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River Brahmaputra (Yarlung Tsangpo): a potential flashpoint between India & China

River Brahmaputra (Yarlung Tsangpo): Un potencial punto de conflicto entre India y China

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Abstract: China and India are the two most populated countries on earth siting astride the Great Himalayas. Also, they are the fastest growing economies and hence extremely resource hungry. Energy and water being the key resources to guarantee sustained economic growth, both countries are developing diplomatic and military capacities to have secure access to these resources. Recently, both the powers have shown unprecedented political assertiveness and resource aggressiveness on the issue related to water sharing of an important Himalayan river, namely, Brahmaputra. This seemingly conventional political issue is essentially interlinked to complex existential concerns like water security for burgeoning population and industry, food security and sustained economic growth for both the countries. This paper aims at examining the stated water sharing dispute between India and China with a view to ascertain the likelihood of it becoming a flashpoint for an all-out military conflict between the two Asian giants.

Keywords: Water Security. Water Wars. Water Diplomacy. Behavior of Riparian States.

Resumen: China e India son los dos países más poblados del planeta, situados en el Gran Himalaya. Además, son dos países con las economías de crecimiento más rápido y, por tanto, con extrema necesidad de recursos. Siendo la energía y el agua los principales recursos para garantizar el crecimiento económico, los dos países están desarrollando capacidades diplomáticas y militares para tener acceso a esos recursos. La cuestión relacionada al agua es más regional e implica conflicto de intereses con países vecinos. Recientemente, ambos fueron asertivos políticamente y agresivos al mismo tiempo con recursos sin precedentes en la cuestión de compartir el agua de un importante río del Himalaya, el Brahmaputra. Este artículo tiene como objetivo examinar la disputa declarada de compartir el agua entre India y China, con el objetivo de verificar la probabilidad de volverse un punto crítico para un conflicto militar total entre los dos gigantes asiáticos.

Palabras-clave: Seguridad hídrica. Guerras por agua. Diplomacia del agua. Comportamiento de los Estados Ribereños.

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"Water security for us is a matter of economic security, human security, and national security, because we see potential for increasing unrest, conflicts and instability over water."

Hillary Clinton (U.S. Secretary of State, March 22 2011, World Water Day)

1 Introduction

India and China are two ancient civilizations connected in time but distanced in almost every other aspect. What has insulated the two civilizations is not any traditional animosity but impregnability of the mighty Himalayas. These vast mountains were also the traditionally accepted frontiers between the two nations with its resources peacefully shared by the local population on either side. This concept of 'frontiers' was neither common nor well understood by the Western colonial powers, who tempered with these proven boundary arrangements and left a legacy of conflict between nation states by delineating borders without balancing geographical realities to social actualities. Consequently, in spite of a bloody war in 1962 and several local military conflicts and standoffs, the issues of boundary and disagreement on sharing of water resources nestled in the Himalayas continue to hyphenate the Sino-India relationship even after seven decades of Independence. Sino-Indian relations have become further complex in the last few years. In spite of consistently increasing bilateral trade, relations continue to be strained due to environment of mutual suspicion, economic competition and border disputes. It has been widely noted by political scientists that the coexistence of India and China in the international state system is highly unusual in that they both aspire to superpower status and share a border. Both sides have attempted to repair their relationship with various confidence-building measures (CBMs) like reciprocal state visits, signing of various bilateral agreements, joint military exercises, and strengthening of bilateral trade. However, these CBMs have been undermined by intermittent crises which flare up over the historical disputes. The most recent and important is the anxiety stirring up between the two countries over the critical issue of alleged Chinese diversion of rivers flowing into India.

China with a population of 1.3 billion is one of the driest nations in the world and is extremely water thirsty. Challenged with acute shortage and disproportioned and inverse distribution of water resources within its boundaries, diversion of existing waters, rejuvenation of existing river systems and control over new fresh water sources is a compulsion for China. India on the other hand accounts for about 17% of the world's population but only 4% of the world fresh water resources (POPULATION, 2018c). Distribution of these water resources across the vast expanse of the country is also uneven. Continued population growth is putting enormous pressure on its water resources. With no proportional increase in availability and an ever increasing

demand, water security for India is emerging as an issue of extreme urgency. The remedy to this predicament for both, China and India lies nestled in the glaciers of the mighty Himalayas. With nearly fifteen thousand glaciers and vast snow cover measuring approximately 1,400 cubic kilometres in volume, Himalayas are the largest fountainhead of freshwater resource and a strategic common to India, China, Nepal and Bhutan and Bangladesh.

What is of vital significance is that China controls the trans Himalayan region of Tibet through which most of the rivers originating in Himalayas flow, thus making it the upper riparian state[1]. Over the past decade, China has started building dams over Brahmaputra river for hydroelectric projects. Ever since, there has been an increase in political assertiveness and resource aggressiveness between China and India, relating to water sharing of Brahmaputra. The recent debates in China concerning enhancement of the scope of South-North diversion project to include Brahmaputra waters have now raised the anxiety levels in lower riparian states of India and Bangladesh to a new level. In an era where growing economic ties are the only hope of thaw in the deteriorating Sino-India relationships, a socio-political issue involving livelihood of population of 100 million Indians is likely to generate sparks that may start an unstoppable fire.

2 SCOPE

This paper will examine the Sino-India water dispute over Brahmaputra River for its potential of becoming a flash point of a full scale military conflict between China and India. As wars are complex matters, the analyses process cannot be restricted to water scarcity and security dimensions of the dispute alone. Comprehensive analyses must therefore include additional factors that are likely to influence the political decision making of the two states when water security is threatened. Following factors will be analysed in the paper:

- Water security and historical perspective of water wars.
- Water scarcity challenges in India and China.
- Dynamics of Brahmaputra dispute.
- Political environment and importance of popular sentiments in India and China.
- Economic environment and cost of war.
- External powerplay by third party.
- Technology as a possible war preventer.

