

CHAPTER I

THEORETICAL AND CONCEPTUAL FRAMEWORK

“Water is not a commercial product like any other, but rather a heritage that must be protected, defended and treated as such”¹⁴

Since last five millennium, the relationships and the rules pertaining to water have developed and resulted in clashes between the natives of a region. Their wants, social, cultural, spiritual beliefs and customs have been at dispute because of these water conflicts. However, almost all the civilizations in their long history somewhere or the other managed to curb such clashes with dignity and grace. The civilizations like, Egyptian civilization, the Indus Valley civilization and the Chinese civilization introduced rules governing irrigation, floods or water management which managed the conflicts so gracefully that even present day laws would fail to do so. The water rules and systems in the earlier periods normally centered on the community rights, the post-industrial revolution rules have elaborately stressed on non-public possession and their problems. Equally if, within the late 20th century, the prime focus of the governance of water has shifted towards limiting pollution along with the allocation of waters and the stress within the 21st century has taken a shift from towards managing water in an integrated manner within the context of the development of property rights.

¹⁴ European Commission Water Framework Directive, 2009

Water as a conflict has been arising at numerous levels namely, between countries, regions, and further down to the sub-regions and even amongst different states, districts, political parties, castes and even farmers which becomes detrimental for the growth of economy, security, social stability and even health schemes. These conflicts, thus, signify the lack of appropriate administrative, democratic and legal measures to handle problems that lead to such disputes. Water has always been a complex resource which was made so through its material and philosophical means, which suggests that it, was created by uninflected and imposing an economic proprietor framework on a complicated part of the scheme.¹⁵

The ecosystem has made water a mediated resource and it is accessible in common however is employed individually; in contrast to different public purposes, it cannot be utilized in common. Water is partible and open to sharing and has non-public edges. It is however, hard to prohibit people who receive it within its natural course because the costs of such exclusion could be terribly high. Water has completely different scales of convenience and usage like water at the small watershed, homestead, basin, sub-basin inter-basin and also at inter-country level that need other methods of handling it. Also, the manner in which water flows and the way in which it is used, managed or planned also causes unidirectional and uneven difficulties. For instance the upper riparian countries use affects the downstream countries, however not contrariwise.

One of the most politically debated and charged matter between India, Bangladesh, Nepal and Pakistan has been the distribution of water which has mounted tensions between these countries over the control and management of supply of water arising from mistrust, shortage and mal governance. Increasing demand and the scarcity of water has acted as an catalyst to the ongoing conflict and also the demarcation of boundaries due to decolonization and division of the river basin due to political changes have created more friction amongst these countries including their inner states and provinces.

¹⁵ Muhammad Mizanur Rahaman, “Principles of Transboundary Water Resources Management and Ganges Treaties: An Analysis”, Water Resources Development, Vol. 25, No. 1, pp- 159–173.

The term inter-country conflicts generally refer to the conflicts that arise between sovereign countries over water which are primarily disputes that are based on the political borders of such countries. However, the so called conflicts may be an advanced mixture of all the opposite types of conflicts viz: previous use problems, upstream–downstream problems, clash of allotment and the privileges, and generally even non-water conflicts. Inter- country problems are usually additionally an indication of the shortage of scientific approach to water management in Asian countries especially in India. However, management of water in India is somewhere trapped in ancient ideas, that arose even when water itself was not a problem, however the investments for the construction of dams was the way larger restriction. Moreover, this suggests that even a single drop of water is not wasted and a concerted attempt is made to construct dams to retain each drop of water within the stream, resulting in drastic fall of stream flows below their resurgence levels and much of them have even disappeared in several delta regions, resulting in salt water ingress, salinization, drop in channel evoked recharge, decline in fish catch and diverse different environmental issues. Rivers ought to flow into the ocean if humans and also the ecosystems on that rely, are to flourish.¹⁶

The insufficiency of the present watercourse agreements and negotiations and also the need for agreements for varied international watercourses area unit ominous legal vulnerability in the present international legal arrangement governing trans-boundary waters. Such vulnerabilities make it difficult for some countries to manage their rivers, capriciously, unalterably and while not sharing relevant data that their neighbours may require. This result in a conflict over progressively scarce and contaminated provides, deteriorating variety, and heavy threats to human health, economic development, and sustainability.

This chapter attempts at bringing an overview of the importance of water as a life sustaining resource and the indiscriminate use of water resources leads to water crisis which in turn puts a pressure on the available water resources. Further, the chapter

¹⁶ Suhas Paranjape and K.J. Joy, “A Million Revolts in the Making Understanding Water Conflicts”, IIR51 (2011).

attempts to answer the research question as to how do transboundary water sharing impact nations and the role played by principles of international law governing the same.

