The present chapter is an attempt to examine the water disputes in the subcontinent, the treaties signed, difficulties encountered and a critical understanding of the solutions put forth with a special emphasis on the Indus Water Treaty.

2.1. Geo-Political Overview of South Asian Sub-Continent

South Asia is a macro-geographical region wherein various countries in close geographical proximity share certain commonality of interests. These interests could incorporate a whole gamut of historical, geographical, economic, political, social and cultural aspects. In fact it is a region where geography, history, politics and culture are truly intertwined and a realm of one of the oldest civilizations in the world where people from all races and religions have coexisted over a long period of time. This mosaic of different cultures has given it a unique identity that is unparalleled anywhere else in the world.

The appellations, South Asia and the Indian sub-continent are same. The area was usually referred to as British Indian Empire prior to 1947. Most geographers, such as Sir Dudley Stamp called it the Indian sub-continent because of its separation from the rest of the Asian landmass by a continuous barrier of mountains in the north. This region is well defined by the South Asian Association for Regional Cooperation (SAARC) formed in 1985 and included the countries—Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Following the conception of the SAARC, very little has been actually done to promote the mechanism for collective cooperation in the sub-continent. History has bequeathed it with great socio-cultural identity whose roots are deep in soil of this region. The

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2 Dudley Stamp, 1898 to 1966 was a geologist by training who spent most of his career in the geography department of London School of Economics.
recorded history of the region reveals that the region has also been familiar with enormous conflicts and cooperation throughout of its civilizational history.

Geographically, it is well defined and distinct geographical region with diversified physiographic characteristics and diverse flora and fauna. This vast region is sandwiched between the great mountain chains and the Indian Ocean. In the north and northeast it is surrounded by mighty Himalayan mountain ranges, while in the north-west by the Karakorum, the Hindu Kush and Makran ranges. In the east it is enclosed by Purvanchal Hills and Bay of Bengal, while in the south it penetrates into the Indian Ocean and in the south-west by Arabian Sea. It sprawls over an area of about 4,48,000 Km$^2$ (17,29,738 square miles) or 10 percent of the continent. Geomorphologically South-Asian sub-continent exhibits a vast mosaic of snowcapped mountains, arid deserts, plateaus, fertile plains, dense forests and islands. This resourceful region is surrounded by the three water bodies—the Bay of Bengal, the Indian Ocean and the Arabian Sea and is well connected by the sea routes. These water bodies play a significant role in economic development and poverty alleviation in the region.

Politically the entire South-Asian region has witnessed convulsive politics in the last six decades with exception of India. While, the India has managed to keep its democracy alive, the other nations within the region have experimented on and off with democratic processes. In the absence of a democratic form of governance in South-Asia the political issues are overtaken by the politics of confrontation. The roots of conflict among the people of this region can be traced from the ancient civilizations and old empires. The causes are mainly religious, linguistic, castes, ethnic and economic disparities and uneven resource distribution.

Another cause of political turbulence is mutual suspicion and mistrust and a lack of confidence in each other’s motives and intentions. South Asia has a population tightly packed in urban as well as in rural areas, with alarming average of 580 people per square miles. The region contains over 1.6 million people which are one-fifth of

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the world’s combined population. With high growth rate of population and scarcity of resources collectively creates opportunities for socio-political and economic instability resulting into conflicts.

In terms of economic development and regional economic cooperation, South Asia offers very attractive prospects due to its natural and energy resources and the potential for cheap hydro-electric power. While the whole world has developed inter-dependent structures to promote regional prosperity, but South Asia sub-continent is stymied in this regard due to various conflicts amongst its states and nations. Secondly, this region is one of poorest regions in the world and is home of approximately 40 percent of the world’s poor population. More than 500 million people of this region are living below the Absolute Poverty Line (Absolute poverty is the absence of enough resources to secure basic life necessities). It is the region with the highest human deprivation, wherein 260 million people lack access to basic health facilities, 337 million people are without safe drinking water and 400 million people go hungry every day.7

Nations of South Asian sub-continent are understood as a single geographical unit which shares three major river basins viz. the Indus, the Ganges and the Brahmaputra. These rivers are the largest single economic resource of this region, especially when considered in conjunction with the population. Although, great mountain chains of the region are the largest fresh water house in the world, many experts believe, the biggest constraint on the future growth of the world’s economy is not the would be shortage of oil but water. As regard sub-continent all the countries are mainly agrarian and their agriculture is dependent on the use of river water. It is also the key to their hydropower and industrialization. However, owing to the rapid growth of industrialization, agricultural development and domestic usage, water resources are declining rapidly which in turn give way to political, economic and regional conflicts.

