The Brahmaputra is known as one of the mighty rivers in the world. Its source lies in Chema-Yungdung glacier in the Kailash range of the Himalayas south of the Lake Kauggyu Tsho at an elevation of 5,150 meters. Having a length of about 2,900 Km., the river flows through Tibet Autonomous Region of People’s Republic of China for 1700 Km. Entering India the river flows for 720 Km in the states of Arunachal Pradesh and Assam. The Brahmaputra enters Bangladesh below Dhubri and after traversing 279 km joins the Ganga at Goalundo. The river has different names at different places. Known as Tasangpo (the purifier) to the Tibetans and Ya-lu-Tasangpu Chiang in China, Brahmaputra in India and Jamuna in Bangladesh. After its confluence with Ganga (in Bangladesh), the combined flow of two rivers is known as Padma. After another 105 Km the Meghna joins the Padma and the united stream thereafter known as Meghna, it thus enters the Bay of Bengal. Though of not much concern to us here, Brahmaputra has a number of tributaries in Tibet, such as Ngangchu, on the banks of which are the trade centers of Gyantse, Kyichu and Lhasa, the capital of Tibet. Passing through a series of rapids, the river enters India across the Sadiya frontiers.

TRIBUTARIES OF BRAHMAPUTRA
Throughout its flow in India and Bangladesh the Brahmaputra receives waters from various tributaries. Such tributaries are categorized as northern and southern ones originating from India, Tibet and Bhutan. Some tributaries also join this river in Bangladesh. (See Figure-5.1).
Figure 5.1: The Brahmaputra River Basin
Figure 5.2: Flow diagram of the Brahmaputra

Northern Tributaries

Subansiri

Originating in Tibet the Subansiri flows down into India and curving through the mountains of N.E.F.A. and Assam (see Figure-5.2). The river flows for a total 442 Km. along with many smaller ones. The Kamla is its major tributary. Also known as Luhit in lower reaches of Assam. Mara is the main town along its course. The waters of the river are important for irrigating the agriculture and the development of pisciculture.6

Jia Borelli

Known to have its source in Tibet Jia Borelli (also known as Kameng) is 264 Km long and has a drainage area of 11,843 Sq. Km. The main sub-tributaries of this river include Bichem, Khari Dikrai and Sonai. Traversing through the higher reaches of Himalayas the river sharply descends to the Assam valley to merge into the Brahmaputra 11 Km east of Tejpur. The foundation stone of 600 MW Kameng Hydroelectric Project at West Kameng district in Arunachal Pradesh was laid on 2 June 2002.7

Manas

Passing in Great Himalayan ranges in Bhutan the river Manas flows through Kameng and Goalpara districts of Assam. It joins Brahmaputra at Jogighopa. The length of the river is 376 Km with having the drainage area of 37,500 Sq. Km. The Tongsa and the Kur are its main sub-tributaries. The river during its course irrigates the land for agriculture in Assam.8

Southern Tributaries

The tributaries flowing into Brahmaputra from south are:
**Buri Dihang**

Rising in the mountains near Indo-Myanmar border, this is 362 Km long with 8,473 Sq. Km drainage area. It joins Brahmaputra 32 Km downstream of Dibrugarh. The Buri Dihang is important for irrigation. Its main sub-tributaries include the Namphunk, the Namchik, the Mganton and the Tirap. Marghirita is the only important township along its course.9

Two more little known tributaries Disang and Dikhu also flow into the Brahmaputra. Rising from mountains these two rivers have their drainage area between Buri Dihang and Dhansiri. The primary data about these two tributaries is perhaps not yet fully available.10

**Dhansiri**

It rises in Nagaland hills descends to join the Brahmaputra opposite Majuli island at Dhansirmukh. The river flows for about 354 Km from its origin to the confluence having a drainage area of 12,250 Sq. Km. The main sub-tributaries adding to its waters are the Diyang, the Diphu, the Nambar and the Kalyan, which also originate from lower hills there.11

**Koppili**

The source of Koppili lies in Mikir North Chacher Hills and flows for 256 Km and joins the Brahmaputra near Raya Mayang. Its drainage area is 15,800 Sq. Km. Its main sub-tributaries include the Jamuna, the Borpani and the Umum.12

**Tributaries of Brahmaputra joining in Bangladesh**

**Tista**

The well-known river Tista rises from the glaciers of the Himalayas in the Sikkim and debouches into plains at Sivok and joins Brahmaputra near Rangpur in Bangladesh (see Figure-5.2). Its length is 309 Km having drainage area of 12,540 Sq. Km. Its main subtributaries joining on its way include the Rajini, the great Ranjit, the Lish, the Gish and the Ghel.13
Jaldhaka