I.1. INTRODUCTION

Water is a creator, enhancer and the primary supporter of human life on the planet and hence undoubtedly is the only resource which sustains life and promotes all forms of advances and nonetheless this most essential resource has now become the most underappreciated asset and an over- exploited resource, due to the plethora of degradation, shortages and competition eliciting inter-country and intra state sharing disputes. Water covers more than seven tenths of the planet's surface, but yet the world today is confronted with an escalating water crisis, which ultimately leads to the inference that the abundance of water in the world is a mere optical illusion. Indisputably, water is critical to continued socio- economic advances. The availability of water is integral to sustain the demand for food, manufacturing, generating electricity and supporting ecosystems and biodiversity; thereby binding humanity together virtually with its daily existence.

In the earlier times, water was never seen as a commodity which could be bought, sold and owned like any other commodity. The advent of modernity and the flourishing of capital introduced changes in thoughts. The rapid growth and expansionism of capitalism sought to capitalize nature more and led to the conversion of it into private property. The significance of water has been acknowledged in different cultures and traditions. For instance; The Bible was written amid water scarcity and was a recurring theme in the Old and the New Testament.¹⁷ Further, water has determined the centres of civilization. Rivers have helped to initiate agriculture , foster evolution from nomadic to urban settlements facilitate trade and transportation and have served as a catalyst for cross-culture interactions. In the thirteenth and sixteenth centuries, these water sources became England's gifted economic development and later became central to industrialized and

¹⁷ Joshua Getzler, "A History of Water Rights at Common Law", Oxford University, 1

urbanized transformation of the late eighteenth and the nineteenth centuries.¹⁸ Legal conflicts over water rights especially for domestic, agricultural and manufacturing were prevalent and led to competing access to flowing water. To ensure sufficient water availability, the common law courts in 1750 developed a set of legal doctrines attaching property rights to riparian possession of flowing water and limited rights to the use of surface and underground waters. These doctrines eventually served as an influence for the new water doctrines of Roman law and civil law concepts of common goods. Over the years, philosophers such as Blackstone and John Locke used water to illustrate their theories of property rights.¹⁹ In the ancient times, water as a source of power, rather than for transportation was little known and exploited, which subsequently led to Roman backwardness in the field of power and technology. However, Classical Roman law sought to provide a solution to this by introducing doctrines that demarcated rights for the use of rural and urban water use. As the society progressed, the Europeans in the medieval age had sharper incentives of increasing and making efficient usage of water and contribute to the improvement of agriculture and technologies and improve urban trade, in contrast to the ancient world. To avoid future potential water conflicts and ensure systematic water resources, legislative attempts were made to codify and enact statutes regulating the use of water between states and citizens. The Magna Carta in England as seen as the first attempt to govern the use of causeways and dams.²⁰ Further, the common law doctrines governed conflicts between private parties. Moreover, the significance of water use and water power was reflected in the economic life, concerning riparian and water rights in the phase of industrialization where there was extensive use of water power both as an energy source and a crucial raw material.

A significant part of the problem related to water-sharing between nations escalates from the explicit and definite use and the characteristic of water, including its social, bio-physical, and economic characteristics. This is particularly because water is such a crucial resource that it is implanted in ecosystem and the approach of water being manipulable and free resource would be a wrong approach. Also, mega projects linked to dams and

¹⁸ Id.

¹⁹ Supra note, 17

²⁰ Id.

inter-linking of rivers though aim at development yet tend to underscore and undermine the long term viability and sustainability of water and water resources at a whole; henceforth affecting the health of the riparian ecosystems and tend to cause an impact on livelihoods. Moreover, in the process of water-sharing, often the issue of water quality seeks to get ignored. The use of water by users is a two- way process which not merely involve the use of water but further also includes the return of water. The amount of water that is to be returned and its condition i.e. the quality is crucial to the health of ecosystems. While, water sharing involves contesting claims over the use and allocation of optimum share of water which is loud and clear, there is no attention given to who returns how much of that water to the ecosystem and in what condition with the result being pollution and deterioration of the water quality.

Water being a scarce geo-political resource, has been the root cause of water disputes ranging from traditional military attacks to international disputes over shared waters in the region. Water supplies have been central to the military power and expansionism. Water being a fundamental resource served as a defining factor in the power of a nation. Though traditionally, non renewable resources such as oil, due to its scarce nature were the target of military action, water later became the focus for military power as it provided nations and states a source of economic and political strength.²¹ Due to this reason it was essential to maintain sufficient water supply systems. Further, regional water conflicts became a common trend. One such example being the Middle East region where sharing of water supplies had severe implications. Rivers in the Middle East like Nile, Tigris and Euphrates became a cause of concern due to the increasing pressure faced by population growth and irrigation. In the seventh century, Ashurbanipal of Assyria, as a part of his strategy seized control of water wells against Arabia.

²¹ Peter H. Gleick, "Water and Conflict: Freshwater Resources and International Security" *International Security* 8, no. 1, (Summer 1983): 153.

