned within India and China, and other aspects and details in question which are not satisfied by simply using the nation-state as the matrix to base such a study. Riparian relations between India and China do

bring into focus the need for the regions within these countries to take up the issue of solving the water related issues. Tibet, being the headwaters and the Northeast in India being the region into which the river flows into makes these two areas the key stakeholders in the riparian issue over the Tsangpo-Brahmaputra. Beijing and New Delhi would do well to include voices from Tibet and Northeast in the process of deliberating on riparian issues especially in the context of the Brahmaputra. Both Tibet and Northeast of India have a society-culture-religion-economy based largely on the Tsangpo-Brahmaputra. For both these regions saving and protecting the river is of utmost priority which provides a motivation for them to cooperate to promote the most ecologically sound practices of this river. The fact to be noted, however, is that, even if willing, neither can Tibet assert enough pressure on Beijing, nor can the Northeast of India assert enough pressure on New Delhi to prevent business as usual diplomacy from overtaking a nature-based approach to the negotiations on the Brahmaputra.

While analysing the riparian frictions emerging between India and China a glimpse is provided into the kind of resource choices these countries are making. There is undoubtedly a race to create hydroelectricity producing structures on the Tsangpo-Brahmaputra by India and China which is adding to the alarmism in the literature surrounding these activities. Question arises as to why these countries are making these resource choices and whether the decision to opt for hydroelectricity over the complications it creates between neighbours is fruitful over the other option of relying on coal-related sources of energy. It is clear that by commissioning the most number of dams in the world, China has opted for clean energy resources regardless of the complications it causes with its lower riparians. For China, if examined from this perspective, it is essentially a bargain between maintaining good relations with its neighbours by forgoing damming activities for hydroelectricity projects on transboundary rivers or pursuing such projects which will not only assuage great powers but will promote a healthy culture for future energy related projects which will become more and more commonplace for sustaining the rapidly rising Chinese economy.

There are several theoretical underpinnings which can be considered to explain China's and to an extent India's indulgence in constructing such massive water transfer projects. In his work "Oriental Despotism", Karl Wittfogel establishes the idea of the hydraulic society, claiming that all political power in Asia is derived from control of water resources (Wittfogel, 1957). Wittfogel establishes large infrastructure projects as a keystone of China's "hydraulic society". Chalmers Johnson suggested that a "developmental state" is characterized by having strong state intervention, as well as extensive regulation and planning (Johnson, 1982). Kenneth Pomeranz categorizes China's commitment to construct large-scale water infrastructure

projects as evidence of a “developmentalist project” (Pomeranz and Burke, 2009). In *Mao’s War against Nature*, Judith Shapiro argues that the core of Mao’s views towards nature is best summed up as *ren ding sheng tian* (man must conquer nature) (Shapiro, 2001).

However, there are other changes which China is initiating with regard to its diplomacy in relation to its lower riparians, possibly in an attempt to assuage them about its benign intentions with regard to its river-water projects. Recently, there have been several subtle shifts in relation to China’s attitude towards addressing the apprehensions of the lower riparians. For instance, government officers from Laos, Thailand, Vietnam have corresponded with officials from China and have begun to exchange hydrological data on transboundary rivers including the Mekong. Another case in point, “...China for the first time conceded that rivers are assets of all countries (meaning upper riparian, middle riparian and lower riparian countries)” (Joshi, 2013). It is also a marker of the fact that China intends to portray to its neighbours that it understands that there is no zero-sum equation as far as environmental activities are concerned, there can only be the question of efficiency while dealing with environment related issues. Additionally, such steps by China also indicate that it is intending to move away from the conflict-cooperation dichotomy and perhaps in inkling towards looking at rivers as a resource which has to be looked upon as a shared asset.

Another important aspect which is highlighted while examining water relations between India and China is that of the impact of riparian issues on the notion of absolute sovereignty. Questions of autonomy, control and legitimacy arise while dealing with riparian issues between nations. These matters are complicated even more when two relatively equal powers are involved. Question also arises about the kind of sovereignty bargain which India can make to ensure that China takes its interests and concerns into consideration. Here, it is important for India to take note of the other demands which are emanating from the Chinese side for instance that of Arunachal Pradesh. It is important for India to ensure that any bargain struck with China over water issues come only after thorough hydrological budgeting of the amount of dependency India has on the flow of the Brahmaputra which is sourced from China is conducted. On the basis of hydrological budgeting it has been established that “the Yarlung Tsangpo is a minor contributor to the total flow of the Brahmaputra. Further, snow and glaciers supply about 34% of its total flow” (Bandyopadhyaya, 2013). Additionally, it has been scientifically established that “...an important distinction between the Himalaya’s two largest rivers is that Tsangpo discharge is primarily derived from rainfall (~80%), whereas Indus discharge has a significant snowmelt component (~66%)” (Bookhagen and Burnak, 2013). These facts throw light on the fact that the Brahmaputra is not dependent on the water that flows from China to

a great extent and instead tributaries form its major source apart from rainfall, making it less dependent on China's activities on its upper reaches.

Here, the notion of first-user rights makes negligible sense since most of the flow begins in India, thereby offsetting any advantage India may achieve in rushing to establish dams before China on the Brahmaputra, apart from the fact that China, nor India recognize any international convention or treaty which provides the first-user rights argument any legal backing for it to stand regardless of which country claims such a right.