This river also rises in Sikkim and flows 186 Km before joining Brahmaputra at Alipur in Bangladesh. Its drainage area is 3,958 Sq. Km and its main sub-tributaries are the Murk and the Dihana.14

Torsa

The Torsa originates in Tibet as Machi and after traversing the hills for 113 Km, the river enters Bhutan where it is known as Amochu. Flowing further 145 Km down it enters the plains of the Jaipaiguri district of West Bengal as Torsa. About 56 percent of this river lies in Tibet and Bhutan. The river has a drainage area of 4,883 Sq. Km. The main sub tributaries of Torsa are known as the Holong and the Kalangi.15

Barak

After emerging from Manipur Hills it traverses in a westerly direction up to Badarpur, when the river bifurcates into the Surma and the Nuiyara. It joins the Meghna at Bhairab Bazar in Bangladesh. Its total length is 902 Km and has a drainage area of 25,900 Sq. Km. The main sub-tributaries of the river Barak are the Jiri, the Chiri, the Horong, the Katakhel and the Longai.16

Gumti

It joins the Meghna and main sub-tributaries are the Surma and the Ragma.17

Hydrology

Constant changes of the river’s course constitute a significant factor in the hydrology of the Brahmaputra. The most spectacular of these changes was the eastward diversion of the Tista River and the ensuing development of the new channel of the Jamuna, which occurred in 1787 with an exceptionally high floods in the Tista.18 The waters were suddenly diverted eastward into an old abandoned course, causing the river to join the Brahmaputra opposite
Bahadurabad Ghat in Mymensing District. Until the late 18th century the Brahmaputra flowed past the town of Mymensing and joined the Meghna River near Bhairab Bazar (the path of the present-day old Brahmaputra channel). At that time, the course of Jamuna River (now the main Brahmaputra channel) was a minor stream called the Konai-Jenai, which was probably a spill channel of the old Brahmaputra. After being reinforced by the Tista flood of 1787, the Brahmaputra began to cut a new channel along the Konai-Janai and gradually converted it after 1810 into the main stream, now known as the Jamuna.19

Along the lower courses of the Ganga and Brahmaputra and along the Meghna, the land is subjected to constant erosion and deposition of silt because of the shifts and changes in these active river courses. Vast areas are subject to large-scale inundation during the monsoon months of June to September. The oscillation of the Jamuna since 1787 have been considerable, and the river is never in exactly the same place for two successive years, Islands and sizable newly deposited land (chars) in the river appear and disappear seasonally. The Chars are valuable to the economy of Bangladesh as additional cultivable areas.20

In Tibet, the waters of the Brahmaputra are clear because little silt is carried downstream. As soon as the river enters the Assam Valley, however, the silt charge becomes heavy. Because of the speed and volume of water in the northern tributaries that flow down from the rain soaked Himalayan slopes, their silt charge is much heavier than that carried by the tributaries that cross the hard rocks of the old plateau to the south. In Assam the deep channels of the Brahmaputra follows the southern bank closer than the northern bank. The hydrology of the river is unique and unparallel among the other rivers of the subcontinent. The continuous changing course of the river has some advantages but more disadvantages. It affects the economy, especially agriculture, along its course as well as the flora and fauna.21
The entire territory of Bhutan is drained by four important perennial river systems namely the Torsa (Amo Chu), the Raidak (Wangchu), the Sankosh (Mo Chu) and the Manas. These rivers have their source in glaciers at very high altitudes and carry substantial flow throughout the year and more importantly during the non-monsoon months too. All the four river systems ultimately end up merging their waters into Brahmaputra.

Within Bhutan these rivers descend in a general north-south direction, from as high altitudes as 6,000 meters, through the narrow valleys, steep bed slopes enter India in the foothills. Their perennial nature and sharp and steep levels between the outer Himalayas and in the foothills, along with their substantial flow even during the non-monsoon months, these rivers have huge potential and attractive possibilities for the development of power projects at a large scale. In the lower reaches of the rivers, before they enter India, rivers offer some suitable sites for storage type development. Wangchu Hydroelectric Project is one of such schemes on the river Wangchu (Raidak).

The flows of these rivers are at their peak during the monsoon months (June to October in Bhutan) and lowest in the winter (December to March). The annual rainfall in the catchment areas of these rivers varies substantially between 400 mm in north to 5,000 mm in the south. For instance, Raidak, the main river system in western Bhutan (available hydrological data shows) has a mean inflow in the dry months (November to May) amounting to about 23% of the total annual flow. The mean annual inflow in the catchment area of the river systems in Bhutan varies from about 0.02 cumecs per Sq. Km in the north to about 0.06 cumecs per Sq. Km in the south.