I.2. EVOLUTION OF WATER SHARING DISPUTES

Water as ammunition and the water related disputes trace long back into early civilizations and have been described in myths, legends and historical accounts. These involve the dispute over the Mesopotamia River between Umma and Lagash on the shared use of irrigation systems.²² Further, in 612 B.C. an alliance of the Babylonian, Persian and Egyptian forces attacking and destroying the capital city of Assyria, Ninevah with a sole reason to get a larger portion of the Khosr River illustrates the problem of water sharing even in olden days.²³ As societies progressed, water was being used a weapon by countries in an attempt to coerce other nations to comply with demands over the use of water. Instances of such water conflicts can be witnessed in a plethora of disputes such as; the Israel and Jordan water conflict over the use of Jordan River's drainage basin in 1948. This basin is collectively used by Jordan, Israel Syria, and Lebanon. Tension in the basin arose when members of the Arab League sought to distract the waters of the Jordan River from Israel.²⁴ Next, conflict over the Nile River is a contentious one because of the treaty signed between Sudan and Egypt in 1959.²⁵ This treaty provided for additional water supply to other upstream nation such as Kenya, Ethiopia etc. thereby reducing the water availability in the Egypt region and spurring tensions in the arid region. Water resources have been used as weapons for target and tools in cases where conflicts between nations escalate and take the shape of military aggression. Although water is a renewable resource, yet the fact of it being a scarce and a finite resource is a bitter truth and is thus a subject of substantial control by nations and is an easy temptation for military purposes. An instance of such military attacks over water include the deluging the water supply in North Vietnam by the United States in 1960s and the Turkish Syrian water supply conflict of 1987 over the water sharing of the Tigris- Euphrates river, as Turkey attempted at blocking water to Syria due to its support to the Kurds. Further, water has not only originated military tensions but moreover has also led to ethnic clashes and violence between groups. This can be witnessed from the

²² Haleh Hatami and Peter H. Gleick, *Journal of Environment: Science and Policy Development*.

²³ *Id.*

²⁴ *Id.*

²⁵ Agreement between the United Arab Republic and the Republic of Sudan for the Full Utilization of the Nile Waters, November 8, 1959. The treaty provided for the allocation of water of the Nile River.

case of poisoning of wells in the 1990's by the Yugoslav forces with carcasses and other hazardous materials which led to echoes of violence between the Albanians and Yugoslavians.²⁶

The past decades have been witness to not solely large scale global water wars, instead regional fights and ethnic waters have largely revolved around the sharing of waters. The current position is centered on the Transboundary Rivers between nations such as India and its neighbours.

Ownership of water means an entitlement to its use in a certain way. Such ownership is not only limited to a share of a common water resource but also implies the share tied to a specific use and hence affecting the prioritization. Even though water is a divisible resource which is amenable to sharing, yet it is important to realize that even though it is a common pool of resource, yet it is used separately. Implying, that the use of water by one, denies other the use of that water. This brings us to an important concept of excludability, as the multiple uses involve high trade-offs which lead to high exclusion costs, thereby making it problematic in excluding another user from its natural access. Seen from a traditionalist point of view, water is both a local and a non-local resource, meaning that modification in the availability and sharing of water in the upstream regions leads to basin-wide implications in the downstream area.²⁷ Thus, it is important to realize that water is a shared resource which involves the usage of a different approach i.e. recognition of different users.

I.3. DIMENSIONS OF WATER SHARING

The concept of water sharing has various dimensions attached to it. The first one being physical in nature and as per the physical dimension, water crisis is the result of an increasing imbalance between the supply of water and its demand. The implication being that, even though water is the most abundant resource on the Earth, it cannot be

²⁶ The Journal of Contemporary Water Research and Education, Present and Future of Water Conflict and International Security.

²⁷ Ramaswamy R. Iyer, Water and Laws in India 217(Sage Publications 2009).

consumed for human consumption as 97.5% of it is excessively salty and unfit for the production of crops as well. Most of the fresh water is locked in ice covers. Therefore, only a small portion of what is called as the 'green water' it is physically accessible. Further, the remaining part, being 'blue water' cannot be utilized due to economic and environmental limitations such as salinization between the water supply and demand.²⁸ The second dimension being the economic one, which stresses on the linear correlation between economic development and water resources that escalates into water conflicts. Lastly, the important dimension being the institutional one, which highlights the limitations of institutions in dealing with water resource allocation and management of water so as to avoid conflicts.²⁹ Considering the above dimensions to the use of water, it becomes even more pertinent to adopt suitable arrangements for transboundary water sharing between citizens and neighbouring areas at the whole. It is hence easy to comprehend the existence of water conflicts, in the situation of absence of democratic, legal mechanisms in effectively dealing with the water conflicts posed between nations. Further, such water conflicts fall under two categories such as claims over water uses and conflicts over equity, access and allocation of water resources. Water sharing centres on the concept of equity which implies minimum assurance of water to all its users particularly where water resource is required for an adequate livelihood. The equity doctrine helps in providing a basic service by providing a minimum water assurance at a reasonable cost and dependability. The main idea behind the said being, that right to access water resources is a vested right in people due to maintenance of their adequate livelihood as opposed to the conventional approach where water resources are seen as any other asset, such as land which people own. Subsequent to the allocation of water to nations for livelihood, the rest of the remaining portion may then be treated as available water for allocation for other uses. Thus, the equity principle helps in the process of water sharing by separation of water entitlement into two; one based on rights and the other being based on economic opportunities as water serves both a fundamental right and the economic aspect of it also cannot be ignored.

