INTERNATIONAL LAW AND THE WATER CONFLICTS

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FINAL APPROVAL

It is certified that we have read the dissertation submitted by Mr. Abdul Waheed student of LLM International Law Registration No: 86-FSL/LLMIL/S08 entitled "*International Law and the Water Conflicts*" as a partial fulfillment for the award of degree of LLM (Internatioal Law). We have evaluated the dissertation and found it up to the requirement in its scope and quality for the award of degree.

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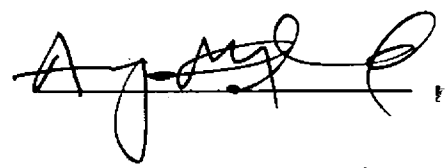

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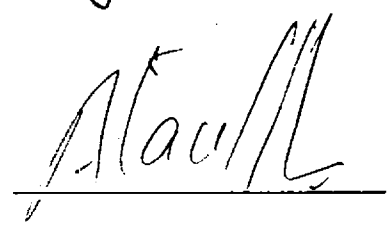

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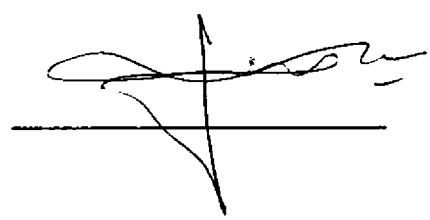

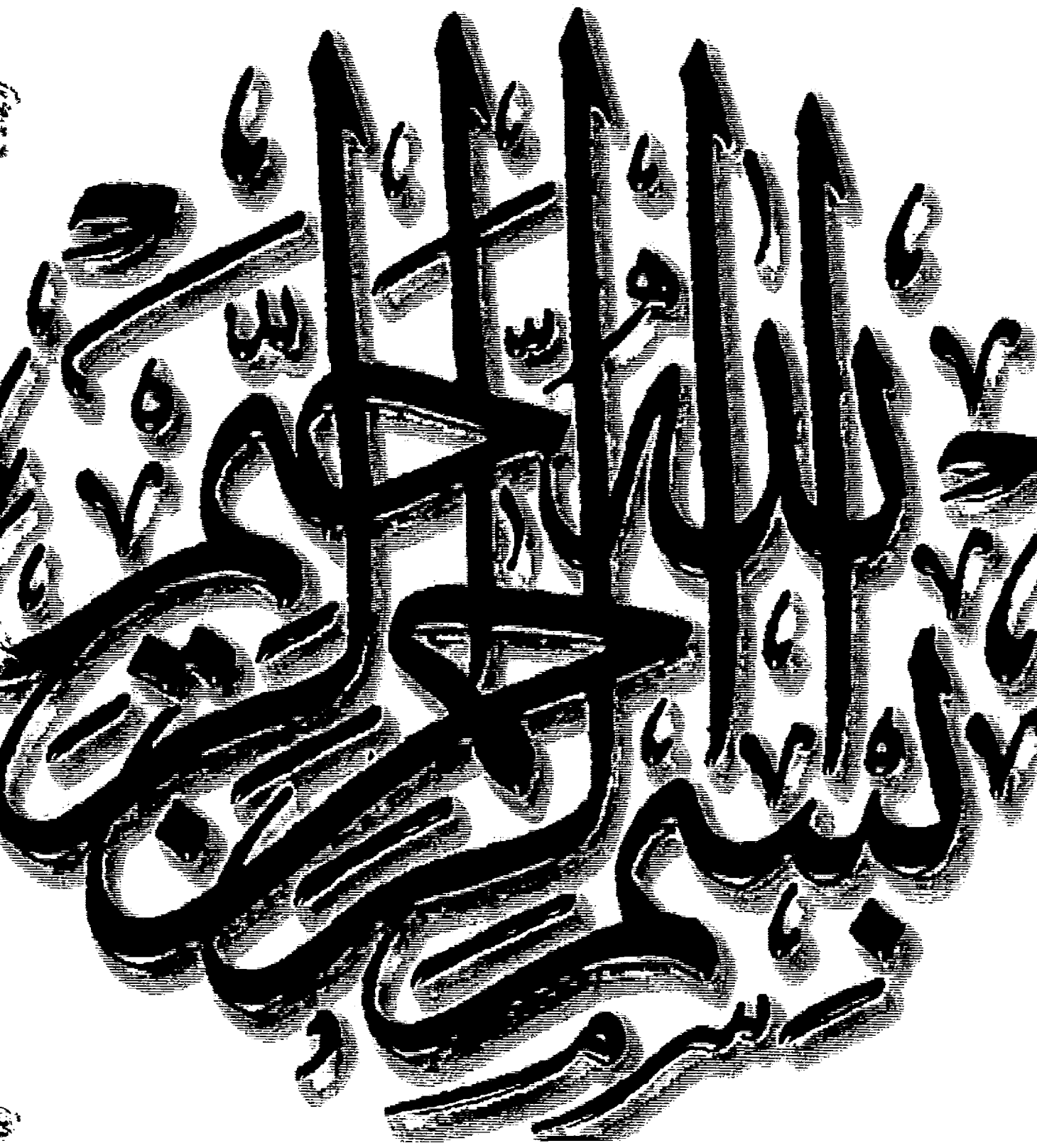

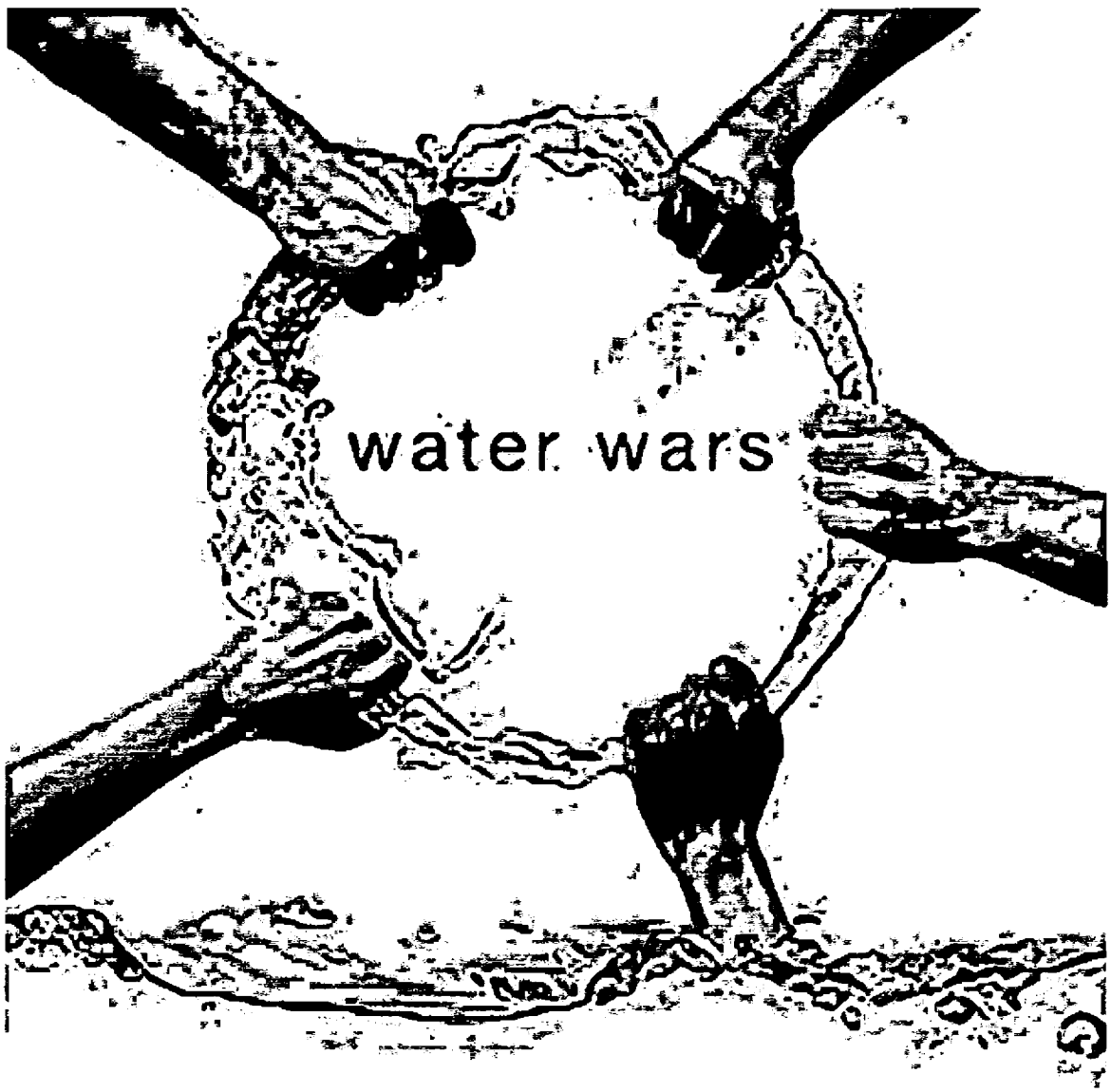
water wars

TABLE OF CONTENTS

CHAPTER 2 INTERNATIONAL WATER LAW

CHAPTER 4 RECOMMENDATIONS AND CONCLUSION

LIST OF ABBREVITATIONS

ASL	Above Sea Level
ICJ	International Court of Justice
ICAS	Interstate Council for the Aral Sea
ICPR	International Commission for the Protection of the Rhine against pollution
ICWC	Interstate Commission for Water Management Coordination
IFAS	Interstate Fund for the Aral Sea
IHK	Indian held Kashmir
ILA	International Law Association
ILC	International Law Commission
IWL	International Water Law
IWT	Indus Water Treaty, 1960
J&M	Jammu and Kashmir
M	Meters
MAF	Million Acre Feet
MW	Megawatt
PCIJ	Permanent Court of International Justice
GAP	Southeast Anatolia Project or Guneydogu Anadolu Projesi
UBDC	Upper Bari Doub Canal
UN	United Nations
UNEP	United Nations Educational Program
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNGA	United Nations General Assembly
USA	United States of America

LIST OF CASES

1. The River Oder Case, 1929 (PCIJ).
2. The Diversion of Water from the Meuse, 1937 (PCIJ).
3. The Gabcikovo-Nagymaros Case, 1997 (ICJ).
4. The Helmand River Delta Case, 1872 and 1905 (Arbitration).
5. The Lake Lanoux Case, 1975 (Arbitration).
6. The Trail Smelter Case, 1938-1941(Arbitration).
7. The Gut Dam Case, 1968 (Arbitration).
8. The Zarumilla Case, 1945 (Arbitration).

LIST OF CONVENTIONS AND RULES

- The Berlin Rules on Water Resources, 2004.
- Helsinki Rules on the Uses of the Waters of International Rivers, 1966.
- United Nations Convention on the Law of Non-Navigational Uses of International Watercourses, 1997.
- Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 1992.

LIST OF FIGURES

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Though I did not visit the watercourses and places mentioned in the thesis, I was nonetheless helped in preparing for a visit by people experts in Pakistan. For this I would like especially to thank Mr. Syed Amjad Mahmood, Assistant Professor, Faculty of Sharia and Law, International Islamic University Islamabad (IIUI).

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ABSTRACT

The world has witnessed many wars and it is expected that many clashes will take place in future. The reasons of these wars are various, for instance, religious, ideological, economic, racial, political radicalism, civil, population immigration and terrorism. After the 9/11 incident, global society has been fighting war against terrorism seriously, whereas there is also a new kind of battle, which may be waged in the world in the near future over natural resource, which is called water war, water conflict, water terrorism, and water use as weapon. At present, human's aim to control water has been greater than in the past and this struggle for water may spark wars among states.

Worldwide, water scarcity, mismanagement, lack of International Water Law (IWL), shortage of international institutions, accessibility to clean water, lack of investment, lack of co-operation, poor quality might be the causes of international and regional conflicts and especially when they happen between States of weak international relationship.

In this thesis, I will throw light on International water conflicts over distributed clean water resources and particularly through an examination of chosen case study of Indus Water Treaty, 1960(IWT) between India and Pakistan, the sources of International Water Law and the critical analysis of International Water Law and Indus Water Treaty, 1960.

The first chapter of the thesis will focus on conflicts in different regions of the world regarding a number of international rivers: the Indus, the Ganges, the Mahakili, the Jordan, the Tigris-Euphrates, the Nile, the Parana, the Lauca, the Aral Sea, the Rhine, the Colorado, the Rio Grande, and the Columbia, in which only some of the conflicts have been resolved while other are continuing and show no signs of an imminent solution.

Chapter 2 deals with the sources, role, principles and significance of non- navigational uses of IWL. This section studies what legal frameworks if any, exists to manage the utilization of international rivers, and a number of efforts by the global community to enter into consent over the factors to be taken into consideration when a conflict over water share arises between countries. This chapter also deals with the cases which are decided by Permanent Court of International Justice (PCIJ), International Court of Justice (ICJ) and International

Arbitration Tribunals and the importance of these cases in the development of in International Water Law. This chapter also discusses the important principles of International Water Law, which has two specific aims, firstly, to summarize the principles of International Water Law dealing with international watercourse management and secondly, to examine the extent to which these principles are included in present international conventions and rules.

Third chapter critically examines the International Water Law the focus will be on the sole universal UN Watercourses Convention, 1997 available on non-navigational uses of shared watercourses. What are the issues that have contributed to reluctance of states to become party to it? This chapter also addresses as to why Indus Water Treaty, 1960 is currently losing its efficiency in resolving the dispute and may fail to avoid water wars between Pakistan and India and the problems have the potential to become a crisis, damaging the Indus Water Treaty, 1960.

Finally last chapter is about recommendations at the international level, regarding Indus basin and conclusion.

CHAPTER 1

CURRENT AND OLD INTERNATIONAL WATER CONFLICTS

"The struggle to control water is a struggle without end"[1]

1.1 Introduction

Several areas around the world face scarcity of fresh water. No region of the earth is exempted from disagreement among different States over water. On one hand, some of these controversies are liable to give rise to conflicts. On the other hand, various issues regarding water distribution are normally solved in a businesslike manner through bilateral and regional treaties. Agreements manage the organization and utilization of various international watercourses, but few of these treaties have not proved fruitful. Bilateral agreements and rules are lacking in authority because of the nature or tension between the countries concerned. Tensions are sometimes due to strategic importance of water in the region. For example, Indus River or scarcity of waters in the region for example the Middle East.

Though, several regions deal more with conflicts over collective water supplies and relationships among the States are expected to be unbalanced. In areas, where water is rare, conflicts sometimes appear to be the single approach to solve the issue.

1.2 South Asia

South Asia is home to some important river systems, like the Indus River and the Ganges-Brahmaputra. While, the artificial distribution of watercourses by political limitations as well as pressure placed on fresh water resources by population expansion have given rise to disputes between countries in the region. Water distribution has been consistently a key problem between India and Bangladesh in terms of division of the Ganges-Brahmaputra and also between Nepal and India in terms of Tanakpure Hydro scheme. Water distribution between Indian and Pakistan has always been a burning political and international issue in connection with Indus basin.

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[1] T.Tvedt and E.Jakobsson, ed., *A History of Water*, vol.1 (London: New York: I.B.Tauris 2006), I.

1.2.1 The Indus Basin

Worldwide utilization of fresh water is increasing at a much faster speed than the increase in population. Hence, the stress of fresh water scarcity is being felt all over the globe. Pakistan and India are no exception to it. At the present rate the population of Pakistan will go up to 270 million in 2025, and that of India will be 1.3 billion.[2]

The result of global warming is by now perceptible and might make imbalance by either series of scarcity or incessant rainfall causing flood. In such a position, the Pakistani and Indian governments may have to depend more on artificial means such as construction of large dams, and linking of watercourses so as to divert water to regions where water is scarce. In such a situation, the two States would be compelled to take actions to control water supply from the source of beginning of watercourses. That's why, the control over Indus basin by the two States is one of the possible issues of conflict between the two nations. In future, Indus water issue is going to be as critical as Kashmir.

In the past, even subsequent to the downfall of the Indus civilization, the area saw the appearance of the great kingdoms like, the Parthians, the Bactrians, the Mughals, the Mongols, and the British. The Indus basin in these empires hardly became a contentious problem because there was a singly political power in the region and also that Indus water remains a shared property, away from any central political power.

The first background was set under British colonial rule for future conflicts in the region to have power over the water flowing from the Indus basin. In 1947, after the independence of Pakistan and India, main conflicts came to surface due to even distribution of assets including water. A boundary commission under the chairmanship of Sir Cyril Radcliffe awarded all the sources of the five tributaries of the Indus Basin (Beas, Chenab, Jhelum, Ravi, and Sutlej) to India. Thus, all sources of Indus water remained in India and continued to be the upstream riparian of the Indus and its rivers. In spite of such a dangerous distribution of Indus water, the relations between Pakistan and India ever since their independence have continued to be stressed and brittle.

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[2]Muhammad Kabir, "Pakistan Banjer Ho Jaye Ga," *Jang, Sunday Magazine*, 4 January, 2009.

1.2.1.1 The Course of Indus Basin

To completely figure out the problem that the Indus Basin bears, it is important to be familiar with the course of its flow from source to the empting in Arabian Sea.

The earliest name for the Indus River was Sapta-Sinduhu which means a soil of seven watercourses. These are Chenab (Asikni), Indus (Sindhu), Jhelum (Vitasta), Ravi (Parsuni), Soan (Susoma), Sutlej (sutudri), and sarasvati. So it is said that the Aryan invaders gave it the name of Sindhu, which is Sanskrit word, means Ocean.[3]

The Indus Basin is 2900 km long originates in the Kailash range in Western Tibet at the height of approximately 18,000 feet[4] and then travels in a Northwest direction through China to Ladakh in Indian held Kashmir. The river then streams West, crosses the Kashmir boundary, and spins South and enter into Pakistan. After passing from area of high altitude, the Indus runs as a speedy mountain stream between Hazara and Swat regions in Pakistan until it arrives at the basin of Tarbela Dam. The Kabul watercourse sticks together the Indus just above Attock, where the Indus cuts across the salt series close to Kalabagh to flow into the Punjab plain.

The Indus River then takes its most famous tributaries from the East. These five tributaries are Beas, Chenab, Jhelum, Ravi, and Sutlej. Likewise, these five rivers originate in India and later link the Indus in Pakistan. Hence, all sources of Indus water originates in India and sustained to be the upstream riparian of the Indus and its five major rivers. Pakistan remains the lower riparian of Indus basin.

1.2.1.2 Pre -Independence Conflicts on Indus

Irrigation in the Indus valley has been in vogue since primitive times. The said irrigation system, based on small level schemes, irrigating a vast portion of the area, was rather limited one. The first background was set under British colonial rule for future conflicts in the region to have power over the water flowing into the Indus Basin. The British started enormous water schemes and included several of the rivers of the Indus into an integrated basin-wide managing plan. Before 1859, a system of big and small canals linking one branch of the watercourse to another, were constructed.

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[3]Kaiser Bengali, *The Politics of Managing Water*, (Islamabad: Oxford University Press, 2003), p. xxii.

[4]Ibid.

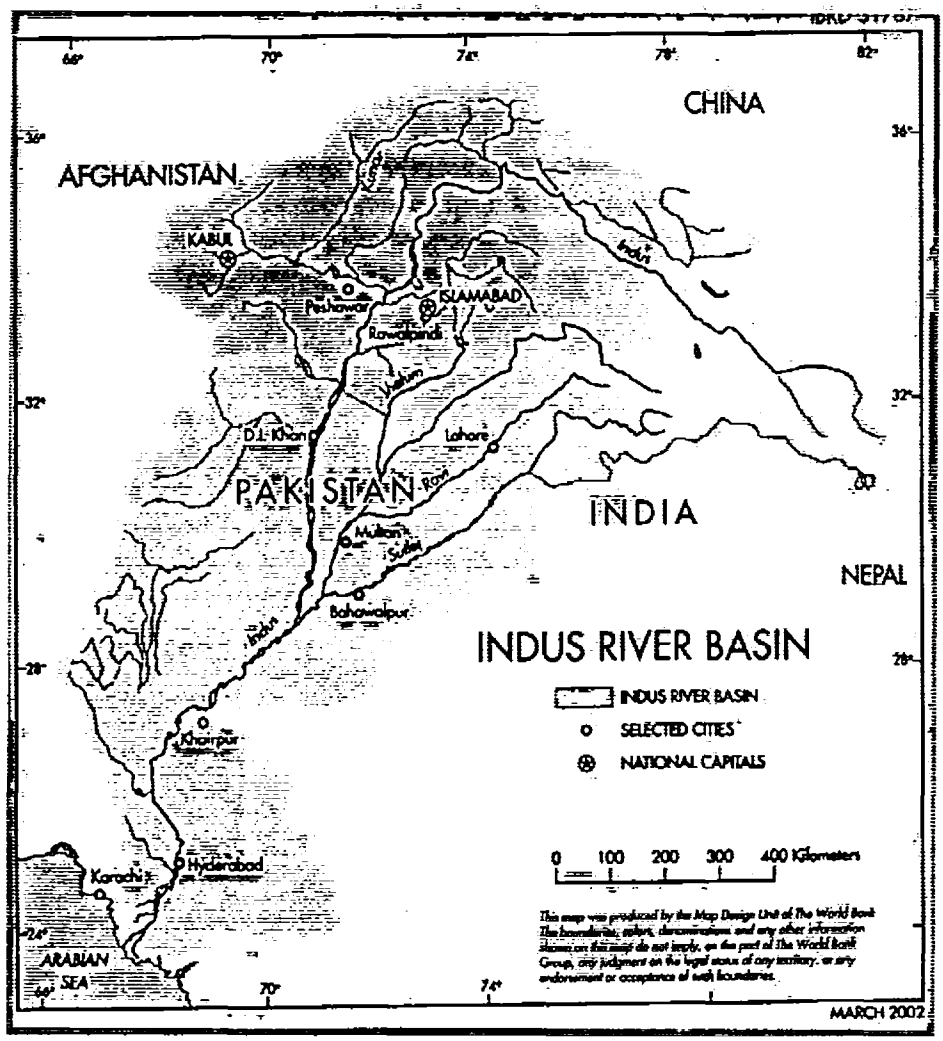

Figure 1.1: Site of Indus Basin Systems[5]

[5]Antarpreet S. Jutla, Dewayne Wan," Indus River Basin,"(2009), https://wikis.uit.tufts.edu/confluence/display/aquapedia/Indus+River+Basin (accessed: 21 November, 2011).