An assessment of the hydropower potential of Bhutan rivers is presently being carried out on the basis of available topographical maps and estimated river flows. The assessed tentative potentials of various river basins of Bhutan are shown in Table-5.
Table-5.1

Hydropower Potential of Bhutan

<table>
<thead>
<tr>
<th>S.No.</th>
<th>River Basin</th>
<th>Development Capacity (MW)</th>
<th>Potential Energy (GWH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amo Chu</td>
<td>823</td>
<td>4,130</td>
</tr>
<tr>
<td>2</td>
<td>Wang Chu</td>
<td>1,925</td>
<td>9,620</td>
</tr>
<tr>
<td>3</td>
<td>Mo Chu</td>
<td>2,421</td>
<td>11,465</td>
</tr>
<tr>
<td>4</td>
<td>Tongsa</td>
<td>2,253</td>
<td>9,985</td>
</tr>
<tr>
<td>5</td>
<td>Dangme Chu</td>
<td>4,136</td>
<td>18,895</td>
</tr>
<tr>
<td>6</td>
<td>Minor Rivers</td>
<td>280</td>
<td>1,130</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>11,838</td>
<td>55,225</td>
</tr>
</tbody>
</table>

Tongsa and Dangme Chu are the two tributaries that form the Manas.

Source: Study on ‘WANGCHU BASIN IN BHUTAN’ carried out by WAPCOS (1995)

The phenomenal potential of the rivers of Bhutan can be fully utilized by harnessing these ever flowing rivers. Bhutan being tiny Himalayan Kingdom with small population, with limited human resources with no technology worth its name there, cannot on its own develop, harness and benefit from the available unlimited hydroelectric potential. Being a landlocked country is another disadvantage that makes Bhutan permanently dependent for its trade and commerce on its neighbours.26

Realising these limitations, Bhutan, quite pragmatically and systematically has started harnessing its water resources albeit with India’s cooperation/assistance. It is a rare example of mutual cooperation and quid-pro-quo to fulfill the needs of two neighbours. While Bhutan, one of the least developed economies in the world, needs the revenues for upkeep of the state and meets the aspirations of its people, India directly needs power (which it has no scope to develop) for its Eastern Regional Grid. Both supplement each other’s needs.27

Power Development in the Wangchhu Valley

The Wangchu, known as Raidak in India, is formed by the confluence of two main tributaries namely Paro Chu and Thimpu Chu at an elevation of 2068 meters. At its confluence with Piping river near the Indo-Bhutan border, the Wangchu drains a mountainous catchment of 4767 Sq. Km. The river
leaves Bhutan and debouches on the plains of north Bengal near Raidak village. In its stretch from confluence of Paro Chu and Thimpu Chu upto the Piping junction, the Wangchu descends by some 1,900 meters. This stretch of the river provides attractive possibilities for generation of large-scale power.\(^{28}\)

To materialize the prospects of power generation, the Indian assistance has always been forthcoming. Both the countries have been prospecting to install hydropower projects in Wangchu Valley. One such project was identified and installed at Chukha, which came to be known as Chukha Hydropower Project and Tala, where Tala Hydroelectric Project is fast coming up and may go critical in 2004.\(^{29}\) The project will utilize the sharp drop of the river by 885 meters to make electricity. While the Chukha Project has a capacity of 370 MW, the Tala Hydroelectric Project is bigger and is likely to produce 1020 MW of electricity.\(^{30}\) The Chukha Project is utilizing the gross head of 468 meters. The scheme is run-of-the-river development with a diurnal pondage for meeting varying power demands during the lean season. A further drop of about 1,200 meters is available between the tailrace level of the existing Chukha Project and up to the confluence of river Piping. Two promising schemes have been envisaged to utilize this steep drop. A further down the flow, Wangchu Hydroelectric Project, a storage development scheme will also be undertaken.\(^{31}\)

The commencement of power projects, as mentioned earlier, shows how the water resources on the continent can properly managed and developed for the optimum benefit of the states and the people of this region. For instance, while India has secured a permanent source of power for its domestic and industrial use and Bhutan has also benefited substantially.\(^{32}\) In 1977, Bhutan’s per capita income was reported to be 100 US$ putting it amongst the lowest in the world. After the Chukha Project, built of course with Indian assistance started producing electricity, the revenues flowed in and per capita income rose to $545 by 1999. Another leap is forthcoming once Tala Hydroelectric Project, which is much larger than Chukha Project, starts
functioning by 2004. The per capita income of Bhutan is expected to touch $1000, placing it among the middle-income countries.33

The People and the Economy of the Basin

The Yarlung Tsangpo (Brahmaputra) drains most of the southern of the Tibet except for the area just north of Chomolungma (Mt. Everest). The Yarlung Tsangpo flows east through the most densely populated region of Tibet, irrigating most of the agricultural land in the Yarlung Valley. Thereafter it passes through Shigatse city of Tibet and flows south of Lhasa. East of Lhasa it flows through the Kongpo region before turning abruptly near Mt. Namchakbarwa to the south, cutting straight through the Himalayan divide to flow into India as Brahmaputra.34

