History is witness to the fact that civilizations have evolved around and/or across the rivers. The earliest civilizations, such as Mesopotamia, Egypt and Indus evolved and were nourished along the banks of the Tigris, the Euphrates, the Nile and the Indus River. These rivers have served as catalysts for cooperation between nations. Unfortunately, the scarcity of water in all the respective regions, previously served by these rivers, has turned the coin to the other side, i.e. from cooperation to confrontation. These basins have become the bone of contention for many a nations, especially to those in the arid regions and contributed to their instability and mutual distrust. The increasing demand and thereby competition for shared water has led to many international conflicts, political instability and even acute violence in some regions.

Water conflict is not a new phenomenon, even in the ancient times there are many examples of inter-state conflicts over water. The earliest known inter-state conflict over water took place around 2500—2350 BCE between the Sumerian states of Lagash and Umma along the Tigris River. There are many other instances of direct and indirect conflicts over water. But from the last century water became a contentious issue and a source of acute conflicts. Many scholars are of the opinion that increasing demand, decreasing quantity and climatic variability, causing scarcity of water, may lead to acute water conflicts and so may intensify political debates among the users. In addition to this, Peter H. Glick (1993) contended that as we approach the twenty first-century, water and water-supply systems are increasingly becoming objectives of military action, the instruments of war and silent elements of interstate politics. As

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human population grows, lifestyle changes, and with it, the demand for fresh water and climatic variability make water supply and demand problematic and uncertain.²

Presently there are about 263 transboundary lakes and rivers which cross the international frontiers, covering one-half of the land of the globe and affecting about 40 percent of the world’s population.³ The world’s population is increasing by about eighty millions per year, thereby increasing fresh water demand of about 64 billion cubic metres annually.⁴ Usually water scarcity arises when a country’s annual water supply dips below seventeen hundred cubic metres per person. When this reaches a level between seventeen hundred and one thousand cubic metres occasional water scarcity is likely to occur.⁵ In such a situation the scarcity of water is becoming the cause of dispute among users, especially on shared river basins.⁶ It is pertinent to mention here that both India and Pakistan are dependent on shared rivers and are fast approaching to the status of water scarce countries. Both the countries per capita water availability is estimated to decrease to less than one thousand and seven hundred cubic metres per person by 2025 respectively.⁷

Disputes over water arise when a stakeholder of the shared water system attempts to utilise its share of already decreasing water supply and the other members are likely to respond desperately. At the same time, any effort by upstream countries to store the river water or otherwise control its onward flow is almost sure to produce concern and hostility with and among the downstream states.⁸ This geographical fact has led to many geopolitical disputes over shared waters of the Nile, the Jordan, and

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the Euphrates rivers in the Middle East; the Indus, the Ganges, and the Brahmaputra rivers in the South Asian Sub-Continent. The South and South East Asian countries like China, India, Pakistan and Bangladesh are heavily dependent on fresh water supply for subsistence. Since the demand is more than the supply in this region, it creates national and international disputes over the utilisation of water.

On the other hand, there is also an impressive history of water dispute resolution and a good number of scholars, policymakers and politicians summarise that water is also a catalysts for cooperation, as number of transboundary rivers have favoured cooperation over conflicts. It is true that water is becoming a scarce resource, but it does not mean that scarcity always leads to disputes. Political motivation, economic development and the role of inter-regional and intra-regional institutions could play a significant role to resolve the water disputes between users. Most of the water disputes are negotiable, though few have witnessed sharp conflicts during the last five decades in the world. As per the report of United Nations Department of Economic and Social Affairs (UNDESA), 157 treaties and agreements were negotiated and inked, among which the Indus Water Treaty, signed between India and Pakistan, is one of the best examples of water conflict resolution.9

South Asian sub-continent comprises countries of Afghanistan, Bangladesh, Bhutan, India, Nepal and Pakistan, (also called as the countries of the Himalayan block).12 It is a region of both abundance and scarcity of water. In terms of water abundance, the region is fed by the Hindu Kush-Himalayan mountain system, which constitutes one of the largest storehouses of fresh water in the world. The four major river systems including, the Indus, the Ganges, the Brahmaputra and the Meghna, originate from the Hindu-Kush Himalayan mountain system. Flowing through

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9 The Indus Basin dispute resolution is an example to support this view, where above mentioned actors were actively involved to resolve the water dispute. Similarly, the Mahakali Treaty between India and Nepal and Ganges Treaty between India and Bangladesh has also enriched the history of dispute resolution in the sub-continent.


different regions and valleys such as the Indus Valley, Damoder Valley, and Kashmir Valley, etc., water from these rivers is available in plenty to the inhabitants. But in terms of water scarcity, there are some regions such as deserts of the Rajasthan in India, Cholistan and Thar Desert in Pakistan which face severest water scarcity. Meanwhile, on developmental lines, these four major river systems traversing different states present a challenge of water management as the interests of the states are at variance.

The water resource is a key to agriculture, hydropower, and other economic activities in South Asia elsewhere. As economies grow, the lifestyle of people typically begins to include an overuse of water, and people’s good living standard intensifies the demand for water. When there is a negative relation between the demand and supply, conflict over sharing of water is certain, and a situation like this calls for judicious management. Geographically, South Asian countries are spread over unique landscapes and are dependent upon transboundary shared rivers. The transboundary rivers and their utilisation present geopolitical challenges for management. In the past, the management of traversing rivers in the region has remained a conflicting issue. Various disputes occurred between the stakeholders over the utilisation of shared rivers which resulted some agreements and treaties, such as *Indus Water Treaty, Mahakali Treaty and Ganges Treaty.*

The Indus River with its five tributaries is one of the great river systems of the world, which remained an important source for agriculture development. Since times immemorial, good irrigation techniques have been practised to produce sufficient agricultural production on the alluvial plain of the Indus River, which also nurtured the later empires within the Indus Valley.