The position began to change considerably around the middle of the 19th century. In 1859, a new period in irrigation was heralded, when the Upper Bari Doub Canal (UBDC) was finished from the water of Ravi. It irrigates approximately 01 million acres of land between the Beas and Ravi Rivers[6]. In 1872, Sirhind Canal was constructed. Furthermore, new canals were dug out; various older canals were improved, renewed, and enlarged. As a result, between 1875 and 1900 in the Sind region irrigated land doubled from around 1.5 million acres to 3.0 million acres[7].

Interstate enmities over fresh water were not a crucial crisis in the Indus Basin until after the World War I, like as early as in 1862, irrigation officials in Punjab suggested the notion of efficient utilization of water "The best line for a canal is that from which the largest extent of country can be irrigated at the smallest cost, irrespective of the name or nature of the existing Government of the country in question."[8] This idea was later accepted by the Indian Government and was a basis for major suggestions of the Indian Irrigation Commission 1901-1903. Following the World War I, new main irrigation schemes like the Sukkur Barrage, Sutlej Valley, and Bhakra projects were planned to enhance irrigated land in the Indus Basin.[9]

Interstate worries started to pose a problem in connection with the upstream and downstream water accessibility. The parties in these conflicts were the Indian States of Bikaner and Bahawalpur and British-ruled provinces of Bombay and Punjab. It must be noted that until 1935 Sind was a part of the Province of Bombay. As at that time, the Secretary of State for India in London and the Government of India had the authority to decide interstate conflicts on water by an executive order.[10]

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[6]Undala Z. Alam, *"Water Rationality: Mediating the Indus Waters Treaty,"* (diss., Department of Geography, University of Durham 1998), p.36.

[7]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 201-209, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

[8]J.H.Dyas, "Memorandum on Captain Crofton's Preliminary Report on the Sutlej Canal Project," *Agricultural Proceedings, No. 3, Govt. of Punjab,* (22 October 1962): 82.

[9]Undala Z. Alam, *"Water Rationality: Mediating the Indus Waters Treaty,"*(diss., Department of Geography, University of Durham 1998), p.36.

[10]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 201-209, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

After negotiations with the concerned parties, the authorities by an executive order Sukkur Barrage, Sutlej Valley Projects and The Bhakra Project was not allowed because the reservoir would have inundated area in the princely state of Bilaspur[11].

With the approval of the Government of India Act of 1935, the executive order through which the Government of India can decide interstate water conflicts[12] became void. The Act, primarily made water a subject of provincial jurisdiction[13], as a result, provinces were authorized to develop their own water sources. The Governor-General of India was authorized to interfere merely when there was an interstate watercourse conflict between two or more provinces, when one complained against the other.

As far as the Indus Basin system was concerned, Sind became rather worried over the possible impacts of various new irrigation systems that were being examined by Punjab province for potential implementation. Sind, in October 1939, officially demanded under the Act of 1935 from the Governor-General of India to constitute a commission to analyze their objection that:

"The effect of Punjab's new projects, when superimposed upon the full effects of its projects already approved or executed, would be to cause such lowering of water levels in the Indus River from May to October as would seriously affect the efficient working of Sind's inundation canals; and that the Thal and Haveli Projects would create a serious shortage of water at Sukkur in winter such as would interfere with the supplies required by the Sukkur Barrage Canals."[14]

Under the chairmanship of Justice B.N. Rau, the Indus Commission was constituted in September 1941, which presented the findings in July 1942. The conclusion of the Indus Commission's report was that the withdrawals of water by Punjab province was expected to cause material damage to the inundation channels in Sind, particularly in the month of September and also proposed a few particular

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[11]N.D Gulahti, *Indus Water Treaty* (Bombay: Allied Publishers, 1973), 472.

[12]Aaron T. Wolf, Joshua T. Newton, " Case Study of Transboundary Dispute Resolution: the Indus Water Treaty" p.1, http://www.transbooundarywaters.orst.edu/research/case-studies/indus-New.htm (accessed: December 13, 2011).

[13]Ibid.

[14]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 201-209, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

suggestions on the distribution of the Indus waters during the time of winter.[15] As expected, both the provinces did not accept the reports of the Commission. Between 1943 and 1945, as a final attempt, the Chief Engineers of the two provinces gathered to look into the matter as to whether a jointly satisfactory agreement might be concluded by the two provinces.[16] They produced a draft agreement in September 1945, which was also not accepted by both provinces. Thus, the stage was set to submit the conflict to the British Government in London for a decision, and lastly, in the beginning of 1947, it was determined to submit the dispute to the Secretary of State for India in London for a last judgment.[17]

But the time for submitting of the water dispute to the British Government became unsuitable. Because prior to any finding might be reached, on 14th August, 1947, Pakistan and India got independence and any more efforts to find a solution to the conflict were made by the British Government an inappropriate procedure. In addition, conflict resolution was made more complicated and difficult by the Indian Independence Act of 1947 as the Western districts of Punjab and Sind became part of Pakistan, while the Eastern districts of Punjab became part of India. Before partition in 1947, the disagreement over the distribution of waters of the Indus Basin was interstates conflict. The division of India signified that the two provinces were no more inside one state, but parts of two newly independent countries, and not having friendly relationship with each other.

1.2.1.3 Post- Independence Conflicts on Indus Basin

The Radcliff Commission carried out partition of India into two sovereign States within a record time of just two months and thirteen days.[18] Actually, when in 18 July 1947, British Parliament passed the Indian Independence Act, the border line that was to separate Punjab into two new States was not even determined.

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[15]Ibid.

[16]Undala Z. Alam, *"Water Rationality: Mediating the Indus Waters Treaty,"* (diss., Department of Geography, University of Durham 1998), p.41.

[17]Ibid, p.41

[18]Aaron T. Wolf, Joshua T. Newton, " Case Study of Transboundary Dispute Resolution: the Indus Water Treaty"p.1,http://www.transbooundarywaters.orst.edu/research/case-studies/indus-New.htm(accessed: December 13, 2011).

Therefore, under the chairmanship of Sir Cyril Radcliff, the Punjab Boundary Commission was constituted to divide the province into West and East Punjab. Sketching an international boundary between two new States was not an easy task under those circumstances, because a complexity in determining where the international border between West and East Punjab would lie was made worst by the included character of the canal structure, and the high reliance of farming in undivided Punjab upon the water of canals. Radcliffe proposed a suggestion to both Jinnah and Nehru, the then leaders of Pakistan and India at that time, that "Punjab Water System should be a joint venture run by both countries."[19]But, the idea of Radcliffe was criticized by Muslims and Hindus:

"Jinnah told him to get on with his job and inferred that he would rather have Pakistan deserts than fertile fields watered by courtesy of Hindus. Nehru curtly informed him that what India did with India's rivers was India's affair. Both leaders were obviously furious with him and hinted that he was playing politics."[20] The Commission found it impossible to maintain the irrigation structure of the Upper Bari Doab Canal (UBDC) because its upper section was lying in India, while the lower part in Pakistan. They also recommended that "a solution may be found out by agreement between the two States for some joint control of what has hitherto been a valuable common service."[21]

With the speedily worsening condition between the two new nations, the option of collective management of the UBDC was not a reasonable resolution. Though, on 10 December 1947, short-term solution was set up by the two Chief Engineers of East and West Punjab to sustain before partition distribution on the UBDC and at Ferozepur.[22] On 20th December 1947, both the Chief Engineers signed a Standstill Agreement. The agreement was to be negotiated before the Standstill Agreement ended on 31st March, 1948.[23] The Agreement worked pleasantly for the period it was negotiated but what exactly occurred toward its expiry is difficult to judge.

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[19]L.Mosley, *the Last Days of the British Raj,* (*New* York: Harcourt, Brace 1962)198-199.

[20]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992),203. http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

[21]Ibid.

[22]Ibid.

[23]Aaron T. Wolf, Joshua T. Newton, "Case Study of Transboundary Dispute Resolution: the Indus Water Treaty," p.1, http://www.transbooundarywaters.orst.edu/research/case-studies/indus-New.htm (accessed: December 13, 2011).

On 1st April 1948, India discontinued the flow of water passing through its territory to Pakistani canals. The India had stopped the Ferozepur headwork's on the Sutlej watercourse affecting the Dipalpur canals and the UBDC, which damaged 1.6 million acres of irrigated soil in Pakistan.[24] There are several suggested reasons for the Indian act to stop flow of water for irrigation. Amongst the reasons recommended by the experts few of them were following:

"put pressure on Pakistan to withdraw the "volunteers" from Kashmir, certain Indian leaders wanted to "use every means at their disposal to wreck her (Pakistan's) economy, to demonstrate that she could not succeed alone, and thus to bring her back to India," and denial of irrigation water would expedite the process; and retaliation by India for Pakistan's imposition of an export duty on raw jute leaving East Bengal for processing in the jute mills of West Bengal."[25]

It may, the event of 1st April, 1948 precipitated the proper dispute between Pakistan and India on the distribution of the Indus Water System. Talks on the dispute were shortly started, and on 30th April, 1948, the Prime Minister Nehru issued clear instructions to the East Punjab Government to continue the delivery of water of the Dipalpur Canal and UBDC. At present, it is hard to discover the main motives for that unpleasant event. As there were various players implicated, it is possible that their incentives were not all similar. On 3-4 May 1948, in New Delhi an Inter-Dominion Conference was held between the two countries. On 4th May, the two States signed the Delhi Agreement, also known as The Inter-Dominion Agreement, which guaranteed Pakistan that India had no plan of abruptly stopping water to Pakistan without giving time to develop alternating resources. Likewise Pakistan accepted the natural worry of India to develop regions where water was insufficient and that were underdeveloped when judged against the regions of West Punjab.

The signatories in Delhi Agreement, on behalf of Pakistan were the Finance Minister, Ghulam Muhammad, and ministers, Mumtaz Daultana and Shaukat Hyat Khan. The Indian signatories were the Prime Minister, Jawaharlal Nehru, and ministers, N V Gadgil and Swaran Singh. There were a number of firm discussions between the two countries

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[24]Dr.Noor ul Haq Sadia Nasir, "Water Issue in Perspective," *Islamabad Policy Research Institution*, http: //ipripa k.org/factfiles/ff45.shtml(accessed: march 2011).

[25]A.A.Michel, *The Indus Rivers*, (New Haven: Yale University Press, 1967), 34.

before the agreement was signed. India argued that Pakistan had approved to pay for water under the Standstill Agreement 1947, it signified that Pakistan had accepted India's proprietary right to water. In reaction, Pakistan argued that expenditure was not for the water received by Pakistan, but for the expenses of protection and function of the irrigation structure as it belonged to Pakistan anyhow due to the right of prior share.

The Delhi Agreement of 4th May 1948 did not especially decide this problem, but the West Punjab Government "agreed to deposit immediately in the Reserve Bank such ad hoc sum as may be specified by the Prime Minister of India."[26]

Whereas Delhi Agreement of 1948 for the time being solved the critical problems, Pakistan was not pleased with it. As a result in 1949, Pakistan sent a letter to India with the view that the "present Modus Vivendi (Delhi Agreement) is onerous and unsatisfactory to Pakistan," and that another Inter-Dominion Conference should be held early in order to make "an equitable apportionment of the flow of all waters common to Pakistan and India and resolving by agreement all disputes incidental to the use of these waters." Furthermore, if "negotiations cannot accomplish such a practical solution, the International Court of Justice shall, upon application of either party, have jurisdiction to resolve the dispute."[27]

Between the two States, several notes were exchanged. A few of them were at the highest government level. Like, on 8th October 1950, the Prime Minister of Pakistan Liaquat Ali Khan recommended an International Commission consisting of equivalent number of judges from both the States, but Indian Prime Minister Nehru refused that suggestion. Generally, however, India was not agreeable to third party arbitration.

So far as any further improvement on the distribution of the Indus Basin water was concerned, it was pretty apparent that by 1950 the two nations had reached a dead end. Some of the conflicting problems were the following: Pakistan declared that the Delhi Agreement of 1948 was accepted and signed under compulsion and pressure. On 29th September 1954 to this allegation Nehru responded to the Prime Minister of Pakistan: "I cannot imagine how any question of compulsion could possibly have arisen in these

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[26]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 201-209, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

[27]Ibid.

circumstances. There was then no kind of threat or even suggestion about stopping the flow of water."[28]

There were also a few complexities with the ad hoc sum that had to deposit by the West Punjab Government with the Reserve Bank of India under the Delhi Agreement, and Pakistan also wished to submit the canal water issue to the International Court of Justice, but India wanted to submit an ad hoc tribunal with an equivalent number of judges chosen by both the nations.

However, the Delhi Agreement of 1948 would continue flow of water to Pakistan but at a price. At first, Pakistan was to give for the transfer of water through India, and then, India was to be permitted steadily to reduce this delivery of water to Pakistan. While Pakistan had signed the Agreement, Pakistan was unhappy with the provisions there. Therefore, Pakistan challenged the agreement and its method of signing the agreement. On the other hand, India was pleased with agreement. India considered it as an international water accord, and rejected Pakistan's claim. The Delhi Agreement was observed until 1960.

1.2.1.4 World Bank Involvement:

In 1951, David E. Lilienthal, (former Chairman of the Tennessee Valley Authority), was invited by Nehru the Prime Minister to visit India. He also visited Pakistan. He wrote an article outlining his ideas and proposals on the Indus Basin. He suggested that:

"The starting point should be, then, to set to rest Pakistan's fears of deprivation and a return to desert. Her present use of water should be confirmed by India, provided she works together with India (as I believe she would) in a joint use of this truly international river basin on an engineering basis that would also (as the facts make clear it can) assure India's future use as well. The urgent problem is how to store up now wasted waters, so they can be fed down and distributed by engineering works and canals, and used by both countries, rather than permitted to flow to the sea unused. This is not a religious or political problem, but a feasible engineering and business problem for which there is plenty of precedent and relevant experience. This objective, however, cannot be achieved by the countries working separately; the river pays no attention to partition - the

[28]Undala Z. Alam, *"Water Rationality: Mediating the Indus Waters Treaty,"* (diss., Department of Geography, University of Durham 1998), p.50.

Indus, she 'just keeps rolling along' through Kashmir and India and Pakistan. The whole Indus system must be developed as a unit - designed, built and operated as a unit, as is the seven-state TVA system back in the U.S. Jointly financed (perhaps with World Bank help) an Indus Engineering Corporation, with representation by technical men in India, Pakistan and the World Bank, can readily work out an operating scheme for storing water wherever dams can best store it, and for diverting and distributing water."[29]

Eugene R. Black, President of the World Bank was inspired by those recommendations. Black made contacts with Lilienthal for advice to resolve the issue. Consequently, Black proposed to the Governments of Pakistan and India, to accept the Bank's good offices. He, in a following letter, draws "essential principles" that may be pursuing conflict solution. These principles incorporated: "that water resources of the Indus basin should be managed cooperatively; and that problems of the basin should be solved on a functional and not on a political plane, without relation to past negotiations and past claims."[30] He also proposed that Pakistan and India each select a senior engineer to work on a plan for development of the Indus and a Bank engineer would be presented as an ongoing advisor.[31] In March 1952 both countries accepted Black's proposal.

The first meeting of the Working Party was held in Washington in May 1952 which included a team from the Bank along with Pakistani and Indian engineers.
After three weeks of argument, the Working Party settled on outlines which included the following point: "determination of total water supplies, divided by catchments and use; determination of the water requirements of cultivable irrigable areas in each country; calculation of data and surveys necessary, as requested by either side; preparation of cost estimates and a construction schedule of new engineering works which might be included in a comprehensive plan. To avoid common conflicts, the parties agreed that any data requested by either side would be collected and verified when possible, but that the acceptance of the data, or the inclusion of any topic for study, would not commit either side to its relevance or materiality."[32]

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[29]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 205, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

[30]http://en.wikipedia.org/wiki/Indus_Waters_Treaty# (accessed: September 21, 2011).

[31]Ibid.

[32]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 201-209, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

In the next two meetings in November 1952 at Karachi and in January 1953 at Delhi, the two States were not able to agree on a joint approach to developing the Indus waters. The Bank then recommended that the two States should make their own strategy. On 6 October 1953 these plans were presented to the Bank. The Bank summed up the two plans for water utilization and distribution in millions of acre-feet (maf).[33]

Plan	For Pakistan	For India	Total useable water
Pakistani	102.5	15.5	118
Indian	90	29	119

Even though the two plans came to rather similar approximate of total water existing for irrigation development, they differed usually in terms of distribution of water between the two nations. After some negotiations and compromises by the two countries, both the sides were convinced to regulate, to some extent, their first proposals.

Plan	To Pakistan	To India
Modified Pakistani	70% of the eastern rivers (Ravi, Beas, and Sutlej) and all of the western rivers (Indus, Jhelum and Chenab)	30% of the eastern rivers and none of the western rivers
Modified Indian	None of the eastern rivers and 93% of the western rivers	All of the eastern rivers and 7% of the western rivers[34]

On 5 February 1954 the World Bank concluded, with this stalemate between the two countries, that unless there are various new developments "there is no prospect of further progress in the Working Party."[35] Then the Bank went to made its own proposal called for "the entire flow of the Eastern rivers (Ravi, Beas and Sutlej) would be available for the exclusive use and benefit of India, and for development by India, except that for a specified transition period India would continue supply from these rivers, in accordance with an agreed schedule, the historic withdrawals from these rivers in Pakistan. The

[33]Aaron T. Wolf, Joshua T. Newton, " Case Study of Transboundary Dispute Resolution: the Indus Water Treaty"p.5,http://www.transbooundarywaters.orst.edu/research/case-studies/indus-New.htm (accessed: December 13, 2011).

[34]Ibid.

[35]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 201-209, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

entire flow of the Western rivers (Indus, Jhelum and Chenab) would be available for the exclusive use and benefit of Pakistan, except for the insignificant volume of Jhelum flow presently used in Kashmir."[36]

Bank Proposal	Pakistan	India
	The entire flow of the Western rivers (Indus, Jhelum and Chenab).	The entire flow of the Eastern rivers (Ravi, Beas and Sutlej).[37]

At the same time the Bank proposal was given to both the countries. On March 25, 1954, India accepted the proposal of the bank as the foundation for agreement. On the other hand, Pakistan had some complexity with the proposal of the bank and on July 28, 1954 gave only qualified acceptance. Pakistan believed the supply of the Western rivers to be inadequate to restore their existing deliveries from the Eastern Rivers, especially given limited existing storage capacity.[38]

On 21 May 1956, the Bank put forward an Aide Memoir declaring the necessities for storage on the Western Rivers for Pakistan for irrigation requirements and the base for India's financial liability for improved storage facilities and the enlarged link canals. The Aide Memoir along with some explanations Pakistan agreed in principle the Bank's plan to distribute the Indus Basin water as modified by the Aide Memoir. However, the rhythm of consultation did not enhance significantly.[39]

Then in May 1958 the two States met at Rome. Key points in argument incorporated whether the major replacement storage facility have to be on the Indus or Jhelum rivers? Pakistan favored the Indus River while the Bank argued that the Jhelum River was more cost-effective and the water of Indus River might be utilized for development purposes. The main motive for taking this idea was that it would significantly decrease the expenditure of replacement works, because India was willing to pay replacement expense and not development.

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[36]Ibid.

[37]Aaron T. Wolf, Joshua T. Newton, "Case Study of Transboundary Dispute Resolution: the Indus Water Treaty"p.5, http://www.transbooundarywaters.orst.edu/research/case-studies/indus-New.htm (accessed December 13, 2011).

[38]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 201-209, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

[39]Ibid.

In the next meeting at London, Pakistan suggested a development plan with two major storage facilities, one on the Indus at Tarbela and the other on the Jhelum at Mangla, as well as three minor dams on both tributaries. Expanded New link canals were also planned. The whole expenditure of this project was expected to be $1.12 billion.[40]
In November 1958 India, objecting both to the cost and the extent of the Pakistani plan, and proposed a substitute plan which she claimed that it was not only more inexpensive but also would take much less time for execution as compared to Pakistani proposal. Pakistan did not accept the Indian plan because Pakistan had no intent of being reliant on India for irrigation water particularly, after her experience of 1 April 1948, immediately after the freedom.

Now, it was apparent to the Bank panel that a treaty would be achievable if the following stipulations are taken into consideration: India received the rights to Eastern Rivers and also expenditure of replacement plans to be accepted by India. For Pakistan, development and replacement works had become indivisible, and therefore it was essential to agree on a planned set of works, and after that obtain funds for their development. In May 1959, Black visited both States. In India, his talks with the Prime Minister Nehru, he recommended that India's payment to the replacement works be set at a specific figure, irrespective of the last expenditure and also agreed to give financial support to India for the building of the Beas Dam. He met President Ayub Khan in Pakistan and settled to look satisfactorily at a sensible replacement-cum-development project, consisting Tarbela and Mangla Dams. With these stipulations both countries agreed to a specific payment settlement, and to a ten- year transition period during which India would continue supply historic flows to Pakistan.[41]

In August 1959, Black arranged a consortium of States (Australia, Canada, Federal Republic of Germany, New Zealand, USA, and United Kingdom) to assist the development of the Indus Basin. In September 1960, when the Indus Basin Development Fund Agreement was concluded; the whole expenditure of the works in Pakistan was 893.5 million dollars. As a grant the consortium supplied 541 million dollars to Pakistan. In addition Pakistan obtained 150 million dollars in loans. The payment of India was

[40]Aaron T. Wolf, Joshua T. Newton, " Case Study of Transboundary Dispute Resolution: the Indus Water Treaty" p.5, http://www.transbooundarywaters.orst.edu/research/case-studies/indus-New.htm (accessed: December 13, 2011).

