India-China Ties: Will the Use of Water Resources or the securitization of water lead to a ‘water war’ between the two neighbours, overshadow the border dispute and make relations more strained and complex? The paper dwells on this question and more.

Global Water Crisis

Water Wars are becoming inevitable today as the progressive rate of population expansion, along with rapid urbanization and climate change, has created a situation where the ratio of fresh-water to human population is immensely unproportionate. Though the issue of depleting fresh-water resources does not get the attention as oil does, in a world where a third of the population suffers from water shortage, water can be seen as the new oil. The geopolitical implication of water shortages is often not recognised. A study conducted by the Strategic Foresight Group (SFG), Mumbai titled 'The Himalayan Challenge'¹ alarmingly predicts that "in the next 20 years, the four countries in the Himalayan sub-region (India, Nepal, China, Bangladesh) will face the depletion of almost 275 billion cubic metres of annual renewable water. For comparison, this is more than the total amount of water available in...Nepal at present²."

Developing countries face the biggest threat of potential water conflict as they often lag behind in effective management of water

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resources. The South and Southeast Asians regions have tried to limit the possibility of conflict over common water resources by drawing up numerous treaties which include the Mekong River Commission, the treaties of Sarada (1920), Kosi (1954), and Gandak (1959) between India and Nepal, the Indus Water Treaty between India and Pakistan (1960), the Ganges Waters Treaty between India and Bangladesh (1977), and the Agreement on the Use of Water and Energy Resources of the Syr Darya Basin between Kazakhstan and Uzbekistan in 1998³.

Recently, the issue of water war has cropped up in South Asia, home to about half of the world’s population, especially between India and China over the river Brahmaputra, large parts of which flows through the northeastern Indian states of Arunachal Pradesh and Assam. Statistics show that from 1999 to 2008, the volume of internal renewable water resources decreased from 2,220 to 2,092 cubic meters per capita in China and from 1,762 to 1,631 cubic meters per capita in India, placing them amongst the countries with the lowest per capita reserve base⁴. Environmentalist Lester Brown insists that water shortages in the two countries present the largest threat to food security humanity has ever faced⁵.

A large population, need for national water resources, and ineffective water-sharing policies might lead to potential armed conflict between China and India. Moreover, climate change could actually trigger a real water war with India sucked into the vortex of this possible conflict. Melting glaciers would badly affect rivers originating in the Tibetan Plateau and this may force nations in the sub-region to protect its water resources. In fact, these nations might look even beyond their borders and if this happens, tension is bound to mount. Such a situation would force India and China to securitize water sources, leading to real tension. Top leaders of

⁵ Ibid
both the countries have already recognised the significance of water security. In 1998, then Chinese vice prime minister Wen Jiabao stated that the “survival of the Chinese nation” was threatened by the country’s shortage of water\(^6\).

In 2007, Prime Minister Manmohan Singh remarked, “Dry land agriculture, changing climate and water scarcity are the new challenges we are facing... given the threat of climate change and global warming, we face the real prospect of reduced supply of water. This threat is of particular concern to us in India as we have, since times immemorial, depended on glaciers for our water supply in this part of our sub-continent\(^7\).”

The cause for conflict not only lies in the fact that both India and China face acute water crisis but also because the Tibetan plateau serves as the common source of water resources for the major South Asian actors- India, Pakistan, Bangladesh, Nepal and China. For China, the Tibetan plateau is a whole new untapped resource, which, if exploited, would help China meet its growing water demands, whereas it is the starting point for the major rivers so crucial for India and Pakistan- the Indus, the Brahmaputra and the Ganges.

**Water crisis in China**

China, as the next emerging superpower, is faced with diminishing access to fresh water resources. This increasing water crisis, affecting more than half of the country’s 660 cities, is largely due to the uneven distribution of water resources\(^8\). The arid north and northwest, home to 35 per cent of the population, has only 7 per cent of the country’s water resources\(^9\).

\(^6\) *Ibid*

\(^7\) *Ibid*


\(^9\) *Ibid*
China has three main sources of water: glaciers, surface water and ground water. As of now, China’s most pressing problem is not the volume of fresh water available but over-utilisation of water resources by industries, its huge population and mismanagement of resources.