7 Ibid.
2.2. Water Resources of South Asian Sub-Continent

South Asia is a region of both abundance and scarcity of water. It is fed by the Hindu Kush and Himalayan mountain system which is one of the largest storehouses of fresh water in the world. As per the report of World Bank there are 20 rivers originating from this mountain chain. Out of total, the four major rivers are the Indus, the Ganges, the Brahmaputra and the Barak (Mehgna), also known as IGBM basin. The Indus River takes a westward course towards the Arabian Sea while the Ganges and the Brahmaputra make a journey towards the Bay of Bengal east of the sub-continent.8

These rivers extend over six South-Asian countries viz. Bangladesh, Bhutan, India, Nepal, Pakistan and China. These four river systems drain an area about 2773700 km² stretching over about 3000 km² in east-west direction and 800 square km in north-south direction. The IGBM basin has immense water resources with an overall runoff excess of 1500 billion cubic meters per year.9 The Brahmaputra river system carries the highest volume of water with 585 billion cubic meters per year followed by the Ganges and the Indus with 525 billion cubic meters and 181 billion cubic meters respectively.10 The Indus drains the territories of India and Pakistan while the Ganges, the Brahmaputra and the Mehgna drain Bhutan, Nepal India, and Bangladesh some parts of China as well. The basins of these rivers conclude the rest of the two, Myanmar and Afghanistan.

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Table 1: Sharing of South Asian Sub-Continent River Basins

<table>
<thead>
<tr>
<th>Basin Name</th>
<th>Total basin area (in sq km)</th>
<th>Country name with sharing area (in sq km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indus</td>
<td>1,138,800</td>
<td>Pakistan 597,700</td>
</tr>
<tr>
<td></td>
<td></td>
<td>India 381,600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China 76,200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Afghanistan 72,100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chinese controlled claimed by India 9,600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indian controlled claimed by China 1,600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nepal 10</td>
</tr>
<tr>
<td>Ganges-Brahmaputra-Mehgna</td>
<td>1,634,900</td>
<td>India 948,400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China 321,300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nepal 147,400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bangladesh 107,100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bhutan 39,900</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Myanmar 80</td>
</tr>
</tbody>
</table>

Source: Asia: International River Basin Register: Transboundary Freshwater Dispute, August 2002.

The distribution of water is a serious issue all over the world. The major conflicts are accruing over some of the mightiest rivers where 40 percent world’s population lives on rivers crossing through several countries i.e. the Nile, the Tigris, the Euphrates the Brahmaputra and the Indus. When these rivers flow in an arid region, there is a heightened risk of inter-state and intra-state conflict between upstream and downstream countries. Each upstream and downstream country wants to use maximum water from shared rivers. Thus the distribution and utilization for water from shared rivers is a main cause of disputes between upper riparian and lower

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Water Disputes in South Asian Sub-Continent

2.3. Water Disputes between various Countries of South Asian Sub-Continent

South Asia sub-continent is such region where geo-political entity provides a base for conflicts. Since major economic activity is agriculture and water being the most important determinant of agriculture and also for other activities. However, water is most crucial element of South Asian sub-continent has fuelled a lot heated discussion and conflicts among the countries of the region. Water disputes are not a new issue in South Asian sub-continent, even prior to independence there were water disputes among and between provinces and princely states.

Cooperation and negotiating resolution to early disputes on the Indus Basin began as early as 1874, when Britain and Indian Maharajas agreed on the percentage of water each would receive from the Hathmatee Basin for irrigation purposes. At the time, the British and the Maharaja of Edur agreed to the construction of the weir, and the British agreed to pay for damages if the sites were flooded. In 1892, the State of Jind and the British government agreed to allocate water for irrigation in exchange for payment. The only problem with the above agreements was that the Indian parties had little, or no choice, in the matter since they were much weaker than their British counterparts. Such power asymmetry characterized much, or all, of the negotiations that took place during the pre-partition period. After the partition this issue deepened consequently. Disputes over control and use of transboundary water sent ripples across the countries in the region. The case of water dispute between India and Pakistan over the use of Indus Basin rivers, between India and Nepal over the use of Mahakali River and between India and Bangladesh over the use of Ganges River are the causes of intense and strained relationship between concerned nations.