[41]Asit K. Biswas, F. Iwra, "Indus Water Treaty: the Negotiation Process," *Water International* 17 (1992) 201-209, http://www.thirdworldcentre.org/induswatertreaty.pdf (accessed: 04 March 2011).

fixed at 174 million dollars. The consortium also provided 315 million dollars to Pakistan in foreign exchange in a supplemental agreement.[42]

On September 1960, the Indus Water Treaty was signed in Karachi by President of Pakistan Field Marshal Muhammad Ayub Khan and Prime Minister of India Jawaharlal Nehru. In January 1961, subsequently both the governments ratified the Treaty.

1.2.1.5 Outlines of Indus Water Treaty, 1960(IWT)

IWT, 1960 is the only international water treaty co-signed by a third party, the World Bank. After about nine years of serious discussions and negotiation, the result was a long, complex and detailed mechanism of approximately150 pages which include a Preamble, 12 Articles and 8 comprehensive annexes. Under the provisions of Treaty, about Eastern Rivers (Beas,Ravi, Sutlej), and Western Rivers(Chenab, Jhelum, Indus):
"All the waters of the Eastern Rivers shall be accessible to the unrestricted use of India, except The Transition Period shall begin on 1st April 1960 and it shall end on 31st March 1970, or, if extended under the provisions of Part 8 of Annexure H, on the date up to which it has been extended. In any event, whether the Transition Period shall end not be later than 31st March 1973. During the Transition Period, Pakistan shall receive for unrestricted use the waters of the Eastern Rivers which are to be released by India in accordance with the provisions of Annexure H."[43]

"Pakistan shall receive for unrestricted use all those waters of the Western Rivers which India is under obligation to let flow under the provisions of Paragraph (2). India shall be under an obligation to let flow all the waters of the Western Rivers, and shall not permit any interference with these waters, except for the following uses, restricted in the case of each of the rivers, The Indus, The Jhelum and The Chenab, to the drainage basin thereof: (a) Domestic Use; (b) Non-Consumptive Use; (c) Agricultural Use, as set out in Annexure C; and (d) Generation of hydro-electric power, as set out in Annexure D.
Pakistan shall have the unrestricted use of all waters originating from sources other than the Eastern Rivers which are delivered by Pakistan into The Ravi or The Sutlej, and India

[42]Ibid.

[43]Articles, II Indus Water Treaty 1960.

shall not make use of these waters. Except as provided in Annexures D and E, India shall not store any water of, or construct any storage works on the Western Rivers"[44]

Article V deal with the financial provisions. In Article VI detailed provisions were set for regular exchange of canals and rivers data between the two parties, and Article VII referred to future cooperation to the fullest probable level.

In Article VIII both the parties agreed to set up a permanent post of Commissioner for Indus Waters who must be "a high-ranking engineer competent in the field of hydrology and water-use." Both the Commissioners will establish Permanent Indus Commission, which will assemble at least once a year alternatively in Pakistan and India, and "The purpose and functions of the Commission shall be to establish and maintain co-operative arrangements for the implementation of this Treaty and to promote co-operation between the Parties in the development of the waters of the Rivers."

Article IX referred to resolution of dispute and differences. If the commission is incapable to decide the particular issue, then under Article IX, Annexure E the problem is dealt by a Neutral Expert and if the Neutral Expert fails to resolve the differences then under Article IX, Annexure G a Court of Arbitration shall be made to decide the dispute. Article X deals with the emergency provisions, and Article XI is about final provisions.

1.2.1.6 Present and old Conflicts on Indus Basin

When the Indus Water Treaty was signed in Karachi by the President of Pakistan Field Marshal Muhammad Ayub Khan and Prime Minister of India Jawaharlal Nehru, it was expected that once and for all the disputes on Indus waters between Pakistan and India were to remain calm and passive. But neither of these expectations could be held out any longer when in 1965 India stopped the three Eastern tributaries, which significantly harmed crops in Pakistan. In January 1966, after the Tashkent meeting, the three tributaries were again released by India.[45]

1.2.1.6.1 Salal Hydro Electric Project

During 1970s the first important dispute that arose between Pakistan and India was about the Salal Hydro Electric Project on the Chenab watercourse in Jammu & Kashmir.

[44]Articles, III, Ibid.

[45]Helmut R. Kulz, "Further Water Dispute between India and Pakistan" p.718, http://www. Jstor.org/ stable/757706 (accessed: 04 January 2011).

According to the IWT, the dispute was agreeably solved after lengthy discussions and debates (December 1974 – April 1978) between the commissioners of the two States and also at the level of foreign secretaries.

1.2.1.6.2 Wullar Barrage

Wullar Barrage or the Talbul Navigation Project is the most contentious water project of India on Jhelum watercourse. In 1984, India launched building of the barrage on Jhelum River near Sopor, 25 kilometers North of Srinagar in Indian held Kashmir(IHK) with a storage capacity of 0.3 million acre feet (MAF) and calculated power generation of 960 megawatt (MW).[46] Pakistan declared that India had infringed Article I (11) of the IWT, which forbids both countries from undertaking any "man-made obstruction" that may cause "change in the volume (Annexure E) of the daily flow of waters". Further that, according to sub-paragraph 8(h) of the treaty, India may commence its construction" only after design has been approved by Pakistan" and" its storage capacity not to exceed 10,000 acre feet". Whereas, the storage capacity of the Wullar Barrage is 300,000 acres feet, which is 32 times more than the allowable capacity.[47]

In October 1991, Pakistan and India nearly reached an agreement, according to which India relinquished 300,000 acre feet storage capacity and also would maintain 6.2 meters of barrage ungated with a crest level of 5,167 ft. In response, the water level in Wullar Barrage would be permissible to increase to the full functioning level of 5,177.90 ft.[48] But, in 1992, Pakistan added another stipulation that India must not build the Kishanganga Hydro-Power Project which India rejected and the discussions were delayed.[49] Indian Government has not abandoned the Wullar Project but the construction on the barrage is currently postponed.

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[46]Abdul Rauf Iqbal,"Water Wars and Navigating Peace over Indus River Basin," *Monograph* I, issue II (2010):1-20.

[47]Shaheen Akhter, "Emerging Challenges to Indus Water Treaty Issue of Compliance & Transboundary Impacts of the Western Rivers,",www.irs.org.pk/f310pdf (accessed: 10 April 2012).

[48]Ibid

[49]Ibid.

1.2.1.6.3 The Baglihar Dam

The Baglihar Dam is a run-of-river plant being built by India on the Chenab watercourse in Jammu and Kashmir. This hydropower project has a capacity of 450 MW.[50] Under the IWT the Chenab River as one of the three Western rivers has been allotted to Pakistan. India has been granted certain uses of the Western rivers. Those utilizations contain run-of-river hydropower plants subject to certain stipulations specified under Annexure D of the IWT. Pakistan claimed that the design of the Baglihar Dam did not match with Annexure D paragraph 8 criterion a, c, e and f of the treaty and worried that the plan would let India to control and block water flow of the Chenab River which is allotted to Pakistan. On the other hand, India alleged that the Baglihar Dam was in accordance with the conditions of the treaty. During 1999-2004 Pakistan and India held a number of rounds of discussion on the design of Baglihar projects, but fruitless. After failure of discussions, Pakistan raised six objections on January 15, 2005, approached the World Bank regarding the dispute of Baglihar hydropower project.

The World Bank on May 10, 2005, appointed a highly experienced civil engineer, Mr. Raymond Lafitte, Professor at the Swiss Federal Institute of Technology, as the Neutral Expert to deal with the Baglihar dispute. After successive meetings on February 12, 2007 at Switzerland in Bern, the Neutral Expert conveyed to the ambassadors of Pakistan and India signed copies of his last decision on the Baglihar issues.

Decision of the Neutral Expert: The Neutral Expert judgment on the Baglihar difference dealt with the questions challenged under the four condition of Annexure D paragraph 8 of the IWT. The first problem on the maximum design flood connected to the estimate of the maximum quantity of water which can enter the Baglihar dam. In analysis of a lot of uncertainties of flood analysis, the Neutral Expert keeps the charge proposed by India of 16,500 m^3/s, as different to 14,900 m^3/s planned by Pakistan, for the peak release of the design flood.[51]

As for the second difference of an ungated or gated spillway are concerned, Pakistan believed that it was not required, and would let India to control the delivery of the watercourse. The Neutral Expert concluded that the situation of the location,

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[50]Abdul Rauf Iqbal,"Water Wars and Navigating Peace over Indus River Basin," *Monograph* 1, issue II (2010):1-20

[51]Salman M.A.Salman, "The Baglihar Difference and its Resolution Process-a Triumph for the Indus WaterTreaty?" *Water Policy* 10 (2008)105-117.

containing topography, hydrology, geology and sediment yield, needed a gated spillway. He also declared that an ungated spillway may make a threat of flooding the upstream shoreline, and that an altitude of the dam peak, which would stop such a danger, would be costly. He further declared that the examination of the present about 13,000 spillways in the globe confirmed that the prerequisite of gates on big spillways is general practice.[52] On the question of the level of the spillway gates, the point of India was that the design of the auxiliary spillway, sluice spillway and chute spillway was essential to make sure harmless passing of the plan flood. Pakistan declared that even if it could be assumed that a gated spillway was essential, the proposed Indian orifice spillway is not positioned at the highest level constant with the terms of the IWT.

On this problem, specially, the Expert felt that "the need for the Treaty to be read in light of new technical norms and standards."[53] The Neutral Expert concluded that India's planned gated chute spillway on the left wing and the outlets composing the sluice spillway is at the highest level in accordance with inexpensive and sound design and acceptable building and function of the works. He also declared that the outlets composing the sluice spillway, planned by India, should be of the minimum size and located at the highest level consistent with a sound and economical design. Though, he concluded that the outlets must preferably be sited 8 meters (m) lower to guarantee safeguard against upstream flood.[54]

On the problem of the artificial raising of the water level, Pakistan believed that the Baglihar dam crest elevation planned by India was overstressed and might be lower. The Neutral Expert concluded that the crest elevation at 844.5 m Above Sea Level (asl), consequential from a freeboard above the full pondage level of 4.50 m presented by India is not at the lowest elevation, and that the freeboard above the full pondage level must be 3.0 m, guiding to a Baglihar dam crest elevation of 843.0 m asl.[55]

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[52]Ibid.

[53]Ibid.

[54]Raymond Lafitte, "Baglihar Dam and Hydroelectric Plant: Expert Determination, Executive Summary," 12 February 2007, p.11.,http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/223546-117199 6 34025 5/ BagliharSummary.pdf (accessed: 19 April, 2012)

[55]Ibid. p.15.

On the fifth concern of the volume of the maximum pondage, Pakistan claimed that the Indian projected value of the maximum dam pondage surpass twice the pondage necessary for firm power. The Expert fixed a lower value and concluded that the values for maximum pondage fixed by Pakistan as well as by India were not in accordance with the criterion laid down in the IWT.[56]The issue concerning the level of the power intake, Pakistan claimed that the intake for the turbines was not located at the highest level as required by the criterion of IWT. Mr. Lafitte settled that the intake level must be raised by 3 m and set at elevation 821 m asl.[57]

Both Pakistan and India claimed success and highlighted the parts of the decision of Neutral Expert which they supposed reacted positively to their claims.

1.2.1.6.4 Kishanganga Hydroelectric Project

Pakistan and India are once again at loggerheads over the issue of Kishanganga hydroelectric Project on Neelum River. The Project is concrete gravity dam on Neelum watercourse close to Kanzalwan with low-level outlets and gated spillway. The Kishenganga River flow is to be diverted after producing 330 MW of power into the Wullar Lake through 22 KM tunnel.[58]

Pakistan raised objections to the Indian Kishenganga Hydroelectric Project on the ground that it breaches the provisions of Annexure E Paragraph 10 of the IWT. It also does not match with the design criterion a, c, e, f and g, of Paragraph 11, Annexure E of the IWT. Pakistan also objected that the diversion of flow from one Tributary to another Tributary as planned by India is to damage Pakistan's agricultural and power capacity in the Neelum Valley and also would have a direct bearing on the environmental features and socio-economic life in the region downstream of Indian project. Moreover, Pakistan has already begun Neelum-Jhelum Hydroelectric Project in Azad Jamuu & Kashmir (AJK) having the capacity to produce 969 MW power. If the Project of India is built according to their planned design, it will cause decline in the power production and also decrease in the normal annual inflows of watercourse at Neelum-Jhelum Dam location.[59]

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[56]Ibid., p.17.

[57]Ibid., p.19.

[58]Abdul Rauf Iqbal,"Water Wars and Navigating Peace over Indus River Basin," *Monograph 1*, issue II (2010):1-20

[59]Ibid.

While, on the other hand, India stated that the diversion is well within the provision of the IWT and also holds that it would only divert the Neelum River to connect the Jhelum watercourse, which also flows through Pakistan. Hence, the water anyway will eventually reach Pakistan.

In 1994, Pakistan was officially informed about Kishenganga Hydroelectric Project by India. The issue had been on the schedule of Permanent Indus Commission for more than nine years and currently Pakistan has decided to approach the International Court of Arbitration against the building of contentious project and has formed a group of legal professionals to fight the case.[60]

1.2.1.6.5 Other Controversial Projects

In spite of Pakistan's disagreement with the controversial Wullar, Baglihar, and Kishanganga projects in Indian held Kashmir (IHK), India is preparing to construct other dams. The new projects are the Burser and Pakal Dul on Marusundar, tributary of Chenab watercourse in district Doda. The Burser dam will produce 1020 MW electricity, the Indian ministry has kept Rs43.78 billion and the dam will have a height of 252 meters, which is more than the Baglihar project and the Pakal Dul dam will produce 1,000 MWs electricity, ministry has reserved Rs 34.80 billion.[61]

According to Mr. Arshad H Abbasi (Energy and Water Expert and other sources) India has proposed or carried out investigation to build a large number of dams on western watercourses like the Ans, dam on Chenab River will generate 200 MW electricity (Under investigation); Bichari, 104 MW(Under investigation); Barinium, 240 MW(Under investigation); Dul Hasti I&II, 780 MW(in operation) Gypsa, 395 MW(Under investigation); Kirthi I&II, 300 MW both(Under investigation); Kiru, 600 MW(Under investigation); Karwar, 520 MW(Under investigation); Naunat, 400 MW(Under investigation); Raoli, 150 MW(Under investigation); Raltle I&II, 560 MW(Under investigation); Swalkot, 1200 MW(Under investigation); Seli, 715 MW(Under investigation) and Shamnot, 370 MW(Under investigation).[62]

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[60]Khaleeq Kiani, "Pakistan to Move Arbitration Court on Kishanganga Project,", *The Dawn*, 03 May, 2010.

[61]Iftikhar Gilani, "India to Build Three More dam in IHK", http://www.dailytimes.com.pk/ default.asp? page=story 20-2-2005 p.11(accessed: March 19, 2009).

[62]Shaheen Akhter, "Emerging Challenges to Indus Water Treaty Issue of Compliance & Transboundary Impacts of the Western Rivers,",www.irs.org.pk/f310pdf (accessed: 10 April 2012).

1.2.2 The Ganges River: India and Bangladesh

The Ganges River, called in Urdu Ganga, emerges in the Himalayas and flows through India to Bangladesh, which flows for 113 kilometer in Bangladesh and empties into the Bay of Bengal. It is home to more than 300 million people, the entire drainage area is around 1080000 km and it has a total length of about 2600 km[63] which is shared by Bangladesh, India, China, Nepal and Bhutan making it one of the most heavily populated international basins in the globe. The sharing of the water of Ganges is a constant problem between Bangladesh and India over the development and appropriate distribution of the water resources of the river Ganges that moves from India into Bangladesh. The issue over the Ganges basin is of conflicting interests of up-stream and down-stream riparian. The upper riparian, India developed projects for water diversions for its own navigability, irrigation and water supply benefits. Bangladesh initially as East Pakistan (in 1971 East Pakistan became Bangladesh State) has interests in safeguarding the historic flow of the Ganges for its own down-stream utilization.

India between 1961 and 1975, about 11 miles upstream from the border with Bangladesh at the small town of Farakka constructed a barrage on Ganges River called Farakka barrage. The dam divert Ganges water into the River Bhagirati-Hooghly tributary of the River Ganges in order to develop the access of ships to Calcutta Port, which is linked by the Hooghly to the sea, to prevent siltation of the river and provide water to Calcutta for domestic, municipal, and irrigation purposes. Farakka barrage designed for a maximum design discharge of 27, 00,000 cusecs, a head regulator for diversion capacity of 40,000 cusecs of flow and having a length of 7363 ft.[64] Bangladesh said that the Ganges water is required particularly in the dry months of November to May for irrigation, to hold back salt-water interruption from the Bay of Bengal and to stop siltation and consequential flooding of the Bangladeshi part of the Ganges.

India at first declared that the Ganges River was not an international watercourse, because 99 percent of river catchments area lay in India. Later India not only ceased to

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[63]Muhammad Mizanur Rahamam, "The Ganges Water Conflict, a Comparative Analyses of 1977 Agreement and 1996 Treaty," *Asteriskos*,(2006):196, http://www.internationalwaterlaw.Org/bibliography/articles/general/Rahaman-GangesWater_Res_Devel.pdf (accessed: August 12, 2010).

[64]"Farakka-India's Diabolical Water Conspiracy Against Bangladesh,",http://facttruth.wordpress.com/2010/02/12/farakka-indias-diabolical-water-conspiracy-against-bangladesh (accessed: August 12, 2010).

refuse the internationally of the river but also declared its willingness to talk about the issue.[65] Bangladesh takes the issue before the United Nation General Assembly (UNGA) where negotiations between 1968 and 1976 clarified the positions of the States.[66]

In 1971 Bangladesh came into being. In April 1975, at a minister-level meeting the two parties approved a trial operation of the Farakka Barrage from April 21 to May 31, 1975, to divert 11,000-16,000 cusecs water.[67] However, after the trial operation India continued to divert the full capacity of 40,000 cusecs water in dry season. Bangladesh objects and protests and raised the matter at a number of international and regional forums, including the 31st session of the UNGA in 1976.[68]

For the time being, the controversy was solved; both countries signed the Sharing of Ganges Waters Agreement in1977.[69] The agreement provided for the sharing of Ganges waters in according with an annexed schedule during the annual dry season from January to May. The accord would at first cover a term of five years. It might be extended further by joint treaty. The treaty was expired in November 1982. In October 1982 a mutual statement was issued, in which both parties decided not to extend the 1977 treaty, but would fairly begin new attempts to reach a solution but it was not achieved.[70]

In 1982 and 1985, two Memorandum of Understanding, followed the treaty, both of which were also for short time.[71]

After a lapse of nearly a decade in 12 December, 1996, a new Ganges River Treaty was signed between the two countries.[72] The new treaty provided a formula for distribution

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[65]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses*, (London: Oxford University Press, 2001), 251.

[66]Ibid.

[67]Aaron T. Wolf and Joshua T. Newton, "Case Study of Transboundary Dispute Resolution: The Ganges River Controversy":5. http://www.transboundarywater.orst.edu/research/case-studies/Documents/Ganges .pdf (accessed August 18, 2010).

[68]Ibid.

[69]Ibid.,p.6.

[70]Ibid.,p.6.

[71]Ibid.

[72]Muhammad Mizanur Rahamam, "The Ganges Water Conflict, a Comparative Analyses of 1977 Agreement and 1996 Treaty," *Asteriskos*,(2006). , http://www.internationalwaterlaw.Org/bibliography/ articles/general /Rahaman- GangesWater_ Res_Devel.pdf (accessed: August 12, 2010).

the Ganges waters during the dry season, and also comprised a seasonal schedule of the available water and the share of each State. The treaty also sets up a Joint Committee to manage the water sharing planning under the Treaty. It is valid for 30 years.

But Ganges River Treaty does not contain apparent dispute resolution and arbitration systems. In addition the treaty does not bind any country to resolve the dispute if differences continue. Therefore the treaty set up political means, not arbitration to decide any dispute started from the execution of the treaty. The deficiency of arbitration mechanism makes it a less useful legal instrument. In spite of the Treaty, there are still groups in Bangladesh like, Bangladesh National Party that believe that the treaty was too beneficial to India and blamed the government for compromising Bangladesh's sovereignty and similarly some factions in India like members of the Congress and the BJP raised doubts that the treaty was not too beneficial to India.[73]

Bangladesh object that the Farraka barrage has increased salinity levels, slowed down navigation, created a negative impact on water quality, agricultural and industrial production and infected fisheries.[74]

1.2.3 The Kosi, Gandak and Mahakali Rivers: India and Nepal

The friendship that India has with Bangladesh and Nepal in the area of water resources, its situation has not constantly been pleasant or even reasonable, when considering the Farakka Barrage, Teesta Barrage and River Linking project in the former case, and the Gandak, Sarada and Kosi projects in the latter.

Water resource project concerning Indo-Nepal relation, the first to be started after the freedom of India, was the Kosi Project, being a multipurpose project included hydropower production of 1,800 MW, irrigation and flood control.[75] But, the project was criticized at all levels in Nepal. In 1954 Nepal and India signed the Kosi Agreement to control the flow of the watercourse and ensure flood management. Due to dissatisfaction and protest in Nepal against the treaty ultimately, India on 19, December 1966 revised

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[73]Pia Malhotra, "Water Issue between Nepal, India and Bangladesh," *A Review of Literature* (New Delhi: Institute of Peace and Conflict Studies, July 2010, p.1-12., http://www.reliefweb.int/rw/RWFiles2010.nsf/FilesByRWDocUnidFilenam/MMAO-87CGSN-full_report.pdf/$File/full_report.pdf (accessed: September 30, 2010).

[74]Ibid.