The development of water received considerable attention when Delhi Sultanate was established. Different methods and techniques were introduced to develop new irrigation system and to enhance agricultural yield. Later, the Mughal emperors also developed the Indus Basin with new horizons. Large canal systems, weirs, and tanks were developed to provide the water supply to agricultural lands. Extensive integrated and perennial canal systems were put into practice in the Mughal time.
The sophisticated change started when British Business Company (East India Company) settled in the sub-continent. With the start of British rule, the British administration implemented several schemes to utilise the wealth of waters of the Indus Basin to produce surplus agriculture and to increase their revenue. In order to achieve this, vast canal structure was laid in the middle of 18th century, through local and provincial bodies.

However, being attracted to the production and revenue resulting from agricultural lands, provincial bodies came to compete for share of water for irrigation which led to the disputes at inter-state and intra-state level. There various disputes occurred between Punjab and Sindh over the share of water from Sutlej and Beas rivers, but a number of meetings and commissions set up by Central Government, couldn’t find a resolution, as agriculture lands and irrigation system were expanding, population was growing leading to increase in demand for water. Before the provinces could reach a final agreement India was partitioned in 1947 into two states of India and Pakistan.

In 1947, after the creation of two independent states of India and Pakistan, problems arose over the utilisation of canals and water resources. The boundary line, known as the Redcliff line, cut off the Indus canal system from head-works. Many of the canal head-works such as Upper Bari Doab Canal (UBDC) and Sutlej Valley Canal remained in India (East Punjab) while the lands being irrigated by their waters fell in Pakistan (West Punjab). India as upstream user of the three eastern rivers claimed sovereign riparian rights and stopped water supply to Pakistan in 1948, which engendered the water dispute between India and Pakistan.

In December 1947, an inter-dominion agreement was made between India and Pakistan to maintain the supply of water to Pakistani canals. However, with the expiry of the agreement on March 31, 1948 the East Punjab shut-off the water supply to West Punjab which fuelled excessive degree of animosities between the two nations. Pakistan protested against the stoppage of water which eventually led to an Interim

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Agreement on May 4, 1948 and both countries agreed to recognize and respect the each other’s needs for water. Though the agreement was not considered as the permanent solution, it still provided some temporary basis for dealing further with the vexed problem. The agreement fell apart when both the countries could not resolve their differences over Sutlej River. Pakistan as a lower riparian, challenged the agreement, in a bid to secure its rights it said that the aforementioned agreement was signed under duress and called for the equal apportionment of all common waters by the involvement of International Court of Justice. But India opted to resolve the dispute by mutual understanding instead of taking recourse to the third party involvement. However, discussion over the share of water reached a deadlock by the end of 1950.

In 1951, David Lilienthal, visited India and Pakistan, and suggested some mechanism to manage the Indus Basin by joint control. It was after David Lilienthal’s suggestions that the World Bank decided to offer the negotiation to resolve the dispute between the two countries. The negotiation started in 1951 between the two countries under the supervision of the World Bank which lasted for almost nine years until an agreement, the “Indus Water Treaty” was formally signed on 19 September 1960. The treaty was inked by Jawaharlal Nehru, the Prime Minister of India, Muhammad Ayub Khan, the President of Pakistan, and W.A.B. Iliff of the World Bank.

As per the treaty, the use of the western rivers, namely the Indus, the Chenab and the Jhelum, was assigned to Pakistan, with a provision for limited volume of water from these rivers for India’s consumption, while the waters of the eastern rivers, the Ravi, the Sutlej and the Beas, which constitute 19 percent of the overall

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17 (i) The whole Indus Basin must be developed as a unit—designed, built and operated as a unit as in the seven-state TVA system back in the United States;  
(ii) International financing be arranged, perhaps by the World Bank, to fund the work and Indus engineering corporation be founded;  
(iii) Representatives are included from both countries as well as from the World Bank;  
(iv) Greater storage facilities and cooperative management be implemented.
18 Shaista Tabassum, *River Water Sharing Problem between India and Pakistan: Case Study of Indus Water Treaty* (Colombo: Regional Centre for Strategic Studies, 2004), 24-25.  
19 *Indus Water Treaty 1960, Article III*
supply of the Indus Basin, was exclusively available for India.\textsuperscript{20} Among other components, the treaty also included a dispute-resolution mechanism that relies primarily on bilateral mechanisms; it also possesses a provision for comprehensive external apparatus, in case agreement could not be reached bilaterally. The treaty provided a transitional period of ten years to enable Pakistan to undertake the replacement of works on Western Rivers, through the international financial assistance. The financial assistance made by the World Bank, which was received from some of the friendly countries, and India also facilitated the agreement.

The Indus Waters Treaty is widely considered one of important water treaties of the world. The World Bank thus helped the Twin countries to work as far as possible in an environment of peace and harmony. The World Bank being a signatory to the treaty made commitments of its own for tasks specified in Article V and X as well as Annexures F, G and H.\textsuperscript{21} The treaty is unusual in three dimensions: its origin, the water allocation mechanism and its integration of previously established norms in customary international water law.\textsuperscript{22} Hence, the treaty and its water sharing mechanism have been appreciated, despite 50 years of experience—surviving in bitter political relations including three armed conflicts between the two countries.

Although the treaty has been an emblem for maintaining water dispute, but past one and half decades are evidence that the treaty has been under stress. The simple reason is the altered necessities of the two countries. The treaty allows India to tape water for run-of-the river projects, on western rivers—Chenab, Jhelum and Indus. However, India has constructed many projects on western rivers, which Pakistan claims to be the violation of the treaty and considers it a threat to her economic security. India says that the construction is endorsed by the treaty and all projects are within the limitations of the treaty’s criteria.

The Indus Water Treaty is considered by large number of experts as one of the best examples of cooperation, but it is often criticized by the public of India and Pakistan as the unfair deal of the treaty is unfair. Critics in Pakistan argue that the

\textsuperscript{20} \textit{Indus Water Treaty1960}, Article, II.