The river enters the Assam Valley of northeast India as the Dihang River.35 The Assam Valley can be divided into two regions, Upper Assam Valley and Lower Assam Valley. The Upper Assam Valley includes the districts of Lakhimpur and Sibsagar and major parts of Tezpur tahsil of Darrang district. This area has major tea growing plantations and the presence of mineral oil. It also has the commercially exploitable forest resources and potentiality for industrial growth. The common agricultural activity in this area is mainly rice growing. While rice occupies the alluvial soil tracts, continually renewed during the year, immediately adjacent to the Brahmaputra and its tributaries, tea occupies the old alluvium with greater acidity in the areas lying above the usual floods level and away from Brahmaputra.36

The right and left bank areas of the Brahmaputra in the Upper Assam Valley differ in their genesis as well as the economy. The former being a region of backward agricultural economy with fertile soil and frequently changing river courses while the left bank areas a mixed of agricultural-cum-industrial economy. Significantly, the Brahmaputra effectively divides the two regions in the absence of any bridge that could join the two regions.37

Lower Assam Valley comprises of Goalpara, Kamrup, Nowgong districts and Mangadoi tahsil and western fringe of Tezpur tahsil of Darrang
district. The region has predominantly an agricultural economy with a diversified cropping pattern comprising pulses, oilseeds, sugarcane, potatoes, tobacco, and jute, in addition to major crop, rice. Recently, wheat has been introduced in the relatively drier eastern parts of the region.\textsuperscript{38}

The industrial activities of this area are mainly confined to its major town Gauhati, and are based either on its agricultural and forest resources or on local and imported raw materials. Other important centers here include Hojal and Lumding having mainly the rice mills, Silghat known for its jute mills and Jagiroad having spun silk mills. The area has a better accessibility from the rest of India. The development of manufacturing industries especially in Gauhati caters to the needs of the people of the area and its neighbourhood.\textsuperscript{39}

The important urban centers in this part of Brahmaputra Basin include Sadiya, Dibrugarh, Johrat, Gauhati, Goalpara, and Dhubri. The cities or the towns are dependent on the Brahmaputra waters in many ways. Though the demand of water here is not that much given to the nature of topography and absence of major industries.\textsuperscript{40}

Brahmaputra on entering Bangladesh, flows for 120 Km. to join the Ganga getting the name of Padma and then Meghna thus forming one of the largest deltas in Bangladesh before flowing into Bay of Bengal.\textsuperscript{41} Bangladesh is low land country and rivers here actively keep on building new deltas and islands by depositing huge quantities of sediment. The sediments create very fertile soil, most of which is devoted to the cultivation of rice, the country’s staple food. The country is densely populated. Except the capital like Dhaka, people live in villages overwhelmingly. Bangladesh has the problem of plenty of waters flowing from all directions with constant threats of floods. Agriculture is the mainstay of economy. The cultivation is of jute and rice. The exports of jute, tea, tobacco, fish and timber are its major economic features. Naturally the waters of the rivers including that of the Brahmaputra
play a significant role in it. In fact, having very less mineral base, and power potential in the Basin, Bangladesh has been less industrial. 

The Brahmaputra is the main waterway with a length of about 720 Km. The tributaries like Subansiri, Manas, the Buri Dihing and Dhansiri are navigable for varying distances in their lower reaches. The partition of India in 1947, altering the political boundary significantly curtailed the steamer navigation of the Brahmaputra. Formerly, the bulk of the export and import and trade within the region passed through this river. Due to a number of restrictions, which have been increasing over the years, imposed by Pakistan Government before 1971, the river fell to almost insignificance as a river route for external trade. The earthquake of 1950 also greatly affected the steamer navigation in the upper reaches of the Brahmaputra and as a result, streamers now cannot operate beyond Nimati. However, the navigation in the river plays an important role for sundry purposes and variedly interwoven with the everyday life of the local people.

SECURITY SUSCEPTIBILITIES

The South Asian subcontinent is perhaps one of the most deprived in the world. Densely populated, it inhabits the half of world’s poor. This region leads in most of the negative indicators of Physical Quality of Life Index (P.Q.L.I.). At the same time (with few exceptions, of course) military expenditure by the countries here is disproportionately higher than the government spending on education and health put together. A pervading sense of insecurity occasionally flares up into confrontation. The ethno-religious conflicts in these diverse societies not only hinder the development process but also drain away scarce state resources. Above all the nuclear tests by India and Pakistan in May 1998 has raised the specter of violence to the higher levels of destruction in South Asia with a potential to Armageddon.