[75]Umesh Parajuli, "Water Sharing Conflicts between Countries, and Approaches to Resolving Them," *Water and Security in South Asia (WASSA)* Project Report 3 (2003): 27.

the agreement. Still after the revised agreement and its implementation, the creative intention to bring these advantages to Nepal has not completely materialized. Nepal have expressed her anger regarding the submergence of the land and the displacement of the people and India did not give any reparation for it.[76] India's administration and control of the Kosi barrage was also believed as breach of Nepal's territorial sovereignty. In April 2008 there was a distressing flood in Kosi basin which displaced approximately 50,000 people in Nepal and 30 million People in India.[77] Both countries held guilty each other for failing to avoid such an enormous calamity.

Another issue was Gandak project that was constructed to bring India benefits, i.e. hydropower, irrigation and flood control. On the Gandak River, a barrage was constructed, which forms the boundary between Nepal and India. On 14 December, 1959 Gandak Project Agreement was signed between Nepal and India on this issue.[78]But the fate of this project was also similar to that of the Kosi project: it was greatly criticized by Nepali politicians.

Another controversy was of Mahakali Watercourse. Conflict between Nepal and India over sharing of the advantages of the Mahakali Watercourse started in 1983 after India's unilateral decision for the construction of Tanakpur barrage upstream of the Sarada barrage, on land which was transferred from Nepal to India (Prior to 1920 the Mahakali Watercourse was a boundary river with right bank in India and left bank in Nepal but the 1992 Sarada Agreement transferred possession of portion of the left bank territory from Nepal to India).[79] Nepal expressed her worries about the planned project, but they were not heard. This was only settled after the conclusion of Mahakali Treaty in 1996 regarding the incorporated development of the Mahakali River including Tanakpur Barrage, Sarada Barrage, and Pancheswar hydroelectric Project.[80]

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[76]Pia Malhotra, "Water Issue between Nepal, India and Bangladesh," *A Review of Literature* (New Delhi: Institute of Peace and Conflict Studies, July 2010, p.7., http://www.reliefweb.int/rw/RWFiles2010.nsf/FilesBy RWDocUnidFilenam /MMAO-87CGSN-full_report.pdf/$File/full_report.pdf (accessed: September 30, 2010).

[77]Ibid.,p.5.

[78]Ibid.,p.6.

[79]Umesh Parajuli, "Water Sharing Conflicts between Countries, and Approaches to Resolving Them," *Water and Security in South Asia (WASSA)* Project Report 3 (2003) p.28.

[80]Ibid.

However similar to 1954 Kosi and 1959 Gandak treaties, the Mahakali agreement mostly advantaged India. In this background several Nepalese people complaint of being deceived by their powerful neighbor.[81] Nepal thinks this agreement is defective, missing apparent provision of what constitutes their water right. It shows that Nepal would obtain four percent of the water supply, but does not identify the quantity of water that India would receive and to suppose that India would receive 96 percent is extremely imperfect.[82]

Nepal is extremely doubtful of India's actions, on the basis of past occurrences regarding, Kosi and Gandak. On the other side, India is claimlng that Nepal is not actually interested in developing those huge water resources for the joint advantages of the people of both States.

1.3 The Middle East

The Middle East region is famous not merely for its religious, geo-political and ideological clashes and differences but also for the factor that it is very arid. Being a mostly arid region, suffers from recurring water scarcity. In the media Middle East conflicts are typically attached to religion or oil, but water resources has turn into a main cause in current disputes. Center for Strategic and International Studies of Washington concluded that, in future, "water -not oil-will be the dominant resource of the Middle East."[83]

1.3.1 The Jordan River: Jordon, Israel, Syria and Palestine

The River Jordan widening about 251 km from it sources in Lebanon to the place the river ends in the Dead Sea and originates near the borders of three States, Lebanon, Syria, and Israel.[84] The Jordan tributaries are: the Hasbani and Ayoun, which begins in

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[81]Emma Condon, "Resource Disputes in South Asia: Water Scarcity and the Potential for Interstate Conflict," *(Workshop in International Public Affairs, University of Wisconsin-Madison, June 1, 2009)*, p.12.

[82]Pia Malhotra, "Water Issue between Nepal, India and Bangladesh," *A Review of Literature* (New Delhi: Institute of Peace and Conflict Studies, July 2010, p.7., http://www.reliefweb.int/rw/RWFiles2010.nsf/FilesByRWDocUnidFilenam/MMAO-87CGSN-full_report. pdf/$File/full_report.pdf (accessed: September 30, 2010).

[83]Robin Clarke, *Water: the International Crisis*, (London: Earthscan Publications Ltd 1991), 100.

[84]http://en.wikipedia.org/wiki/Water_politics_in_the_Jordan_River_basin (accessed: April 27, 2012).

Lebanon, the Dan in Israel, the Banias in Syria, Yarmouk, commence near the Golan Heights, Yabis and Harod, joins on the left and right bank of the Sea of Galilee. [85]

The Jordan River and its riparian rights are shared by five States: Lebanon, Jordon, Israel, Syria and Palestine; though Israel as the occupying power has refused to provide any of the water resources to the Palestine. Its drainage system as a source of freshwater is very important for most of the population of Jordan, Palestine, Israel, Syria and Lebanon. The issues of Jordan River drainage system, comprising rival claims, water utilizations, and also issues of riparian rights of surface water along international watercourses, as well as utilization and accessibility of ground water.

Israel for years enjoyed total control of headwaters of the Jordan River and still manages two of the three rivers. In the 1967 Six-Day War Israel controlled the Banias when it captured the Golan Heights, in the beginning of 1976 Hasbani with Israeli support of private army in south Lebanon, in 1978 Israel took south Lebanon and set up a security zone there, from which did not leave until 2000, providing it direct armed control over the larger stream, the Litani as well as the Hasbani for 22 years.[86]

The ongoing hostility between the neighboring Arab countries and Israel and the need for water, has positioned the Jordan Basin as an essential haggling chip since Israel's creation in 1948. After the Arab-Israeli war in 1948, riparian countries began to plan unilateral development of the Jordan watercourse system.

In July 1953, Israel established a National Water Carrier to transfer water from the Sea of Galilee and Jordan watercourse to the Negev desert. These channels allowed agriculture of further desert territory.[87] The Arab States considered, the National Water Carrier as a sign of Israel's hostile expansionism. In response, Syrian Arms Forces opened fire on the Israeli construction team and sites.[88] Syria also complained to the U.N; but in 1954 Security Council resolution permitted Israel to restart work. [89]

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[85]Ibid.

[86]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses,* (London: Oxford University Press, 2001), 268.

[87]Munther J. Haddadin, "Water Resources in Jordan," *Resources for the Future* (2006), p. 32.

[88]http://en.wikipedia.org/wiki/Water_politics_in_the_Jordan_River_basin (accessed: April 27, 2012).

[89]Ibid.

In 1953, President of America Dwight Eisenhower appointed ambassador Eric Johnston to reconcile an inclusive settlement of the Jordan Basin portions, and plan an arrangement for its regional progress (the plan is known as the Johnston plan), but the plan was never adopted.[90] Talks between Israel and Arab nations on regional water distribution agreements sustained for more than two years with no real achievement further than a cease- fire.

Following 10 years of silent stress in the region, the conflict sparked once again. In response to Israel, Syria, within its boundaries, tried to avert one of the Jordan River's tributaries the Banyas River. This was followed by Israeli air-force attacks on the site. These events about water matters led to the outbreak of Six-Day War in June 1967 between Israel, Jordan, Egypt and Syria. [91]After that war, Israel got control of the Jordan River, the West-Bank (The valley due to its underground flow of water and wells became a major water source for Israel).

In 1994, the Prime Ministers of Israel and Jordan concluded a Peace Treaty.[92] Israel and Jordan had decided to distribute the Jordan River. However, it did not solve the important issue regarding Jordan River like the agreement is silent on the cost-sharing. This agreement not including Lebanon and Syria, which are still in a situation of war with Israel, seeking for the control over the Golan Heights and the Hasbani Rivers tributaries to the Jordan River. The agreement has also been criticized that its provisions fail to provide to Jordan the full share it would have got under the Johnston plan. [93] In addition, there have been complexities with the agreement execution like; in 1997 Jordan protested that Israel has not fulfilled its obligations to supply them the additional water. [94]

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These States tried to control the Jordan River were shown by different constructions, The Syrian attempted to divert the Banyas River, the National Water Carrier, constructed by the Israelis, the Jordanians construction of King Talal dam. These efforts directed to responses that regularly were followed by armed conflicts. Syrian fire on the Israeli

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[90]Michael Elliott, "The Global Politics of Water," *Journal of Global issues,* ninth Edition (93/94), 86.

[91]Robin Clarke, *Water: the International Crisis,* (London: Earthscan Publications Ltd 1991), 101.

[92]http://en.wikipedia.org/wiki/Water_politics_in_the_Jordan_River_basin (accessed: April 27, 2012).

[93]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses,* (London: Oxford University Press, 2001), 275.

[94]Ibid.

construction sites of National Water Carrier, Israeli air-force and military attacks on the Syrian site, and the Six-Day War highlights this dispute as a "war threat" conflict, in which the requirements for fresh water often gave birth to war among these countries.

1.3.2 Tigris-Euphrates Rivers: Turkey, Syria and Iraq

The Euphrates and Tigris Rivers originate in Turkey and flow through the territory of Syria before entering Iraq. Both rivers systems are usually treated as one basin as they join in the Shatt-al-Arab watercourse soon before draining into the Persian Gulf. While the Tigris River not enters Syria fully the Euphrates flows through Syria for a significant distance. These States represent opposite views on the question of national sovereignty over Tigris-Euphrates Rivers. Turkey supports the theory of absolute territorial sovereignty over all rivers as long as they stream on Turkish territory[95] while, Syria admits that these rivers are international rivers and declares that it needs to share through a "mathematical formula," and also ratified the UN Watercourses Convention, 1997, which recognizes the rights of riparian States and considerably limits national sovereignty over international rivers, whereas Iraq pursues the principle of absolute territorial integrity and therefore object to both Syria and Turkey's use of the water as it decreases the flow that naturally enters its territory.[96]

There is a long history of concern over the Tigris-Euphrates Rivers water between Syria, Turkey and Iraq. Serious stress has arisen two times in history: in 1975 between Iraq and Syria and in 1990, Iraq and Syria united in the dispute against Turkey.

The relationship between Syria and Iraq on fresh water matters go back at the times when Turkey was not in the heat of the crisis. In 1975, Iraq and Syria were brought to the edge

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[95]The former Turkish President Suleyman Demirel's said:

"Neither Syria or Iraq can lay claim to Turkey's rivers any more than Ankara could claim their oil. This is a matter of sovereignty. We have a right to do anything we like. The water resources are Turkey's, the oil resources are theirs. We don't say we share their oil resources and they cannot say they share our water resources." ICE Case Studies, Case Identifier: TIGRIS, Tigris-Euphrates Dispute, http://gurukul.ucc.american.edu/ted/ice/tigris.htm (accessed: August 14, 2010). Late President of Turkey Turgut Ozal said "we don't tell Arabs what to do with their oil, so we don't accept any suggestion from them about what to do with our water." Another occasion he said "The oil is theirs [the Arabs] and the water, all the water is ours", Adel Darwish, "Water is behind Turkey Syria Border Tension" *World Media*, Oct 6 1998, http://mideastnews.com/water 001 .html (accessed: August 8, 2010).

[96]Laurene Boisson de Chazournes, Bertrand Charrier and Fiona Curtine, "National Sovereignty and International Watercourses," *Green Cross International* (2000), 56.

of armed conflict over the finishing of Syria's Tabqa dam[97]. Iraq objects that the dam had reduced the watercourse's flow to an insufferably low level endangering the Iraqi agricultural land. In May 1975, relationships between Syria and Iraq threatened to become violent. Syria stopped its airspace and boundaries to Iraq and both nations commenced to mass troops on their common boundaries.[98]In June 1975, only intervention of Saudi Arabia was capable to break the rising stress, both nations reached an agreement that prevented the looming conflict[99]. The provisions of the agreement were secret.

In 1990 the conflict was over the Turkey Southeast Anatolia Project or Guneydogu Anadolu Projesi (GAP)[100]. Turkey's GAP project is raising tension in Syria and Iraq regarding the future of their right to utilize the waters of the Euphrates River. Filling the reservoirs of these dams including in the project will decrease the flow of water downstream to Syria and Iraq. In 1990 the Turkey prevents the flow of the Euphrates River for a month, starting filling the Ataturk Dam reservoir[101]. Both Syria and Iraq protested, even Iraq warned to bomb the dam[102]. Turkey guilt Syria for not well running the flow to Iraq; however the impression was made obvious that the GAP was a main anxiety to the two States of Arab. Even if force is not an aim, however, the GAP project creates a major danger to downstream water consumers, Syria, for instance, depends a lot upon the Euphrates River for, irrigation, industrial uses and drinking water, and to a smaller amount for electricity. According to a report, by the end of the 20th century, Syria, would be running short of water still without the GAP project, with GAP, Syria

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[97]Robert Mandel, "Sources of International River Basin Disputes," *Conflict Quarterly* (Fall 1992), 37.

[98]Ibid.

[99]Ibid.

[100]"GAP project was initiated in 1997, which contains planning to build more than 20 dams and 17 electric power plants on Tigris-Euphrates, which will ultimately provide over half of Turkey's electrical energy and irrigation needs.", Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses,* (London: Oxford University Press, 2001) , 280.

[101]Laurene Boisson de Chazournes, Bertrand Charrier and Fiona Curtine, "National Sovereignty and International Watercourses," *Green Cross International* (2000), 95.

[102]Ibid.

faces a water calamity.[103] The issue of GAP project is remained unsolved and resulting in a very tense situation in the region.

Now Turkey is planning construction of a "Peace Pipeline", which would carry water from Turkey to Syria, Saudi Arabia and Jordan, and the Gulf States. [104] The project has not been implemented. There would in fact be two pipelines the Gulf pipeline supplying United Arab Emirates, Oman, Qatar, Kuwait, Eastern Saudi Arab, and Bahrain and the Western pipeline supplying Jordan, Syria, and Western Saudi Arab. The estimated cost of the two pipeline has been expected to be 12.5$ billion for the Gulf pipeline and 8.5$ billion for the Western pipeline.[105]However many observers said that the Peace Pipeline would be so costly that it can never be constructed and would, take maybe 15 years to plan and build. These States have not as so far showed that they would be ready to contribute to the project. Their worries may stem in part from an unwillingness to become dependent upon Turkey for water, in part from other damage of the pipeline and fears of terrorist, and in part from expenditure concern. On any occasion, the plan remains under consideration of Turkey, and might be the cause of future water conflict in region. So far these States have not reached an inclusive river agreement to guarantee sustainable water managing in the river.

1.4 Africa

Water scarcities are a part of everyday life in several areas of Africa. A great proportion of African States are very dependent on the weather for agricultural, as water resources are rare. With the increasing needs for water resources, privatization of the water resources, the uneven sharing of water supplies among adjoining States, several African States have history of poor administration of water resources and particularly with insufficient conflict resolution mechanisms, conflicts on water resources seem almost predictable.

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[103]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses*, (London: Oxford University Press, 2001), 283.

[104]Ibid., p.284.

[105]Ibid.

1.4.1 The Nile: Egypt and Sudan

The Nile Basin is usually described as the world longest river. It flow an area of about 6,700 km in ten States (Burundi, D.R. Congo, Eritrea, Ethiopia, Egypt, Rwanda, Kenya, Sudan, Tanzania, and Uganda).[106] It is composed of three tributaries the White Nile, Blue Nile and the Atbara.[107] Even though the Nile River crosses ten countries, the principal consumers of the watercourse are Sudan and Egypt. As the Nile riparian States got freedom from Colonial powers, riparian conflicts became more contentious and international.

In the early twentieth century, tension arose between Sudan and Egypt because of Egypt's growing water needs. But in May 1929 both countries concluded the Nile Water Agreement, which shared its utilization and managed the flow of the Nile River and also confirming Egypt beneficial position.[108]

Following World War II, due to population increase and water requirements cooperation began to break down between Egypt and Sudan. To handle these needs, Egypt enlarged its irrigation efforts and, after 1952 revolution decided to construct the Aswan Dam in order to crop the hydroelectric power of the Nile and to control the annual floods of the River.[109] But this plan was to have major effects on the soils of northern Sudan. Constructing this dam would mean that complete sections of northern Sudan would be swamped. There were also many environmental worries as to how the project would transform life on the banks of the River. New hostility began over the level in which dam would be a joint project and to which a more equitable water distribution scheme would result. More particularly Sudan resented not being consulted regarding the project and responded with objection and caution to some of the effects for its people.[110]

In 1954 negotiation started between two countries but ineffective, and a military conflict broke out in 1958 when Egypt sent armed force to try to get back disputed border

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[106]http://en.wikipedia.org/wiki/Water_politics_in_the_Nile_Basin (accessed: May 01, 2012).

[107]The source of White Nile is Burundi, passes through Lake Victoria, and moves into southern Sudan and The Blue Nile source is near Lake Tana in the Ethiopian highlands. The Blue Nile and the White Nile join in the capital city of Sudan, Khartoum. Both flow jointly to north of Khartoum, where they are joined by Atbara tributary, which also originates in the Ethiopian highlands.

[108]Robert Mandel," Sources of International River Basin Disputes," *Conflict Quarterly* (Fall 1992), 42.

[109]Ibid.

[110]Ibid.

area. However that year a more positive military command took power in Sudan and this development come together with Soviet influence both States in 1959 signed an agreement on the utilization of the Nile River.[111]This treaty established a joint technical committee which would be in charge of directing and managing every development projects which changed the flow of the river. But this agreement was merely bilateral and did not contain other riparian States of the Nile River. Other basin countries have presently been responding to Egypt's control of Nile River water by threatening to withdraw from the treaty and starting projects of their own. Ethiopia was not even consulted in treaty from which 86 percent of the water comes from and utilized only one percent of Nile water. According to Ethiopia's minister for trade and industry, Ato Girma Birru, "Egypt has been pressuring international financial institutions to desist from assisting Ethiopia in carrying out development projects in the Nile basin...It has used its influence to persuade the Arab world not to provide Ethiopia with any loans or grants for Nile water development."[112] Kenya is experiencing increased water scarcity and refuse to recognize Egyptian restrictions on the utilization of the Nile water.[113] Recently Tanzania started a 27.6 billion dollar scheme to get fresh water from Lake Victoria.[114]

Egypt is losing access to the Nile River waters by development plains in other States, remains ready and capable to interfere militarily in order to keep the status quo. In 1979, Egyptian President Anwar Sadat said: "The only matter that could take Egypt to war again is water."[115]

As more riparian States of Nile valley grow their economies, the requirement for water resources enhances, the supply is expected to stay unchanged, considerably increasing the likelihood for armed conflict over the Nile's water.

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[111]Ibid.

[112]Lauren Howe, "Hydro politics of the Nile River: Conflict, Policy, and the Future," *Insights*, 33., http: //www.hamilton.edu/documents//levitt-center/Howe_article.pdf (accessed: May 01, 2012).

[113]Ibid.

[114]Ibid.

[115]Patricia Kameri-Mbote, "Water, Conflict, and Cooperation: Lessons from the Nile River Basin," *Navigating Peace*, No. 4 (January 2007), 1., http://www.wilsoncenter.org/sites/default/files/Navigating PeaceIssuePKM.pdf (accessed: May 01, 2012).

1.5 Latin America

Latin America is home to a number of the world's major rivers. It is also an area that is given rise to some famous disputes over joint water resources; including the Parana River and Lauca River.

1.5.1 The Parana River: Argentina and Brazil

The Rio de la plata basin, which comprises the Parana River, is distributed among Argentina, Brazil, Bolivia, Paraguay and Uruguay.

A dispute arose between Argentina and Brazil over the control of water resources of Parana River. In 1966, Paraguay and Brazil, declared their intent to construct Itaipu Dam[116] across the Paraná River, on the Argentina, Brazil and Paraguay boundary. Argentina was worried that the Itaipu dam would have harmful effect and maintained that Brazil had a duty under international law to inform it of the technical facts of the Itaipu dam and to consult with it. Brazil strongly rejected such obligations of consultation and prior notification.[117]

On 19 October, 1979 Argentina and Brazil finally reached agreement (agreement between Argentina and Brazil and Paraguay on Parana River projects) on the harmonization of the works they were scheduling.[118]

Even though Argentina is most affected by the project, it was not part of mutual project. Relationship between Argentina and Brazil is unpleasant over the matter and opponents of the project, together with Brazilians, claimed that the progress bore less relation to the nation's energy requirements than to Brazil's "militant posturing" towards neighboring States.[119]

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[116]According to the Great River of the World, the Itaipu dam will be the mightiest hydroelectric project in the globe; it impounds a reservoir 125 miles long and also longer than 40 city blocks. It took eighteen years to construct and having the generating capacity of 12,600 MW. , Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses*, (London: Oxford University Press, 2001), 265.

[117]Ibid.

[118]Ibid.

[119]Robin Clarke, *Water: the International Crisis*, (London: Earthscan Publications Ltd 1991), 98.

Brazil as the upstream State is in a most important position, and the effects of its actions are expanded in downstream States because the Parana River covers much bigger part of these States than it does of Brazil. Brazil has carried out several water schemes, like constructing hydroelectric plant and dams, without asking and consulting the other affected riparian States. These events led to conflict and anger.[120]

1.5.2 Lauca River; Bolivia and Chile

Since 1962, Bolivia and Chile have been in dispute over waters of the Lauca River, when Chile, where the Lauca watercourse has it source, diverted the water of watercourse for a main irrigation and hydroelectrial projects.

The downstream State, Bolivia, warned Chile that this would be considered as an act of hostility and also maintained that Lake Coipasa, into which the Lauca River runs, the salinity has enhanced as a consequence of diversion; that dampness in the basin region has reduced due to the decreased watercourse level; and that the decreased quantity of water in the watercourse has caused water scarcity several of cattle farming places.[121] After the diversion of Lauca watercourse, Bolivia disconnected diplomatic connections with Chile, and fruitlessly, in September 1962 put forward its case, to the Organization of American States.[122] The litigation between both States started in 1939, caused political tension until the 1960s.