²⁸ Supra note 27.

²⁹ Id.

By way of the rapid advancement in technology the probability of water use and its availability has decreased to a considerable extent and has exceeded its availability in certain areas. Thus, in instances where the resource is scarce and over-abundant and where the flow is uncontrolled, it hence leads to conflicts and disputes which require a spontaneous and an immediate response. Hence, it becomes vital for determining the priorities and claims of users which can only be done by designing restrictive mechanisms to mediate between conflicting claims, thereby ensuring that water sustainability is maintained. The situation of absence of water -sharing centric laws is further heightened and made worse when the state bears the responsibility for allocating and exploitation of water. This leads to the regulatory role of state in operating water resources getting blurred. As water is a common resource, the determination of share of water to its claimants being states and nations is certainly a difficult task at hand. Determining the optimum quantity of water for the common benefit of all users and claimants depends on the relative weights attached by the society to different objectives and is liable to change with the changing technological conditions.³⁰ This is hence the principle underlying the idea behind the debate regarding “*Prior Appropriation and Optimum Utilization*”³¹ that poses the question whether prior users of water should have a greater right over the access of shared water resources even if its appropriation is excessive and causes a loss to the other claimants on one hand, or whether the quantum of water resources must be evenly distributed as to sub serve the common good of all the claimants and ensure its efficient utilization. Tribunals and courts, adjudicating upon the said issue have recognized and protected the right of appropriation with respect to riparian sharing. But its implementation has been difficult due to the phenomenal expansion of agriculture and irrigation and the use of technology which lead to a severe competition for limited water resources. Further, another major contested issue of water sharing and water law in general, is the debate between the premise of appropriation of private property³² for a public use by the state by payment of a monetary compensation to the owner for the use of his/her property. On the other hand, the public trust doctrine forbids state from transferring or converting the common pool of resources into private

³⁰ Supra note 27 at 6.

³¹ Id at 5.

³² Id at 8.

use, being the holder of such public resources as trustees of the property. The above two thus have significant implications on the entitlements and rules of allocation between water sharing of nations. The water sharing issue becomes a pertinent one because of another reason being, lack of laws concerning the state or the governments to seek involvement of affected people by the sharing of water resources or its beneficiaries. Though the governments have formulated policy statements on compensation of project affected people due to sharing of waters, yet they seem to have no legal backing and therefore clearly lack in implementation.

Conflicts over water can either be inter-state i.e. those that occurs between two or more neighbouring States which has a common boundary water basin such as a lake or river or an intra-state conflict i.e. between the potentially same parties of the same country.³³ Any territory that contributes to a stream, a minimum of one in all the tributaries of that crosses a boundary, can be defined as a transboundary water resource.³⁴ These transboundary water resources and allocation crosses political borders and also include the underground and surface water and also the interconnections between these two. Such transboundary allocations of water resources can often prove to be complex in nature. The primary reason being the uncertainty of interactions between key actors that function in the political domain due to different political needs, knowledge and political boundaries. Such transboundary water conflicts have been foremost in South Asia predominantly between India, Nepal, Pakistan and Bangladesh over the Ganges and Indus Water River. One of the key factors affecting the issue of transboundary water allocation is the political relations between nations and the involvement of the political community at large. Hence, to resolve the transboundary water allocations and ensure an efficient and sustainable water distribution, transboundary water sharing arrangements become an important concern due to the following reasons:

³³ Uprety& Salman, "Legal Aspects of sharing transboundary waters in South Asia: Preventing conflicts and Promoting co-operation," Hydrological Sciences Journal, Volume 56, 2011 - Issue 4: Water Crisis: From Conflict to Cooperation.