The countries of the region, despite the fact of their geographic contiguity and multiple strands of various social, economic, historical, cultural etc. commonalities have not given a serious thought to develop a permanent or
viable system/framework for cooperation amongst themselves. The main reason for the lack of cooperation seems to be the sense of suspicion and anxiety that each country has towards the other and which has compartmentalized them to isolation from each other. Consequently all of them are suffering in their set of raised cocoons and false sense of nationhood. They have built up the threat perceptions, security alarms against each other, which unfortunately has become guiding force of their national interest. Their aggressive behaviour/postures towards each other (especially in India-Pakistan context) is a reflection of their sense of insecurity.47

The perception of security is not so static to become a universal truth. Rather "security inevitably means different things at different times and in different places, depending on what people have to protect, and the nature of the threat."48 In today’s rapidly integrating and interdependent world, it is not easy to find a generally agreed definition for it. The idea of national security may be traced to the concept of the state itself and the prevailing view of state sovereignty.49 In the age of kingdoms and empires the state sovereignty has long been vested into the king’s person. This perception gradually changed with the emergence of the idea of the nation-state in Europe. With signing of the Treaty of Westphalia in 1648, sovereignty no longer came to define in the person of one individual, but became rested in the concept of the nation-state, an idea that evolved over time and through a process of intense conflict. The concept of security became embodiment of a country encompassing a fixed territory and inhabited by a people who shared common vision of their collective destiny. The search for security became one of the key detriments of inter-state relations and the defence and survival became the very core of a country’s external policy.50

The 19th century Europe made nationalism as a sacrosanct belief that propelled them to geographic expansionism buttressed and augmented by the achievements of new science and technology. The centrality of national interest was made based on the conglomerate of these detriments. The competitive European nationalism was in fact a pursuit of more power,
position and glory under the garb of national security, which was to come at the expanse of the others. The national security became identified with national interest defined in terms of power.51

The emergence of the nation state made the sovereignty and its protection as its sole aim that could not be compromised even in the cause of common good. Furthermore emerged the idea of “national interest” in the 1930s, that viewed the state as having permanent interests and safeguarding them and enhancing them was the sole purpose of a nation.52 It was essentially zero-sum in character and carried forward with a vengeance to the Cold War in the aftermath of World War II in 1945.

The Cold War –as coined and explained by Walter Lippman- started between the two ideological and military blocs.53 During the years of Cold War generally regarded between the Korean Crisis and the disintegration of the Soviet Union, the world witnessed a gradual shift in concept and concerns of national security. The security policy remained a primary object of the state but no more came to be regarded as the sole instrument for it. The focus shifted from competitive to cooperative model of security.54

This process of evolution has led to a broad consensus in the world that narrow military definitions of security are inadequate to deal with the comprehensive range of questions that arise before the state today. What primarily threatens a state now is indeed a whole range of new issues that are no longer narrow state-centric or strictly sovereign issue for a single nation. They are quite often also nonmilitary in character.55 Some of the more prominent new security issues are; trans-border population flows, restrictions on trade and commerce, trafficking in drugs and narcotics, exploitation and management of natural resources and a whole range of environmental questions. This realization has led to new approaches to security both in regional context and internationally.56

It is against this backdrop needs to be developed that a new approach to security in Continental South Asia. Since the British withdrawal form here
the independent sovereign nations of this region have remained conditioned by the traditional mindset of security, where confrontations and conflicts were considered to be inevitable. The cooperation was thought could be extended only at a price and was to be bartered. Each state (especially India and Pakistan) safeguarded its own sovereignty at the expense of possible and mutually beneficial regional cooperation. The direly needed any cooperative arrangement could not even be thought of till the visualization and the birth of SARC (later SAARC). As if the history of South Asia was put to backburner that the region has historically been a single geo-economic entity.

The South Asian Association of Regional Cooperation however remains a feeble attempt to promote cooperation. This approach is not pragmatic as is evident from the past about two decades' of SAARC existence. It has more or less has become a ceremonial gathering of the Heads of the States/Governments of South Asia.

The biggest hurdle in a practical regional cooperation has been and remains the strained Indo-Pak relations since partition. The issue of Jammu and Kashmir has pushed them into three wars (1948, 1965 and 1971) and the Kargil conflict. The problem of infiltration, religious, terrorist local and foreign organizations operating in Jammu and Kashmir, the infiltration and terrorism in Punjab in yesteryears, the drug trafficking and money laundering and other territorial disputes have created an atmosphere of distrust rather hatred between India and Pakistan.