1 Tibet lies in a region known as Trans Himalayas. As the term suggests, Tibet lies beyond the main Himalayan range. The Trans Himalayan region itself is an ill-defined mountain region covering an area of about 1,000 km (600 miles) and having a width ranging from 225 km (140 miles) to about 32 km (20 miles). In Tibet lies the river valley region extending for about 1,000 km from west to east. The Brahmaputra River (known in Tibet as the Yarlung Tsangpo) flows from west to east through most of this region. The Tibetan plateau is the source of some of the biggest rivers in the Himalayas. The Brahmaputra, Indus and Satluj are three Trans Himalayan rivers that originate in Tibet, cut across the main Himalayas making fearsome gorges and then flow towards the plains.

3 WATER SECURITY: WATER SCARCITY

As per the UN definition, Water security is defined as "The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability (UNITED NATIONS UNIVERSITY, 2013)". The keyword here being "safeguard". This article focuses on the military consequence of initiatives being undertaken by China and India to safeguard its water resources. Water is one of the most critical components of the earth's ecosystem. Without water there will be no life. From sustaining human bodily functions to balancing climate, supporting agriculture and industrial development, water is serving exponentially more people and many usages. This makes access to clean and reliable water supply crucial to human survival and sustainable progress. The WWDR is an annual and thematic report that focuses on different strategic water issues each year and aims to provide decision-makers with the tools to implement sustainable use of our water resources. It also includes regional aspects, hotspots, examples and stories, making the report relevant to a broad range of readers, at different levels and in different geographical areas. Unfortunately, fresh water is an increasingly scarce and precious resource. Less than 2.5 percent of all water on earth is fresh water and almost 50% of it is in the form of polar ice and high-altitude glaciers around the world. With increasing consumption, pollution, and climate change, this marginal amount is further declining at a rapid pace. "Global per capita freshwater availability has plummeting more than 60 percent since 1950." It is reported that at the turn of the millennium in 2000, more than one billion people did not have access to clean drinking water (UNITED NATIONS, 2018).

According to a recent article co-authored by the chair of the Department of Water Engineering at the University of Twente in the Netherlands and a water scarcity expert from the Johns Hopkins Water Institute, approximately 66 percent of the world's population, or more than four billion people, live in areas under severe water scarcity. Of these four billion people, one billion live in India, and 900 million live in China; the majority of their populations thus live in areas of severe water scarcity (HOEKSTRA; MEKONNEN, 2016). In 2006, a World Bank Working Paper on water scarcity claimed "China will soon become the most water-stressed country in East and Southeast Asia." Water scarcity is also linked to food availability. Agriculture accounts for 70 percent of all global water consumption, compared to 19 percent for industry and about 11 percent for drinking. The Strategic Foresight Group, a prominent India-based think tank that publishes extensively on climate change and environmental issues, projects both India and China will face a 30 to 50 percent decline in rice and wheat yields by 2050 due to "the cumulative effects of water scarcity, glacial melting, disruptive precipitation patterns, flooding, desertification, pollution, and soil erosion" (SHALIZI, 2006).

3.1 WATER WARS: DO NATIONS FIGHT WAR OVER WATER?

Those concerned with the water crisis and its future are divided essentially into two schools. One school indicates that water, as a source of conflict, is more likely to be the case within countries than between them. It focuses on water as a source of cooperation and as an impetus for scientists and political leaders to use modern science and advanced technology to create new solutions and seek suitable alternatives. The other school argues that water scarcity, as a source of conflict, will increasingly be inter-state in nature and examines water- induced conflicts. This school, however, makes it clear that "water resources have rarely been the sole cause of conflict" but should be viewed as a "function of the relationships among social, political, and economic factors, including economic development." This school also evaluates the role of water as a tool and weapon (both political and military) in conflicts caused by other factors. There is no clear empirical evidence suggesting water as a primary trigger to a major war between two nation states. The Pacific Institute, a Think Tank has created a 5000 year timeline categorizing conflicts related to water where water was used as 'trigger' and/or 'weapon'. The database lists 551 conflicts all across the world[2]. While the database does indicate 224 conflicts where water was the trigger, most of them come out as small intrastate feuds and others being limited to skirmishes or show of force. Interestingly, the database shows use of water a weapon in large number of conflicts world over to achieve a favourable and/or quick culmination to the conflict and also to force own terms on the adversary. Water may be used as a weapon during a conflict and not initiate the conflict perse.

Figure 1 - Historic Perspective of Water Conflicts Across the World

Source: Pacific Institute (2019).

2 Founded in 1987 and based in Oakland, California the 'Pacific Institute' works to create a healthier planet and sustainable communities. We conduct interdisciplinary research and partner with stakeholders to produce solutions that advance environmental protection, economic development, and social equity in California, nationally, and internationally.

A similar sentiment is echoed by Juha Uitto, at the United Nations Human Development Program, and Aaron Wolf, professor of geography at Oregon State University. In their report they argue that while only one war and seven cases of acute water-related violence are known, there have been more than 3,600 water related treaties over the years, reflecting a strong record of cooperation over conflict on issues related to water (UITTO; WOLF, 2002)[3]. Notwithstanding the lack of empirical evidence on the subject, large number studies and articles published by experts on water scarcity and future of water wars indicate weaponization of water with certainty of it becoming the trigger for future wars (HILL, 2016). Arguments prophesying inevitability of water wars are gaining wider acceptance world over with both, Governments and militaries. The subject is being discussed and debated extensively in international forums and military institutions alike.

More and more literature supporting the possibility of water wars is coming to fore and the idea is getting reinforced like never before. In absence of empirical evidence from past, scholars are modelling their future risk assessment on the predicted data of water usage and scarcity in future along with behavioural response of individuals, societies and Governments to the effects of scarcity. It is to be understood that while in the past water security largely had an economic dimension with respect to a state or region, the predicted scarcity in future will have a more direct consequence to the extent of existential crisis, where billions of people are going to not have access potable water. Despite considerable evidence of cooperation over water usage, a number of arguments link water scarcity and armed conflicts. While states have not fought exclusively over access to water, increased water scarcity, when combined with other factors such as upstream-downstream positioning, sovereignty linkages, and political instability, may lead to war. China and India may not be an exception to this rule

3.2 WATER SCARCITY CHALLENGES IN INDIA

India accounts for about 17% of the world's population but only 4% of the world fresh water resources. Distribution of these water resources across the vast expanse of the country is also uneven. The increasing demands on water resources by India's burgeoning population and diminishing quality of existing water resources because of pollution and the additional requirements of serving India's spiralling industrial and agricultural growth have led to a situation where the consumption of water is rapidly increasing while the supply of fresh water remains more or less constant. The water demand projection for India is a matter of concern.