³⁴ Water Encyclopedia: Science and Issues, www.waterencyclopedia.com

- i. First, nations compete for economic growth which leads to an indefinite pressure on water supplies as nations intend to secure an enormous portion of the pooled water resources in a region. Hence, only through specific water-sharing arrangements in place, water supplies can be conserved or protected for users beyond the national borders.
- ii. As riparian neighbours compete to apposite resources of shared rivers by establishing structures such as dams and reservoirs, the relations between the upstream and downstream nations tend to get relentlessly affected and further lead to mistrust and discord.
- iii. The competition for sharing water resources springs in violent water conflicts and threatens world peace, security and impedes regional collaboration and integration.
- iv. Growing prosperity, population-size and economic development cause a major increase in water demand, thereby limiting its availability and supply to meet consumption levels.
- v. The advent of industrialization has spurred industrial wastes and pollutants such as sewage discharges, therefore aggravating the water crisis and hence making it arduous for nations and governments to provide the basic right of water and leading to denial of accessibility.

Considering that transboundary water resources has served and has been a root cause of water crisis, having lurked past hostilities, it thus becomes an important geo-political agenda. The troubling lack of mechanisms in most international shared resources to facilitate transboundary water cooperation over nations poses significant geo-political risks.

The management and prevention of such transboundary water conflicts over transnational waters and rivers demands for an institutionalized approach that is a mix of three basic elements. Firstly, what is required is a combination of certain international norms and rules. Second, is establishing accommodating institutional mechanisms amongst States

which share a common water course and the third being the most crucial one, that centres on a prudent and an environmentally sustainable management of water whose primary focus is on and efficient usage of water resources. In matters of a transboundary water conflict, where determination of an equitable water share is a matter of concern, in such cases, norms and rules help in determining a reasonable share .important. The fact that much of the global freshwater is shared water in the form of transnational river or lake basins which extends to almost the half of the planet's land surface, hence calls and underscores the necessity for rules-based, institutional arrangements among nations to govern shared waters. Therefore, to promote the reasonable use and protect the integrity of shared waters, the principle of the rule of law suggests that it becomes essential for the global riparian community to provide for a basis for the effective usage and dissemination of water resources. This is strengthened by the facet of international law which rests primarily on treaties and customary law.

I.4. INTERNATIONAL WATER LAW: RULES AND PRACTICE

The laws pertaining to different aspects of human activities like maritime and space activities, environmental protection and international trade, further as access to and use of trans-boundary natural resources fall within the category of international law which is a system of legal rules, norms and general principles, substantive or procedural rules that govern State relations.³⁵ Akin to the present body of legal rules are the basic principles set forth within the Charter of the United Nations (UN Charter),³⁶ codifying the legal foundation of the international community's collective commitment to market regional peace and security, world cooperation and advance the basic freedoms to all. The importance of the rule of law in development and surroundings was recently emphasized within the world organisation Resolution "*The Future we Want*", the out-come manuscript from the "*UN Conference on Sustainable Development, Rio+20*".³⁷

³⁵ R. Jennings and A. Watts Oppenheim's International Law, 4 (Pearson,NinthEdition,1996)

³⁶ The Charter of the United Nations was signed on 26 June1945and entered into force on 24 October 1945. 1369 U.N.T.S.181.

³⁷ Rio+20, the United Nations Conference on Sustainable Development was convened 20 to 22 June 2012.

Paragraph 7 of the resolution provides, "We affirm that we continue to be guided by the purposes and principles of the Charter of the United Nations, with full respect for international law and its principles."

International legal rules also govern the use and protection of water resources shared by two or more countries, which are often found in various international treaties and are reflected conjointly in rules of customary law of nations that mostly relies on State practice.^{38 39} However, the law of nations are not the sole instruments available to resolve trans-boundary water conflicts, but it provides a large degree of framework for addressing a broad vary of water-related challenges and considerations that span across “scales sectors and disciplines,” which highlights the vital inter-connectivity of trans-boundary water resources management issues. Endeavor is made to tackle the world water challenge, particularly at international and regional levels which needs associate degree of integrated approach that takes into consideration various factors, at intervals the ever-changing context of the world community and therefore the evolving structure of international water governance.

The UN meeting on “Water, Peace, and Security of 2012 highlighted the importance of finding ways to enhance trans-boundary water resources co-operation and collaboration.”⁴⁰ It particularly emphasized that “since water resources may become a true supply of manipulation and increasing instability and may be a priority in each nation’s policy and domestic agenda, we want to figure along to advance cooperation on shared waters.”⁴¹ While, unquestionably, the political will of national governments determines to an oversized extent the degree of cooperation across State borders, law plays a vital role through its prescription of the foundations of the sport governing the

Paragraph 8 states “We also reaffirm the importance of freedom, peace and security, respect for all human rights, including the right to development and the right to an adequate standard of living, including the right to food, the rule of law, gender quality, women’s empowerment, and the overall commitment to just and democratic societies for development.”

³⁸ M.N. Shaw, *International Law*, Cambridge University Press, Fifth Edition, 2003.