In the eastern part of the region one comes across the Chakma tribal problem between India and Bangladesh. Various terrorist outfits operative in northeast like Bodos seek sanctuaries in Bhutan or Nepalese migration to Bhutan have also strained relations between these countries. Many overlapping bilateral problems also exist between these countries. The nuclear dimension, recent menacing rise in terrorist activities and the military build-up on Indo-Pak borders has aggravated the situation further at the peril of cooperation.
Problem of Floods

The main problem in Brahmaputra basin is the floods that occur every year during monsoon months. Even before the monsoon, the melting of glaciers in higher Himalayas brings the floods. The Brahmaputra River and its tributaries when flooded bring devastation to the human and animal population and destruction of property. The states have to spend millions of its scarce financial resources to rehabilitate the population and rebuild the infrastructure (the roads, bridges, electricity and telephone supply lined etc). The increased intensity of floods in the Brahmaputra plains is attributed to multiple factors such as indiscreet and extensive human intervention in the catchment areas. The population is increasing day by day and deforestation is changing the ecological balance in the catchment areas of Brahmaputra. The heavy deforestation has resulted in increased silt load and subsequent rise in riverbeds. The 1950 earthquake also altered the bed configuration and forced the river change its course near Dibrugarh.61

The Brahmaputra valley, sloping from northeast to southwest, has an extremely low gradient of 13 cm. a kilometer and the river flow languidly. Even a marginal rise in the bed level of the rivers, say of 30 cm, can cause problems. The meandering rivers have frequently changed their course and the low-lying areas along the banks have been serving as natural safety valves, absorbing the spill over. But the enormous siltation in the recent past has changed all that. These silted areas have been brought under the crops so much so that one million hectares of such low lying areas which were full of fish until the early 1950s are now under crops.62

The Brahmaputra river basin is one of the most rapidly denuding regions in the world. The natural and anthropogenic forces here have combined to destroy one of the most exotic natural regions with a unique set of cultural and physical attributes. The situation calls for effective soil conservation measures and sound basin management practices. The recurring fury of floods block the economic development in the region and pose a
serious threat to the internal security of the upper riparian (India) and more so of the lower riparian (Bangladesh) states.63

India has adopted flood control schemes on the Brahmaputra to reduce the flood hazard and damages. Such schemes involve the building of 3,830 Km. embankments along the main river tributaries, 770 Km. of drainage channels and 44 town protection projects.64 Various river training programmes and channel improvement schemes have been executed. In the field of irrigation development of the Brahmaputra basin, India is still going on with minor irrigation works. However water development and management activities by India on the Brahmaputra River in the upstream is posing a tremendous threat to the economy and ecology of lower riparian Bangladesh.65

Bangladesh is regarded as one of the poorest countries in the world. As is evident, it is an agricultural economy where the agriculture sector is traditional and jute has remained an important aspect of it. In recent years, jute has lost its demand in the international market thus rendering the Bangladesh economy poorer. Being a lower riparian state all the major rivers and rivulets discussed above converge together at one or other stage and enter Bangladesh making it virtually a floating country. One could imagine the mighty Ganga, Brahmaputra, and their tributaries crisscrossing the land to make development impossible. Ironically, Bangladesh is subjected to the barging of unwanted floods especially during the monsoon on which it has no control as the source of these rivers is outside the country. The rivers rise simultaneously to bring annual nightmare of floods to the people, the government and planners in Bangladesh. In such a situation no roads can withstand the flood fury, no bridges can be built and no infrastructure can holdout against the floods.66

The menace of floods is increasing by the year with the seismic activities, deforestation and human intervention upstream in the catchment areas.

The real economic misery of Bangladesh is due to yearly recurring floods that affect the three-fourth of its territory to the extent that the
Presidential palace, government offices including the Dhaka airport and embassies and diplomatic missions are flooded putting the administration in limbo. Thousands of people are annually killed, crops are washed away and property worth millions is destroyed. The aftermath of floods brings diseases for which Bangladesh has neither resources nor manpower to cope. It would not be wrong to say that Bangladesh is sandwiched between two furious water bodies. The Sunderbans delta that becomes like an ocean within Bangladesh especially during the monsoon and the occasional turbulences in the Bay of Bengal which sometimes furiously wash away the entire human populations on the islands of the delta. Even war cannot bring so much and far reaching devastation as the floods bring to this country almost every year.67

Bangladesh may not be facing security threats in terms of military intervention from its neighbours but the biggest threat to its internal security remains the recurring catastrophic floods.68 Accusingly feels that these floods are ‘man-made curse’ and charges India for them. As the Ganga and Brahmaputra flow through India to Bangladesh, it feels that India is neither interested nor makes serious efforts to manage the waters in these rivers to save Bangladesh from floods. The manifestation of this anger and mistrust could be seen during the 1988 floods. While President Ershad of Bangladesh appealed to the international community for assistance, he refused to accept any assistance from India whom he did not hesitate to describe as the main culprit for the misery.69