**Glaciers**

About 49,873 square kilometres of the Tibetan Plateau covering most of the Tibet Autonomous Region and Qinghai province is the most important source of water in China, giving rise to China’s two main rivers— the Yellow River and the Yangtze River\(^\text{10}\). Moreover, the Indus, Ganges and Brahmaputra rivers, crucial for China’s neighbours—Pakistan, India and Bangladesh—originate from the Tibetan plateau.

**Surface Water**

China’s surface water bears the biggest impact of the water shortage. Though the main source of China’s surface water - its rivers and lakes - are replenished by melting glaciers and rainfall, China over-exploits these resources towards more industrialisation, generating hydroelectric power and for transportation. This over-exploitation of lakes and rivers could cause them to dry up and leave the population in a drought-like situation without any access to fresh water.

**Ground Water**

Over-extraction of groundwater and falling water tables are big problems in China, particularly in the north. China gets about 70 per cent of its drinking water and about 40 per cent of its agricultural irrigation waters from its ground-water sources\(^\text{11}\).

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\(^{11}\) *Ibid*
However, these reserves are fast getting dried-up due to over-utilisation and pollution\(^\text{12}\).

Faced with acute water shortage, China responded by proposing two major water diversion projects to transfer water from one region to the other: the *South-North Water Diversion Project* and the *Great Western Route Diversion Project*. The idea of a South-North water diversion was first introduced by Mao Zedong in 1952 and is estimated to be completed by 2050\(^\text{13}\). This project is supposed to transfer nearly 44.8 million cubic meters of Southern waters from the Yangtze River to Beijing and Tianjin in the dry North. The issue of controversy, however, surrounds the Great Western Route Diversion Project which will have huge ramifications for the lower riparian states of India and Bangladesh. It involves building a dam on the ‘Great Bend’ of the Brahmaputra, known as the *Shuomatan Point* —where the river does a u-turn and starts flowing east to India— into Arunachal Pradesh and then crossing the plains of Assam, eventually flowing into Bangladesh.

**Sino-Indian Historical Relations**

The Sino-Indian War of 1962 over a disputed Himalayan border left a legacy of suspicion and tense relations between the two countries. The border dispute remains unsolved even today with China claiming India’s northeastern state of Arunachal Pradesh bordering southern Tibet. India, too, claims that China is occupying about 15,000 square miles of the Himalayan plateau—Aksai Chin. Even after a series of bi-lateral dialogues, the border issue has not been resolved. Now, in the light of China’s race towards superpower status, Beijing appears more determined than

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India
ever to ward off competition from other emerging Asian countries, particularly India. This is a reason why China has adopted a hard-line strategy towards India, including a heavy presence of People’s Liberation Army in the disputed Himalayan border, many incidents of violation of the McMohan line-of-control, increased aggressiveness in claiming Arunachal Pradesh and offensive attacks on India in the state-controlled Chinese media.\textsuperscript{14}

India and China has had a series of bilateral dialogues but the issue of water never came up until recently. Now, the issues causing tension between China and India extend beyond border disputes. Water is becoming a key security issue in India-China relations, paving the way for a new era of hostility.

**The Zangmu Dam and Diversion issue**

Both India and China’s economic growth and development depends on the availability of water. Both the Indian and Chinese economies continue to grow at a frantic pace and both countries face acute water shortage which soon can be comparable to the kind of water scarcity prevalent in the Middle East in terms of per capita availability.\textsuperscript{15} The expansion of irrigated farming, growing industries and rising demands of the middle class calls for both countries to ensure a stable source of water supply. As such, China has been engaged in major inter-river water transfer projects on the Tibetan plateau, the world’s largest freshwater repository after the polar ice-caps.\textsuperscript{16} However, these activities are of great concern to India and other lower riparian states such as Bangladesh and Pakistan. Tibet is the source of major Indian rivers and any water transfer or diversion projects on the Tibetan plateau would reduce

\textsuperscript{14} Chellaney, B. (2009). Coming water wars: Beware the future. *The International Economy*
\textsuperscript{15} *Ibid*
\textsuperscript{16} *Ibid*
international river flows into the lower riparian countries. India depends on rivers that originate in China for one third of its renewable water supplies\textsuperscript{17}.