In order to avoid tensions from turning into conflicts, China and India need to be mindful of the reservations of the lower riparian nations. They need to increase transparency and environmental and social impact assessments of projects on transboundary rivers and participate in multilateral venues (Turner, *et al.*, 2013: 17). China and India must also address what appears to be a systemic bias in favour of mega-projects (Pomeranz, 2013: 9). Internally, instead of opting for water diversion plans, China and India need to expand energy efficiency initiatives; increase wind and solar energy development; foster better understanding of the water-energy-food nexus and create national consciousness of water and energy conservation (Turner, *et al.*, 2013: 17).

6. Conclusions

Freshwater is coming under increasing stress in this energy hungry region, rendering all concerned riparian countries as potential candidates who could attempt to harness these transboundary rivers for their own use, perhaps with an aim to establish first-user rights. Moreover, unlike oil and other strategic resources, freshwater does not have any viable substitute. In order to ensure that cooperation trumps conflict in the case of transboundary rivers of Asia, it is pertinent to ensure that transparency and joint development of such rivers are undertaken; and that the Harmon Doctrine is permanently shelved in favour of the Doctrine of Absolute Integrity.

India and China share several rivers and have been unable to, thus far, solve the transboundary river concerns that have cropped up between them. India is wary about China's diversion projects and has been unable to urge China to commit to water-sharing/dividing treaties. Indian and Chinese official pronouncements indicate their intention of diverting, damming, transferring, and linking transboundary rivers, which bode ill for the health of riparian relations of not only India and China but for their relations with other riparian countries as well. Both the SNWTP and the ILR are projects which have a long and elaborate history. They were products which were conceived of in the 20th century and are the symbols of engineering feats which have defined India and especially China. They are the culmination of several such engineering marvels where nature has been manipulated to serve humans

and they thus are seen as the natural choices for India and China in the 21st century, both of which have a history replete with grandiose projects which have kept alive the faith on the usefulness and productivity of large scale construction projects.

Emphasis on large scale water transfers with possible transboundary impacts by both India and China and between India and China adds a volatile component to the riparian relations thereby lending credence to Gleick's thesis of conflict which specifies that water resource are a source of conflict between nations. India and China, are, to some extent, militarily and economically compatible which could propel either nation to resort to military means to settle transboundary riparian issues. Gleick's contention that water resources arise as sources of conflict when riparian nations plan developmental projects on such rivers seem to offer the most-plausible platform for evaluating the possible conflicts which may arise between India and China over rivers originating in Tibet and flowing across both countries. Additionally, Gleick's identification that control of Water Resources, especially with regard to urgency to establish and ensure "access to water" being a root cause for riparian tensions which has the potential of leading to outright conflict is also helpful for evaluating the possible violence which may arise from India and China's rush to dam, link and divert water to ensure continued and augmented access to the resource. Gleick also identified the possibility of transboundary rivers emerging as military tools where water resources or water systems are used by a nation, as a weapon during military action. This also helps in understanding the basis which underlies India's apprehensions that China could manipulate its control on the headwaters of transboundary rivers in order to gain an advantage in other issue-areas.

However, it needs to be mentioned that a war over water between India and China does not seem imminent. Aaron Wolf's thesis which states that countries are more likely to cooperate over water than pursue military ways out of water disputes seems to be a more apt framework in order to conceive the attitudes of China and India over riparian issues. India and China may not have stated principles and doctrines about water sharing; however, they do seem to have some common traits with regard to transboundary rivers which understate the nature of riparian relations between them. For instance, neither has signed the UN Convention on the Law of Non-Navigational Uses of International Water-Courses, nor are they willing to submit to invasive regional water mechanisms with their riparian neighbours, plus, both nations have some history, however scanty, of water agreements with some of their lower riparian nations; these similarities show that both nations have comparable ways of dealing with riparian issues which provides a basis for them to tackle their riparian issues in the future. Additionally, going to war over water will be costly for China and India on other issue-areas. Neither can

afford to launch a full-fledged war over transboundary rivers as first of all, it is impossible to gauge the possible adversarial ecological and environmental fallouts of such a war; and moreover, it is unknown whether warring over water and preventing its flow in the process will be able to fulfill the water ambitions of either nation or will instead unleash environmental, social and ecological havoc of untold proportions.

India and China's water relations are shaped by various factors which are specific to these two countries. Riparian relations between the two countries do not hinge on cooperation or conflict; instead they are yet to take a definitive and concrete form. Tendencies emanating from their riparian attitudes portray that both nations do not want a military solution to any transboundary riparian complexities, however neither are willing to totally submit to the wishes of their respective lower riparian nations, which suggests that riparian relations can be understood in a continuum rather than as purely conflictive or cooperative.

It is undoubted that freshwater is coming under increasing strain in the contemporary world in general and in Asia in particular; and with the population graph continuing to rise and the agricultural and industrial water needs refusing to relent, the strain on freshwater resources is only going to climb, rendering it urgent for China and India to defuse riparian tensions and ensure that water resources are managed in the most efficient and ecologically sound manner possible.

Note

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