Security implication of possible diversion of Brahmaputra by China

As the Brahmaputra (Yarlung Psangpo) originates outside South Asia and flows for 1600 km. in Tibet it has great power potential. In fact it has recently been recognized that it forms the largest and deepest canyon in the world.70 The river sharply descends over 3,000 meters within the 200 Km journeys rendering it as one of the greatest hydropower source in the world. In 1986 at a conference in Alaska (USA) it was pointed out under one of the conference themes “Himalayan Hydropower Project” that 11 dams could be
constructed around the “Brahmaputra loop” which could make about 48,000 MW of electricity. Another eminent Indian researcher speculates this capacity to be 70,000 MW, enormous indeed.\textsuperscript{71}

The Chinese interest in this Brahmaputra bend at Drachu in southern Tibet has many vital aspects. It wants to tap the waters of Brahmaputra by diverting it, through possible nuclear explosions, to the northwestern deserts of the country for irrigation, develop the area as an attractive tourist destination and export the electricity to India, Burma and Bangladesh.\textsuperscript{72} The explorations undertaken by the Government of China report the feasibility of this grand project. Though nothing concrete has been done so far. In fact some seriously doubt the feasibility and possibility of the construction of such projects.\textsuperscript{73}

If such a project is realized—though it is too early and hypothetical to think—it has serious security implications for lower riparian India and Bangladesh. On entry to India Brahmaputra brings 33 per cent of its total flow, remaining about 67 per cent being added by the tributaries from the rest of the basin.\textsuperscript{74} If China succeeds to divert the Brahmaputra, may be in the long run under different pressures, India and Bangladesh will be permanently at the mercy of China who will hold the levers during peak and lean season. Nutrient rich sediments that enrich the soils of India and Bangladesh would be held back in the reservoir. The river’s delta will become deprived of silts; thousand of fish species, which rely on the delta for breeding and raising young, will be affected, as well as the maintenance of the delta itself.\textsuperscript{75}

\textbf{POLITICAL WILL AND PROGRESS – Transfer of water from Brahmaputra to Ganga}

The sharing of the waters of international rivers has been a contentious issue throughout the world. The devising of mutually agreed regime for the management of such river waters has often eluded the riparian countries. The rivers of the Continental South Asia are no exception. The Indus basin shared by India and Pakistan and the Ganga River basin among India, Nepal and
Bangladesh has created fissures and anxious situations among the cobasin countries. A unique situation in this region is that the area under scrutiny has a big country flanked by the smaller neighbours. India shares borders with all other countries of the region while the other smaller neighbours have no geographical contiguity to each other. The small neighbours are dwarfed by the overwhelming presence of India and always remain fearful of the overbearing attitude of their bigger neighbour.  

Not only India is geographically big but also it has incomparable economic, political and technological superiority *viz-a-viz* its neighbours. India has a well-established parliamentary democracy and has given concrete shape to its political institutions. The country has been able to achieve the political stability that reflects in consistency in its policies. The political systems in other countries still are either embedded in monarchical orders (Nepal and Bhutan) or have not been able to provide democratic and stable political systems. 

India has one of the big economies of the region. Its economic development has withstood many odds and has shown resilience. India, in fact is considered as arising economy as compared to its neighbours in the Continental South Asia. Similarly, there is no comparison of technological development between India and its neighbours. 

The presence of India as a big regional power overawes its smaller neighbours. India’s actions, policies and perceptions have always viewed by them with suspicion. These smaller states have somehow believed that their national interest, national self image even the very identity is dwarfed by India’s predominance. The central geographical position of India in the South Asian continent and its large size as compared to others has historically contributed to the creation of psychological barriers and, to the extent, even apprehensions in the mind of neighbours about India’s capacity and intentions to create problems for them. Another important factor is the
spillover of ethnic population between Bangladesh and India, Sri Lanka and India as well as Nepal and India, which has social and political connotations.79

The connections in the past, during the colonial period, also have a substantial bearing on the present. Apart from Myanmar, which was part of India up to 1935, Pakistan and Bangladesh too were carved out of pre-independence India, as West and East Pakistan, the latter becoming an independent state following the Bangladesh liberation war of 1971, in which India had played a notable part. These historical and geographical factors must be constantly borne in mind whenever one deals with any question relating to the South Asian region, since they have contributed in no small measure, to the shape of things prevailing today and will continue to do so in the foreseeable future as well.80

Any practical measure of cooperation between India and these countries has to be seen in the light of India’s preeminence in this geographical area viz-a-viz the neighbours. However to manage and utilize the resources, especially the waters in common rivers, the political will in this regard is required on both smaller and big neighbours. Cooperation cannot be forced rather it is a mutual concern of all the countries. More so, the development and progress cannot be brought about singly, it is a common effort, mutually beneficial to all concerned.81