\textsuperscript{21} \textit{Indus Water Treaty 1960}, (see in appendix a).

country has lost its three eastern rivers to India. Whereas, critics in India argue that the
Indus Water Treaty is in favour of Pakistan as it gives eastern rivers to India, which
contain only 20 percent of the basin flow and three major western rivers to Pakistan
which contain 80 percent water of the basin. Apart from the common opinion, the
reaction of media, academicians and farmer communities from both the sides raise
their figures against the Indus Water Treaty.

The three Western Rivers of the Indus basin flow through the disputed State of
Jammu and Kashmir. This is also one of the causes of concern which questions the
integrity of the treaty, because the restrictions placed by the treaty on the western
rivers make the State virtually impossible to be benefitted to a large extent by way of
hydropower generation and irrigation. The Jammu and Kashmir Government has
raised strong voice against the treaty as it does not take care of the interests of the
State. The treaty was agreed upon by both the parties keeping their own interests in
view without considering the interest of the people of the State; it has divested Jammu
and Kashmir of its inherent rights over its own water resources. Perhaps the Indus
Water Treaty has become one of the reasons behind the alienation of people who feel
betrayed by the signatories of the treaty.

1.1. Relevance of the Study
Since the partition of India and Pakistan, water is a focal point between the two
countries, more notably for Pakistan, for its high dependency on water. As a lower
riparian nation Pakistan is more sensitive to water issues. This sensitivity is the main
reason for its confrontation with India on various issues. In this connection the present
study tries to go through the genesis of water dispute between the two countries, and
follows the subsequent development to draw profitable conclusion. It further sees how
the water dispute was settled under the ages of the World Bank and the Indus Water
Treaty signed.

The study also looks into the water developments after the Indus Water Treaty,
and also examines the contemporary issues to the treaty which occurred from various
reasons. The study is a significant step to contribute in the way of water dispute

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23 Total area of divided State of J&K is about 84,471 Square miles, of which 39,160 Square miles are
Indian Administered, 33,513 Square miles are Pakistan Administered and 11,798 Square miles
are under Chin’s occupation.
resolution vis-à-vis Indus Water Treaty. It is also pertinent to know the nature of water disputes in the region, and develop appropriate arguments and approach to harness the water resources which meets the aspirations of main stake holders of the Indus Basin.

1.2. Research Method and Sources of Data

The present study is based on qualitative information and research methods and tools for the study. Qualitative research consists of methods and techniques which cannot be quantified; lack of quantification may be due to the small sample or unique occurrences. It is more related to the phenomenon in perspective. Qualitative research has largely been accepted by a number of scholars and treated as and considered the best to examine at hand. It has many types of methods such as observations and interviewing and content analysis which i have tried to adopt in my thesis.

The study examines the Indus Water Treaty between India and Pakistan. To achieve the objectives of the study, data and information were collected from both primary and secondary sources. Primary information were collected from the different offices including discussion with various historians, geographers, economists, political scientists and water resource experts working on issue.

Secondary sources of information collected from published and unpublished books, research reports, journals, articles and leading international and national newspapers. Most of the secondary information was collected from various libraries such as University of the Punjab (Lahore), Punjab Public Library (Lahore), Quaid-I-Azam University Library (Islamabad), Azad Jammu and Kashmir University Library (Muzaffarabad), AJK Assembly Library (Muzaffarabad), Department of Kashmir Studies Library (University of the Punjab), International Water Management Institute Library (Lahore). In India various libraries have been consulted for collection of data which includes Panjab University (Chandigarh), Punjabi University (Patiala) and in Jammu and Kashmir State, University of Kashmir (including various departmental libraries) Sher-e-Kashmir Agriculture University, and Jammu University Library. The data and information collected from the different sources were analysed and presented in a logical and systematic manner. This research work has been written in a very simple and lucid style and is presumed to make the study comprehensive and understandable.
1.3. Literature Review

The present work deals with the Indus Water Treaty between India and Pakistan, with the main objective of understanding the problem through published, unpublished literature regarding the research topic, “Indus Water Treaty: A Geo Political Study”

Although, there is a good amount of research works published on international river basins and water conflicts but our effort will entail to review the relevant literature over the topic, which comprise:

- Text and reference books.
- Research papers, published in National and International journals.
- National and International newspapers and magazines.
- Doctoral thesis, dissertations and reports.
- Speeches and public opinions on issue.

Books

N.D. Gulhati,

*Indus Water Treaty: An Exercise in International Mediation* (Bombay: Allied Publishers, 1973) the book deals comprehensively with Indus water basin, its history, physical feature, climate of the basin and importance of the water for India and Pakistan, disputes over share of water in pre treaty era, settlement of dispute through third party mediation, satisfaction and dissatisfaction of two countries, water laws and regional politics over water. The writer highlights the importance and development of Indus Basin through systematic contemplation. Talking on the partition and water dispute between India and Pakistan, he claims Sir Cyril Red Cliff boundary line has left many yet uncompromised disputes between the two new born states, of these water is one of the contentious disputes. He further provides detailed accounts of the Indus Basin negotiations, describing how India and Pakistani engineers with World Bank facilitator, developed an enormously complex plan for parallel energy production infrastructures. N.D Gulhati in his conclusion appreciates the abilities of the parties to frame the issue as a technical problem, which enabled those who, “speak
the language of the joint management of the rivers”, to make progress where politicians could not.

Bashir A. Malik,

*Indus Water Treaty in Retrospect* (Lahore: Brite Books, 2005) the book deals comprehensively with the geographical settings, climate, water flow, irrigation, and distribution of water and canal system. In its introductory part, the author praises the Pak Punjab irrigation system as not only greatest but unique too. The author however, laments the effects of partition and the impact of Indus Water Treaty. The Indus water system, which subsequently came up, suffered by weak management and so aggravated the problems of the people concerned. Hence he calls it a sick system. The author raises his finger against partition of Punjab and Bengal Provinces as not part of the original plan and also on the manner in which partition was so hurriedly done in mere 73 days.