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The partition resulted in redrawing of map which marked a boundary line between new born states. The restructuring of map was based on religion not geography which led to the imbalance of water share. Geographically the head-works of transboundary rivers lie with India having command to use water for its high demanding sectors. This led to spark conflicts over sharing water between upper riparian and lower riparian countries. A brief compendious of water disputes between various countries is given below.

2.3.1. Water dispute between India and Pakistan

The partition of Punjab etched a hard border between India and Pakistan and cuts the Indus river system and disrupted its well managed integrated irrigation canals network. Many of the canals were served from their headwork’s fell in India, while the land being irrigated by their waters fell in Pakistan, which led to dispute immediately after partition of 1947.

The Indus River system was the main source of irrigation for Pakistan’s agricultural land. But after partition the source of the river of Indus remained with India which became insecurity for Pakistan. India asserted that Pakistan being a lower riparian country could not claim any property rights on the river water of the Indian Punjab. But Pakistan argued with strong principle of international water law that all the co-riparian countries had an equal right to the share of water in proportion to area, population and agricultural utilization. Thus, a strong hostility had risen over the water use after partition. To resolve this issue an inter-dominion agreement was signed between India and Pakistan in 1948 to serve as an ad-hoc agreement for considering both sides’ claims to share water. The negotiation process was continued for twelve years until a landmark agreement—the Indus Water Treaty was signed on 19 September 1960 under the auspices of the World Bank. Since the focus of research is the Indus Water Treaty, the detailed account of it will be presented in a separate chapter.


16 Karthykeyan Deepa, Centre for Asian Studies, Chennai, India (n d); (accessed March 7, 2011).
2.3.2. Water dispute between India and Nepal

2.3.2.a. Origin of the dispute: The history of water dispute between India and Nepal is long standing. There are about 6000 rivers and streams in Nepal\(^\text{17}\) but shares with India a total of 264 tributaries and rivers which all form a major part of Ganges system. The origin of conflict between the two countries is over the Mahakali River (Sarda River in India) an important tributary of Ganges River. The use of the Mahakali River to demarcate border between the Nepal and India, and is the source of dispute between the two countries. In fact, the very origin of the river is a source of contention, the Kalapani region which encompasses an area of about 400 km\(^2\) is recognized as an internationally disputed border region.\(^\text{18}\) It occupies 13 percent of the Ganges Basin and supplies almost 47 percent of its water.\(^\text{19}\)

Nepal is landlocked country, having vast water resources for hydropower. Such statements as “water is to Nepal as oil is to the Arab is becoming a strong slogan and hints at the sentiments of the Nepalis about water”. The first Hydel studies conducted in Nepal in 1960 indicates its potential at 83,000 MW, but due to unstable economic situation Nepal could not utilise and manage its huge hydropower potential within the country. On the other hand India’s rapid industrial growth is willing to buy the peak power produced from Nepal.\(^\text{20}\) The potential for water resource development between the two countries gained significant value. In achieving this, numbers of bilateral agreements were enacted with India for joint development of water resource project.

2.3.2.b. History and factors leading to the treaty: The recorded history of water dispute between India and Nepal became active since British time over the sharing of Mahakali River. Mahakali is not just a tributary of Ganges but also demarcates the boundary line between India and Nepal. In geographical context of Mahakali, Nepal remained an upper riparian country while India is lower riparian country.


In 1816, during the time of British East India Company, an issue came up over the use of Mahakali between British Government and Kingdom of Nepal. It was resolved by signing of *Sugali Treaty* between two countries. At the time of this treaty Mahakali River was officially declared as a border river between India and Nepal. But it was most unfortunate for Nepal Kingdom that the British did not mention feeding tributary of Mahakali in the treaty. Therefore, origin and border of Mahakali remained disputed.\(^{21}\)

With the growth of agricultural development in India, the British government began planning to construct Sarda Barrage on Mahakali River (excluding head water) to provide irrigation water for northern Indian states especially for Utter Pradesh. Keeping this in mind British Government in India negotiated the first bilateral Sarda Agreement for sharing irrigational water with the Kingdom of Nepal in 1920. The main provisions of this document are:

<table>
<thead>
<tr>
<th>Table 2: Sarda Treaty between British Government and Nepal Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>India receives:</strong></td>
</tr>
<tr>
<td>Land exchange</td>
</tr>
<tr>
<td>Water transfer (dry season)</td>
</tr>
<tr>
<td>Water transfer (wet season)</td>
</tr>
<tr>
<td>Cash</td>
</tr>
</tbody>
</table>


As a result of this treaty Nepal kingdom agreed to exchange 4,000 acres of land of the eastern bank of the Mahakali to India for the construction of Sarda Barrage in exchange with 4,000 forestland areas as well as cash amount of 50,000. One exclusive point goes in favour of India which helped it to construct Banbasa Dam across the Sarda River. Furthermore this treaty allows Nepal to withdraw 4.25 cumecs of water in dry season and 13 cumecs in wet season, which could be increased to

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28.34 cumecs if water were available. In this treaty no volume of water was specified for India, it was limited only by the scale of the technology, it was able to utilize.

The treaty shows India’s claim as a lower riparian country and its “equitable” rights to the use of international transboundary rivers according to international laws and practices. India also claims that it has rights to use water in accordance with its needs for water. Therefore the dispute over the quantum of water continued to exist for long time with different agreements and challenges from 1920 to 1996 until the Mahakali Treaty.

In between 1920 to 1996, various agreements were signed between India and Nepal which include Kosi Agreement of 1954, revised in 1966, Gandak Project Agreement, 1959, Karnali river project 1968, etc. But the land mark treaty was inked in 1996, known as Mahakali Treaty. The description of Mahakali is given as follows:

2.3.2.1.c. The Mahakali Integrated Treaty, 1996: Mahakali treaty deals with integrated development of Mahakali River which took notice of Sarda barrage dispute, Thanakpur barrage controversy and Panchswar project. It is a great achievement for development of principle over sharing water. The treaty was signed on 12 February 1996 in New Delhi by Dr. Prakash Chandra Lohani, Minister for External Affairs Government of Nepal and Mr. Pranab Mukherjee Minister for Foreign Affairs Minister for External Affairs Government of India.

Trilochin Upreti, water resource expert from Nepal is of the view that As a result of this treaty Nepal water rights were recognized for the first time; furthermore it also gave equal status to Nepal over sharing of water with India. The main provisions of this treaty given are below:

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22 The Kosi Agreement was signed on 25 April 1954, but soon after its conclusion it was severely criticized by the opposition political parties of Nepal. But the agreement did not benefit Nepal, neither in terms of power share nor in terms of territorial rights, etc.

23 To address the Nepals discontent, Mr. K.L. Rao the then Indian Minister for Power and Irrigation visited Nepal in 1962. He discussed the issue with some sections and therefore both the countries agreed to sign another agreement in 1966, which was on the basis of 1954 agreement. By signing of the 1966 agreement, water development in India gained valuable inputs also the agreement marked history of good relationship between the two countries.


• The treaty recognizes the Mahakali as a boundary river on major stretch between the two countries:

• Sarada Barrage: Nepal to have the right to the supply of 1,000 cusecs of water from the Sarada Barrage in the wet Season (May 15 to October 15), and 150 cusecs in the dry season (October 16 to May 14). India is required to maintain a flow of no less than 350 cusecs downstream of Sarda Barrage in the Mahakali River to maintain and protect the river system.

• Thanakpur Barrage: Nepal to continue having sovereignty over the land (2.9 hectare) needed for building the eastern afflux bund, as well as a hectare of the poundage area. In exchange Nepal has, free of cost, 1,000 cusecs of water in the wet season and 300 cusecs in the dry season, and 70 million Kwhrs of electricity (as against the earlier agreed figure of 20 million Kwhrs from the Thanakpur power station, with transmission line to its border. Half the incremental power generated at Thanakpur after augmentation of river flows with the commissioning of the Panchswar dam, to be supplied to Nepal at half the operational and any additional cost. India also constructs an all-weather road connecting the Thanakpur barrage to Nepal's East-West Highway, including bridges en route. There is provision for the supply of 350 cusecs of water for the irrigation of Dodhara Chandni area.

• Panchswar Project: A joint Indo-Nepal hydroelectric project on Mahakali River on the basis of a 50:50 cost benefit split, which remains the most controversial part of the treaty.