3 The seven cases are: between India and Pakistan in 1948 over access to the Indus basin; between Syria and Israel in 1951 over Israeli water projects in the Huleh basin; between Egypt and Sudan in 1958 over the Nile River; between Somalia and Ethiopia in 1963-1964 over water in the Ogaden desert; between Israel and Syria in 1965-1966 over Arab plans to divert the Jordan River; between Iraq and Syria in 1975 over the Euphrates; and between Mauritania and Senegal in 1989-1991 over grazing right along the Senegal River. See Wolf (1998, p. 256).

The World Bank in its 1999 report indicates that the overall water demand will increase from 552 BCM (Billion Cubic Metres) to 1050 BCM by 2025, which will require the use of all available water resources in the country. The per capita water availability according to the report has dropped from over 5,000 cubic metres per year in 1947 to less than 2,000 cubic metres per year in 1997 and by 2025, this figure will further drop to 1,500 cubic metres per year, which is well below the level at which water stress is considered to occur. The report also lists six of India's 20 major river basins below the water scarcity threshold of 1,000 cubic metres per year (FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, 2018c). The Mckinsey Report (2009) suggests that by 2030, water demand in India will grow to almost 1.5 trillion m3, principally driven by population growth and the domestic need for rice, wheat and sugar. According to the Report, the current water supply is approximately 740 billion m3 (2030 WATER RESOURCES GROUP, 2009).

The interplay of food, energy and water within the complex context of population increase, rising standards of living and resource constraints poses interlocking challenges to sustainable environmental policies. Clearly, water security in India is deeply linked to development and economic growth of the country. A growing need to synchronise internal water management measures with external riparian policies is thus critical. Although India has low per capita water consumption, it lags in the efficient use of water across sectors. Continued population growth and the impact of global warming along with inadequate conservation and huge wastage are putting enormous pressure on water resources. With no proportional increase in water availability and an ever increasing demand, water security for India is emerging as an issue of extreme urgency. Most of India's northern rivers originate in Tibet. China annexed Tibet in 1950 and gained control over the Himalayan glaciers of the region where some of the world's largest rivers originate and flow to South and Southeast Asia. China has strengthened its political and economic control over Tibet where India and China have a complex, unresolved boundary dispute. There are widespread fears in India that China's diversion of waters of the Yarlung-Tsangpo, to meet high demand in its arid north, will cause hydrological imbalance in the northeast part of India and shortage in Bangladesh, which in turn will impact riparian relations.

3.3 WATER SCARCITY CHALLENGES IN CHINA

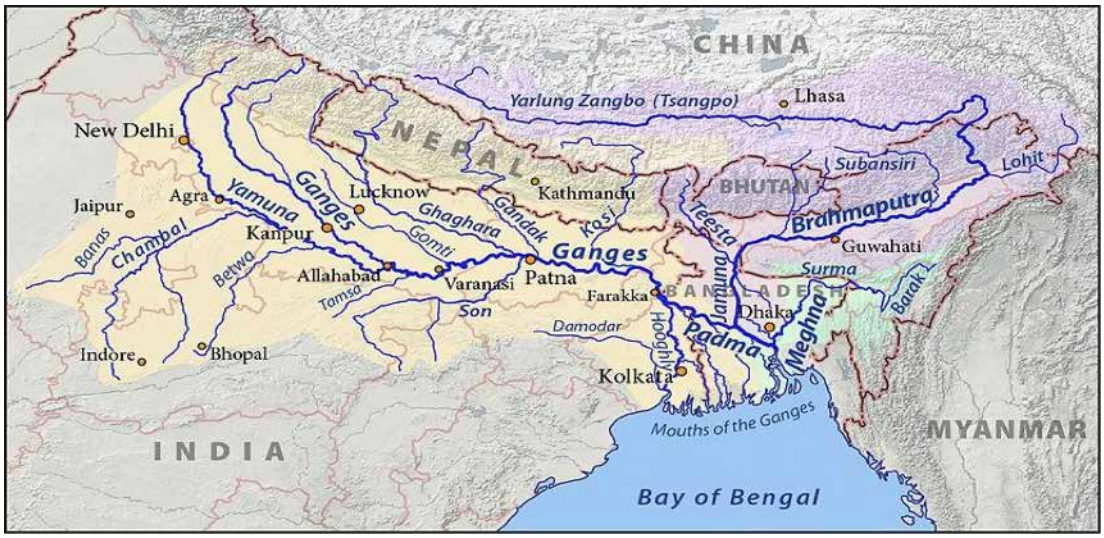
China is an extremely thirsty country and is one of the world's driest nations. With a population of 1.3 billion and much of its rivers polluted and silt- ridden, water undoubtedly has become a prized strategic asset. In 2004, China’s available water per capita was one of the lowest in the world for a populous country, meanwhile, the demand for water is growing more than 10 percent annually in Chinese cities and more than five percent annually for its industries (SHALIZI, 2006). This precipitous decline in available water has worsened an already critical shortage in drinking water for China’s huge population. More than 25 percent of all Chinese