1.6 Central Asia

In 1991 when the Central Asian Republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) got independence, the Aral Basin was almost a biological desert. The issues of the Aral Sea Basin, which earlier had been an internal problem of the Soviet Union, became international. Since that time the new riparian States have been struggling to restore, the watershed.

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[120] Ibid.

[121] Ibid.

[122] Ibid.

1.6.1 The Aral Sea: Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan, and Uzbekistan

The Aral Sea[123] straddles the boundary between republics of Kazakhstan and Uzbekistan. It is supplied mostly by two watercourses, Sye Darya or Syrdarya (it is 2,212 km long and the lengthy river in Central Asia) and the Amu Darya or Amudarya (it is 1,415 km long).[124]

In 1960 the Moscow central authorities plans the "Aral Sea Plan" to transform the area into the cotton strap of the Soviet Union. The Soviet government diverted enormous quantity of water from the two rivers of the Aral Sea, the Syr Darya and the Amu Darya, to water cotton fields[125] have resulted devastating effects on the flow of Aral Sea, people, environment and economies of the whole area.[126]

In 1991 it became an international watercourse with the independence of the Central Asian Republics.

At present the States of Aral Sea basin experience a host of troubles, including, severe worsening of the health of the basin inhabitants, decrease in clean environment, drop in the competence of the regional financial system and large aridity of the basin itself, like local residents fight high rates of hepatitis, cancer, tuberculosis and anemia. Often due to poor diet and lack of clean drinking water, the ratio of child death is high in the area.[127] Another factor may add further to the ambiguity of a solution, Tajikistan and Kyrgyzstan have stated that, as upstream countries they consider that they are entitled to damages from lower riparian countries for allowing water flow to them.

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[123]States having the entire or part of their areas within the Aral Sea Basin are Afghanistan, Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan, and Uzbekistan. It irrigates about over 7.9 million hectares and there are also 45 hydropower plaints and 8 reservoirs within the basin. UN,"*International River and Lakes Newsletter,"* no 29 (1998), 9.

[124]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses,* (London: Oxford University Press, 2001), 260.

[125]Cotton is called "white death" and also considered that cotton brought a kind of "environmental AIDS". Michael Elliott, "The Global Politics of Water," *Journal of Global Issues,* ninth Edition (93/94):78.

[126]Ibid.

[127]Laurene Boisson de Chazournes, Bertrand Charrier and Fiona Curtine, "National Sovereignty and International Watercourses," *Green Cross International* (2000), 80.

In acknowledgment of the problems and necessity for action, the five newly independent Central Asian Republics basin riparian countries concluded an agreement on 18 February 1992 "Agreement on Cooperation in the Management, Utilization and Protection of Water Resources in Interstate Sources." The agreement also institutes the Interstate Commission for Water Management Coordination (ICWC), which is given quite wide authorities, containing determination of yearly water utilization limit for all of the States and also the decisions of the ICWC are compulsory for each water consumers.

On 26 March, 1993, the leaders of the Republics concluded another treaty, the purposes of which include the reasonable use of the water recourses and land of the Aral Sea. This treaty also made another organization, the Interstate Council for the Aral Sea (ICAS), which is to be the main regional institute responsible for addressing the Aral Sea basin problems. The basin countries created a third organization the International Fund for the Aral Sea (IFAS), whose obligation is the organization of funding for schemes permitted by the ICAS.

It is not yet obvious whether these treaties and the organizations they set up will bear fruit, in the shape of restoration and safety of the basin and development of living standard of the population in the Aral Sea basin. A successful international accord on water utilization and share appears necessary to the environmental and economic suitability of the area. But it is not so far obvious that the countries in the Aral Sea basin, especially those upstream, are persuaded of the significance of collaboration with downstream co-riparian. In 1991 when the extent of the tragedy was revealed the administration and funds from Soviet Union were gone and the newly independent Republics were facing political and economic disorder (in the case of Tajikistan, civil war); the potential for water conflict is high.

1.7 Europe

Europe is home to several well-known rivers; among them are the Danube, and the Rhine. This part will focus on a long-standing dispute relating to salt pollution of the Rhine Basin.

1.7.1 The Rhine River: France and Netherlands

The Rhine River is the longest in Western Europe and is home to around sixty million inhabitants and the basin supplies drinking water to about twenty million people.[128] It goes through France, Netherlands, Germany, Switzerland, Austria and the Liechtenstein. It is used for different purposes, including industrial, navigation, and for drinking purposes.

Several of the Europe's key industries located beside the Rhine basin banks in Netherlands, France, Switzerland and Germany, like large steel, pharmaceutical, petrochemical industries. With the industry the difficulty of pollution appeared, containing potassium and sodium chloride wastes. This pollution of salt was especially widespread in France and Germany, for example, French Mines de Potasse d, Alsace (MDPA) guilty for 40% of the entire chloride levels of the Basin.

In 1950 by the exchange of notes between Netherlands, Switzerland, Luxembourg, Germany, and France initially established "International Commission for the Protection of the Rhine against Pollution" (ICPR) and was later on formalized in the 1963 Berne Convention.[129] It initial job was to find a method to remedy the over growing pollution of Rhine.

In 1976 after long negotiation the member States within the Rhine Commission, managed to enter into an agreement on the Rhine Chlorides Convention "Convention on the Protection of the Rhine against by Chlorides, 1976", signified initial step towards solution of Rhine salt pollution. Once more, however, the schemes of the members States of the Rhine Commission remained unsuccessful. This time the reason was the decision of the Government of French not to present the agreement to the parliament (Assemlee Nationale), for fear it would not be accepted. As respond to the France decision the Netherlands Government recalling its diplomat, a strange and surprisingly strong action for one European State to take action against another.[130] Netherlands and France finally concluded a treaty in 1983, on the resolving of the disagreement, on the basis of a

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[128]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses,* (London: Oxford University Press, 2001), 256.

[129] Robert Mandel," Sources of International River Basin Disputes," *Conflict Quarterly* (Fall 1992), 43.

[130]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses,* (London: Oxford University Press, 2001), 259.

research by `a group of scientific professionals. Rhine Chlorides Convention entered into force in July 1983 when the French parliament ratified it.

It was agreed under ICPR that the Convention's objects might be met by means other than injection of the waste salt into the soil. The parties approved the Additional Protocol in 1991 to stop using injection as a manner of disposal.[131]

However, the trouble has still not been completely resolved for Dutch. Lake Ijssel, one of Netherlands main sources of drinking water, is fed largely by one of the tributaries of Rhine, but in addition receives salty leakage water from a near polder. When a Chloride concentration from the Rhine is mixed with this salty water, the consequential salt level is too high to meet the values of drinking water.[132]

1.8 The North America

The United States shares several main watercourses and lakes with its neighbour States Mexico and Canada. These rivers contain the Colorado and Rio Grande Watercourses to the south and Columbia River and Great Lakes to the north.

1.8.1 Colorado River: USA and Mexico

The Colorado River has been considered the most debated and litigated watercourse in the world. It rises from Colorado and Wyoming, forms the boundary between Mexico and United States of American (USA) and then empties into the Gulf of California. Water of the watercourse is distributed between seven American States (Arizona, Colorado, California, New Mexico, Nevada, Wyoming and Utah), ten American Indian tribes and Mexico. This valuable resource of water has given rise to many problems.

The first problem of Colorado River is related to water quality, this issue mainly concerns the salinity of the River. It is naturally salty river; almost half of the salinity receives from natural resource and from the human being interference with the use of the watercourse. In 1961 the issue of water quality was raised by the Wellton Mohawk

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[131] Ibid.

[132] Ibid.

Irrigation Project in Arizona, which started process of a scheme of drainage wells which released salty water into Colorado watercourse above the Mexican diversion.[133]

The agriculture benefits of the Mexicali Valley in Mexico were impacted. In Mexico, agriculture interests in the Mexicali Valley were directly impacted. The salt concentration of the irrigation waters in Mexicali (a rich agricultural region) attained a high level of 2,700 parts per million as compared to earlier usual reading of approximately 800 parts per million.[134] Mexico protested that the salinity of water carried in the limitrophe sector of the watercourse had necessitated taking soil out of farming. Mexico reacted by starting a crash program of ground water expansion along with the boundary of Arizona, which unsurprisingly, was met with objections from the farmers of Arizona.[135] To address this issue in 30 August, 1973, Mexico and the US concluded a treaty, which is famous as Minute 242 Agreement. It quite positively named a "Permanent and Definitive Solution" to the problem of Colorado River salinity. To execute its responsibilities under the agreement, the USA built a "multi-million dollar" desalination plant in Arizona.[136] Though; still farming land in the Mexicali valley receives injury from Colorado salty levels.

A second problem concerning Colorado water has to do with lining of the "All American Canal" which is about 80 mile canal and began operational in 1940. It carries water of Colorado watercourse from a point on the Arizona-California frontier to the Impearl valley of California; there the water of the river is utilized for irrigation by the Impearl district. The canal flows about 66 miles similar to the boundary between the Mexico and US. Annually a huge amount of water is lost from it through seepage. Water has been seeping through its eastern sides and underside for more than fifty years into an aquifer distributed by the USA and Mexico.[137] Farmers of the Mexicali valley have greatly relied upon this water. To meet rising needs for water in California, a scheme was

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[133]Robert Mandel," Sources of International River Basin Disputes," *Conflict Quarterly* (Fall 1992), 32.

[134]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses* (London: Oxford University Press, 2001), 291.

[135]Ibid.

[136]Robin Clarke, *Water: the International Crisis*, (London: Earthscan Publications Ltd 1991), 100.

[137]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses*, (London: Oxford University Press, 2001), 292.

developed to stop water loss through leakage from the canal by lining it with concrete and plastic. At the same time these protection actions would reduce the groundwater existing for irrigation in the Mexicali Valley. It is expected that the lining of the canal will cause annual loss of over 80 million of dollars, suffer approximately 33,000 acres of farmland and120 wells[138]. Mexico has maintained that the USA has a responsibility under Minute 242 agreement to consult prior to undertaking this plan. So far, the USA and Mexico have not solved this issue.

1.8.2 Columbia River: Canada and USA

The USA and Canadian border is the longest in the globe. The terrestrial boundary is about 5,525 miles long, including 1,538 miles distributed with Alaska.[139] Canada and USA concluded Boundary Water Treaty in 1909. The agreement explains boundary water rather narrowly by not including the waters of watercourses flowing across the border. Unlike the Colorado watercourse dispute in this issue the USA was a lower riparian country. The Columbia waterway rises in British Columbia, streams across the Canadian-USA border into Washington and empties into Pacific Ocean. The dispute started in 1951 after USA suggestion to make Libby Dam on the Kootenay watercourse. The dam reservoir would have deluged about 42 miles of Canadian area and increased the water level approximately 150 feet at the boundary. The USA proposed to pay damages to Canada for flooding the territories and the consequential displacements, but not for the power benefits.[140] Canada maintained on a share of the power benefits and pointed out that it might turn away the Kootenay River into the Columbia River and later on declared the likelihood of diverting more than 15 million acre-feet per annum from the Columbia River into Fraser watercourse.[141]

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[138]Ibid.,p.293.

[139]Canada-United States border, http://en.wikipedia.org/wiki/Canada_%E2%80%93_United _ States _ border (accessed: August 16, 2010).

[140]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses*, (London:Oxford University Press, 2001), 295.

[141]Ibid.

In 1961 the dispute was finally solved through Columbia River Basin Treaty signed at Washington.[142] Johnson expert on water resources described the agreement having "ended one of the bitterest debates waged between Canada and United States." The agreement set up a complete and combine plan for the development of the resources of the Columbia Watercourse.

1.8.3 Rio Grande: Mexico and USA

The Rio Grande watercourse was also the cause of conflict between Mexico and USA, which has its source in Colorado. This disagreement was described by extreme claims on both Mexico and USA: the "Harmon doctrine" of absolute sovereignty on the part of the USA, which would have permitted "the US to utilize the River entirely as it fit, without regard consequences on Mexico State; and main concern of utilization on the part of Mexico, which would have prohibited more development of Rio Grande watercourse by the USA."[143]

In 1906 the dispute was finally solved, both countries signed a treaty at Washington regarding the "Equitable Distribution of the Water of the Rio Grande for Irrigation Purposes" The agreement provides for the building of a storage dam in the USA close to Engle and the supply by the USA to Mexico of around 74 million m^3 of water every year according to a monthly program.[144] The use of River by the USA and Mexico was further adjusted by a 1944 agreement regarding the size of the stretch of the watercourse that shapes the border between the USA and Mexico.

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[142]Robert Mandel," Sources of International River Basin Disputes," *Conflict Quarterly* (Fall 1992), 34.

[143]Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses*, (London: Oxford University Press, 2001), 285.

[144]Ibid.

CHAPTER 2

INTERNATIONAL WATER LAW

"The war of the next century will be about water"[1]

2.1 Introduction

International Water Law (IWL) is also identified as Transboundary Water law, or International Watercourses Law, is the set of those legal principles that manage, regulate, settle disputes and control the use of water distributed by two or more States. The utilization of international watercourses is divided into non-navigational and navigational uses, and for them a different set of IWL is adopted.

In the last four decades some States began to use fresh water to considerable level. It is clear that certain utilization linked with harmful downstream effects, and also decreases the accessibility, quantity and quality of freshwater resources. This created an increasing possibility for conflicts. Ultimately the need for international rules emerged. Acceptance of these water challenges has led to the growth of developing body of IWL, agreements, rules and decisions of international tribunals that play a progressively prominent role in explaining the rights of access and development to watercourses and in determining the laws and procedures of shared rivers.

After World War I, IWL started to deal with matters of non- navigational use of international watercourses. Globally, the first effort to manage the utilization of non-navigational uses of international watercourses was made in 1966, "Helsinki Rules on the Uses of the Waters of International Rivers (Helsinki Rules 1966)." At the same time, IWL of non-navigational uses has evolved its own principles in quite different areas of the use of transboundary water to manage nation's conduct. Like "the principles of reasonable and equitable utilization."

2.2 Universal Convention: Convention on the Law of Non-Navigational Uses of International Watercourses (UN Watercourses Convention, 1997).

The possibility of international conflicts on Transboundary water is obvious from the earlier discussion in this thesis. For this reason the United Nations (UN) adopted a framework UN Watercourses Convention, 1997 presents States essential set of laws and guiding principles to decide and avoid conflicts over international rivers.

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[1]T.Tvedt and E.Jakobsson, ed., *A History of Water*, vol.1 (London: New York: I.B.Tauris 2006), I.

The United Nations General Assembly (UN GA) suggested that the International Law Commission (ILC) "take up the study of the law of the non-navigational uses of international watercourses with a view to its progressive development and codification."[2] In July 1994 after the deliberation, consideration and study on non-navigational uses of international watercourses, the ILC adopted a set of draft articles, which took almost a quarter century. These draft articles were submitted to UN GA to be used as a preliminary point for the drafting of a universal water convention. On 9 December, 1994 UN GA adopted resolution which provides that "the Sixth (Legal) Committee shall convene as a Working Group of the Whole open to all member States of the UN or members of specialized agencies."[3]

The Sixth (Legal) Committee in 1996, organized as the Working Group of the Whole started conferences on the draft articles of ILC. For Working Group, the time from 7 to 25 October, 1996 (three week session) envisaged in the above resolution showed insufficient to complete its mission. The UN GA approved another resolution[4], on the request of Working Group arranged a 2nd session for the time of two weeks. After this negotiation, the Sixth Committee presented its last description of the convention in its report to the UN GA. The convention was adopted by the UN GA on 21 May, 1997.[5] The efforts of the commission, took about three decades, led to the adoption of universal convention by the UN GA.

The UN Water Convention, 1997 consists of a preamble, seven parts consist of 37 articles: Part I, Introduction (Articles 1-4); Part II, General principles (Articles 5-10); Part III, Planned Measures (Articles 11-19); Part IV, Protection, Preservation and Management (Articles 20-26); Part V, Harmful Condition and Emergency Situations (Articles 27-28); Part VI, Miscellaneous Provisions (Articles 29-33); and Part VII Final Clauses (Articles 34-37). An Annexure sets forth procedures relating to Arbitration.

This convention presents a reasonable framework agreement addressing the basic matters, like, procedural rules, substantive rules, dispute settlement, and institutional mechanism that give a concrete base to guarantee water security at all level. The essential

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[2]UN GA Res. 2996(xxv) 8 December, 1970.

[3]UN GA Res.A/49/52, Para 3.

[4]UN GA Res.A/51/206 (17 Dec.1996).

[5]UN GA Res. 51/229 (21 May, 1996).

provisions, for example no harm rule and equitable uses led to codifications of existing rules. In the Gabcikovo-Nagymaros project Case 1997 the single decision of International Court of Justice (ICJ) relating to international watercourses, the ICJ clearly recognized the significance of convention. The convention establishes duty to exchange information about the condition of waterway, for example information of a meteorological, hydrological and ecological nature. It also affirms obligation of consultation and notification and information exchange mechanisms about planned measure. After this universal convention, new treaties have been signed or are presently under discussions that draw greatly on its provisions. For instance Agreement on the Cooperation for Sustainable Development of the Mekong River Basin, 1995 and 7 August, 2000, Revised Protocol on shared Watercourses in the Southern African Development Community (SADC), Protocol for Sustainable Development of the Lake Victoria Basin, 2003 and Senegal River Water Charter, 2002.[6]

2.3 Regional Convention: Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 1992 (Helsinki Convention, 1992)

Associated countries with United Nations Economic Commission for Europe (UNECE) are conscious of the demand for collaboration if these countries are to make sure that water resources are utilized fairly and sensibly. They understand that they distribute the same transboundary waters and depend on one another to seek useful results. This constructive approach to the difficulties guided to the adoption of Helsinki Convention, 1992 and adoption of its "Protocol on Water and Health to the 1992 Water Convention (1999)" and "Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (2003)." On 18 March, 1992 the convention was signed in Helsinki and on 6 October, 1996 came into force. European community and thirty four States have ratified the Helsinki Convention1992. It set up a framework for joint efforts among UNECE States on the control and avoidance of pollution, equitable and reasonable utilization of transboundary water and cooperation on issue of water.

[6]Laurence Boisson de Chazournes, "Freshwater and International Law: The Interplay between Universal, Regional and Basin Perspectives," *Insights* (2009), 5.

Helsinki Convention, 1992 consists of preamble, 28 articles in 3 parts, and four annexure. It contains three parts. Part I have provisions about all parties, part II have provisions regarding the riparian States and part III deals with institutional arrangements.

Major provisions of the convention are that:

"Parties to the Helsinki Convention, 1992 shall take appropriate measure to stop, decrease and control any transboundary impact; this denotes they should: make sure that transboundary waters are used in a reasonable, environment friendly way; make sure that waters utilized in an equitable and reasonable manner; make sure restoration and protection of ecosystems."[7]

The Helsinki Convention encourages assistance between the riparian State by way of multilateral and bilateral accords for the introduction of coordinated strategies, plans and policies to safeguard transboundary waters, for instance: meeting between riparian States, start warning method, foundation of combined bodies, common development and investigation, exchange of information, establish combined assessment and monitoring program and public information. An additional distinguishing feature of the Convention provides institutional mechanisms. According to this tool, shared management instruments play an important role.

2.3.1 Protocol I: Protocol on Water and Health to the 1992 Water Convention (1999)

It was adopted in London, June 1999 and entered into force in 2005. It deals with, delivery of nutritious drinking water, sufficient sanitation, safety of fresh water resources, and protection against water related illness and arrangement to react and check eruption. It aims to improve the safety of human health through the development of water administration and the protection against water related diseases.

2.3.2 Protocol II: Protocol on Civil Liability and Compensation for Damage Caused by the Tran boundary Effects of Industrial Accidents on Tran boundary Waters (2003)

It was adopted in Ukraine, May, 2003 aiming for an inclusive civil liability system and a speedy and sufficient damages rule in the case of injuries to international water caused by industrial accidents. The goal of this protocol was to record as many countries as possible and to extend its range.

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[7]Article. 2, Helsinki Convention 1992.

2.4 Helsinki Rules on the Uses of the Waters of International Rivers (Helsinki Rules, 1966)

The International Law Association (ILA) adopted the Helsinki Rules in 1966 on the Uses of the Waters of International Rivers and was generally observed as the suitable rules for the utilization of international rivers and consequently they were pursued by nations as state practice or formulated in the shape of international conventions.[8]

The Helsinki Rules are the ruling mostly quoted by courts, largely mentioned by scholars, provided the foundation for the UN Watercourses Convention, 1997[9] and also for all agreement which are relating to the uses of transboundary water in central Europe and North America.

The Helsinki Rules 1966 signify a revolutionary effort dealing with particular uses, such as timber floating, navigation, and pollution and also describe procedure for the settlement and avoidance of disputes but their leading and guiding rule is equitable use. The 1966 rules concern the utilization of international rivers.[10]

Furthermore such an international river is described as "a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus."[11] Hence for the first time the Helsinki rule addressed the transboundary ground water. The Helsinki Rules produced the basic principle of "equitable and reasonable utilization" of international waters as the fundamental principle of IWL. The Helsinki Rules for this reason have provided in Article V various factors for determining such equitable and reasonable utilization for every riparian country.

The Helsinki Rules consist of six chapters: Chapter 1, General (Articles I-III); Chapter 2, Reasonable and Equitable Utilization of the Water (Articles IV-VIII); Chapter 3, Pollution (Articles IX-XI); Chapter 4, Navigation (Articles XII-XX); Chapter 5,

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[8]Salman M.A.Salman, "The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law," *Water Resources Development* 23, no.4 (December 2007), 630.