China is expected to face 25 per cent water shortfall by 2030\textsuperscript{18}. With rising power shortage and international pressure to reduce carbon emission, China is now focusing on generating hydro power that requires building dams. As such Brahmaputra and other rivers originating in its territory could become pawns in the political game. So far China’s hydropower focus was on Yangtze River – across which the Three Gorges Dam was built – and the Yellow River. Now China is eyeing the Yarlung Tsangpo (in Tibet), known as Brahmaputra in India and Yaluzangbu in China. It is the world’s highest river, and also one of the fastest-flowing\textsuperscript{19}. China’s plans for the Yarlung Tsangpo has two components- one focusing on generating hydropower, and the other, which China restrains from talking about in public, is the northward re-routing of the Brahmaputra’s water to the dry Yellow river in the northwestern provinces of Xinjiang and Gansu.

There is concern in India over China's plans to dam the Yarlung Tsangpo (Brahmaputra). The Zangmu Dam that China is building is just the first of 28 dams that Beijing plans to build on the Yarlung Tsangpo in Tibet, including a hydel power generation plant at Zangmu on the middle reaches of the Brahmaputra, less than 200 kilometres from the Indian border. China had initially denied that they were constructing a dam on the Brahmaputra river, even after the contract was awarded. It was only in April 2010 that Yang Jiechi, Chinese Foreign Minister, officially revealed that they were constructing the Zangmu Dam. The Zangmu dam is part of the Zangmu Hydropower Project and is

\textsuperscript{17} Holslag, J. (2011). Assessing the Sino-Indian water dispute. \textit{Journal of International Affairs, 64}(2)
\textsuperscript{18} Bhuchar, P. (2011, August 19). \textit{India Today}
\textsuperscript{19} Chellaney, B. (2009). Coming water wars: Beware the future. \textit{The International Economy}
estimated to support a 510 MW power station. It is being built at Gyaca County in the Shannan Prefecture of Tibet Autonomous Region\(^\text{20}\). Construction on the dam began in 2009 and is expected to be completed by 2015. Specifications for the dam are uncertain as China has not shared much information.

The issue of more serious concern to India is China’s plans of diverting the Brahmaputra. The Brahmaputra originates in southwestern Tibet as the Yarlung Tsangpo River. In India, it is called Dihang (Arunachal Pradesh) and Brahmaputra (Assam) and in Bangladesh is called Jamuna. This 2900 km long river lies partly in India – 918 km, China – 1625 km and Bangladesh – 337 km. The Brahmaputra emerges from the Khanglung glacier at an altitude of 5,300 metres in Southern Tibet and flows in an easterly direction parallel to the Himalayas for 1,100 kilometres\(^\text{21}\). The average discharge of the river is about 19,300 cubic metres per second (cusecs) and floods can reach over 1,00,000 cubic metres per second (cusec). The Brahmaputra Basin accounts for 573 billion cubic meters of surface water resource in the Northeast\(^\text{22}\). It was declared National Waterway No. 2 of India in 1988\(^\text{23}\).

The real worry for India, however, is not whether China will divert the Brahmaputra but when, as China has already identified the point of diversion- the U-bend where the Brahmaputra forms the world’s longest and deepest canyon just before entering India. It is at this Great Bend that China plans to divert water, and also build hydroelectric power projects that could generate 40,000 megawatts of power. The diversion of the water is part of a larger hydro-engineering project, the South-North water diversion scheme.

\(^{21}\) Ibid
which involves three man-made rivers carrying water to its arid North region. With 56.5 per cent of Brahmaputra River’s length and 50.5 per cent of the area of the drainage basin lying within Tibet, China naturally has a claim to at least a share of Brahmaputra’s water. Moreover, with weak international laws and no candid water-sharing arrangements between the two countries, China has all the leverage in the issue. Beijing gave no notice when it started building the $1.2 billion Zangmu dam on the Brahmaputra. Also, China still chooses to remain secretive about the diversion issue as it “implies environmental devastation of India’s north-eastern plains and eastern Bangladesh and would thus be akin to a declaration of water war...”.

More dams on the Brahmaputra: China’s Plan for Energy Development 2011-15

China has approved construction of three more dams on the Brahmaputra in Tibet in addition to the Zangmu dam. A document titled ‘Plan for Energy Development during the Period of the Twelfth Five-year Plan’, which has been posted in China’s State Council website, mentions three dams to be built at Dagu, Jiacha and Jiexu over the river Brahmaputra. The document, listing projects to be completed in China’s 12th five year plan (2011-15), made a passing reference to the three dams without any details. The new projects were reportedly approved by China at the State Council or Cabinet meeting on January 23, 2013.