are without access to drinking water. Almost half of China's 668 largest cities are short of water with 108 identified as "serious" and 60 as "critical." By 2030, the Chinese government predicts the country's annual freshwater shortage will reach 200 billion cubic meters (PAK, 2016). China's worsening water shortage is exacerbated by increased pollution on a historic scale. Due to the shortage of water resources in China, the groundwater plays a key role in providing drinking water for China's huge population. 70 percent of China's population of 1.3 billion drinks groundwater. Out of 660 cities in China, more than 400 cities source their drinking water from groundwater. More than 80 percent of China's underground aquifers, which supply 70 percent of the country's drinking water, are polluted. More than half of China's population drinks water contaminated with organic waste. More than 75 percent of surface water flowing along China's rivers is unsafe for drinking or fishing, and 30 percent is unsuitable for agriculture and industry (LIN, 2016). China's water problem has a stark regional dimension as well; the south has the preponderance of water while the north has the higher demand. This has created a significant regional disparity that is getting worse with time. While 45 percent of China's population and 60 percent of its agriculture are in the north, the region has only 13.8 percent of the fresh water. In per capita terms, the amount of available water in the north is about 25 percent of that available in the south. To correct these imbalances, China has embarked on a massive water transfer project known as the South- North Water Diversion Project. Started in 2002, the project consists of three planned routes: the eastern, central, and western. More on this issue will be discussed in subsequent paragraphs.

4 THE BRAHMAPUTRA WATER DISPUTE

The Brahmaputra is one of the major rivers of Asia which flows through China, India and Bangladesh. Out of its total length of 2,880 km the River covers a major part of its journey in Tibet as Tsangpo. Tsangpo or the Brahmaputra flows 1625 km in Tibet parallel to the main range of Himalayas before entering India through Arunachal Pradesh near Gelling. Before entering India, the river passes Pi (Pe) in Tibet and suddenly turns to the north and northeast and cuts a course through a succession of great narrow gorges between the mountain Gyala Peri and Namjabarwa (Namcha Barwa). In India the river flows through the states of Arunachal Pradesh, Assam, West Bengal, Meghalaya, Nagaland and Sikkim comprising a total basin area of 197316 sq. km which is 5.9% of the total geographic area of the country (GOSWAMI, 2008). The river is known as the Siang in Arunachal Pradesh. The Siang River meets two other major tributaries, Dibang and Lohit in the west of Sadiya, at a place named Kobo. From this confluence point, the river is known as the Brahmaputra till it enters Bangladesh. Out of the total catchment area of the river, 50.5% lies in Tibet, 33.6% in India, 8.1% in Bangladesh and 7.8% in Bhutan. In India the journey of the river Brahmaputra is 918 km long. It holds special importance for Indian economy as it accounts for almost 29 percent of all surface water in India's rivers and encompasses roughly 44 percent of India's total hydropower potential (GOSWAMI, 2008).

Figure 2 - Map of Brahmaputra River

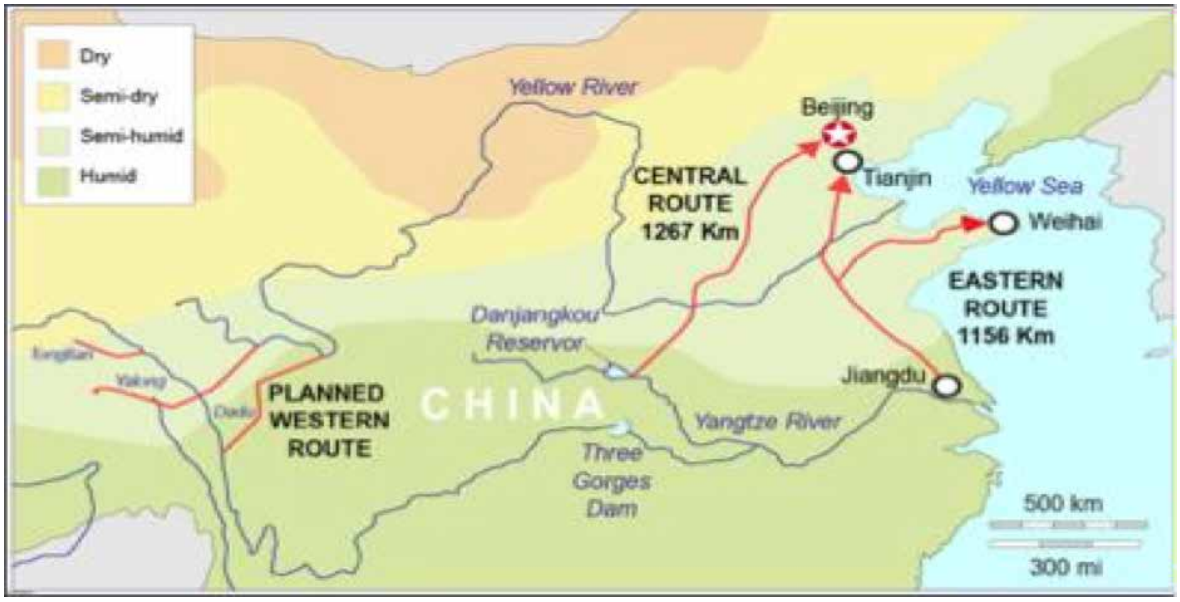


Source: Brahmaputra River (2018c).

On the China's end, its development activities on the Brahmaputra are currently limited to building series of hydroelectric dams. China has announced plans to construct four dams along the Brahmaputra in Tibet. One of these facilities, namely, Zangmu Dam, is currently operational and has a total installed capacity of 510,000 kilowatt hours. A more controversial use of the Brahmaputra lies in China's proposal to divert the river to meet domestic needs, especially for irrigation. As mentioned earlier, China currently faces serious water scarcity challenges at a national level. China's limited water resources are unevenly distributed further, this situation has been exacerbated by factors such as weak pollution controls, poor conservation efforts, and inefficient irrigation methods. To remedy this great north-south water divide, China had started a massive South-North Water Diversion Project to transfer a total of 38 to 48 billion cubic meters of water annually. Officially announced by China's State Council in 2002, the project called for diverting waters along three different routes—an eastern route, a central route, and a western route. The water diversion projects along the first two routes are already completed and are transferring water from China's Yangtze and Han Rivers in the south to the Yellow River in the north. The third route is still under development. It will divert tributaries to the upstream portion of the Yangtze River in western China to the Yellow River (GLEICK, 2008). Over the past three decades, various Chinese scholars have proposed diverting the Brahmaputra as a remedy above and beyond the official South-North Water Diversion Plan. The best-known plan, put forward by a senior researcher at the Yellow River Water Conservancy Commission in 1990, envisions diverting the river via a series of canals and dams through Sichuan Province and into the Yellow River. Other plans have been proposed and studied by scholars at the Chinese Academy of Sciences, the Yangtze River Commission, and