The author highlights the Indus Water Treaty which despite all its tall and pious promises and projections proves a bane than anything of bliss for Pakistan. The author states that the Treaty was meant for regional peace and settlement of Kashmir issue, but has since taken tens of thousands of lives of Kashmiris. The book fails to provide details how this treaty was going to settle Kashmir issue or how it was going to bring regional peace without giving them genuine share of their water resources. The author has not mentioned the losses suffered by Jammu and Kashmir because of Indus Water Treaty. However, this book provides useful knowledge on the topic but lacks in exhaustive and dispassionate treatment.

R. K. Arora,

*The Indus Water Treaty Regime* (New Delhi: Mohit Publications, 2007) the author records that the dispute on the Indus waters began long before the independence of India and Pakistan. The dispute started in the form of inter-state differences between the Punjab, Sind, Bahawalpur and Bikaner. In 1947, after the partition of India, the dispute became an international issue and was exacerbated by the fact that the political boundary between the two countries was drawn right across the Indus basin. The author emphasises that although the original treaty called for cooperation in the planning and development of the river, requiring joint planning but each of the states
utilizes its water resources individually and there is no basin-wide joint management of the Indus.

According to the author the present root of the problem, lies in the lack of harmony between the interests of Pakistan and Jammu and Kashmir. On the one hand, Pakistan needs to build dams to divert water flows to Punjab and Sindh; on the other hand, J&K needs to come out of the Indus Water Treaty to improve its own irrigation, hydro-electricity and employment prospects. The author confuses the readers as if Jammu and Kashmir is an independent entity having direct conflict with Pakistan or if it was a party to the Treaty. The author has not discussed the implications of this treaty on J&K as he has discussed other issues like Chenab Formula and its effects if signed.

The author talks about the alternative approach to the Indus Water Treaty issue, which could be an integrated development plan for the conservation of the Indus Basin and if jointly developed by both the countries, it would address the political dimensions of the conflict in J&K. The author also highlights the contradictions as well as vagueness of International Law.

Aloys Arthur Michel,


Michel’s book which consists of about 350 pages presents a comprehensive but definitive discussion on the development of Indus Basin. He starts with the development of irrigation infrastructure in the Indus Basin and claims that the agriculture had a significant impact in shaping the economy. Especially the writer has focused his intentions to explore the development during of British Government in India. To support the economy, the Britishers constructed worlds’ extensive and largest canal system in the Indus Basin. Therefore, they achieved valuable output from the Indus plain. The author depicts agriculture development in the Indus plain and designed engineering capabilities, led industrial growth and economic prospects all over the sub-continent. In this process provinces and state bodies were side by side with government, shaped the agriculture economy. The book serves admirably to introduce the reader with the Indus Basin and developments and problems within it prior to the Indus Water Treaty.
In this book the writer unfolds the sad story of partition and its consequences on two nations. The partition has disrupted well managed irrigation network, created political and mental borders among the people involved. He depicts the post-partition developments in very lucid manner but he did not give any proposal for future. According to author, the location and topography of Indus Basin with its endowments of soil make it so complex for any writer to predict future solutions because the Indus Basin spread over the four countries which make it too difficult for any person to draw definitive conclusion. The integrated canal system of unpartitioned country had made it too difficult to be divided between the two countries.

In regard to water dispute between India and Pakistan, the writer has brought abundant measures, perceptiveness, sympathies and carefulness, to examine the problem of water resources in the Indus Basin. Especially Michel’s documentation of Pakistan’s difficult bargaining position on the Indus basin plan, his examination of inter-regional disputes over water and his analysis of the political issues involved in Indus Basin is remarkable. He is probably proud of the immense contribution of his own countrymen the vital intervention of David Lilienthal, and by Eugene Black and the World Bank; the seemingly inexhaustible generosity of the United States Government and the high attainments of her engineers and technicians who were fully involved during negotiations process. Moreover, he writes that, the conclusion of the Indus water Treaty because the negotiations were “for water, rather than land or ego” and were conducted, “in some secrecy by fair minded parties with a common vision”. The book contributes sufficient knowledge on the topic but does not gives thorough view of the subject especially on post Treaty development and their implications for international water law.

Shaista Tabassum,

River Water Sharing Problem between India and Pakistan; Case Study of Indus Water Treaty (Colombo: Regional Centre for Strategic Studies, 2004) deals with the river water sharing issue between India and Pakistan. It describes the origin of the problem and the gradual development of the issue. It also sees how the issue was chalked later by India and Pakistan with World Bank mediation and concisely looks into the irrigation system constructed after the treaty with the water sharing issue
which arose after the signing of the treaty. Although it deals with the topic yet it lacks required details and analysis of the facts. Moreover, it neither covers the international water law and dispute resolution mechanism nor the current issue on water ratio between India and Pakistan.

**Trilochn Upreti,**

*International Watercourses Law and Its Application in South Asia (Kathmandu: Pairavi Prakashan Publishers, 2006)* presents a comprehensive review of the revolution of water law over the century. While doing so, the author has also attempted to outline the positive and negative aspect of international treaties on boundary and Trans-boundary Rivers around the world. In this book, the author has cited a profusion of examples of water disputes across the world and the way they were attempted to be resolved. After doing a critical analysis of the four doctrines of international water law viz, territorial sovereignty, territorial integrity, prior appropriation and equitable utilization, he has considered the last doctrine as the best one for it has wider acceptance among the international community. He is an ardent supporter of the principal of equitable utilization as it would help to serve the interest of the riparian states and resolve their disputes in a reconciliatory manner.

The concept of equity and the emerging concept of equitable utilization of shared natural resources have been dealt with at length, citing judicature of the international court of justice. The reader will get an opportunity to be acquainted with numerous international treaties on water sharing, based on the principal of the equitable utilization.