During an informal discussion between Indian and Chinese officials on February 5, 2013, the latter claimed that the new dams would not have any impact on the flow of water to downstream areas in India. Beijing also reassured that the run-of-the-river

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26 Ibid.
hydropower projects on the river would not come in the way of the flood control and disaster reduction efforts in the lower reaches and would not disturb the ecological balance.\textsuperscript{27}

But this news led to a wave of protests in India. The head of the main opposition Bharatiya Janata Party (BJP) Rajnath Singh said February 13, 2013 India should register its strong protest and also take up at international forums the issue of China's plan to build dams on the Brahmaputra as it would harm downstream interests, particularly that of Northeast India.\textsuperscript{28} Chief Minister of Arunachal Pradesh, the state closest to China, Nabam Tuki said February 16, 2013: "China building the three dams will affect the interest of people in the downstream areas. We will soon move New Delhi to take up this issue with China in the interest of the people."\textsuperscript{29} Assam Chief Minister Tarun Gogoi also wrote to Prime Minister Manmohan Singh requesting him to take up the matter regarding the construction of the three dams on the Brahmaputra with Beijing.\textsuperscript{30}

If China continues with its plan to build more dams on the upper reaches of the Brahmaputra, it would surely affect the downstream areas in Northeast India. As this region is primarily dependent on agriculture, such depletion in water resources due to dam building would have an adverse impact on the economy of the region. On February 3, 2013, an NGO in Guwahati alleged that China is building 26 hydropower dams on the upper reaches of the Brahmaputra in Tibet. They further said that once China completes these projects, India will receive 64 per cent less water during the

\textsuperscript{27} China apprises India of dam plans on Brahmaputra. \textit{Deccan Herald} (2013, February 5) Retrieved from http://www.deccanherald.com/content/310177/china-apprises-india-dam-plans.html
\textsuperscript{30} Ibid.
monsoon and 85 per cent less in the non-monsoon season. If these claims turn out to be true, it could seriously harm India’s interests.

Implications of China’s hydro projects

Building of mega dams on the Brahmaputra is opposed by certain political parties and organizations in the Northeast. Rising protests against building dams in Arunachal Pradesh could make the Indian government decide to stop construction of dams there. But what about the dams China is likely to build on the Yarlung Tsangpo in Tibet? Even if construction of dams in Arunachal Pradesh stops, the existence of similar dams would still be a threat and would nullify any security acquired from preventing mega dams in Arunachal Pradesh. In such a case, what would be the stand of the anti-dam protestors? China would surely not be bothered even if there are protests against it in India.

India’s Lower Subansiri Dam is the biggest hydroelectric project undertaken in India so far and is a run-of-the-river scheme on the river Subansiri. The project is facing stiff protests from political parties like Asom Gana Parishad, Bhartiya Janata Party and organizations like the Krishak Mukti Sangram Samity (KMSS), All Assam Students Union (AASU) etc. arguing that the project would affect the downstream riverine environment and could have an devastating effect in case of a major earthquake in the region. The Lower Subansiri dam is at an altitude of about 150 metres, 116 metres high and where the river perhaps flows at a gradient of not more than 30 cm/km. In contrast, the Zangmu dam has been constructed at an altitude of 3,200m where the river flows over a much steeper gradient. As such, the Zangmu dam is far more vulnerable to a dam break caused by an earthquake. Even if the dam doesn’t collapse in an earthquake, damages to the sluices

through which the water flows and to the spillways used to get rid of excess water could create havoc downstream. The Indian government and political parties should look into the Zangmu Dam issue first before worrying over the Subansiri project.

Moreover, diversion of the Brahmaputra, the lifeline of India’s Northeast, would wreak havoc in the region. With the water being diverted, the amount of water in the Brahmaputra will fall significantly, affecting the region. Environmental experts report that roughly 60 per cent of the total water flow will fall drastically if China is successful in diverting the Brahmaputra. India has raised concerns about the project on the grounds that it could pose a grave threat to the farmers and environment in northeast India. It will severely impact agriculture and fishing as the salinity of water will increase, as will silting in the downstream area. Moreover, India being a lower riparian state would be at the mercy of upper riparian China in matters of releasing pre-regulated water flows back into the river whenever needed.