elsewhere (SAMARNAYAKE; LIMAYE; WUTHNOW, 2016). Although no proposal has been officially endorsed, some Chinese and foreign scholars contend that China's water shortages may become so severe that the government will have no choice but to attempt to tap into the Brahmaputra. For instance, water scarcity, combined with the effects of climate change and desertification, may become so intense that a more radical scheme to divert the Brahmaputra will be needed. Similarly, a failure of the South-North Water Diversion Project to alleviate water shortages in northern China could make a plan to divert the Brahmaputra "very tempting" for PRC authorities.

Figure 3 - Current and planned routes of the South-North Water Diversion Project



Source: Samarnayake, Limaye, Wuthnow (2016). Map drawn by Mike Markowitz.

India views China's strategic river diversion plan of Brahmaputra waters in Tibet with great trepidation as these upstream activities will reduce both, the runoff and hydro-power potential India can expect from the Brahmaputra River (DHAWAN, 2017). As a lower riparian, India feels vulnerable to the water diversion and storage projects planned on the Yarlung- Tsangpo. Riparian issues always have political connotations. The implementation of river policies, even when purely design-related to the linking of rivers or constructions of dams and barrages, are undertaken within a political context. Riparian states differ in their views of what cooperation entails for them and not surprisingly, a power game ensues. Politically in India, the basin is spread over 22 parliamentary constituencies comprising 12 in Assam, 4 in West Bengal, 2 in Arunachal Pradesh, 2 in Meghalaya, 1 in Sikkim and 1 in Nagaland.

South Asia Network on Dams, Rivers and People (SANDRP) is an informal network working on issues related to rivers, communities and large scale water infrastructure like dams:

their environmental and social impacts, their performance and issues related to governance of rivers and dams (SANDRP, 2018). Withgreater focus on economically integrating the Far East states into mainland India, this news of China's projects is not a good one for India population and politicians alike. India and China have a long-standing border dispute. China lays claims on substantial parts of India, particularly in Arunachal Pradesh through which the river Brahmaputra flows. The boundary issue comes in the way of meaningful cooperation on water issues. India is concerned that China will use water as a tool to pressurize India and to extract concessions on the boundary question. Given the environment of distrust between the two countries, it is hard to imagine that India will accept China to be a responsible upper riparian player. Further, there is no clear accepted international law on shared waters and China was among the only three countries that voted against the Convention on the Law of the Non-Navigational Uses of International Water Courses in the UN General Assembly in 1997. This casts shadows on any claims made by China on adhering to the international principles of good neighborliness towards the riparian nations in the region. Therefore, as water resources of Tibet add salience to China's resource aggressiveness towards India, potential of water issues becoming catalysts for conflict between the two giants is likely to increase. India on its part is also seeking to utilise Brahmaputra waters to rejuvenate its shrinking Ganges basin and to overcome frequent flooding problems through an ambitious 60 rivers interlinking project. With such political and economic stakes, India sees damming and diversion of Brahmaputra waters by China as an unacceptable loss of control over a strategic common. While the political issues swirling around China and Tibet are complex, there is no denying that water occupies centre stage in China's interest in Tibet and therefore, China's position on utilization of Tibet waters is likely to have a significant bearing the bilateral relations between the two countries. Further, China's hardening position on Arunachal Pradesh (India) has formally linked the water dispute to that of sovereignty. Chinese claim on Arunachal Pradesh is not a mere rhetoric. In laying claims to Arunachal it is claiming the almost 200 million cusecs of waters resources in the state. It is a different matter whether or not the transfer of waters is technically feasible. This position of China has altered the dynamics of the ibid dispute. From being a regular riparian issue affecting 3% of Indian population residing in Brahmaputra basin, it has now become a matter of national pride for 1.2 billion Indian citizens, who may be ready to pay any price for it.

4.1 INTERNAL POLITICAL ENVIRONMENT: ROLE AND IMPORTANCE OF POPULAR SENTIMENTS

As discussed earlier, Himalayas have traditionally functioned as impermeable border between India and China precluding any perceivable trans frontier overrun of social and political values. Consequently, the two civilisations evolved as if located on two separate continental shelves Markedly, while communist ideology was growing roots in China in mid 20th

century, at the same time, India was embracing representative democracy on the other side of the hill. Interestingly, while the world went through an intense cold war standing polarised on these exact political values, China and India remained non-aligned and have no history of military conflicts/ unrest or mutual diplomatic criticism based on each other's preferred political orientation. Notwithstanding the aforesaid, all is not well on the political front, the challenges to the political stability for both the countries are not external but from within. More so for China than India.

China. China is formally a multiparty state under the leadership of Communist Party of China (CPC). While most western scholars argue that the political system lacks the vital ingredient of universal suffrage, theoretically the argument does not hold ground. All the adult citizens of Peoples Republic of China are permitted to vote albeit for election of Deputy of National Party Congress and the local/village heads only. Thereafter the election system adopts the hierarchical model of indirect-election (CHINA'S, 1949). While exponents of Chinese political system can continue to argue that the model is democratic, there is no denial of the fact that it is marred with intrinsic flaws and has fostered centralisation of power with CPC. Having learnt lessons from disintegration of USSR, where there was no provision of rewarding citizens for their contributions, Chinese leaders went on to refine their political model to include individual's prosperity alongside national growth. This measure alone has paid rich dividends and has resulted in upliftment of 800 million Chinese out of poverty (CHINA..., 2017). Magnificent as this may sound, it has interfaced 800 million informed, well-travelled and politically more conscious/ interested Chinese with a seemingly archaic political system they are not permitted to question. This arrangement is potentially volatile. Recent surveys show that these citizens expect good governance from the political dispensation implying sustained economic growth, good job opportunities, contemporary infrastructure, access to clean water, pollution free environment and robust healthcare system. Noticeably, issues like unification of China, diversion of Tibet waters and military conflict with India either find no mention in the list or are too relegated to be considered (Chinese population is seemingly more sensitive to resource sharing and military conflicts related to Japan and United States of America). Having said that, CPC leadership cannot be seen as a weak disposition by abandoning the idea of unification or silently accepting increased military presence of other players in its so called backyard. Consequently, to remain domestically unchallenged, the political leadership of China must walk the fine line of fuelling nationalistic feelings without entertaining the idea of a war in the near future. While the issue of water shortage concerns the wellbeing of the citizens of China, they are unlikely to be emotionally obsessed with water from Tibet Plateau as they have never had an access to this resource. Also, many citizens are likely to evaluate this initiative for its economical prudence and adverse environmental implications and therefore may not show enthusiasm in the first place, leave aside seeking a war over it.