[9]The Finnish Chair of the ILC Committee that made the Helsinki Rules, E.J.Manner, recommend to the UNGA that "the ILC take up the study of the law of non-navigational uses of international watercourses, and that it consider using Helsinki Rules as a model for its works.", Stephen C. McCaffrey, *The Law of International Watercourses Non-Navigational Uses*, (London: Oxford University Press, 2001), 322.

[10]Article. I. Helsinki Rules 1966.

[11]Articles. II, Ibid.

Timber Floating (Articles XXX-XXV); and Chapter 6 Provides Procedure for the Settlement and Prevention of Disputes (Articles XXVI-XXXVII).

These Rules have played an important role in development of IWL. This is the first international instrument to contain principles for both navigational and non-navigational utilizations of international watercourses. Till the 1997 UN Convention, the rule remained the only most comprehensive, valued and significantly cited set of principles for regulating the safety and utilization of international waterways. The 1966 Rules have been adopted by various States and international organizations. For instance, the 1995 Protocol on the Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) was based mostly on Helsinki Rules. Likewise, in 1973, in India, New Delhi, the Asian-African Legal Committee, referred to the principle of equitable utilization and including the factors determining such use.

2.5 Berlin Rules on Water Resources, 2004 (Berlin Rules, 2004)

The Berlin Rules, 2004 is a document adopted by the ILA on August 21, 2004 in Berlin to summarize IWL customarily applied in present times to water resources, whether crossing international borders or inside a State.

The Report of the Water Resources Committee of ILA declared that the Berlin Rules 2004 include the experience of the almost four decades: "taking into account the development of important bodies of international environmental law, international human rights law and the humanitarian law relating to the war and armed conflict, as well as the adoption by the General Assembly of the United Nations of the UN Convention."[12]

The Rules are comprehensive. They are divided into 14 chapters; include 73 Articles, covering different issues on fresh water resources which go beyond the UN Watercourses Convention, 1992 and the Helsinki Rules, 1966.

The emphasis by the Water Resources Committee of ILA on the growth of IWL is worth noting, given the method in which the Rules dealt with the relationship between the duty not to cause harm and the rule of equitable and reasonable utilization.

Article 12 of the Berlin Rules, 2004 declares that:

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[12]Salman M. A. Salman, "The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law," *Water Resources Development*, 23, No. 4, (December 2007),635.

"Basin States shall in their respective territories manage the waters of an international drainage basin in an equitable and reasonable manner having due regard for the obligation not to cause significant harm to other basin States."

The Rules oblige that States take proper steps to manage and maintain water resources, in combination with other resources, and reduce environmental injury. Furthermore to setting out various guidelines for States to follow with respect to water within their territories and water they may share with other nations. The Rules obliges a reasonable openness to the global community of information connected to fresh water resources and their use, especially in those areas where States sharing a water resource may be impacted.

Three features differentiate the Berlin Rules, 2004 from Helsinki Rules, 1966 and the UN Watercourses Convention, 1997. First, some of the provisions of the Berlin Rules, 2004 relate to both international as well as national waters. This is a clear deviation from all other IWL instruments that strictly apply to international shared water resources. Second, the Berlin Rules, 2004 reflect recognized principles of customary international law, and include emerging principles as well. This approach differs from the Helsinki Rules, 1966 and UN Watercourses Convention, 1997 which reflect the established principles of customary international law only. Third, thinking on international environmental law and in its efforts to include the present customary rules, the Berlin Rules, 2004 have downgraded the basic principle of IWL of equitable and reasonable utilization, and have equated it with the duty not to cause significant harm. The Helsinki Rules, 1966 and the UN Watercourses Convention, 1997 treat harm as one of the factors for determining equitable and reasonable use, and therefore subordinate the duty not to cause harm to the rule of equitable and reasonable use.

2.6 Decisions of International Courts and Arbitral Awards

2.6.1 Permanent Court of International Justice (PCIJ)

2.6.1.1 The Oder River Case, 1929[13]

The River Oder begins from the Oder Mountains in Czechoslovakia. It is the second longest watercourse in Poland. Under Article 331of the Treaty of Versailles, 1919 the

[13]Case Relating to the Territorial Jurisdiction of the International Commission of the River Oder (Poland and Great Britain, Denmark, Czechoslovakia, Germany, Sweden and France), PCIJ, Ser.A.No.23-Ser.C.No17-11, p.5-46, Sept 10th.1929.

River Oder was recognized as an international watercourse. Further this article declared that:

"all navigable parts of these river systems which naturally provide more than one State with access to the sea, with or without transhipment from one vessel to another; together with lateral canals and channels constructed either to duplicate or to improve naturally navigable sections of the specified river systems, or to connect two naturally navigable sections of the same river."

By virtue of article 341 of the treaty, the administration of Oder was placed under the international commission. The job of the said commission was "define the sections of the river or its tributaries to which the international regime shall be applied."

A dispute started between Great Britain, Denmark, Czechoslovakia, Germany, Sweden, France and Poland which contended that:

"The jurisdiction of the Commission, which consisted of the representatives of Germany, Denmark, France, Great Britain, Sweden, Czechoslovakia and Poland, was limited only up to the sections of the Warthe and the Netze in Polish territory."[14] Other States contended that "it must be to the navigable point of Warteha and the Netze, even leaving the territory of Poland." [15]

The special agreement of 30 October, 1928 drawn up by the Governments represented on the Oder commission asking the PCIJ to answer the above questions.

The Court found that the distinction between national and an international river is that the second must be naturally providing more than one State with access to the sea and must be navigable:

"but when consideration is given to the manner in which States have regarded the concrete situation arising out of the fact that a single waterway traverses or separates the territory of more than one State, and the possibility of fulfilling the requirements of justice and the considerations of utility which this fact places in relief, it is at once seen that a solution of the problem has been sought not in the idea of a right of passage in favour of upstream States, but in that of a community of interest of riparian States. This community of interest in a navigable river becomes the basis of a common legal right, the essential features of which are the perfect equality of all riparian States in the use of the whole course of the river and the exclusion of any preferential privilege of any riparian

[14]PCIJ, Ser.A.No.23-Ser.C. No 17-11, p.6.

[15]Ibid.

State in relation to others. The jurisdiction of the Commission extends up to the points at which the Warthe (Wartha) and the Netze (Notec) cease to be either naturally navigable or navigable by means of lateral channels or canals which duplicate or improve naturally navigable sections or connect two naturally navigable sections to the same river."[16]

Therefore, the submission of Poland was rejected and the other opponent countries' arguments were sustained in the judgement.

River Oder Case was the first water dispute submitted to the PICJ, and its decision deals with the questions which are important to the IWL development, in non-navigable and navigable. The notion of "community of interest" has been considered as foundation of the most important principles of equitable utilization, and which has a leading part in the growth of IWL and most of the States apply it. This decision plays significant role in common water ways, for example a river that crosses the territory of a country or countries is a shared property to every riparian country and must be managed in such a manner that each utilization does not harm others right.

2.6.1.2 The Diversion of Water from Meuse River, 1937[17]

The Meuse River begins in France and runs through Belgium and Holland into the North Sea. On 12 May, 1863 Belgium and Dutch concluded treaty concerned with the management of diverting water from the Meuse River for feeding of irrigation channels and navigational Holland and Belgium signed another agreement in 1925, planned to resolve all differences regarding the enlargement or the construction of new canals. Both States commenced works on the diversion of water from the Meuse River. Holland initiated to build the Juliana Canal, the Borgharen and the Bosscheveld Lock barrage, whereas Belgium started to construct the Albert Canal, a barrage at Monsin (incomplete at the time of decision).

In 1936 Holland commenced proceedings in the PCIJ with unilateral application under article 36(2) (compulsory jurisdiction) of the Court Statute. Holland requested that the Court gave order to Belgium to stop all work constructed in violation of the 1863 Treaty, to restore all works to conform with the Treaty of 1863 and also to refrain from feeding against the Treaty. Belgium requested the Court to announce that Holland submission

[16]PCIJ , *Annual Reports* (1937), p. 221-222.

[17](Holland and Belgium), PCIJ, Ser.A/B 70- Ser C NO 81, June 28th.1937

was illegal, that the BorgWarner barrage had been constructed in violation of the 1863 Treaty, and Juliana Canal too, would be subject to the 1863 Treaty.

The Court refused the claims of both countries, maintaining itself entirely to an interpretation of the 1863 Treaty.

The Court refused the first submission of Belgium regarding the Borgharen barrage, declared that the 1863 Treaty did not prohibit Holland to change the depth of water at Maastricht in Meuse without Belgium's consent, if the release of water, the volume, and the current in the Zuid-Willemsvarrt were not affected.

The Court also rejected the second Belgium submission related to the Juliana Canal on the ground that the 1863 Treaty was planned to control water supply to the canals situated on the left bank of the Meuse only, hence, the Juliana Canal situated on the right side of the bank, did not come under the rule of water supply given by the said Treaty.

The Court refused Holland's submission because the Treaty of 1863 Article 1 provided the right to control and supervise all the intakes, situated in Holland's territory as well as in Belgium. With respect to the construction of the Albert Canal, water taken from the Meuse in Holland's territory, by Belgium, the derivation of water was irrelevant, in the view of the Court, the Belgium and Holland could transform, enlarge, modify, fill, the canals and enhance the volume of water in them on condition that the volume of water was not affected and the canals did not leave their territories.

This decision of Court firmly supports the fundamental principle of equal action of countries as well as the reciprocity of the duties and right of the States in a collective waterway.

2.6.2 International Court of Justice (ICJ)

2.6.2.1 The Gabcikovo-Nagymaros Project Case, 1997[18]

In Europe Danube is the second largest river, which crosses nine countries. In 1977 Czechoslovakia and Hungary concluded a treaty regarding the operation and construction of a project planned to share, develop and assign benefits from the River Danube. The said project was to be performed on the basis of a joint management plan and by mutual investment. According to the said treaty, the designed project consisted of a chain of barrages and dams on the stretch of about 200 kilometers between the Budapest in Hungary and Bratislava in Czechoslovakia of the Danube River. According to the

[18](Slovakia/ Hungary), ICJ's judgment, 25 Sept. 1997 ICJ 7; repr. in 37 ILM 162(1998).

preamble of the said treaty the scheme was planned to get the large use of the natural resources of the River Danube section Bratislava-Budapest for the improvement of energy, water resources, agriculture, transport, agriculture and other segment of the nationwide economy of the contracting States. The project was intended at the safety of regions along the banks against flooding, production of hydroelectricity and the enhancement of navigation on the related section of the Danube.

When the agreement plans were being considered for execution, the environmental consequence of the project was seriously criticized. As the consequence of extreme pressure from public, Hungarian administration was forced to suspend the project at first, and then in 1991 when dialogues with Czechoslovakia did not produce any encouraging result unilaterally terminated the treaty. During the period of dialogues, Czechoslovakia also initiated examining alternative solutions. Such as "Variant C" (a unilateral diversion of the Danube by Czechoslovakia) comprised the construction of Cunovo dam and its related structures. Slovakia, a successor of Czechoslovakia decided to start the construction and then by a provisional solution put the Gabcikovo project into operation. Both the States failed to settle the dispute. On 2 July, 1993 Slovakia and Hungary submitted the case to the ICJ by special agreement entered into force on 28 June, 1993.

The Court dealt with a number of questions, such as postponement and desertion of the project by Hungary, issues of state of necessity, environmental consideration, the material breach of the treaty, the occurrence of a fundamental change of circumstances, the impossibility of performance of the Treaty, and growth of fresh rules of international watercourses law. The ICJ rejected the aforesaid Hungarian arguments and declared that to postpone and later discard the project was not lawfully justified. The Court further held that in its place of doing so, Hungary would have the option of the dispute settlement mechanism provided by the treaty. Rejecting all the aforesaid submissions, the Court concluded that Hungary was not allowed to cancel the project. About the Slovakia unilateral utilization of the Danube, the Court declared that: "it is not only a shared international watercourse but also an international boundary river, from which presently Hungary is deprived of its benefits and Slovakia is using between 80 and 90 percent of the waters of the Danube before returning them to the main bed of the river, despite the fact the Danube is not only a shared international watercourse but also an international

boundary river."[19] The manner, in which Slovakia dispossessed Hungary from these benefits by placing the 'Variant C' into function, is inappropriate with the treaty.

The Court declared Hungary and Slovakia acts are unlawful, and both Countries are required to give compensation to the other for the damage sustained by each action to the other, the Court further held that both countries are obliged to implement and consult the provisions of the treaty of 1977 in good faith.

The judgment of Court provided that treaty measures should be executed in good faith with the aims set forth in it. For that, there are a number of rights equivalent to a duty to consult and notify regarding the planned project, practice the notion of "equitable utilization", "no harm" and forever keep excellent friendship in a supportive manner. The reasonable and equitable use of an international waterway is the essential obligation.

2.6.3 Arbitral Decisions

2.6.3.1 The Helmand River Cases

The River Helmand starts from the mountains of west Kabul and covers about 700 miles course in Afghanistan. One of Helmand river distributaries shapes the boundary between Iran and Afghanistan for approximately 12 miles before flowing and dividing into Seisten or Helmand delta in the two countries border area. Its waters are vital for farmers in Iran and Afghanistan.

Arbitral award of General Goldsmid, 19 August, 1872

On 9 August, 1872, the first dispute between Iran and Afghanistan was submitted to the arbitration of a British Commissioner, General Goldsmid to decide the dispute between the two countries relating to the delimitation of their boundary and the use of the waters in the delta region. According to an agreement between Afghanistan, Iran, and British commissioner, acting as an arbitrator, were to assemble in Iran and Seisten to decide issue relating to Helmand.

In the award General Goldsmid at Teheran in19 August, 1872 decided: "Persia should not possess land on the right bank of the Helmand. It appears therefore beyond doubt indispensable that both banks of the Helmand above the Kohak band be given up to Afghanistan. The main bed of the Helmand therefore below Kohak should be the eastern boundary of Persian Seistan. It is, moreover, to be well understood that no works are to

[19]Para 78 of the ICJ's judgement 37 ILM (1998), p 190.

be carried out on either side calculated to interfere with the requisite supply of water for irrigation on the banks of Helmand."[20]

The award of General Goldsmid has been considered as one of the basics of equitable utilization. It has added to the reasonable distribution of waters from the joint river to every riparian State. Hence, it has clearly highlighted the following impression: while utilizing your part of waters you should take into account the benefits of other riparian countries, and every harmful effect is prohibited.

Arbitral award of Colonel MacMahon, 10 April, 1905

Facts of the second case: A second dispute was presented to the arbitration of Colonel MacMahon, in 1902 inquiring:

"What amount of water fairly represented a requisite supply for irrigation provided on behalf of Persia by the award of 1872? The mission in Seistan had been created in order to determine this requisite supply for Persian needs and it was stated that one third of the water which reached Seistan would suffice for irrigation in Persian Seistan, leaving the same supply for Afghan requirements as well."[21]

Col. MacMohon on 10 April, 1905 declared in his award that Iran was causing injurious consequence on Afghanistan's waters and proclaimed Iran act unlawful. Though, Iran has never accepted the award. The Goldsmid judgment of 9 August, 1872 was confirmed by the verdict of Col.MacMohan. The award refused the concept of intervention in the other state's use of water.

2.6.3.2 Lake Lanoux Case (Spain v. France), Award of 16 November, 1975

Lake Lanoux is located in the territory of France on the Southern slope of the Pyrénées. The outlet of this Lake in the eastern Pyrenees of France runs into the Carol Watercourse. On 21 September 1950, in order to make hydropower the Electricité de France proposed to the France Government to divert the waters of the Lake Lanoux to the Ariège River flow in France. Afterwards, by way of a tunnel linking the rivers Carol and Ariègel over the outlet to the Puigcerda Canal the waters so diverted were to be entirely returned to the Carol Watercourse. On the diversion of the waters Spain objected, arguing that it would have bad consequence in Spanish territory.

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[20]Trilochan Upreti, *International Watercourses Law and Its Application in South Asia,* (Kathmandu: M House Ramshapath, 2006), 38.

[21]Ibid.

On the basis of the Arbitration Treaty, 1929, the Case was decided by an arbitrary tribunal. In 1956, both countries signed a Compromise at Madrid due to which the Arbitral Tribunal met in Geneva.

The arbitral tribunal declared that the planned diversion of water by France would not breach the treaty as there would be no net change to the water flow of the Carol Watercourse. The tribunal articulated its observation: "that under existing customary international law co-riparian States are equally entitled to reasonable use of the waters from an international drainage basin and its view regarding a co-riparian consent; ...that there exists a principle prohibiting the upstream State from changing the waters of a river in their natural condition to the serious injury of a downstream State. Such principle cannot be applied to the present case because the tribunal has established, in regard to the first question examined above, that the French project does not alter the waters of Carol."[22] Thus, Spain was only permitted to the adoption by France of actions ensuring the reasonable safety of Spanish interest.

Therefore, the award, various substantive rules have emerged. It shows that a downstream country has no veto power to object or to end any scheme of water in the upstream country unless it causes severe or major or considerable unpleasant results. Thus, it is a responsibility of the country that is proposing to begin a project to discuss and confer with its co-riparian country to identify whether any harmful change can be imposed by such work and to make sure the reasonable use of such joint waterway.

It is a landmark ruling in IWL, because it is clearly connected to the sharing and distribution of fresh waters in an IWL.

2.6.3.3 Arbitration of Trial Smelter Case, 1938-1941

The Smelting Company Limited and Consolidated Mining of Canada worked a lead smelter and zinc beside the Columbia River at Trail located in British Columbia approximately 10 miles north of the international border with the USA. There was a great stock of mines and lead smelters being excavated by these companies. Throughout the smelting procedure, the sulfur dioxide vapors were passed over the border and caused harm to plants and crops on Columbia River valley, Washington in USA territory. The major classes affected were Cedar, Douglas, Yellow pines, and larch. Damage harvests contained wheat, oats, and alfalfa. In 1935 at Ottawa Canada and USA signed a

[22] Ibid., p. 42.

convention and accordingly composed an arbitral tribunal to decide the issue over crop and timber damages caused by a smelter on the side of Canadian boundary. The tribunal declared that: "Under the principles of international law, ... no state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory or another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence."[23]

The Tribunal declared Canada liable under international law for the action of the Trail Smelter. Thus, the Trail smelter was obliged to abstain from causing any injury through fumes passing over the USA territory.

The verdict has very important for the growth of international law and particularly international environmental law. The Trial Smelter rules have turned into an important part of customary principles of international law. This award is quoted in various international and national cases, writings and state practices. For the first time the maxim sic utter tuo, propounded in this case, has been cited in many cases such as the Corfu Channel and Lake Lanoux cases. At present, the Trail Smelter award is famous as the international judgment on transborder air pollution, having founded the "polluter pays" rule as the foundation for deciding transboundary conflicts. It must be understood that this decision has a clear connection with the "no harm rule", specified in Article 7 of the 1997 UN Watercourses Convention. For no harm rules these are the fundamental bases. Use of waters in an international river is the right of riparian countries with the duty to avoid any harm to other riparian countries. In the occasion of any harm to the other watercourse countries, such injury should be removed, prevented or mitigated. In addition, this is the foundation for the notion of no harm principle and extraterritorial water pollution.

2.6.3.4 Arbitration of Gut Dam Case, 1968

River St. Lawrence is among the main rivers in North America and the key outlet for the Great Lakes. Ontario Lake is placed between USA and Canada. It obtains the drainage of the whole Great Lakes scheme passes the Niagara Watercourse and discharges into the River St. Lawrence. In 1900 Canada had sought permission from the USA for the construction of dam. In 1902 consent was given by US Congress with the condition that

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[23]William L. Grittin, "The Use of Waters of International Drainage Basin under Customary International Law," *The American Journal of International Law* 53(1959), 61, http:/www.Jstor.org/stable/2195213 (accessed 11 May, 2010).

US Secretary of War approved the proposed plans. Secretary of War, Elihu Root, permitted the Canadian project subject to two stipulations. First was that if the dam caused any harm to the welfare of the USA or if significantly affected the water levels of Lake Ontario, Canada was to make changes to the plan. The second condition was if the dam caused any adverse effect to US citizen or its territory, the Canadian government shall pay the compensation for such injuries. Canada had agreed to above conditions, With the USA permission; in 1903 Canada constructed Gut Dam between Les Gallops Island of US territory and Adams Island in Canadian territory St. Lawrence. In 1951-52, the water in the same watercourse touched an unexpected point and caused extensive erosion and flooding damage to USA territory. In 1965, in order to decide the problem, Canada and USA composed the Lake Ontario Claim Tribunal.

The Tribunal held in its award that Canada had caused damage and should pay damages. Though, in 1968 to clear up the sum of reparation, there was another agreement concluded by the Canada and USA, in which Canada compensated USA a sum of 350,000 US$ as full and final damages for the harm caused by operation and building of Gut Dam. This judgment improved the notion to utilize your own resources without causing any damage to the other riparian States.

2.6.3.5 The Zarumilla River Arbitration Case, 1945

The River Zarumilla shapes a portion of the frontier between Peru and Ecuador. The issues arise between Ecuador and Peru; in 1944 the two States presented a dispute regarding the River to arbitration.

In 14 July, 1945 Chancellery of Brazil Braz Dias de Aguiar declared that:

"Peru undertakes, within three years, to divert a part of the Zarumilla River so that it may run in the old bed, so as to guarantee the necessary aid for the subsistence of the Ecuadorian populations located along its banks, thus ensuring Ecuador the co-dominion over the waters in accordance with international practice."[24]

[24]Ibid.

2.7 Principles of International Water Law

The Statute of ICJ Article 38 1(C) obliges the Court to apply the general principles of law accepted by civilized nations. This part summarize a few essential general principles of international law related to transboundary water resources administration that are internationally accepted and included in modern international treaties.

2.7.1 Principle of Reasonable and Equitable Utilization

This principle is based on justice, equity, fair dealing and rules of distributive impartiality in which the benefit of all riparian States are taken into consideration. It is the most broadly accepted principle for solving water connected issues. This principle rests on a basis of joint sovereignty or equality of rights, and is not to be puzzled with equal distribution.