The book also elaborates the water availability and its potential uses in South Asia for the economic development and environmental sustainability of the region. It attempts to outline the problem and suggest the equitable utilization of rivers as solution to them. Although it deals with water in details, yet it does not deal with Indus water dispute, treaty and its legal implications.
Salman M. A. Salman and Kishor Uprety,

*Conflict and Cooperation on South Asia’s International Rivers: A legal Perspectives,* (Washington D.C: The World Bank, 2003) the book shares a perspective that the shared rivers have become a focal point of conflict, as well as catalysts for cooperation. This argument is true about South Asian sub-continent. Some twenty major rivers run through it and the three largest basins, those of the Indus, the Ganges, the Brahmaputra, affect not only the countries of sub-continent (Bangladesh, Bhutan, India, Nepal and Pakistan) but China as well. Sharp seasonal variations, such as monsoons, draughts and floods occurring in the territory of some countries add to the difficulty of finding equitable and durable water sharing arrangements in the other countries too.

The authors focus on the hydro politics of four countries of South Asian sub-continent Bangladesh, India, Nepal and Pakistan. It also discusses the problems these countries have encountered as riparian of international rivers and how they have addressed them. In particular the study reviews the treaty management governing the Indus basin, the Ganges river basin, the Kosi river basin and the Mahakali river basins.

Each of these treaties is dealt in-depth; special attention is paid to the main problems of the treaties. The author has sought to address Indus water dispute with respect to Ganges, and an integrated approach to water resource management for India and Nepal. With respect to the Kosi, Gandak and the Mahakali rivers; the authors review treaty experience and offer observation on bilateralism and multilateralism, third party intervention, water rights and benefits, institutional arrangements and dispute resolution. They conclude by stressing the importance of cooperation throughout treaty making process.

**Research Papers**

P.D. Clift,

“A Brief History of Indus River,” *Journal of Geological Society of London,* (2002) presents a brief historical review of Indus River, its course and scattered drainage from Tibet to Arabian Sea. It also has examines the geological evolution of Indus River at various stages and evaluates the old course of the Indus River and discusses how it has
changed its course due to morphological and geological conditions. The writer explains that the seasonal floods of the Indus River and its tributaries formed the land and development of agriculture in the basin. Talking on the significance of its water for the region, the author claims, that the Indus River is a main vehicle for millions of people who directly or indirectly are dependent on its waters. The wide emerging issue of its drainage are serious challenge for food security, its drainage system and ecology. Although, this paper deals with geological history of Indus River but also gives knowledge on its history from Indus Valley Civilization and its economic importance. By this study we are able to understand the history of Indus River and importance of its water. The writer has not discussed any dispute over its water or Indus water Treaty.

Mary Miner, Gauri Patankar, Shama Gamkhar David J. Eaton and Lyndon B,

“Water Sharing between India and Pakistan: A Critical Evaluation of the Indus Water Treaty.” Journal of Water International Vol. 34, no. 2 (June 2009) discusses the Pakistan-India water conflict experience in the context of other international shared river conflicts. Therefore, they suggest Pakistan and India should coordinate and resolve issues rather than deferring them, for the benefit of both nations. They also reveal that India and Pakistan can prevent future conflicts on Indus River in the light of its historic and economic importance and their past experience.

The writers have done a good analysis of treaty relationship with international water laws and treaties. Therefore, they suggest both countries to face common issues together. The writers have made critical analysis of treaty in light of other transboundary water principles and highlight that treaty does not provide mechanism to address the future issues out of climatic changes, economic development, and population growth. Therefore, both countries have to adopt emerging norms of transboundary water laws. Finally the paper suggests the way forward for both parties to modify or scrap and renegotiate the treaty. In order to resolve the dispute, the authors have exemplified US-Mexico and Jordon-Israel water treaties to overcome the conflicts and develop water resources of Indus Basin.

Moreover a little effort has been made to explore the impact of Indus Water Treaty on Jammu and Kashmir State especially on its power sector. The provided data
regarding power scenario in J&K is proving susceptible to authenticity because probably it does not explore the adverse impact of Indus Water Treaty on energy crisis of the state. Further this work minutely gives us the perceptions of the people of J&K regarding treaty but they have not suggested to which extent people of J&K can play role in the peace building measures of India-Pakistan in the context of water conflict.

Ramaswami R. Iyer,

“Indus Water Treaty: A Different View,” *Journal of Economic and Political Weekly*, Vol. 40, no. 29 (July 2005): 3140-44, the author starts from the history of water conflict between India and Pakistan which resulted in the Indus Water Treaty. The writer says if in 1960, there had not been the treaty between the two countries they would have been locked in a water war. Therefore, he claims that the treaty was a good achievement to prevent both countries from war. Also both the countries’ adherence to the treaty proved it a successful means of co-operation. Ramaswamy Iyer has stated that as per the growing demand of water and large scale water development within India and Pakistan there is a lot of dissatisfaction with the treaty. Talking about the technicalities of the treaty, he says that the treaty is highly technical and it is difficult to understand it even for Indus Water Commissioners.

The writer proclaims that if the joint management of Indus basin as one unit is not conceivable, then both countries should share water from each tributary of the basin. He has criticized the idea of B.G Varghese’s IWT II, which was suggested on the foundations of existing treaty. Iyer has objected Varghese’s idea on the these basis: (a) the Permanent Indus Commission has failed to promote better relations between the two parties, (b) differences over water utilization have weakened every hope for cooperation, (c) large water development projects have been made after existing treaty, hence it is impossible for two countries to compromise on it, (d) also the water distribution is not fair. His suggestion is in favour of new treaty. Talking on the rights of Kashmiris over their water Iyer has presented views and concerns of Kashmiris but in short. He argues that by giving western rivers to Pakistan the state of J&K has suffered much but the writer has overlooked the facts. Although the author claims to present a different view on the treaty and contemporary issues but, he has not covered
the topic comprehensively. Over all, the paper has enough scope for research on the topic and we have drafted many ideas for present study.