India. India is the largest democracy of the world and had 814.5 billion politically participative voters exercise franchise in 2014 elections[4]. Like in any good democracy, population of India plays a pivotal role in driving political agendas and shaping policies in the country. Indian population though extremely nationalistic, is diverse in religion, culture and ethnicity. Therefore the issues influencing Indian electorate range from livelihood security (issues concerning land, water, employment, price of commodities etc), religious and culture freedom to nationalistic issues like Governments' response to nations adversaries challenging India's sovereignty or unfair trade practices and monetary policies of the Western world. Understanding this game, Indian political parties, particularly when in power have traditionally sought refuge in blaming external players (foreign countries, particularly neighbours) for all that ails India. This has established a unique political imprudence where the political masters twist facts and arbitrarily fan the nationalistic feelings and EQ of uneducated/ uninformed voters to cover own failures in governance. Indian citizens are traditionally known to react aggressively and emotionally towards issues related to clash of interest with other countries, particularly China and Pakistan. Further, the instant case of water diversion from river Brahmaputra implies reducing the supply of water to the population used to utilising it for its social and economic survival. In the country where rivers are equated worshipped as goddesses and revered, the issue is way more personal and a matter of survival for many. Therefore, any act of diversion or even the promulgation of the idea of diversion of waters of Brahmaputra will invite a serious reaction from the 80 million voters of the affected region in particular and billions of others across the country in general. A call for an all-out war to restore national pride and legal rights may occupy the political centre stage in India. Be that as it may, Indian Government has never displayed irrationality in dealing with situations stimulating military conflict and has persistently demonstrated great maturity in calibrating its response on both. diplomatic and military level, even when the popular sentiment is known to be inclined for a military solution. India's controlled yet effective response to repeated provocations of Pakistan based terrorist organisations stands as testimony of it. Further, the East Bengal refugee crisis of 1971 is an important case in point. Indian Government showed no urgency in responding to the internal and external provocations for an immediate war with Pakistan. The decision to get involved militarily was a considered and informed one with many additional motivations driving the defining the campaign than merely the humanitarian crisis of refugees (RANJAN, 2016).

4.2 ECONOMIC ENVIRONMENT: WAR VS SUSTAINED ECONOMIC GROWTH

China. As discussed above, Chinese political system has evolved from being conformist communists to a tolerant capitalist communist model. This transformation has paid

4 Available at: https://www.eci.nic.in/eci_main1/current/GE-2014%20Color%20with%20maps_%2005032014.pdf. Access in: 12 Sep 2018.

rich dividends to China for over 40 years but now the story is changing and there are costs to pay to keep the growth trends positive. Shrinking GDP growth, massive wave of deficit spending, ageing population, compulsions to address environmental issues, modernisation of armed forces etc are few of the many challenges likely to upset the apple cart of Chinese growth story. Even though China has grown at a spectacular rate in the past, it is still far from becoming a global super power and there is a fair possibility that it may grow old before growing rich (ZILIBOTTI, 2017). Chinese economy continues to be fragile and any challenge to its sustained growth is likely to have direct and corresponding effect on critical issues like trade volumes, employment, innovation, infrastructure growth, welfare schemes, and defence spending thereby causing dissatisfaction amongst population and decline in influence of China in global affairs. Both the outcomes are potentially risky scenarios for CPC. Consequently, economic wellbeing of China is likely to remain the primary focus of the party and a key to its unchallenged existence. Given such compulsions, war is a burden China can ill afford and a sentiment its political disposition is least likely to encourage in the near future.

India. The Prime Minister of India, Mr Narender Modi in his speech to the people of India on independence day, 15 Aug 2018, stated that Indian economy is an elephant that has begun to run (INDIAN, 2018). Thereby implying that the Indian economy has finally taken off the blocks and it is time for India to reap the true benefits of globalisation. Growth story of Indian economy has not been as spectacular as that of China. It has taken a while for the drivers of economy to align well for India and now the domestic indicators and global sentiments are extremely positive and promising. Having said that, the economy is still in a fragile state and therefore Indian government would like to maintain uninterrupted focus on sustenance and strengthening of this momentum in the coming years. War with a strong adversary being the worst kind of interruption. While such may be the intention, there are salient differences in the economic make up of India and China. While Chinese economic story is based on manufacturing and services, Indian economy, though led by services and industrial sector, has a very large employment and consumer base in rural areas dependent on agricultural income. It is noteworthy that while the share of agriculture in GDP is only 17%, it provides employment to over 60% of the population and is therefore the single most important influencing factor in Indian politics (INTERNATIONAL LABOUR ORGANIZATIO, 2020). Further, to the population linked with agriculture, economic issues are closely associated with security of land holdings, availability of water and preservation of cultural traditions. Any compromise or threat to the aforementioned issues has the potential of stirring up major political and internal security challenges. After land, water is the most critical resource for Agriculture activity and therefore rivers are seen as socio- economic resource by the Indian population. Alarming as these figures appear, the story for Brahmaputra basin is not as dynamic as the Ganges basin. Only 3% of Indian population inhabits Brahmaputra basin with the land area being 6% of the country. Further,