This rule is generally accepted as principle of customary international law and approved by judicial pronouncements, state practice, and the writing of qualified publicists and also IWL identied equitable and reasonable use as a set of entrenched rules. Every waterway has different characteristics that require different solutions. Though, the justified principle to deal with every circumstance is that of equitable and reasonable uses. It includes equality, justice, rationality, impartiality and other significant aspects of sustainability. One of the aspects of this principle is to distribute the expenses and benefits of any waterway scheme developed by a watercourse country. It means that if project prepared by an upstream country yields any advantages for the downstream country, it should be distributed on the basis of a cost benefit-analysis; if not, it might be a case of unfair enhancement. Additionally, this rule largely developed and pronounced for the partition, distributing and allocation of marine resources and international watercourses between contestant countries. It also needs a constant procedure of negotiation, collaboration and of giving information, among the riparian nations for the advantageous utilization of a joint waterway. The indivisible part of reasonable and equitable use is the duty not to cause any harm to the other waterway country.

Helsinki Rules, 1966 present rules that provide for the obligations and rights of watercourse countries in matters concerning the distribution of water resources. It provides that "each Basin State is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin."[25] The article is

[25]The Helsinki Rules on the Uses of Waters of International Rivers, 1966, chp.2, Art.IV.

enhanced by Article V, of the same rules of 1966 determining factors what utilization are reasonable and equitable. Therefore, from the study of articles IV and V, it may be said that there is no sole definition of what equitable and reasonable means. Its measurement, though, is to be based on various factors. Thus, the application of reasonable and equitable uses can be different for dissimilar drainage basins bearing in mind the particular situations prevailing in every watercourse.

The UN Watercourses Convention, 1997 holds similar approach in Article 5 on reasonable and equitable utilization and participation. For determining whether utilization is equitable and reasonable or not, the factors are included in Article 6 of the UN Watercourses Convention, 1997. This principle is also incorporated in Articles 7, 15, 16, 17, 19 in the Convention. The rules made in the Convention express the standards that require to be taken into consideration. It is essential to describe the appropriate factors to be considered that will considerably assist resolve the issues during political efforts and talks to prevent and ease future conflicts.

This principle is also included in Article 2.2(c) of Helsinki Convention, 1992, Article 2 of SADC protocol on shared watercourses system, 1995, Articles 4-6, 26 of Mekong agreement, 1996, Articles 3, 7, 8, 9 of Mahakali River Treaty, 1996, Articles 7-9 Sava River Basin Agreement, 2002, and Articles 10, 11, 12, 13,14, 16 of Berlin Rules, 2004.[26] Another major development is the explanation of equitable utilization by the ICJ in the Gavcikovo-Nagymoros case between Hungary and Slovakia, which undoubtedly acknowledged this principle as a basic principle in IWL.[27]

2.7.2 An Obligation Not To Cause Substantial Harm to Other Riparian Countries

According to no harm principle no country in an international watercourses are permitted to utilize the drainage basin in their territory in such a manner that would cause harm to other riparian countries, comprising harm to human wellbeing and health, to the utilization of water for beneficial reason. It is currently considered as part of the customary international law. Customary international law requires State not to permit the use of, or exercise, their territory for actions against the right of other countries. This

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[26]Muhammad Mizanur Rahaman, "Principles of Transboundary Water Resources Management and Ganges Treaties: An Analysis," *Water Resources Development* 25, No. 1 (March 2009), 161.

[27]Trilochan Upreti, *International Watercourses Law and Its Application in South Asia,* (Kathmandu: M House Ramshapath ,2006), 50.

principle, often expressed as *sics utere tuo ut alienum non laedas* (use your own as not to harm that of another), and today recognized as a general principle of IWT.

When taking into account whether one nation's act will cause harm to the area of another, most of global instruments and writing recommend that the harm should be "substantial" or "appreciable" before IWL can be invoked. For damage to rise to the level of "substantial" or "appreciable" injury, the harm should have appreciable and consequential cause upon, economic production, environment or the public health of another country.

Furthermore, worldwide project funding agencies, for example World Bank, have specified that they will not grant monetary support for schemes that are possible to cause harm to the territory of other countries.

This principle is accepted by IWL and environmental law and also applied in several global treaties, and declarations. This principle is included in Articles V, X, XI, XXIX of Helsinki Rule, 1966, Articles 2,3 Helisinki Convention, 1992 and Articles 7,10,12,15,16,17,19,20,21,22,26,27,28 of UN Watercourses Convention, 1997. This principle is also accepted by global environmental conventions like principles 21, 22 of Stockholm Declaration of the UN Conference on Human Environment, 1992, Article 3 of Convention on Biological Diversity, 1992 and principles 2, 4, 13, 24 of Rio Declaration on Environment and Development, 1992.[28]

The principle of no harm rule was employed in Arbitration of Trail Smelter Case between Canada and USA related to Tran boundary air pollution proceedings. In this case tribunal decided that countries have not the right to allow harm to the area of other country through the use of their own territory.

2.7.3 Principles of Negotiation, Consultation and Notification

Each riparian country in an international river is entitled to consultation, negotiation, and prior notifications in cases where the proposed use by another riparian country of a joint river may cause severe damage to its right. The aim of these principles is to promote the clarity of a proposed scheme and to make sure that it is for increasing the benefits with no considerable adverse effects to the other riparian States. The aims of these principles are to report about the planned project in detail, inform, and reply to the possible consequence of such use. The result of not replying to notification is that the country in

[28]Muhammad Mizanur Rahaman, "Principles of Transboundary Water Resources Management and Ganges Treaties: An Analysis," *Water Resources Development* 25, No. 1 (March 2009), 161.

default cannot object to the planned project. These principles are usually considered as applicable where the projected use of a waterway causes a danger of adverse effects or significant injury in another country. These procedural principles are acknowledged by international treaties and agreements like Articles VII, VIII of Indus Water Treaty, 1960, Articles XXIX (2.3.4), XXX, XXXI of Helsinki Rule, 1966, Article 10 of Helsinki Convention, 1992, Article 27 of Convention on Biological Diversity, 1992 and principles 18,19 of Rio Declaration on Environment and Development, 1992, Articles 3,6,11-19,24,26,28,30 of UN Watercourses Convention, 1997, Chapter XI, Articles 57,58,59,60 of Berlin Rules, 2004.[29]

The ICJ in North Sea Continental Shelf Case, 1969 and Gavcikovo-Nagymaros Case, 1997 has supported the view that States are under the responsibility to negotiate and consult in the occurrence of any conflict in undertaking any scheme on an international watercourse.

The ILA's Complementary Rules applicable to international resources (adopted at the 62nd conference held in Seoul in 1986) Article 3, states that:

"When a basin State proposes to undertake, or to permit the undertaking of, a project that may substantially affect the interests of any co-basin State, it shall give such State or States notice of the project. The notice shall include information, data and specifications adequate for assessment of the effects of the project."

2.7.4 Principles of Cooperation and Exchange of Information and Data

It is a duty of every riparian country of an international river to exchange information and data and to cooperate about the condition of the river and present and future uses along the river. Sustainable and best utilization and development of an international river, plus the maintenance and protection thereof, are conditional upon cooperation in good faith between riparian States sharing the river. The basic significance of cooperation between States is the inevitable effect of the fact that an international river is a collective natural resource. Cooperation is also necessary foundation for the good performance of other procedural principle and for the achievement and protection of an equitable share of the benefits and uses of an international river.

The ICJ in Gavcikovo-Nagymaros Case 1997 (Hungary vs. Slovakia) lays stress on the obligation of cooperation between countries sharing the main European River Danube.

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[29] Ibid.

In connection with the duty to use an international river in an equitable and reasonable way, it is essential that States distributing fresh water resources exchange a wide range of information and data regarding those water resources on regular basis. Certainly, this obligation may be believed to be essentially adjunct to, or possibly even an important part of, the principle of equitable utilization and avoidance of considerable harm because without information and data from other riparian countries about the condition of the river, it will be very hard for a State not only to adjust utilizations and provide safety against pollution and floods inside its territory, but also to make sure that its use is equitable and reasonable concerning other State sharing river. Thus, the value of regular exchange of data and information in satisfying the principles of equitable and reasonable utilization of shared watercourse and preventing significant harm to other States can be emphasized in support of international treaties and conventions rules.

This principle is included in Articles VI-VIII of Indus Water Treaty, 1960, Articles XXIX (1.2.), XXXI of Helsinki Rule, 1966, Principles 13,22,24 of Stockholm Declaration of the UN Conference on Human Environment, 1972, Article 6,9,11,12,13,15,16 of Helsinki Convention, 1992, Article 5,17 of Convention on Biological Diversity, 1992 and principles 7,9,12,13,17,27of Rio Declaration on Environment and Development, 1992, Articles 5,8,9,11,12,24,25,27,28 of UN watercourses Convention, 1997, Chapter XI, Articles 10,11,56, of Berlin Rules, 2004.[30]

2.7.5 Principle of Peaceful Settlement of Disputes

The principle of peaceful settlement of disputes holds that all countries in an international river must look for peaceful settlement of disputes in nonviolent manner.

This principle is included in Articles IX Annexure F, G of Indus Water Treaty, 1960, Articles, Articles XXVI, XXXVII of Helsinki Rule, 1966, Article 22, Annex IV of Helsinki Convention, 1992, Article 27 of Convention on Biological Diversity, 1992, principles 26 of Rio Declaration on Environment and Development, 1992, Articles 33 of UN Watercourses Convention, 1997 and Articles 72 and 73 of Berlin Rules, 2004.[31]

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[30] Ibid.

[31] Ibid.

CHAPTER 3

CRITICAL ANALYSIS OF INTERNATIONAL WATER LAW AND INDUS WATER TREATY, 1960

"When the well's dry, we know the worth of water."[1]

3.1 Introduction

Earth contains large quantity of water. About 75 percent of the whole land area is covered with water. Out of which about 97.5 percent is salty or sea water[2] which cannot be used for drinking and agricultural purposes, and to make it useable it requires a lot of capital and time. Merely 2.5 percent [3] of water is fresh water out of which almost 1.08 percent[4] is found in glaciers and icecaps. Remaining fresh water of 0.63 percent[5] is found in the ground water, which is inaccessible and approximately 0.001 percent[6] is found in the atmosphere. Only smaller quantity of water which is about 0.01 percent[7] of earth water is useable for human utilization exists in, rivers, swamp (wetland) and lakes.

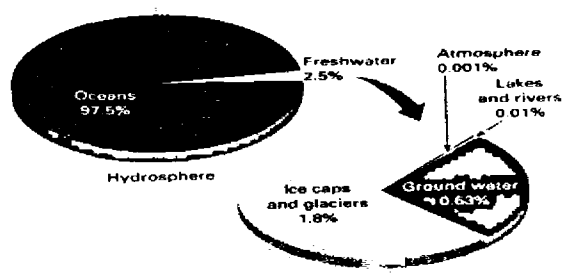

Figure 3.1: Total Quantity of Water on Earth[8]

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[1]Poor Richard, *The Book of Quotations* (1746), 2124, quoted by Stephen c. McCaffrey, *The Law of International Watercourses Non-Navigational Uses,* (London: Oxford University Press, 2001), 4.

[2]Nauman Asgher, "In the Deep Water," *The DAWN,* 1st November 2009.

[3]Graham R. Thompson and Jonathan Turk, *Earth Science and the Environment,* 4th ed (USA: Thomson Learning, 2007), 263.

[4]Ibid.

[5]Ibid.

[6]Ibid.

[7]Ibid.

[8]Ibid.

About 300 watercourses, 100 lakes, and a number of aquifer are shared by two or more countries.[9] These water resources are facing severe challenges consequential from the steady raise in industrialization, population, and ecological degradation, as well as hydrological changeability. Apart from few watercourses in Europe, no major river in the world is managed by treaty comprising all the riparian States. Even when treaties exist, execution and interpretation of these treaties has not been an easy job. Consequently, conflicts over joint waters are on the rise, and currently cover a wide range of problems that go beyond quality and amount of the shared watercourses. All these are best concluded by the Vice President of the World Bank Ismail Serageldin that "the war of the next century will be about water."[10] Given this situation, unfortunately international community has not yet been successful to agree on a generally applicable UN Watercourses Convention, 1997 to manage the utilization of combined water resources.

It would be mistake to say that IWL is a perfect and ideal system. There is a lot that can be improved and reformed, though, as a practical matter, the growth of IWL could be achieved merely by the countries themselves. The international organizations like UN, non-governmental organizations (ILA) and ILC can suggest change in procedure or substantive changes in the law but ultimately the development of law depends on the political consent of sovereign States. This does not underestimate the role of international organizations and non-governmental organizations in striving for improvement, but in the last analysis it is just States that can enter into successful multilateral conventions relating to questions of international importance and merely States whose practice can influence the quick growth of the rules of IWL. The creation of the UN Watercourses Convention 1997 is a good example, but we still wait for its ratification and other international rules on such matters.

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[9]Salman M. A. Salman, " The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law," *Water Resources Development*, Vol. 23, No. 4 (2007): 625–640.

[10]Aaron T. Wolf, "*Water and Human Security,*" p.29, http://www.transboundarywaters.orst.edu/about /wolf. html (accessed: August 11, 2011)

3.2 Critical Analysis of the UN Watercourses Convention, 1997

After Approximately 27 years of preparatory work, the UN GA adopted on May 21, 1997, the UN Watercourses Convention, 1997. However, fifteen years after its adoption, to date there are just six States that signed the Convention but not yet ratified it and merely sixteen contracting Countries are parties to the Convention. This is nineteen short of the number of thirty-five instruments of ratification required for the Convention to enter into force. This part analyzes why UN Watercourses Convention 1997 fails to prevent international conflicts and why have more than one hundred States that in May, 1997 voted for the Convention been not keen to accede to the Convention?

	State	Region	Date of Signature	Date of Ratification
01	Iraq	Middle East		9 July, 2001 Acceptance
02	Jordan	Middle East	17 April, 1998	22 June, 1999
03	Lebanon	Middle East		25 May, 1999 Accession
04	Libya	Middle East		14 June, 2005 Accession
05	Qatar	Middle East		28 February, 2002 Accession
06	Syria	Middle East	11 August, 1997	2 April, 1998
07	Tunisia	Middle East	19 May, 2000	
08	Yemen	Middle East	17 May, 2000	
09	Côte d'Ivoire	Africa	25 September, 1998	
10	Namibia	Africa	19 May, 2000	29 August, 2001
11	South Africa	Africa	13 August, 1997	26 October, 1998
12	Paraguay	South America	25 August, 1998	
13	Venezuela	South America	22 September, 1997	
14	Finland	Europe	31 October, 1997	23 January, 1998 Acceptance
15	Germany	Europe	13 August, 1998	15 January 2007

16	Hungary	Europe	20 July, 1999	26 January, 2000 Approval
17	Luxembourg	Europe	14 October, 1997	
18	Netherlands	Europe	9 March, 2000	9 January, 2001 Acceptance
19	Norway	Europe	30 September, 1998	30 September, 1998
20	Portugal	Europe	11 November, 1997	22 June, 2005
21	Sweden	Europe		15 Jun, 2000 Accession
22	Uzbekistan	Central Asia		4 September, 2007 Accession

Table 3.1 Current Position of the number of Signatories and Parties to the UN Watercourses Convention, 1997[11]

The following are the main reasons as to why the States are reluctant to sign and ratify the Convention.

3.2.1 UN Watercourses Convention's Relation with Future and Present Watercourse Treaties

The first problem that has added to the unwillingness of several Countries to become parties to the Convention is the way in which the Convention has dealt with existing and future treaties. Although Article 3(1) of the Convention provides that:

"In the absence of an agreement to the contrary, nothing in the present Convention shall affect the rights or obligations of a watercourse State arising from agreements in force for it on the date on which it became a party to the present Convention." However, it requires the parties to consider, where essential, harmonizing such treaties with the fundamental rules of the Convention. Article 3(3) stipulates that "watercourse States may enter into one or more agreements ... which apply and adjust the provisions of the present Convention to the characteristics and uses of a particular international watercourse or part thereof."

[11] Alistair Rieu-Clarke, "Entry into force of the 1997 UN Watercourses Convention: Barriers, Benefits and Prospects," *Global Focus, Water 21*(December 2007), 16. , http://www.iwapublishing.com/pdf/Water 21% 20 Dec07p12to16.pdf (accessed: July 16, 2012).

In addition, Article 3(6) States that:

"Where some, but not all, watercourse States to a particular international watercourse are parties to an agreement, nothing in such an agreement would affect the rights or obligations under the Convention of watercourse States that are not parties to such an agreement."

Riparian nations that previously have treaties in place consider that the Convention has not fully recognized those treaties because the Convention recommends that the parties may consider harmonizing such treaties with the principles of it. On the other hand, riparian Countries that have been left out of present treaties think that the Convention should have subjected those treaties to the principles of the Convention, and must have required uniformity between the two. The Convention creates doubts about the validity of existing treaties, as well as the right of the riparian nations that are not parties to such treaties in the joint river.

3.2.2 Controversy between the Principle of Equitable and Reasonable Utilization and the Obligation Not to Cause Harm.

The most critical area of disagreement is the relationship between the obligation not to cause harm and the principle of equitable and reasonable utilization. The upstream riparian States still seem to believe the Convention as biased in favor of downstream riparian States because of its separate and precise reference of the duty not to cause harm. This specific mention of the obligation not to cause harm is believed as equating it with the rule of equitable and reasonable utilization. On the other hand, many lower riparian States, like Egypt, France and Pakistan considered that the Convention helps upstream States because it subordinates the no harm principle to the notion of equitable and reasonable utilization.[12] Upstream States tend to support the principle of equitable and reasonable utilization as it gives more possibility for Countries to use their share of the watercourse for activities that may have impact on lower riparian States. On the contrary, downstream riparian States tend to support the no harm principle, because it safeguards existing utilizations against impacts arising from activities started by upper riparian States.

[12]Salman M.A. Salman, "The United Nations Watercourses Convention Ten Years Later: Why Has its Entry into Force Proven Difficult?," *Water International*, 32 (March, 2007), 9.

Therefore, this conflict between the two principles is, no doubt, one of the most important reasons for the stoppage of the process of the signature and ratification of the Convention.

3.2.3 Dispute Settlement Mechanism

The third contentious issue is whether dispute settlement provisions of Article 33 were proper within a framework agreement, and the degree to which such procedures should be obligatory. Although the Convention recommends for the parties a number of means for settlement of disputes like negotiations, conciliation, mediation and jointly seeking the good offices of a third party, or make use of joint watercourse organizations or referral of the dispute to ICJ or to arbitration. The only compulsory means set forth in the Convention is impartial fact finding commission and the parties are obliged to consider the report of the commission in good faith.

So some riparian countries believe that the fact finding process of the Convention as a compulsory procedure, and argue that such a fact finding procedure interferes with their sovereign right of selecting the dispute settlement methods. In contrast, other riparian nations view that the dispute settlement provisions of the Convention are too weak because they do not afford for any binding mechanism.

3.2.4 Veto Power over the Projects of Upper Riparian States

Another issue related to the Convention is that the notification process, under the Convention, favors lower riparian States and provides them with a veto power over programs and projects of upper riparian States. Another weakness related to notification process is that it does not require notification if the plan is not likely to cause significant adverse effects.

3.2.5 Apprehension about the Loss of Sovereignty

Another major controversial problem related to the Convention is the apprehension of States regarding loss of sovereignty over shared watercourses. Some countries criticized it for its failure with reference to the sovereignty of the watercourse countries over the parts of the international rivers situated in their territory. This view shows a complete failure to understand the basic rules of current IWL that have long discarded the rule of absolute territorial sovereignty.

3.2.6 Complex Definition of the Term Watercourse State

The sixth area of criticism is the expanded meaning under the Convention of the term "Watercourse State" to include "regional economic integration organizations."

Article 2(c) defines "Watercourse State" to mean "a State Party to the present Convention in whose territory part of an international watercourse is situated, or a Party that is a regional economic integration organization, in the territory of one or more of whose Member States part of an international watercourse is situated." In addition, Article 2(d) defines regional economic integration organization as:

"An organization constituted by sovereign States of a given region, to which it's member States have transferred competence in respect of matters governed by this Convention and which has been duly authorized in accordance with its internal procedures to sign, ratify, accept, approve or accede to it."

Thus the Convention permits each such organization to sign and ratify the Convention, therefore, becoming to a contracting party to it. The language of the above quoted paragraphs are very difficult to follow, these provisions as allowing members of one such organization, which are not riparian States to a particular river, to become riparian States merely as the organization has become a member. The fact that the organization has become a party to the Convention would mean that other members of the organization would become riparian to the river in question. The provision of the Convention defining the word "Watercourse State" may be taken to mean that Regional Economic Integration Organizations like European Union have the status of States in the law of nations.

3.2.7 Uncertain Regarding Protection of River Ecosystem

Articles 20 and 22 of the Convention provide for the maintenance and protection of the ecosystem of international rivers. But Article 20 has been criticized both for going beyond customary law and for not striving enough for developing the IWL on an environmental basis. The Convention is unclear and perhaps even confused in the strength and scope of its commitment to river ecosystem protection.

So, it is concluded that certainly, there is a great deal of disinclination to be a contracting party to the Convention from the majority of the Countries. No State from the Americas or South Asia is a party to the Convention so far. There is no fixed date by which the Convention enters into force. It will do so when it achieves the requisite number of 35 instruments of ratification. It is common for controversial and difficult conventions to take significantly long time to enter into force. But, calculating from the

issues discussed above and the very slow procedure of signature and ratification , the threat continues that the Convention might in fact not enter into force as it does not look like that it will achieve the requisite number of ratification .

3.3 Critical Analysis of Indus Water Treaty (IWT), 1960

IWT which has so far sustained stability over the Indus water between Pakistan and India despite Indo-Pak wars in 1965, 1971 and Kargil, is currently losing its efficiency in resolving the dispute and may fail to avoid water war between the two States. The IWT which survived in wars is now threatened by the following issues.