• Setting up of Joint Indo-Nepal Mahakali River Commission.26

After intensive hard work both the countries agreed to resolve water issue by Mahakali well drafted document. This treaty was drafted in the light of equality and needs of two countries.

Nepal is weaker than India, but it is standing at equal position with India on water sharing and also the India was willing to join hands with Nepal. It was possible

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only by Mahakali treaty which has given equal rights to both the countries in term of power generation, irrigation, usage of water as per seasonal variations; a Joint River Commission was established for maintaining relations vis-à-vis water. It is also somewhat flexible for both parties as per their demand. In present era of industrialization, globalisation, and rapid climatic changes this flexibility is benefiting both the parties. It is also providing better solution with growing water demand by encouraging the coordination between the two countries.

2.3.3. Water dispute between India and Bangladesh

Water dispute between India and Bangladesh is almost as old as the partition of the sub-continent. Division of India in 1947 was neither on the basis of geographical lines nor on the basis of cultural differences. It was, as it looks now, arbitrary and political in nature though taking into account the religious belongingness of the people at two extremities of India. The western division came to be known as East Pakistan which subsequently became into Bangladesh 1971. The dispute over the waters flowing naturally into Bangladesh (1971 East Pakistan) erupted on the India’s running plan to divert the water of Ganges River to augment its Hugli River, which Pakistan vehemently opposed and demanded for equal share of Ganges River water.

2.3.3.1. a. Origin of the dispute: The history of water dispute between India and East Pakistan (now Bangladesh) dates back to 1951, which emerged over the sharing of water of the Ganges River, when India decided to construct a barrage known as Faraka across the Ganges River in West Bengal about 10 miles above the border of old East Pakistan (Present Bangladesh), to divert the water of Ganges into the Hugli River. Hugli was main channel of Ganges River until 12th century A.D, after which the river began to change the course towards the east, into channel known as Padma. As a result of this morphological change Hugli channel dried up over the time. Hence, it created a sense of panic both amongst the British administrators and Indians who saw the Calcutta port as symbol of India. Therefore, a need was felt to design a solution to sustain the navigability of the river concerned and flush the Hugli River channel through the diversion of Ganges River. Consequently, in 1850, Sir Arthur

Cotton, the Harcourt Vernon, the Stevenson Moor and Sir William Wilcocks recommended a barrage at Faraka across the Ganges River.\textsuperscript{28}

The main purpose of Faraka barrage was to flush the Hugli River channel and keep the port of Calcutta navigable and improve drainage, sanitation and supply of water for industrial use in metropolitan city of Calcutta.\textsuperscript{29} Calcutta is one of the most important commercial cities since British rule in India and it remained an operational Centre of east India Company, because it was near the sea. It is also an important gateway for two Himalayan states Nepal and Bhutan.\textsuperscript{30}

In 1961, Indian government released Man Singh expert report regarding Faraka Barrage. The report brought out detailed estimates of the building up of silt on the river Hugli and consequences of deterioration for the port city of Calcutta. Therefore, its final decision to go ahead with Faraka barrage and Indian government termed it the “project” for the preservation of the port of Calcutta Port.

The construction of barrage became a major source of tension, mistrust and apprehension between the two countries. The barrage greatly affected the ecology and economy of (then) Pakistan. Because of the diversion of water at Faraka, the (then) East Pakistan faced shortage of water for agriculture and heavy siltation over time filled up the river bed. As a result navigation got hampered, production of fish got depleted and also cause of creating ecological imbalance and perpetual occurrences of flood due to the release of excess water at Faraka during the monsoon season.\textsuperscript{31}

Pakistan considered the fearful diversion of water and its impact on irrigation in what was the known as East Pakistan and therefore opposed the construction of dam. Pakistan raised the doubts about the technicalities of the Faraka barrage and lodged formal protest with India for its damaging effect. In spite of Pakistan’s continued protest against the barrage India began the construction in 1961 completed it in 1971, and commissioned the project on 21 April 1975. Total length of the barrage

\begin{quote}
\textsuperscript{29} B.H. Farmer, \textit{An Introduction to South Asia}, 85.
\textsuperscript{31} Farmer, \textit{An Introduction to South Asia}, 86.
\end{quote}
is about 2,240 meters and it was designed to divert up to 40,000 cubic feet of water per second (cusec) from the Ganges to the Hugli. From 1961 to 1971 sharing of Ganges River water remained an issue between India and Pakistan.\(^{32}\)

\textbf{2.3.3.1.b. Attempts to settle the dispute:} During 1951-1971 several meetings were held between India and Pakistan, however no agreement took place. There were four technical exchanges held in 1961 to 1968 and also five meetings held at secretarial level between 1968 to 1970, but no negotiation achieved.\(^{33}\) With the establishment of East Pakistan (Bangladesh), new issues emerged between Bangladesh and India over the distribution of water resources.