agricultural activity in this region is not as robust as that in Ganges basin and therefore, prima facie, the issue is not of much economic importance to India. Bangladesh, with 70% of its population residing astride Brahmaputra perhaps has greater economic dependence on the river. This being said, like China, India also needs Brahmaputra waters to rejuvenate Ganges Brahmaputra basin where 40% of its population resides (DE STEFANO; DUNCAN; DINAR et al., 2010). Consequently, it has formulated a major river interlinking project at national level involving 60 rivers, of which Ganges- Brahmaputra linking is one part. The idea behind interlinking of rivers is to deal with the problem of drought and floods afflicting different parts of the country, while decreasing farmers' dependency on uncertain monsoon rains. Unlike the Chinese South – North water diversion project, this endeavour is inclusive and involves other two riparian states viz, Nepal and Bangladesh. Given this new dimension, the population involvement and economic activity linked to Brahmaputra acquires mammoth dimension with trans-border interests. China's unilateral decision to divert Tibet waters may be play a spoiler for this dream project and cause angst to Governments and population alike.

4.3 MILITARY CAPABILITIES: COST OF WAR

Economic drivers and political compulsions alone cannot drive a country to war. Military capability is a key factor to be considered when assessing such a possibility. China and India are two military powers that have a history of military conflict and prolonged border unrest. Armed forces of the two countries have motivation to baggage to spur them towards conflict, but both the armies are also extremely responsible and under direct political control of the state.

China. Peoples Liberation Army (including its other two service components) is a 2.6 million strong professional army. With a sustained defence spending of approximately 2 % of GDP on defence and focussed development of defence industry, China has manged to transform PLA from a force limited to defending own borders to as a modern military with regional reach and global aspirations (STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE, [201-?]). Recent initiatives involving force restructuring, transformation of People Liberation Navy (PLN) from Brown water to Blue water navy, augmentation of Cyber and Electronic Warfare capabilities, formulation of Strategic Forces Command (SSF) and successes in quantum computing are steps aimed to achieve the aforementioned aspirations. Be as it may, the Chinese military dream of defeating India in a military conflict has few major challenges. Firstly, any conflict with India has to be fought over the mighty Himalayas and/or in Indian Ocean. Both battlefields continue to impose geographical restrictions on application of force on. Therefore, inspite of being a technologically superior force, PLA is unlikely to be able to deliver a decisive defeat on Indian Army in either of fronts and achieve any rewarding end state. Secondly, PLA is referred to as an untested army. In order to establish itself as a professional and strong force, nothing but decisive defeat of

Indian Army will be acceptable to both PLA and CPC. A stalemate will in all probability be considered as victory for India and therefore will adversely affect the image of PLA as a military force and China as a super power globally. This is likely to result in immediate reduction of China's clout in the region. Lastly, any war with an adversary like India will leave PLA weakened for a considerable period of time, This may not be acceptable to CPC given the fact that the state and population considers USA and Japan higher priority enemies than India and the challenges with both these adversaries are far from removed.

India. Indian armed forces are 1.4 million strong. It is a battle hardened force with wide experience of combat. Indian soldiers are known to be more adaptable to hardships. With 2.5% of GDP dedicated to Defence expenditure, Indian Armed forces have modernised themselves and enjoy considerable technological edge over its immediate neighbours and is fast closing in on China. Supported by geographical realities, Indian armed forces enjoy an edge in defending their country along the Himalayas and in Indian Ocean region against China. However, given the technological and numerical edge PLA enjoys, the effects of the same geographical constraints will be even more pronounced for Indian armed forces, should India undertake a trans-border venture against China based on its integral military capability. In either case, war with China will come at a huge military and economic cost for India. Pakistan, India's western adversary will be the natural beneficiary of the conflict, a situation unlikely to be acceptable to Indian government, population and armed forces alike.

4.4 EXTERNAL DYNAMICS: ROLE OF THE THIRD PLAYER

Today's world order is different from the cold war era dynamics where competitors did not nurture economic relations with each other. Globalisation has intertwined the political and military interests of countries across the world based on economic arrangements. It is no more prudent for two competitive powers to go to war and destroy each other if their economies are supportive and deeply interlinked. In such scenarios, it may be pragmatic for one for these powers to consider arranging for a third player to engage its competitor in war with an aim to weaken its ability to consider any military option against it. This scenario has a great applicability in present day geo-political environment relating China.

USA and China are large trade partners having a complex and paradoxical economic relationship. While the two countries have complementary interests on economic front, they are contenders as world powers. As China progresses on its path of realising its dream of becoming a world power, it is challenging the world economic order aligned preferentially to Western powers since end of World War -II on multiple fronts. In most significant initiatives, it is aggressively seeking restructuring or annulling of the established trade and financial system in the world and is determined to make its currency fully convertible. Scholars feel that challenge to dollar is a reason enough for USA to initiate a

direct military conflict with China and the best time to do so is today since China has still not developed enough military might. Be as it may, scholars also feel that with large No of complex and interrelated issues, a direct military conflict between USA and China is not the best option. In such a scenario, it might chose to include a third player in the game to balance out China. China has settled its land border disputes with almost all the neighbours but India and Bhutan. On-going disputes with Japan, Malaysia, Philippines, Vietnam and Brunei involve Island territories or EEZ issues. Taiwan is a legacy and sensitive issue involving unification of China. It is noteworthy that almost all the neighbours of China less Russia, North Korea, Bhutan and India have a defence treaty with USA. In case of China entering military conflict with any of its neighbour other than those mentioned above, USA will get directly involved in war with China that it doesn't want. Out of Russia, North Korea, Pakistan, Bhutan and India, Russia and Pakistan are aligned towards China and Bhutan is not strong enough to challenge China's might. This makes North Korea and India the most suitable options for acting as proxies.