3.3.1 Not According To New Technical Standards

The first issue related to IWT is that reflects the status of technology of 1950s. Future challenges have not been covered in the treaty. The framers did not take into account new technical, ecological, economic and political developments in the previous five decades, and also those changes likely to take place in the future. Mr. Raymond Lafitte, the Neutral Expert on the Baglihar issue, stated that "the need for the Treaty to be read in light of new technical norms and standards."[13] Mr. Lafitte also stated:

"It is appears that the treaty is not particularly well developed with respect to its provision on sediment transport. This is not criticism: the treaty reflects the status of technology on reservoir sedimentation in the 1950s. The consequence is that the provisions of the treaty which explicitly mention sediment acquire a special significance."

On the neutral expert decision on Baglihar issue Pakistan feels that the spirit of the treaty is violated and the agreement requires revision, as advances in technology make it achievable to construct dams that were not anticipated when the treaty was signed.

3.3.2 Environmental Issues

Environmental issues like global warming and climate change have not been covered in the IWT and India connects the decrease of water in western rivers with environmental change. There is no provision in the treaty that gave a mechanism to both Pakistan and India if climate-based water scarcity happens. The treaty does not deal

[13]Salman M.A Salman, "The Baglihar Diference and its Resolution Process- a Triumph for the Indus Water Treaty?" *Water Policy* (2008): 115

directly with the problem of water scarcity in the region. In fact, when the treaty was negotiated, an upcoming probability of water scarcity was not a primary concern for the framers. The provision of the treaty merely declare that both the countries were obliged to "let flow" the river water without obstructing. Thus, any interference by India would be considered as a clear violation of the treaty by Pakistan. If the above India argument is right then the problem cannot be decided within the framework of IWT. The question remains as to whether the decreased quantity of water flowing into the Western Rivers of Pakistan from the Indian side is on account of climate change of water scarcity or because of obstructions by India?

3.3.3 Against the Wishes of the People of Kashmir.

The Indus water problem is no more a bilateral issue between Pakistan and India. The government and the people of Kashmir where the Indus Basin and most of its main tributaries run through are not in favor of the IWT, because they thinks it is against their interests. For example, Indian held Kashmir has been displeased about the IWT, for not allowing utilization of the Indus water, particularly in terms of power production. Even a group inside Jammu and Kashmir (J&M) considered the IWT as an Indo-Pak conspiracy against the people of Kashmir. Secondly, Kashmiris also believes the IWT as an economic responsibility.[14] The majority of Kashmir deems that the treaty discriminates against Kashmiris by not allowing them tap the potential of the Indus Basin and its tributaries in terms of exploiting the Indus waters for transport, power generation and agriculture.

3.3.4 A Highly Technical Treaty

IWT is a highly technical agreement and broad technical provisions give plenty opportunities for differences among the engineers of Pakistan and India. Issues are arising from different interpretations of, and approach to, various provisions of the text of the treaty. The detail conditions and provisions specified in some appendices and annexure of the treaty paved the way for disputes.

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[14]D Suba Chandran, "Harnessing the Indus Waters: Perspectives from India," *Institute of Peace and Conflict Studies, New Delhi,* Issue, 122 (September 2009), 3.

3.3.5 Non Inclusion of Kabul River

The framers did not include the Kabul River when dividing the six rivers between Pakistan and India. India is not only restraining itself to IHK but has also been successful in building a Kama dam on Kabul Watercourse, a tributary of Indus Basin. It is hydroelectric project on Kabul River in Afghanistan which will have severe effects on Indus water.[15] The fear now is that who will deal this issue in future related to Indus Basin? This challenge is interesting as it in fact increases the issue of scope and the jurisdiction of IWT.

3.3.6 Loss of Lower Riparian Rights by Pakistan

The IWT has divided Western and Eastern rivers between Pakistan and India. Even though both States have obtained exclusive rights on three rivers given to them under the treaty however, Pakistan lost the downstream riparian rights over Eastern watercourses under the treaty.

3.3.7 Provides Very Slight Support to the Integrated Development

One cause for displeasure with the IWT is that, it presents very slight support to the joint development of the Indus Basin. The distribution of the Indus waters, in its own way, signified the "unfinished business" of the 1947 subcontinent's territorial partition.

3.3.8 India's Capability to Stop or Limit Supply of Water at Crucial Time

If no single dam beside the Indus Basin controlled by the IWT may affect Pakistan but the increasing effect of these schemes may provide India the capability to stop or limit the supply of water to Pakistan at vital time. Under the treaty, western rivers assigned to Pakistan but under the control of Indian. As Michael T Klare points out:

"The Indus Waters Treaty has been viewed by many experts as a model for the peaceful resolution of international water disputes. It should be noted, however, that the treaty does not allow for the joint development of the Indus basin; nor does it eliminate the grounds for conflict over water distribution between India and Pakistan. Rather, it is a plan for the separate development of the basin, with India receiving a smaller share of the total water supply but retaining control of several key Indus tributaries. This means that the Indians can argue in the future that they were denied an equitable share of the

[15] Abdul Rauf Iqbal, *Water Wars and Navigating Peace Over Indus River Basin,* (Islamabad: Institute for Strategic Studies, Research and Analysis National Defense University Islamabad, Pakistan 2010), 7.

combined resources of the river; and, at the same time, India's position as the upstream riparian gives it the capacity to impede the flow of water to Pakistan."[16]

3.3.9 Favours One Side over the Other

In practice, IWT favours one side over the other. India holds that Pakistani side that gave up too much water in the treaty, and, furthermore, that Pakistan has made it almost not possible for them to use efficiently the production of hydropower and the "non - consumptive uses", allowed to them on the Western watercourses. Pakistan, in turn, holds that they gave up more water than they got and India's withholding the right to "non-consumptive" uses of the western rivers presents Pakistan with the continuously disturbing and finally fruitless task of protecting its water resources against Indian thieving.

3.3.10 Creates Inter-State Rivalry within Provinces

The IWT creates inter-state enmity within provinces of both the countries, like in Pakistan, especially between Sindh and Punjab. Due to military takeover in 1958 in Pakistan, those provinces were mostly ignored in negotiations. Sindhis believed that their interests had been passed over in support of those of Punjab and have been still since.

3.3.11 No Provision in the Treaty Which Guarantees that Indus Basin should not be Used for Military or Political Purposes

Though the common tools of war are military weapons, however, there has also a long history to make use of water-resources systems as both defensive and offensive weapons. In conflicts between States that rise to military attack, water-resource schemes have often been used as a political and military weapon. Resources of water delivery have been among the objects of military strategy. Access to common water resources has been used for military and political motives. More recent examples are at the beginning of the Persian Gulf War in reaction to Iraqi attack on Kuwait there was secret planning's at the UN regarding using Turkish's dam on the Euphrates watercourse to deprive Iraq of a

[16]Michael T Klare, *Resource wars: The New Landscape of Global Conflict*, (New York: Metropolitan Books, Henry Holt and Company, 2001), http://www.atimes.com/atimes/Front_Page/DK23Aa01.html (accessed: April 12, 2011).

vital portion of its fresh water supply.[17]In January 1993, in civil war, Peruca dam, (the second biggest dam in the former Yugoslavia) was deliberately demolished.[18]In 1993, it was reported that Saddam Hussein tried to crush the resistance to his regime by poisoning water supplies of southern Shiite Muslims.[19] In1990, Turkey completed building of the Atatiurk Dam on Euphrates River. Both Iraq and Syria objected that now Turkey might use water as a weapon against them. President Turgut Ozal warned to discontinue water supply to Syria to compel it to withdraw its assistance for Kurdish rebels, operational in Turkey, whilst Turkey later on denied this warning.[20]Syria stopped its support to the Kurds struggle within Turkey for continuous supply of the waters of shared watercourses.[21] Israel for lots of years enjoyed total control of headwaters of the Jordon River and still manages two of the three rivers. Still, in recent times Israel has controlled the entire Jordan's River headwater, for example, in 1967 war Israel controled the Banias when it captured the Golan Heights and in 1976 the Hasbani with Israeli support of private army in south Lebanon. In 1978 Israel took south Lebanon and set up a security zone there, from which Israel did not leave until 2000, providing it direct armed control over the larger stream, the Litani as well as the Hasbani for 22 years. Canada planned Fraser River Diversion in the Columbia River forced the USA to concur on the downstream problems of Columbia River, which guided to the making of the Columbia Treaty 1961.[22] Bangladesh permitted India utilization of common waters in lieu of India's rejected its assistance for guerrillas who were carrying out assaults on them from Indian side.[23]

The role of water resources as an instrument of political and military action is recognized, where the water resources are the significant part in the power of a country. Indus basin

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[17]Peter H. Gleick," Water and Conflict: Fresh Water Resources and International Security," *International Security, Vol. 18, No. 1*(1993), 89, http://www.jstor.org/stable/2539033 (accessed: March 03 2010).

[18]Ibid., p.88.

[19]Ibid.

[20]Alan Cowell, "Water Right: Plenty of Mud to Sling," *New York Time*, 5 February, 1990.

[21]M. Murakami, Managing *Water for Peace in the Middle East: Alternative Strategies, (*Tokyo: United Nations University, 1995), 23.

[22]Trilochan Upreti, *International Watercourses Law and Its Application in South Asia,* (Kathmandu: M House Ramshapath, 2006), 168.

[23]Ibid.

plays this significant role in the economy of Pakistan. Indus basin which is life line for Pakistan, areas of the country which lie down outside the Indus River are classified as arid regions like, FATA, Tharparker, Balochistan and more. The Indian construction of Dam and other project on Indus water has strategic significant because Pakistan is heavily dependent on Indus water and without Indus water the whole Pakistan will change into sterile desert. As the Indus Basin supplies systems become increasingly vital for Pakistan, their importance as political and military goals is greater. From the above examples, it is clear that there is always a threat that in future India might use Indus Basin as "water weapon". But there is no provision in the treaty which guarantees that Indus Basin should not be used for military or political purposes. There are some past experiences of Indian use of water as political goals, like in April 1948; India had stopped the Ferozepur Headwork's on the Sutlej watercourse affecting the Dipalpur canals and the UBDC, which damaged 1.6 million acres of irrigated soil in Pakistan.

The construction of dams by India may lead to flooding in Pakistan for example; in July 2004 it was observed when India, without notice, discharged the water into Chenab watercourse, flooding enormous parts of Pakistan.[24]

It is hoped that in future India will not use Indus waters for military or political purposes, but who will guarantee the natural disaster, the Indian projects can cause destruction in Pakistan if the said dams were collapse.

Yet current Indian plans of constructing dams on western rivers have once again brought the scenario of water conflict between the two countries. The present stress in the observance of the treaty has had many experts think that water distribution will take a politically turn in the relationship of two nuclear Nations. According to Undala Z. Alam "expecting a water war in the Indus basin following the water wars rationale, India and Pakistan should have gone to war over the Indus waters. All the ingredients were present - two enemies engaged in a wider conflict; a riparian completely dependent upon the Indus waters; water scarcity despite large average runoffs; and poverty preventing the construction of infrastructure to offset this scarcity."[24]

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[24]Sajjad Saukat, "India's Water Terrorism," *Monthly Press Review*, (March 2010):8.

[25]Undala Z. Alam, "Questioning the Water Wars Rationale: A Case Study of the Indus Waters Treaty," Geographical Journal, 168, No. 4, (December, 2002), 342., http://www.jstor.org/stable/3451476(accessed: April 01,2011).

CHAPTER 4

RECOMMENDATIONS AND CONCLUSION

"Let us mobilize all our resources in a systematic and organized way and tackle the grave issues that confront us with grim determination and discipline worthy of a great nation."[25]

4.1 Recommendations Regarding International Rivers

4.1.1 International Organizations or NGOs

International institutions are vital for encouraging cooperation among riparian States. There is obviously a requirement for more management and rationalization of international organizations in their help and funding of projects. Presently about 26 UN Agencies are engaged in several respects with water. Anywhere International organizations have been keen to assisting basin nations to manage international rivers, like the United Nation Educational Program(UNEP) in case of Zambezi, the United Nations Development Program (UNDP) in case of Mekong, the World Bank in case of Indus basin, the consequences have been encouraging and such attempts must be improved and continued.

4.1.2 Educational Institutions

Educational Institutions, particularly Universities can best contribute to the easing of the water emergency in many ways, like, obtain, study, and organize the principal data essential for good practical work, Transboundary water administrators in an incorporated manner and classify meters of future water conflicts. It is difficult to find university course at graduate stage which may sufficiently educate students in water resources.

4.1.3 Principles of UN Watercourses Convention, 1997

Universal principles for the organization of Transboundary water are presently described by the 1997 UN GA Convention on the Non-Navigational Uses of International Watercourse. Political consent is very important to the procedure of avoiding and deciding water conflict, the ratification of the 1997 Convention would assist to eliminate the misplaced doubt of several countries by giving a steady framework within which each international watercourse could manage. This would be a sign of friendliness and

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[1]Quaid-Azam, quoted in Mirza Ibrahim Baig, "Solution to Energy Crisis," *The* Dawn (10 November, 2009).

signify a high level of dedication to deciding the issue of international basin, and also would help to the general application of the principles of duty not to cause significant injury and equitable utilization.

4.1.4 Worldwide Funding Agencies

International funding and Aid organizations should continue to become further responsible. Water connected support and funding requires to be focused on, quantity, quality, surface water, groundwater, and socio-political setting in an incorporated manner. The financial support of big projects on international Rivers should be commenced only after sober consideration for the environment and inhabitants of the whole basin. Aid for large projects should be suspended unless all riparian States have been asked and consulted.

4.1.5 Neutral International Forum

Previously, third-party (friendly) countries have frequently acted as negotiators in international water disputes to good result. There is need of establishment of an international neutral forum for the negotiation and solution of international watercourses conflicts. The making of a highly appreciated, impartial, worldwide forum would be engaged in the avoidance and recognition of possible conflicts, as well as their solution, and might be helpful in developing a smart method of water-dispute study which would helpful for upcoming conflicts.

4.1.6 Long-Standing Policies

Acknowledgment of the duty of State for the supply of fundamental ecological and human water needs, preferably through an amendment to the Constitution. This must include the acceptance that water, is matters of national security which cannot be ignored and scarcity must therefore be prevented.

4.1.7 Acknowledgement of Water as Basic Human Right

There must be universal acknowledgement that fresh water is a fundamental human right and everyone should have access to their fundamental right to clean water.

4.1.8 Acceptance and Respect for the Sovereignty of Others

Every State must accept that national sovereignty is restricted by the respect for the sovereignty of others riparian States.

4.1.9 Environment of Trust and Positive Political Will

All the States of a basin must encourage any plan which assists to generate an environment of trust, assurance and positive political will among them.

4.1.10 Need for the Encouragement of Economic Cooperation and Interdependence

All the riparian States must promote economic collaboration to encourage the more resourceful utilization of the international water basin. They should also encourage better co-dependency which may promote improved relation and support between countries.

4.2 Recommendations Regarding Indus Basin

Pakistan and India can think about the following recommendations, given the concerns connected to the Indus basin, and those which are expected to occur in the upcoming decades.

4.2.1 Need for IWT II

Experts have already supported an IWT II, which is essential from both the countries point of view to look into and get ready for the future challenges. IWT II does not call for a similar or the abrogation of existing IWT. IWT II should be fed into the recent peace process as a means both of resolving present political stresses over IWT 1960 and assuring against environmental change. It might strengthen the basis for a permanent solution to the J&K issue by assisting relations across the Line of Control and reinventing it as a link rather than simply as a border in the making. It also aims at making the presented treaty more efficient, taking into account new technical developments and also those changes possible to take place in the future.

4.2.2 Make an Environment of Confidence

There is need for encouragement of any proposal which assists to generate an environment of confidence, hope and positive political will between Pakistan and India.

4.2.3 Need for Indus Basin Water Specialists Group

There is a need to establish Indus Basin Water Specialists Group, including experts, from different professions, who have been working with the governmental and non-governmental offices, and also have done some revolutionary work on these problems. They must organize self-sufficient meetings in Pakistan, India and both side of Kashmir, in terms of solving the major issue relating to Indus basin.

4.2.4 Decreasing Political Water Rhetoric

There is so much of political oratory both in India, Pakistan and both side of Kashmir, which is in fact hurting every side. There is a need to keep away from statements, like, "abrogate the treaty, for we give them the waters, but they send terrorists," "we will use any weapon, including nuclear to secure our water rights," "water terrorism," "water boom," "water war."

4.2.5 Need for Joint Research

Obviously, neither Pakistan nor India has an idea, in terms of what requires to be done for the future. There is need for a combined and fair research that would give substitute approaches to face the existing and upcoming challenges originating from the Indus basin or IWT.

4.2.6 Role of Civil Society

It is vital to understand that an internal emotional and political incident about the sharing of Indus water in India and in Pakistan is likely to have a negative consequence on the IWT. It is the attendant acknowledgment that civil society is among the best tools to address these issues.

4.2.7 Need for Combined Study and Equitable Utilization of Indus Water

Equally Pakistan and India must mutually spend money in inspiring independent scientific and ecological studies on the Indus Basin and give them the needed access. There is also a necessity for such a focus on all the issues of Indus basin, which affect the relationship between Pakistan and India.

4.2.8 Need for Present and Future Assessments

It is essential that assessments be prepared of current and future Indus water resources and developments, taking projections of demographic and weather changes into account.

4.2.9 To Solve the Kashmir Issue

In relation to the above mentioned proposals, it is vital that Kashmir issue must be solved according to the UN resolution.

4.3 Conclusion

Clean water is very important to the humanity and economies of States, particularly to those in the arid region. Shared water already adds to conflicts among States, and future conflicts over fresh water are increased. Nations struggle over access to shared water resources in several areas of the globe and make use of water as tools of war. Increasing populations, scarcity of water and various States depend on water resources that are under the control of other countries are raising the struggle for limited fresh water resources. One example of such international conflict over shared water is the Indus Basin. Till now Pakistan and India have agreed to IWT of 1960 through some kind of shared administrative plan. The intervention of the World Bank was vital to the process that lastly led to IWT. As a result of the treaty Pakistan has obtained the exclusive control of the Chenab, the Indus and the Jhelum, while India has obtained the exclusive control of the Beas, the Sutlej and the Ravi. Population of the two nations growing at alarming pace and the scarcity of fresh water being sensed by both Pakistan and India, water might appear as a more critical subject of worry between the two States. In the last few years, there have been more common examples of water distribution conflicts between the two States regarding Indus water, like Baglihar Hydropower, the Wullar Barrage, Kishenganga hydroelectric Project and more controversial projects are coming and this may become unstoppable. That's why the control over Indus basin by the two States is one of the possible issues of conflict between the two nations. In future Indus water issue is going to be as critical as Kashmir. Similarly, The Middle East show several vulnerabilities to water- connected conflict, as do various States of Asia, Africa, Europe, Latin and North America. Conflicts over the Tigris-Euphrates, the Jordan, the Nile, and the Ganges/Brahmaputra, watercourse systems seem increasingly expected due to rising struggle for limited fresh water resources, or because of disputes over the right of utilization and ownership of the water resource. Disputes might also happen because of the pollution of joint water by upstream States on the Rhine, the Colorado, and the Aral Sea; or because of the complexity of reasonably sharing hydroelectric generation on international watercourses, like, the Parana.

However, the possibility for international conflicts on shared water resources for this reason international organizations have an approach with a framework conventions and rules presents states essential set of laws and guiding principles to decide and avoid conflicts over shared fresh water resources. For example, among the most important work

is the Universal UN Watercourses Convention, 1997. Its presents a reasonable framework agreement addressing the basic matters like, procedural rules, substantive rules, dispute settlement, avoidance and institutional mechanisms give a concrete base which will make sure water security at all level. It also includes international principles like as the no-harm rule and principle of equitable utilization and also codified general obligation to co-operate for riparian countries. The Helsinki Convention, 1992 Regional Convention set up a framework for joint effort among States on the control and prevention of pollution, equitable and reasonable utilization of Transboundary water and cooperation on issue of water. The ILA Helsinki Rule, 1966 which signify a revolutionary efforts dealing with IWL and adopted by many States, intergovernmental and non-governmental institutions. It also produced the fundamental principle of equitable and reasonable utilization of international waters.The research demonstrates that States have presented only a few disputes regarding international rivers to PCIJ or to ICJ or to Arbitral tribunals. Apart from their relatively small number, the decision of the international tribunals does corroborate certain basic principles. The first case related to the water dispute submitted to the PCIJ was the River Oder Case and its decision the notion of "community of interest" has been measured as basis of the most essential principles of equitable utilization the main principle of IWL, and which has a leading part in the growth of IWL. Its second case relating to international watercourses the Meuse Case, confidently upholds the basic principle of equal action of nations as well as the reciprocity of the duties and right of the States in a shared river. The ICJ single and most current decision in a case regarding International River the The Gabcikovo-Nagymaros Case provided that, there are a number of rights equivalent to a duties to consult and notify regarding the planned project, pursues the notion of "equitable utilization", "no harm" and a supportive manner. Similarly the arbitration award of Lake Lanoux Case the principle of prior notification regarding potential harm to other countries was established, which also gives good support for responsibilities of prior consultation and negotiation. The Trial Smelter Case is the basis for the concept of no harm rule and extraterritorial pollution.

Despite all these efforts the possibility for international water conflict is high. One of the important mechanisms essential to avoid water conflicts is the establishment of apparent rules. But making such laws is difficult because of the several complexities of interstate politics, and other international complicated social and political causes. For achieving this purposes UN adopted Watercourse Convention 1997 presents States guiding principle to decide and prevent international water conflicts. However, so far the

sole universal Convention fails to avoid international water conflicts because States are reluctant to ratify it due to several complexities in it. Unfortunately, no satisfying IWL has been developed that is satisfactory to all States which enhanced the possibility of water war. The high rank of water conflicts already apparent between Pakistan and India, and the negative Indo-Pak attitude towards the norms of IWT, future water- connected conflicts on Indus Basin looks inevitable.

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