In 1972, both countries agreed to establish a joint river commission and several rounds of negotiations were held but all in vain. Failure by the two nations to resolve the issue peacefully led Bangladesh to raise the issue of Ganges water sharing in the United Nations General Assembly session in 1976. Confronting adverse international opinion, India finally signed an \textit{ad-hoc} agreement for 5 years on Ganges water sharing in 1977.

The basic principles of 1977 agreement included dividing the lean period water flow from January 1 to May 31 into 15 slots having ten days each. The sharing was supposed to be on the basis of 75 percent of the dependable flow at Faraka from 1948 to 1973 and the sharing proportion of Bangladesh and India was 60:40 respectively with a minimum flow of 34,500 cusec for Bangladesh and 20,500 cusec for India. In case of a decrease in flow at Faraka under extreme situations, Bangladesh was guaranteed with 80 percent of its share during each of the periods.

The 1977 Agreement expired in 1982 and India refused to extend it. The then military ruler General Ershad succumbed to mounting Indian pressure and signed a Memorandum of Understanding (MOU) scrapping the 1977 agreement where the interest of Bangladesh was compromised and the guarantee clause was excluded. The


MOU signed in 1982 expired in 1985.\textsuperscript{34} After 14 years, an agreement between Bangladesh and India on Sharing the Ganges water “\textit{Ganges Water Sharing Treaty}” was signed on 12 December 1996.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|}
\hline
\textbf{Flow at Faraka barrage} & \textbf{Share of India} & \textbf{Share of Bangladesh} \\
\hline
75,000 cusecs & 40,000 cusecs & Balance of flow \\
\hline
70,000 to 75,000 cusecs & Balance of flow & 35,000 cusecs \\
\hline
50,000 to 70,000 cusecs & 50\% & 50\% \\
\hline
50,000 cusecs & Both countries will enter into immediate consultation to make adjustment on emergency basis. \\
\hline
\end{tabular}
\caption{Water Allocation in the 1996 Ganges Treaty}
\end{table}


Under this treaty a new formula for sharing the Ganges water at Faraka Barrage during dry season was established. It was guaranteed that below Faraka Barrage the water is not to be reduced further except for \textquotedblleft reasonable use\textquotedblright\ in a limited quantity. This was also determined that the amount of water to be released by India to Bangladesh at Faraka would be for a period of 30 years. The new formula to share the water was:

In case the Ganges flow at Faraka is 70,000 Cubic feet or less, both countries are to receive 50 percent with a flow between 70,000 and 75,000 Cusecs, Bangladesh receives 35,000 Cusecs and India receives the rest; with a flow of more than 75,000 Cusecs India receives 40,000 Cusecs and Bangladesh receives the balance.\textsuperscript{35} In the new Agreement, one more provision was designed about the flow of water. It was said that if the flow is below 50,000 Cusecs, the sharing arrangements are to be reviewed after every five years and if no adjustment are made then India has to release 90


\textsuperscript{35} \url{http://www/southasianmedia.net/profile/india/india-interstatconflicts_1.cfm/} (accessed, 2 March 2011).
percent of Bangladesh’s share. Another major feature of this treaty is that it is called, a 30 years Water Sharing Treaty.\footnote{Imran Khalid, “Bangladesh Water Concern,” \textit{Journal of South Asian Studies}, Vol. 25, no.1 (January-June 2010): 82-83.}

The treaty has been made after discussions and negotiation of 35 years between the two countries. At that time, experts had thought that treaty will open new space to invest in long term sustainable projects and it will give opportunity to develop the two countries.

Apart from Ganges river issue there are also issue of sharing and management on other rivers namely Teesta on which a river sharing agreement has become a source of urgency as both India and Bangladesh have barrage on the river and are beginning to develop irrigation in their respective command.\footnote{Ramaswami Iyer, “Conflict Resolution: Three River Treaties,” \textit{Journal of Economic and Political Weekly}, Vol. 34 (June 1999): 1514.} Similarly the construction of Tipaimukh Dam on Barak River has attracted a lot of controversy between the two states. These few more complex issues on the sharing of the Ganges River can be summarized in the words of Binayak Ray.