While both these countries are nuclear powers and have strong armies, what sets North Korea apart from India is the irrationality factor. North Korea is unlikely to be a reliable partner to initiate a military conflict with China on behalf of US as it may not cede the escalation control to USA. Also, in its present form, both India and North Korea do not have the military capacity to engage China for a protracted period. USA will have to support the chosen player with large amount of contemporary military hardware and provide technological support in fields of intelligence and surveillance. US congress may not be comfortable to approve such support for North Korea. On the other hand, Indian armed forces are subordinate to political masters and are known to not undertake unilateral decisions without approval of political hierarchy of the country. Also, Indian political disposition is unlikely to take an irrational decision based on external provocation and will act only on issues that concern own national security. It is therefore possible that a conflict between China and India may erupt in short term on an issue only directly affecting the population of India for which popular sentiment will get formulated through aggressive mainstream and social media campaigns thereby compelling the political masters to take firm action against China. Such developments may be preceded by generous military aid and strategic information sharing cooperation arrangements between India and established powers. It may be wise to note that should a scenario like this get enacted, Brahmaputra water dispute may turn out to be the flashpoint that caused it.

4.5 TECHNOLOGY: REVERSE OSMOSIS TO REVERSE THE WARS

Ever since the advent of International trade, shipping has been the preferred way of transporting goods. This preference had led to large number of commercial cities mushrooming along/ near the coastlines world over. Over the years these cities have grown

in size and numbers and have become the hub centres of commercial activity of their respective economies. Possibility of better job opportunities and good quality of life has prompted migration of population from hinterland to these cities in almost every part of the world, with China and India being no exception. 60 % of Chinese population is concentrated along the East Coast of Chin. China's 1.3 billion people live in 12 coastal provinces, along the Yangtze River valley, and in two coastal municipalities — Shanghai and Tianjin. Along China's 18,000 kilometres of continental coastline, population densities average between 110 and 1,600 per square kilometre. In some coastal cities such as Shanghai, China's largest with 17 million inhabitants, population densities average over 2,000 per square kilometre (PERCENTAGE, [201-?]). GDP contribution of this region is proportionally higher. However, the combined burden of population, industry and agriculture makes the demand of water disproportionally higher in the region. This disproportionate geographical distribution of water and high consumption rates in the GDP rich coastal areas is what has prompted the billion dollars' South-North water diversion project. Unlike China, population in India is concentrated along the Ganges and Brahmaputra plains. Even though the water consumption pattern is not as askew as China, commercial cities like Mumbai, Kolkata, Vizag are draining the lakes and rivers in hinterland and polluting those passing through them.

Advent of internet has given an unimageable boost to evolution of technology as humans are converging interests and sharing ideas like never before. Scientists today are dreaming of colonising Mars and evolving technology to artificially create water on the Red planet to support life. Perhaps it is time world leadership looked at the challenges closer home and diverted some potential war dollars, likely to be spent on fighting wars over water security, to support research in developing efficient technology for more economical and commercial scale conversion of ocean water to fresh water. This will not only meet the thirst of population and businesses concentrated along the coastlines, but also release pressure on the scare freshwater resources in hinterland, thereby making them available for agricultural purposes. Today, Saudi Arabia, UAE and Israel are employing this technology to overcome their water woes, it may be wise for China and India to invest in refining and adopting this technology than spending large sums on water diversion schemes and/ or war inspired by the agenda of water security agenda.

5 CONCLUSION

This article examined the possibility of a military conflict between China and India based on the issue of water sharing of river Brahmaputra. Diverse set of important factors related to political, economic, social and military domains were analysed. The following salient points emerge:

a) River Brahmaputra has alternate water sources independent from the Tibetan glaciers controlled by China. Any water storage and/ or diversion project undertaken by China will not alter the river conditions to the extent the being perceived. Also, the technical feasibility of the undertaking South North water diversion as planned by China remains suspect.

b) China and India are responsible and rational states with stable political environment. Historically, important decisions like war have not been driven merely by popular sentiment. Both the states are known to resolve complex issues diplomatically and prefer peace over war.

c) Even though China and India are the fastest growing economies, the prevailing economic conditions do not favour war.

d) Geographical realities (Terrain conditions of Himalayas and distance of India Ocean from mainland China) are real and favour the defender. Experience of US Army operations in Afghanistan and Vietnam clearly highlight the same. Therefore, while technological superiority may help China surmount some of the challenges posed by difficult terrain and long sea lines of communication, but a decisive victory against India in Himalayas and Indian Ocean will continue to remain a farfetched reality in near future.

e) Security dynamics for China and India are extremely complex and involve additional players that may seek benefit from a conflict between the two nations. China cannot afford to weaken itself militarily and compromise on its super power image by not achieving decisive victory in a military conflict. India, though well supported by geography as a defender, does not have the capacity at present to start a war and go on offensive against China.

f) Majority of the economic activity and population of India and China is concentrated along the coastline. It may be more cost effective for the two countries to invest in emerging technology of converting ocean water to quench the thirst of their large cities along the coastline than go to war over it.

An aggregated view of these factors indicates that unlike oil, water is a resource required to sustain life and businesses alike. Like oil, its security is paramount for a nation and reason enough to go for war. Having said that, war in itself is a complex matter and is seldom driven by a singular agenda. A stable political environment comprising of rational and peace favouring political leadership and population will invariably prefer the path of diplomacy and cooperation to solve water security issues, over war. Therefore, water scarcity by itself is unlikely to be the cause of war. However, when coupled with other factors like unilateral diversion of transnational rivers by the upper riparian state, emergence of popular

sentiment linking water insecurity to issues of national sovereignty and pride, availability of external stimulus in terms of international recognition to own cause and military support and concurrent decreasing political stability in the affected states, the war may emerge as a preferred option. In the case of China and India, occurrence of such a scenario is not an impossibility. Consequently, it is in interest of the two nations in particular and world peace in general that an amicable solution for sharing of Brahmaputra water is found at the earliest. It should be an arrangement that offers win-win conditions to both.

> "The earth, the land and the water are not an inheritance from our forefathers but on loan from our children. So, we have to handover to them at least as it was handed over to us." Mahatma Gandhi apud Dhawan (2017).

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