³⁹ Article 38 (1) of the 1946 Statute of the International Court of Justice (ICJ) is generally recognized as a statement of the sources of international law. Article 38 (1.a) requires the court to apply international conventions, whether general or particular, expressly recognized by the contesting states. Article 38 (1.b) requires the court to apply international customs as evidence of general practice accepted as law. Article 38 (1.c) requires the court to apply the general principles of law recognized by civilized nations. This section summarizes some important customary and general principles of international law applicable to trans-boundary water resources management that are accepted globally and incorporated in modern international conventions, agreements and treaties.”

⁴⁰Patricia Wouters, *International Law “Facilitating Trans-boundary Water Cooperation, Global Water Partnership Technical Committee”* TEC, 17.

⁴¹Round table on Water Security, Remarks by Hillary Rodham Clinton, Secretary of State, United Nations, New York City, 25 September 2012. <http://www.state.gov/secretary/rm/2012/09/198179>. html.

conduct of individual nations and relations between them. The law of states defines the boundaries of State sovereignty and provides the context for trans-boundary water resources co-operation.⁴²

I.4.i. Rule of Law and its Role

There is always a need felt to look at the role of rule of law in the context of international law in managing the trans-boundary water conflicts and building international cooperation in such trans-boundary issues which are provided in three ways:

- Relations of sovereign States and the framework governing it.
- A policy for applying an integrated approach and
- A system for implementing the rules of the game i.e, the substantive and procedural legal norms applying to specific water courses or water related activities.

International water law being a meta-framework for international relations provides associate identifiable corpus of rules of accord and customary law that verify the lawfulness of State actions with relation to water resources that cross national boundaries. International water law provides a platform for distinguishing and desegregation the legal, scientific, and policy problems relevant to the employment of trans-boundary water courses (such as ancient relation to all relevant factors and circumstances in determinant equitable use). At associate operational level, jurisprudence offers a spread of tools and mechanisms for implementation through concrete rules containing specific rights and duties further as procedures which will be invoked in managing trans-boundary water courses or breakdown inter-State conflicts.

⁴² Supra note 40.

I.5. THEORIES AND DOCTRINES OF INTERNATIONAL LAW OF WATER

The establishment of the concepts of international laws on water pertaining to trans-boundary water resources management evolves from different theories and doctrines.

- **Absolute Territorial Sovereignty Theory:** Every country has absolute authority to use the waters of the river that flow in its territory even if the river has an international character. The country's right to use the river corresponds to the fact that it is under no obligation to even consult the other nation through which the river passes. As per the theory, without considering the needs of a lower riparian country, the upper riparian country can divert all the water from the shared watercourse.⁴³ This theory is named after the US attorney, Mr. Judson Harmon as the "Harmon Doctrine", who declared the absolute right of the USA over the Rio Grande in 1895. According to him, Mexico lacks the authority to impose restriction on the US on the ground that the Rio Grande lacked sufficient water for its use by the citizens of both the countries. However, this doctrine is rejected by most of the experts in this field and even the US backed out from the Harmon Doctrine with Mexico and Canada. Thus, this theory garners very little support as a state practice and also does not represent international laws on water.

- **Absolute Territorial Integrity Theory:** This theory expounds the contention that, along with having the right of full flow of water, the lower riparian country also has the right to oblige the upstream country to take consent before interfering with the free flow of water from the lower riparian country. Therefore, "no matter what the priority",⁴⁴ the lower riparian country has a right to claim the sustained and continuous flow of water. This theory is supported by the lower riparian country because of the guarantee that the country can utilize the river in an unchanged condition. Like the Harmon doctrine, this theory also has limited support in state practice, jurisprudence or the writings of commentators.

⁴³ Supra note 17.

⁴⁴ Barandat and Kaplan, 1998; Schroeder-Wildberg, 2002.

- **Limited Territorial Sovereignty Theory:** This theory states that, unless the interests and the rights of riparian countries are prejudiced, each state is free to use the shared rivers flowing through their territories. In this case, sovereignty over shared water is qualified and related to other factors. The co-riparian's along with having equal share of the benefits of the international watercourse also share the rights and duties accruing from the same. This theory also known as theory of "*sovereign equality and territorial integrity*", has an added advantage that the rights of the upper riparian and the lower riparian countries are concurrently recognized and establishes the equitable use of water by all the interested parties. Along with the other said principles, this theory also entails, "*principles of equitable and reasonable utilization and obligation not to cause harm.*" Because of these reasons this theory has been widely accepted and has formed the basis of international water law.⁴⁵

- **The Principle of Equitable and Reasonable Utilization:**⁴⁶ This rule stresses on shared sovereignty and entitles each nation in the basin to have a reasonable share of the water resource for the beneficial use of others. By this, the doctrine reinforces the balance of interests by accommodating interests of each riparian state. The said principle further finds its place in the UN Watercourses Convention and The Helsinki Rules. This theory was also endorsed in Gabkivo-Naymaros Dams case.⁴⁷

- **The Obligation of not causing harm:**⁴⁸ Taking a clue from environmental law, the principle recognizes and enforces an obligation on the nations in the basin sharing a resource to ensure systematic use of water resources and thereby not using them in a manner that potentially causes a momentous detriment to the co-basin states or the environment at a whole.