Hamir K. Sahni,


In this article the author fully complements the success of Indus Water Treaty despite three wars and continuous rivalry between India and Pakistan. Because of water scarcity due to climate change and other factors, conflicts emerged between them from time to time and are poising a big challenge to the functionality of the treaty. To get out of this quagmire, the author suggests the third party mediation (USA). The author tries to justify third party mediation taking clue from the World Bank’s role for signing the original Indus Water Treaty. There are clear indicators that U.S. intervention at this stage will work. The successful U.S. intervention in the recent Kargil conflict serves as a valuable precedent. The United States played an active role in mediation to defuse the crisis, and India raised no objections to third-party intervention in this case.

The biggest security threat in the region, and an impediment to regional collaboration, is the territorial dispute over Jammu and Kashmir—the main cause of the conflict between India and Pakistan. In order to find a constructive solution, it will be necessary to move away from the political realm—where a tradition of distrust and the desire for prestige complicate matters—into the economic sphere, where immense potential for cooperation exists. Because of the lack of trust among the two main parties, this will require some third-party intervention aiming to depoliticize the issue. As per author the United States can play a direct role here-and, in the process, also achieve its own policy goals. It is important, therefore, that the current disagreement over the violation of the treaty is resolved quickly so that it serves as a model for peaceful relations rather than an obstacle to cooperation. As Stephen P. Cohen has observed, “The Indus Waters Treaty is a model for future regional cooperation, especially on energy, environmental concerns, and even the management of the region’s impressive water resources.”
The author laments that due to the significance of water resources, these disputes become politicized. The main risk to stability in the region is the Indo-Pak dispute over Jammu and Kashmir. Increased cooperation between India and Pakistan would promote regional stability, help control the nuclear arms race, and make an end to the Kashmir conflict more likely.

The Indus river system has a direct impact on the state of Jammu & Kashmir, especially on its economic sectors. The Kashmir Valley, which is the main source of the dispute between India and Pakistan, has been affected by the IWT. There is a growing realization that the economic dimension is a crucial element in reaching a resolution in Kashmir, which would lead in turn to a more open and stable South Asia. Addressing water and power limitations will be an important element of economic development in the state of J&K. The western rivers of the Indus River system, which according to the treaty are for Pakistan’s exclusive use, flow through J&K. As a result, these waters cannot be used for irrigation and power generation. The author suggests minor amendments in the Treaty in order to benefit both the counties as well as J&K directly. The treaty can serve as a model to encourage joint projects that can harness more resources and use them more effectively.

The author has not mentioned what sort of adjustments she is talking about in order to pacify the stakeholders of the Indus River Basin Treaty. There should be a clear cut policy, a framework which would suggest a way to bring changes in the original Treaty.

**Peter H. Gleick,**

**Water Conflict Chronology, (Pacific Institute for Studies in Development, Environment, and Security, November 2009)** Peter H. Glick emphasizes the empirical evidence that shows conflict potential of the water sharing issues between the riparian states in the basins; even if they have entered into formal cooperative agreements. Glick maintains a conflict chronology database detailing 203 events stretching way back to 3000 BC. He identifies six categories or type of water conflicts (given below), some of them overlapping, that form basis of the conflict;

- Military Tool: “state actors” where water resources or water systems themselves are used by a nation or state, as a weapon during a military action.
• Political Tool: “state and non-state actors”, where water resources, or water system themselves, are used by a nation, state, or non-state actors for a political goal.

• Terrorism: “non-state- actors”, where water resources, or water systems, are targets or tools of violence or coercion by non-state actors.

• Military Target: “state actors” where water resource systems are direct target of military actions by nations or states.

• Development Disputes: “state and non-state- actors” where water resources or water system are a major source of contention and dispute in the context of economic and social development.

Peter H. Glick’s interpretation is useful to judge the nature of water conflict between India and Pakistan and on the basis of this interpretation Jermy Allouche has drafted the chronology of water conflict and has judged the nature of water disputes from 1947-1960. However, the same pattern has been applied in this work to prepare the chronology and to judge the nature of water dispute between India and Pakistan from 1960-2012. The study is useful for our work, but lacks many a dimensional parameters.

Muhammad Tariq,

“Pakistan-India Relations: Implementations of Indus Water Treaty: A Pakistan Narrative” Journal of Pakistan Institute of Legislative and Transparency (PILDAT) (2010) starts with historical background of India-Pakistan water dispute and circumstances that have led to Indus Water Treaty. Therefore, in connection with Indus Water Treaty, he elaborates on satisfactions and dissatisfactions of both parties on treaty. Moreover, in this monograph, the writer has focused on Pakistan’s water development on western rivers and claims that Pakistan has achieved massive goals in water development after signing the Indus Water Treaty. In the next section, he describes the history of water conflict between India-Nepal and India-Bangladesh and circumstances which led the countries to sign respective treaties.

Further, he talks about the contemporary issues and relations over water, and warns that India’s recent inter linking river project will be a cause of serious tension.
with its neighbour especially for Bangladesh. In this connection also he has mentioned the views of Indian Defence Institute that too has warned, if India could not manage its linking river project well, it will lead to increased conflicts and bad political relations in the region. The writer discusses some international water laws in the context of India and Pakistan water distribution and utilization mechanism, but does not cover the topic exhaustively. In the final section he highlights the Pakistan’s fears and concerns and opines that India’s construction of projects on western rivers is serious issue for Pakistani economy and it will effect adversely the relations between the two countries.

The writer further discusses some issues which can be addressed bilaterally and also suggests that some issues are common to both India and Pakistan, which can be resolved jointly. The writer suggests about some serious issues that can be resolved with the help of international agencies but for this countries will have to show devotion and interest. Though, the author is dealing with India Pakistan Water conflict, relations and some contemporary issues, he does not provide sufficient information on the topic. The writer has not taken into consideration the concerns of the people of Jammu and Kashmiri state.