The threat to Bangladesh is even greater as Bangladesh is the lowest riparian state of the Brahmaputra and the river is more vital to it than even India. Bangladesh is very much concerned over water diversion of the Brahmaputra by China as well as on the building of dams by China and India on the Brahmaputra. It fears the quantity of water reaching Bangladesh would reduce drastically leading to lowering in agricultural production and aggravate environmental problems.

China’s dam projects on the Mekong have already caused tension with its neighbours- Vietnam, Laos, Cambodia and Thailand. China’s Minister for Water Resources, Wang Shucheng, said that

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this project is "unnecessary, unfeasible and unscientific\textsuperscript{33}. But no matter what China’s real plans may be, if Beijing goes ahead with its plans on the Yarlung Tsangpo without any sort if international agreement, it would affect not only China’s nuclear neighbours, India and Pakistan, both facing water crisis, but could also lead to regional instability in an already volatile South Asia.

**Solutions**

Experts like Brahma Chellaney insists that, “*interstate conflict will surface only when an idea is translated into action to benefit one country at the expense of a neighbouring one*\textsuperscript{34}.” In this context, South Asia will not have a real water war unless China goes ahead with its proposed plans of diverting the Brahmaputra at the expense of its neighbours India and Bangladesh.

As such, international water sharing treaties will play a key role in addressing the threat of a water war. India is an upper riparian state with respect to Pakistan and Bangladesh and a lower riparian to China, Nepal and Bhutan. Therefore, India needs to recognise its geo-strategic location and aim to effectively pursue new trans-boundary riparian treaties while reworking on the existing treaties.

India has water treaties with Bangladesh and Pakistan (both downstream) and with Bhutan and Nepal (both upstream) but it doesn’t have any water treaty with China. China has about 10 major rivers - Yangtze, Yarlung Tsangpo, Yellow, Heilongjiang, Songhuajiang, Zhujiang, Lancang, Nujiang, Hanjiang and Liaohe flowing out of its territory to 11 countries - India, Bangladesh, Vietnam, Russia, Kazakhstan, North Korea, Myanmar, Mongolia, Laos, Thailand and Cambodia and none flow in from outside. This

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puts it in the unique position of controlling international rivers and India urgently needs to pursue a regional water treaty with China. The Indus Water Treaty (1960) which demarcated the Indus river waters between India and Pakistan shows that despite historical conflicts, water sharing treaties could prove to be quite successful.

Also, even though China has leverage over rivers flowing out from its territories, the Berlin Rules on Water Resources, 2004 states that nations sharing water should make reasonable efforts not to cause harm to one another by the ways in which the water is used\textsuperscript{35}. The document states the requirement of transparency of information related to water resources and their usage to the international community, particularly in those cases where nations share a water resource\textsuperscript{36}. It asks for equitable and reasonable utilization of the water resources by the water sharing nations. China cannot unilaterally start massive hydro-engineering projects without formal river-basin arrangements with downstream states. It would have been wise on the part of India and China to have signed the UN convention on non-navigational uses of international water courses, 1997, which provides a mechanism to deal with trans-border waters. Only 17 nations signed this convention which doesn’t include the major South Asian actors—India, Nepal, Bangladesh and China. Also, building up on the issue of transparency, China has always been opaque on its hydro-engineering plans, refusing to share information or permitting on-site visits. India should keep track of what China is doing with the Brahmaputra. Talks with China should be held at regular intervals so that India remains apprised of the situation.

The Brahmaputra River has not been properly utilized in India. Out of the total of 84,044 MW hydropower potential of the country, the


\textsuperscript{36} Ibid
Northeast carries a potential of 31,857 MW (37 per cent of the country), of which only 3 per cent has so far been tapped (Brahmaputra Board, 2005). Enough projects are needed on the Brahmaputra if India wants to have a stake on the river.