⁴⁵ Muhammad Mizanur Rahaman, "Principles of International Water Law: Creating Effective Trans-boundary Water Resources Management", International Journal of Sustainable Society, Vol. 1, No. 3 (2009)

⁴⁶ Id.

⁴⁷ 1997 I.C.J.Pg 7

⁴⁸ Supra note 45.

Due to its fundamental importance, the principle finds its place in several international watercourses and agreements, such as the Helsinki rules, The Stockholm Declaration etc.

- **The Doctrine of Prior Appropriation:**⁴⁹ The rule stresses on the first user, implying that the first user shall have the priority on the use of river waters. Hence, both the upper- riparian and the downstream state can have a priority access on the use of water resource to meet their respective demand, if it is the first user of the transnational waters.⁵⁰ However, the said rule by giving a priority right of use diverts from and neglects the use of the watercourse by other users for its beneficial applications and uses, involving irrigation, mining etc.
- **The Colorado Doctrine:**⁵¹ Reinforcing the doctrine of prior appropriation, the Colorado doctrine stresses that the first user of the transnational water automatically gets a priority for its future use.⁵²
- **The Principle of consultation, negotiation and consultation:**⁵³ The said principle calls upon every riparian state to give a prior notification to the other riparian state, in case where the sharing and use of such watercourse may cause serious harm to the other state and its interest. The said rule stems from Art. 3 of the Contemporary Rules of International resources devised by the “International Law Association”.⁵⁴
- **Peaceful Settlement of Disputes:**⁵⁵ In course of sharing of transnational watercourses where disputes cannot be settled by a negotiation arrangement, all nations shall attempt to resolve such disputes through a peaceful means.

⁴⁹ Id.

⁵⁰ Id.

⁵¹ Supra note 45.

⁵² Id.

⁵³ Id.

⁵⁴ Supra note 45.

⁵⁵ Id.

Though the custom made aspects of international water law attempt at resolving the problem of transboundary water dispute, yet they remain underdeveloped, and hence in situations such as these, comprehensive international rules backed by enforcement mechanisms is elusive. With the increase in industrialization and increase in demands for water resources required a law which was innovation driven so as to be applicable to non-navigational uses of water, being flood control etc., in contrast to the early conventions which solely focused and related to the navigational uses of water, for instance the '*Convention and Statute on the Regime of Navigable Waterways of International Concern.*'⁵⁶

I.6. INTERNATIONAL INSTRUMENTS FOR TRANS- BOUNDARY WATER SHARING

I.6.i. The Harmon Doctrine⁵⁷

The 1895 theory advocates that even if there are any possible hazardous consequences, the states have absolute liberty to use waters situated within its territory. This implies that a country is absolutely sovereign over the portion of watercourse situated in its particular domain and territory.

With the passage of the '*Act of the Congress of Vienna of 1815*', the process of the development and codification of international water law for the purposes of navigation commenced. However, in international context, the '*Manheim Convention on Navigation on the Rhine between Belgium, France, Germany and The Netherlands*' of 1868 is considered to be one of the important water treaties which adopted the recommendation of the '*Congress of Vienna, 1815 and Convention of Mainz, 1831.*' it was provided in this convention that the parties to this convention were obliged to maintain the river Rhine

⁵⁶ Also, referred to as the Barcelona Convention of 20 April, 1921 to ensure navigation in waterways

⁵⁷ Based on the opinion of Attorney Judson Harmon, the doctrine holds that a country is absolutely sovereign over the portion of an international watercourse within its borders. Thus, that country would be free to divert all of the water from an international watercourse, leaving none for the downstream states.

and make it sure that the navigational independence through Rhine is maintained.

“The Convention and Statute on the Regime of Navigable Waterways of International Concern,” widely known as *“Barcelona Convention,”* was adopted at Barcelona on 20th April 1921, which dealt with the navigational use of trans-boundary water courses. The aftermath of the twentieth century and the rapid industrialization which in turn increased the demand for water and paved the way for drafting more laws which became applicable to the non-navigational uses of water, such as hydropower, water allocation, flood and quality management of water. As a result of which, these non-navigational principles have become more prominent in a state’s practice and water laws. This part of the research highlights the *‘the Helsinki Rules, 1966; the UN Watercourse Convention, 1997 and the Berlin Rules, 2004* for establishing the fact as to how much the principles on trans-boundary water resources are provided in the recently developed international conventions.

I.6.ii. The 1996 Helsinki Rules on the uses of the Waters of International Rivers

‘The Helsinki Rules on the Uses of the Waters of International Rivers’ was adopted at the 52nd conference, by the International Law Association (ILA) at Helsinki in August 1966. Popularly known as the Helsinki Rules, this document has become acceptable as the basis for negotiation amongst the riparian states and have become relevant even for non-navigational uses of trans-boundary waters, although the Articles XII to XX provide for the navigational uses.