Shaheen Akhtar,

“Emerging Challenges to Indus Waters Treaty: Issues of Compliance and Transboundary Impacts of Indian hydro projects On the Western Rivers”
Institute of Regional Studies, Islamabad, (2010), starts from the position that water has become a serious contentious issue between India and Pakistan certain reasons which are related to Indus Basin water. The author highlights the importance of Indus basin especially for Pakistan and says the water of Indus basin is a main vehicle of Pakistan’s economy and millions of inhabitants are directly or indirectly dependent on it. The author says the partition of British India left number of disputes between the two new born states. Out of which water and Kashmir disputes are the main cause of distress between India and Pakistan.

The author concentrates only on water dispute and describes the history of water dispute comprehensively, its negotiation process and role of World Bank which has led to Indus Water Treaty in 1960. The author argues that Indus Water Treaty has survived many ups and downs in the relations between the two countries, but from the
last two decades the treaty has come under strain mainly due to India’s construction of dams on western rivers.

In regard to construction of dams on western rivers, the writer claims that India is violating the Indus Water Treaty and its projects have great impact on Pakistan economy, ecology and security. The author expresses his apprehension that India’s actions may lead to fierce competition between two the countries and perhaps could become a cause violent conflict.

In the final section of the paper, the writer looks into the ways for promotion of peace by joint ventures by two countries. She says there are some common issues which demand work together, i.e. climatic change, environmental degradation, riparian states issues etc. She also of the view that about fifty years ago Indus Water Treaty was signed in different political situation and it should be renegotiated with current political and economic scenario. The paper gives us information on the topic but does not discuss issues in any unique manner; all these issues are commonly discussed in various papers.

Emma Condon, Patrick Hillmann, Justin King, Katharine Lang and Alison Patz, “Resource Disputes in South Asia: Water Scarcity and the Potential for Interstate Conflict,” (Madison: University of Wisconsin Madison, 2009) talk on South Asian Water conflicts. In this report the authors examine conflicts and agreements over water in South Asia and they highlight the significance of water for development of South Asian countries. Further, talking on the importance of water they have pointed out why water is becoming a source of conflicts between the countries of South Asia. Also they have explored that the decreasing quantity and mismanagement of water within the region.

The writers argue that the gap between supply and demand of water is breeding conflicts among shareholders. By integrating political, economic and climatic trends, the report highlights the areas of concern and outline probable developments. Emphasizing upon Indus Water Treaty they have explored how regional peace and stability is threatened by on-going water conflict between the two countries.
The report is divided into four components. First summarises the history and status of major water disputes between India and its three neighbours Pakistan, Bangladesh and Nepal. Section two forecasts trend in water demand by analysing the expected growth pattern in domestic, agricultural and industrial use. It also examines the probable effect of climate change on the projected water supply in each major South Asian river system. Section third extrapolates from current trend to forecast the likelihood, location and magnitude of conflicts about water in South Asia.

Section four presents opportunity of analysis in which strategies apply to manage the water the conflicts within South Asian region. Finally, the report assesses the several policies and measures that South Asia might employ to mitigate water shortage and conflicts likely to accompany them, external intervention may play an important role in these efforts.

Asit K. Biswas,

“Indus Water Treaty: the Negotiation Process,” *Journal of Water International Vol. 17* (1992) provides a historical overview on Indus water dispute and negotiation process that resulted in the Indus water treaty between India and Pakistan. In the introductory part of his paper the author starts from the genesis of water conflicts between countries and illustrates that the scarcity of water is a cause of water conflicts. Before speaking on Indus water dispute he gives a historical outline of the importance, development and needs of Indus water; he further discusses the occurrence of water disputes before partition of British India.

The writer talks on partition of India into new states of India-Pakistan, and explains the genesis of dispute between two new states immediately after the partition. Further he elaborates the whole scene of water conflict from 1947 to 1960 and negotiation process which resulted in the Indus Water Treaty. In the final section of the paper he has analysed the active role of World Bank during negotiation process.

The writer states that the critical role of third party (World Bank) was impartial and constructive for maintaining peace between two countries. It was possible only keen interest of Eugene Black and without the leadership and financial assistance of the World Bank, India and Pakistan could not have signed treaty within a short period. The writer suggests that the third party’s mediation is effective in resolving the
disputes. The paper deals with the water dispute between the two countries and the role of the World Bank. However, it does not cover the contemporary issues and challenges to the treaty.

F.A. Shaheen, M.H. Wani, S.A. Wani and S.A. Saraf,

“Sustaining Energy and Food Security in Transboundary River System: Case of Indus Basin,” (Srinagar: Sher-e-Kashmir University of Agricultural Science and Technology, 2005) the paper highlights that as a consequence of the Indus Water Treaty, the J&K state is unable to manage its economy as restrictions placed by the treaty have haunted economic possibilities in the state. The authors claim had the state allowed to increase its area under irrigation by one Lakh acres had the state had the freedom to harness its available water resources, the state could achieve significant development. Further, the writers have explored that economic development in Kashmir and claim the treaty has hindered the agricultural development as it allows only 40 percent of the cultivatable land can be irrigated though irrigation schemes. The authors also claim that 25 per cent of population of the state is living without electricity. Due to restrictions placed by the treaty J&K’s power generation capacity has also affected by the restrictions placed by the treaty. In concluding remarks the writer state the Indus Water Treaty has badly hit the Jammu and Kashmir State economy.

Erin Blakenship

“Kashmiri Water: Good Enough for Peace,” Paper Presented in Pugwash Conference at Islamabad Pakistan, (2009) the writer starts from the history of Kashmir conflict and claims that it is one of the violent conflicts between two countries and has potential of destroying the political relations and peace of the region; India and Pakistan have experienced three wars over it. He says due to conflict more than 50000, people have lost their lives and also economic development of the Kashmir has severely been affected. Further, he explains, apart from the political issues, in near future the water could become another grave issue between India-Pakistan and Jammu and Kashmir.