Retired Colonel P K Gautam, research fellow at the Institute for Defence Studies and Analyses, adds that "if China builds a dam on the Brahmaputra now, and we complain about lesser water flows later, it could say that India doesn't have any projects in the northeast."\(^{37}\)

The Brahmaputra was declared National Waterway No. 2 of India and though the river is navigable most time of the year, it has not been fully utilised. Water transport services are used for the transportation of passengers and goods alike across the state and to neighbouring West Bengal but the infrastructure is not good. Water transport service should be modernized on the Brahmaputra so that it can also become a major mode of transport for passengers and cargo. There is urgent need for utilising the water of the Brahmaputra in an effective way through multi-purpose big dams on the river, with provisions for irrigation and flood control besides generation of electricity. However, environmental norms should not be flouted for this.

In an interview with Tariq Ahmed Karim, Bangladesh’s High Commissioner to India on this important issue, the need for better monitoring and regulating fresh water sources in South Asia was highlighted. He stated, “…In such a diminishing fresh-water world, water may have to be declared as a scare and fungible resource whose management and administration needs to be reposed with an authority that is larger than the present geo-

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political configurations of states-provinces and national governments. Citizenry of such a hard-pressed fresh-water world must adopt rules analogous to the rights of citizenry in today’s nation-states, the fundamental underpinnings of which are two, namely: rights go hand in hand with responsibilities (to the state and fellow citizens): and no one citizen’s rights can be at the expense of the rights of another fellow citizen…”

What Karim suggests is a South Asian water regulatory and monitoring body, something that is in India’s interest like a Himalayan Rivers Commission to better manage water issues in the sub-region. He goes on: “… In this context, we in South Asia must, sooner rather than later, politically evolve to a regime of water governance, in which the member states will have, by mutual consensus and consent, set up a South Asian Water Resources Management Authority (which will have real authority and powers vested in it, as opposed to the present configuration of a ‘South Asian Association for Regional Cooperation’). This supranational authority will measure, monitor and keep track of all available water resources (whether ground or surface), set strict uses, conservation and management regulations, and oversee adherence to and enforcement of these regulations, to ensure the rights equally for all its denizens.”

Another option that China and India could explore is constructing shared dams that would mutually benefit each other. The concept of having shared dams has worked out for Brazil and Paraguay with the Itaipu Dam, located on the border of Brazil and Paraguay. It is the world's largest operating hydroelectric project. The electricity generated from Itaipu Dam is estimated to be greater than the electricity generated by China's Three Gorges Dam. The

38 http://geography.about.com/od/culturalgeography/ss/Seven-Wonders-Of-The-Modern-World_5.htm
dam supplies Paraguay with more than 90 per cent of its electrical needs.

The government should hold awareness camps, conduct seminars, prepare documentaries to make the general public aware about the requirement of building dams across the Brahmaputra so that people stop protesting over projects like the Subansiri Dam and instead focus on the broader picture.

**Conclusion**

Water is becoming the source of a potential conflict between India and China. Lack of transparency from the Chinese side is further aggravating the situation. Lack of a water sharing treaty and bare minimum data sharing on water flow is causing India to look at China’s intentions on use of the Brahmaputra waters with suspicion. Adding to it, the potentially devastating effect that Chinese dams may have on the downstream reaches is a major cause of concern for India.

There are two components to the threat of a water war between India and China. First is the problem of water shortage in both the countries which would seriously hinder development if not fulfilled. Second, this problem of water shortage would thereby force both countries to securitize water resources which means China may unilaterally carry out diversion projects if need be. If Beijing goes ahead with its plans on the Yarlung Tsangpo without any international agreements with the lower riparian states of India and Bangladesh, it may lead to a major conflict over water.

The silent ‘water war’ is now finally becoming a reality and India should be ready to face it. The water conflict is also slowly adding a deeper layer of intricacy to the border dispute. In order to prevent the conflict from escalating, the Indian government needs to diplomatically take up the issue with the Chinese government and push for a water sharing treaty. Also India needs to work on a rapid
pace so that the Brahmaputra river can be optimally utilized, both for navigable and non-navigable purposes. The concept of shared dams need to thought of and discussed at diplomatic levels between the two countries. Efforts to douse the conflict before it takes a greater form need to be made in earnest. That alone may reduce the threat of a full blown conflict between the two Asian giants over water. And how could the longstanding border dispute unfold in the days ahead? Market forces, in fact, may come to dictate terms and trade could well keep the Chinese, or the Indians for that matter, away from taking recourse to any military adventure or misadventure.