Brahmaputra is known to have sufficient surplus water. During the lean season (March-April), while Ganga has less water, which is a permanent source of tension between India and Bangladesh (measured at Jogigopa in India) has between 126,000 cusecs (January) and 200,000 cusecs (April) of waters. The excess waters of Brahmaputra flow down unutilized into the Bay of Bengal. If these waters are diverted from Brahmaputra to Ganga it can augment the flow of Ganga and solve water-sharing problems between India and Bangladesh.82

India has proposed to construct a barrage on the Brahmaputra at Jogigopa in Assam, diverting about 100,000 cusecs of water through 324 Km
long link canal crossing Bangladesh territory and then reentering India and out falling upstream of Farakka. India has believed this diversion, apart from meeting the requirements of water, would provide irrigation facilities in an area of 10 million acres in India and Bangladesh. The construction of barrage at Jogogopa would also facilitate generation of 10 million KW hydropower.83

Bangladesh has rejected Indian proposal on the ground that it would not receive any additional waters by the construction of link canal. Bangladesh also feels that digging of canal would unnecessarily divide the country into two parts and would displace people. It also fears to loose at least at least 20,000 acres of agricultural land, which the country is already short of.84 Bangladesh is also worried because of the starting and end points of the link canal would be in India and it would be possible for India to manipulate supply of waters through it in case of strained relations between the two countries.85 Bangladesh instead has put forward the proposal of building storage dams in the upper reaches of Ganga in India and Nepal. These reservoirs would store monsoon waters for release during the dry season. India has taken strong exceptions to the Bangladesh proposal and it mainly believes in bilateral negotiations. India has also believed that after the construction of reservoirs in Nepal might demand navigational rights to Bangladesh through India.86 India has also pointed out that.87

‘There was also no indication of Nepal’s willingness to accept the large storage dams in Nepal as envisaged by Bangladesh to augment the flow of the Ganga at below Farakka.’

Another proposal was broadly studied, wherein the link canal instead of passing through Bangladesh would traverse entirely within Indian territory from the Jogigopa barrage and connect the Ganga through the Tista and Mahananda rivers in India. It is however is not techno-economically viable.88

The one more alternative is a diversion channel from the proposed dam to be constructed on the Sankosh River in Bhutan, where apart from generating 4,000 MW of power, the channel will enable a discharge of about 12,000 cusecs to diverted through a link canal falling into the Tista barrage in
India and later augmenting the flow of the Ganga at Farakka. This proposal is yet to be studied and investigated in India.\textsuperscript{89}

In the given geopolitical environment of Continental South Asia, it is important for the constituents of this region to take a holistic view of the available resources and rationalize their requirements. To view this region from a narrow nationalistic angle will certainly not help to resolve their multiple socio-economic problems. This is also a truism that until the political leadership is objective and imaginative, the given problems will lose their gravity under the whimsical and shortsighted policies of the respective governments.\textsuperscript{90}

Every conscious and aware citizen –let alone the policymakers and decision makers- in all these countries understand that the region has enough water resources sufficient for their growing agricultural needs, expanding industry and domestic use. It is the lack of political will which has hampered the progress in this regard.

References
2. \textit{Ibid.}
4. \textit{Ibid.}
5. \textit{Ibid.}
9. \textit{Ibid.}
10. \textit{Ibid.}
11. \textit{Ibid.}
12. \textit{Ibid.}
14. Ibid.
15. Ibid
16. Ibid.
17. Ibid.
19. Ibid.
20. Ibid.
21. Ibid.
22. WAPCO’S STUDY ON WANGCHU BASIN IN BHUTAN, 1995, 1-1 t 1-5. Also see BHUTAN – The Himalayan Kingdom (The Royal Government of Kingdom of Bhutan) 1979, p.5.
23. Ibid. Also see WORLD GEOGRAPHICAL ECCYCLOPEDIA, op. cit., vol.3, pp. 104-105.
24. Ibid.
25. Ibid.
27. Ibid.
29. Ibid.
30. Ibid.
31. Ibid.
32. Ibid.
35. Ibid.
36. Ibid.
37. Ibid.
38. Ibid.
39. Ibid.
40. Ibid.
42. Ibid.
44. Ibid.

45. Ibid.


49. Ibid.

50. Ibid.


52. Ibid.


56. Ibid.


58. Ibid.

59. Ibid.

60. Ibid.


62. Ibid.


64. Ibid. Also see Johnson, B.L.C: GEOGRAPHICAL DICTIONARY OF INDIA (New Delhi) 2001, pp. 52-53.

65. Ibid.

66. Ibid.

67. Ibid.

68. Ibid.

69. Ibid.
90. Sangeeta Thapliyal, “An Integrated Approach to Develop Water Resources”, *Strategic Analysis*, vol.19, No.3, June 1996. Also see Nalini Kant Jha, “India-