“Ray traces the problem of water-sharing between the two neighbours to three factors: one real, second perceived and third practical. \textit{First}, the Indo-Bangladesh river basin has the largest concentration of world’s poorest population with a high rural population density, making water an extremely sensitive political issue. Second, Bangladesh being the smaller neighbour often treats India with mistrust, making it difficult to conduct discussion on common interest issues in good faith. \textit{Third}, the large number of riparian countries involved in the processes of multilateral diplomacy and negotiation further entrenches the difficulties involved in arriving at an agreement and complicates the processes.”\footnote{Deepa Karthykeyan, “Conflict and Cooperation on Trans-Boundary Waters in South Asia,” Paper for Presentation at Pondicherry University, India.}

\section*{2.3.4. Cooperation between Bhutan and India over Water}

Bhutan and India have recorded good history of cooperation over the share of water in South Asian sub-continent. Bhutan a landlocked country is endowed with rich water resources. It has four major rivers viz the Drangme Chu, the Puna Tsang Chu, the
Wang Chu and the Amo Chu. All these rivers join the Brahmaputra River\(^39\) in India, which enters Bangladesh where it joins the Ganges River and together meet their final destination in the Bay of Bengal.

Bhutan is a mountainous country which has only 26000 hectares of irrigated land.\(^40\) However, because of the narrowness of the valley and its mountainous nature makes the utilisation of water remained under utilised for irrigation therefore, the water of these rivers is being exploited only for generation of hydropower. Estimated hydropower potential of the Bhutan is about 30, 000 MW,\(^41\) which is one third of the Nepal’s estimated power potential. Most of the identified power potential is based on run-of-the river projects. For Bhutan the hydroelectricity is the main source of revenue generation and overall socio-economic development of the country,\(^42\) contributing 22 percent of the GDP.\(^43\) Since, 1949, Bhutan and India have entered enacted number of bilateral agreements such as Indo-Bhutan Friendship Treaty of 1949, Indo-Bhutan Treaty of 1972 and Indo-Bhutan Treaty of 1995. By signing these agreements both the countries have developed good history of mutual understanding and cooperation in the region.

Unlike other countries of the region there is no dispute between Bhutan and India over the utilisation of shared water. To exploit the huge power potential in Bhutan, both the countries have signed some agreements such as Indo-Bhutan Agreement on Chukka Hydroelectric Project (1974). Currently installed hydropower capacity amounts to approximately 1,488 MW with a large amount exported to India, which results in substantial revenue generation for Bhutan.\(^44\) For exploiting the hydropower potential, India also provides financial and technical assistance. India in return benefits from hydroelectricity generated from projects to meet its increasing

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\(^39\) The Brahmaputra River is known as Tsangpo or Yarlung Zangbo in China, Brahmaputra in India and Jamuna in Bangladesh.


energy demand. In spite of a number of conflicts over water between the countries of the region, India and Bhutan have developed mutual cooperation and common vision to achieve maximum benefits from the rivers.

**Conclusion**

South Asian sub-continent, which is home to one sixth of world population, is one of the conflict-ridden regions in the world. The roots of conflicts among the countries of South Asia sub-continent are deep in the soil of this region. Number of problems have been traced which are at the base of conflicts. The water disputes in South Asian sub-continent deal with the complex orientation of the rivers of the region that cut across a number of countries in the region complemented by a tense and uncompromising geo-political situation amongst the fellow riparian countries brings out strategic role played by water in the region.

Historically, the roots of water disputes among the South Asian sub-continent countries are in the British times. After the partition, the division and sharing rights over flowing water between newly created nations engendered conflicts at political level which fortunately culminated in the landmark agreements, treaties and memorandums of understanding for peaceful solution such as the Indus Water Treaty, the Mahakali Water Treaty and the Ganges Water Treaty. After signing of these mutual agreements the countries concerned maximized their benefits by way of harnessing the resources of the region. Considerable progress has been made in the field of water development and in maintaining relations. Though some critical debates have taken place on aforementioned agreements but by the active participation of regional organization and mutual understanding among shareholders, these issues could be addressed in the light of past experience.