The writer highlights the significance of water in human life and countries’ development. He warns that the decreasing quantity of water is becoming a severe
threat for countries’ development and stability especially within trans-boundary river basins. The author warns that in South Asia water quantity is decreasing rapidly and demand is increasing at high level and says this situation can be a cause of serious tensions between South Asian countries especially between India and Pakistan and it will likely contribute to inter-state and intra-state water conflicts. He presents the statistical analysis of India-Pakistan water quantity and warns there is a huge gap between water availability and population growth rate. If the situation remains as it is, decreasing quantity of water is likely to promote political, even armed conflict between India and Pakistan. In this part the writer also explains negotiation process which resulted in the Indus Water Treaty and explains that in fact by signing of the treaty both countries have finished long standing dispute. But current needs and demand for water have weakened the Indus Water Treaty and water of Indus has become a matter of life and death for India and Pakistan, where no one is ready to compromise on it.

Huge stock of water of the Indus Basin originates from Kashmir therefore, in this paper the author describes the potential of J&K water and says J&K has become important place for India and Pakistan because of its water resources. Further talking on the right of Kashmiris over water, he highlights that water is the main source for Kashmir’s economy which can develop agriculture, power sector and other allied sectors. Moreover the writer emphasises the awareness of Kashmiris on Indus Water Treaty and its negative consequences on J&K state. He opines if both the countries will allow J&K to tape its water resources as per requirements, the state could easily develop its agriculture, power sector and allied sectors. And also people of state will manage the on-going conflict in the state. There are some views on joint management of Indus basin therefore he also proclaims about the joint management of Indus basin between two countries also would help to open the ways for good relations between two countries and optimum chances for development including J&K state.

In the last section of the paper the writer addresses the relationship between international water laws and trans-boundary treaties. He defines that basin communities have developed rich history of cooperation especially talking about Indus water treaty. He praises its principles of co-operation and transparency. The author says that the redrafting of the treaty is possible by willingness of two countries but the
two countries are not doing so for fear of losing the ground. Also by signing the Indus Water Treaty both countries have protected their interests, therefore they are not willing to abrogate or redraft the treaty. Meanwhile, he warns if India and Pakistan are not willing to renegotiate the treaty, the demands of Kashmiris will gradually increase. This study gives us useful information on the topic especially on the view point of Kashmiris on Indus Water Treaty. Although the author discusses the views of Kashmir on treaty, yet he does not make clear certain facts about the losses incurred by the treaty. He has discussed the international water laws but has not mentioned under which laws J&K can demand their water rights from the countries concerned. This study is useful for present research and provides significant information on the topic.

Muhammad Siyad,

“Helsinki Rules and Indus Water Treaty” Journal of Himalayan and Central Asian Studies New Delhi Vol. 9 no. 3 (2005) the research paper comprises four parts, part first deals with the brief history of Indus Water Treaty and its main principles, and has claimed that the Indus Water Treaty was remarkable achievement to prevent water conflict between India and Pakistan. Meanwhile, he has depicted that the Indus Water Treaty is a complex agreement with comprehensive articles.

Talking on the dispute resolution mechanism of the treaty he highlights the duties and responsibilities of Permanent Indus Commission (PIC) and states that it was a good achievement that Indus Water Treaty has established the post PIC for peace and maintenance of two countries. In this connection he emphasizes three steps of water dispute settlements through Permanent Indus Commission (PIC), Neutral Experts (NE) and Court of Arbitration (CoA), and opined that this principle of dispute settlement in Indus Water Treaty has enough scope for maintaining peace and also it has guided various water laws to adopt this provision. The paper elaborates that the Indus Water Treaty has maintained relations of two countries through meetings of PICs. Apart from India-Pakistan discussion on water the writer highlights the growing concerns of Kashmiri society over the Indus Water Treaty and he claims the Indus Water Treaty has severely disturbed the J&K state economic sectors especially power sector.
In second part he has explained the history and certain aspects of Baglihar dispute and stated that Baglihar has political, economic and technical aspects. He highlights the Pakistan’s objections on various projects on western rivers especially over Baglihar. Its technicalities, cause of dispute, both countries security concern, Pakistan’s hydrological and economical point of view and India’s response over objections.

Part third focuses on the UN conventions on non-navigational uses of water and describes the relationship of Indus Water Treaty with UN conventions, and its provisions for peaceful settlements of disputes. The writer claims that during the settlement of Baglihar dispute the World Bank has applied the norms of emerging laws which were not taken into account at the time of signing of the Treaty. In connection with some disputes, he has presented a brief sketch of Helsinki Rules but not thoroughly, writer says if we take the example of Helsinki Rules the Indus basin should be treated as single unit. He has revealed the distribution of water between two countries and stated that allocation of water was not fair and his indirect point is that India is a loser at treaty.

The writer has justified the fact through statistic data of India’s dependent population and area on water, but he has not specified which states of India are dependent on Indus river basin. In fourth part write has elaborated the principle of not to cause significant harm and material injury. However, he claims that Baglihar project has no significant harm to lower riparian Pakistan, and claims that the Indus water Treaty allows India to construct run-of- river projects on western rivers. Therefore, it is not violating this provision.

Finally the author argues that the treaty is a complex agreement in both substantial and procedural ways, though it deals with the issues of water allocation and flow of water. In relations with water management principles he has argued that IWT is a successful instance of water conflict management and appreciated the mechanism of dispute settlement, role of PIC and role of NE especially in Baglihar dispute. He opines, in case of renegotiation or redrafting of the treaty both countries have option to adopt emerging norms of internationally recognized water management principles. Water related issue between two countries should be resolved through bilateral approach rather than third parties mediation. The writer has discusses the Baglihar
dispute, yet he does not cover the full technical, political, economic and legal aspects of dispute. He has presented the views of Kashmiri society over treaty but not cover them entirely. Overall this paper provides us valuable information on the topic of treaty and its relations with internationally recognized water management principles.

Though some Newspapers, Periodicals Journals, Magazines, Booklets, Pamphlets and the statements published by governmental and Non-governmental organizations etc. are informative but they are not exhaustive. Whereas other books and journals do not cover all the aspects of the topic as some books have detailed historical perspective some talk about the contents of the treaty while some others elaborate upon current developments/infringements of the treaty only and have sketchy view of the background.