Article II the Rules defines *“international drainage basin’* 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.”*

Article IV, V, VII, X, XXIX (4) ascertain the “*principle of equitable and reasonable utilization*” of the water resources by stating, 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.*”

Article V subject to Article V, paragraph II determines the factors that may be taken into consideration for the determination of equitable and reasonable share of water resources in the international drainage system.

Article V, Paragraph II reads as:

- The earth science of the basin, together with the extent of the drainage basin within the territory of every basin state.
- The climate that affects the basin.
- The geophysics of the basin, including the contribution of water made by each basin state.
- The past usage of the waters of the basin, including the existing utilization.
- The costs of different means of satisfying the economic and social needs in each basin state.
- In each basin state, the population dependant on such basin.
- The economic and social needs of the basin state.
- The availability of other possible resources.
- The viability of reimbursement for the adjustments of any conflicts.
- Avoiding unnecessary waste in the utilization of waters of the basin.
- The extent to which the needs of a basin state may be contented, without causing any injury to a co-basin state.

The addition of the term “without inflicting substantial injury” in Article V (II) demonstrate the espousal of the principle “not to cause significant harm”. Articles X, XI, XXIX (2) additionally endorse this principle. Articles IX–XI provides provisions for dominant pollution of a global geographic area on the premise of the principle of

evenhanded utilization. It is fascinating to note that the paragraph 1(a) of the Article X uses the principle of “not to cause significant harm” in dominant pollution. It mentions:

“Consistent with the principle of equitable utilization of the waters of an international drainage basin, a State must prevent any new form of water pollution or any increase in the degree of existing water pollution in an international drainage basin which would cause substantial injury in the territory of a co-basin State.”

A state is bound under Article XI, for the violation of paragraph 1(a) of Article X, to stop any unlawful conduct and should provide with a compensation to the co-basin state for any injury caused, thus, anything that causes pollution of water falls within the ambit of the “not to cause significant harm” principle, but still the matter is controversial, as the term “substantial injury” is not properly defined. *“In addition, injury does not always necessarily equate with harm and substantial does not always equate with significant.”*

For the prevention and settlement of the disputes, the Helsinki Rules under Articles XXVI-XXXVII provides for the key objective to prevent or settle the disputes by peaceful means (Article XXVII). Also, Paragraph 1 of the Article XXIX recommends that, each basin state should provide for all required available information to the other basin states concerning the waters of a drainage basin within its boundary of Article XXIX, Paragraph 2 states that:

“A State, regardless of its location in a drainage basin, should in particular furnish to any other basin State, the interests of which may be substantially affected, notice of any proposed construction or installation which would alter the regime of the basin in a way} and the notice should include such essential facts as will permit the recipient to make an assessment of the probable effect of the proposed alteration.”

Proposal for the settlement of disputes by alternative mechanisms like negotiation and the establishment of an agency for creation of plans for the proficient utilization of water can be found in Articles XXX and XXXI.

For the purpose of settlement of disputes Article XXXII provides for mediation by a third party this could either be an international organisation or a qualified person. In cases where states in dispute have not been able to resolve their disputes through negotiation or any other measures provided in Articles XXXI and XXXII, Articles XXXIII– XXXVII, in such cases provide for certain guidelines for settlement of disputes and even for arbitration mechanisms. Thus, the 1966 Helsinki Rules provides for the principles of:

- Notification,
- Information sharing
- Negotiation,
- Cooperation
- Consultation, and
- Peaceful settlement of disputes.

The ILA's subsequent resolutions ,The 1982 Montreal Rules on Pollution and the 1986 Seoul Complementary Rules later supplemented the Helsinki Rules and of late, these Helsinki Rules and subsequent resolutions have been reformulated by the ILA's 2004 Berlin Rules. However, the Helsinki Rules do not have any official status internationally as they were drafted by the ILA, which is a professional organisation although these rules are important in the enhancement of international water laws. But, the fact remains that these Rules have to be given great value as the subsequent bilateral and regional treaties have adopted a great deal from the Helsinki Rules and since many years these Rules have been pivotal in the development and codification of international water law.

The Helsinki Rules and their supplementary declarations have however enjoyed a little recognition as official codification of international water law although these Rules have certain applicability and are considered to be sound Rules and to overcome this

inconclusiveness, the UN General Assembly, in 1970, specially required the International Law Commission (ILC) to draft articles to direct non-navigational uses of trans-boundary waters. Thus, the work of ILC is highly regarded as an official codification of international water law and after 21 years of extensive work, the ILC prepared the draft text of the UN Watercourses Convention in 1991.

I.6.iii. The 1997 UN Convention on Non-navigational Uses of International Watercourses

The UN General Assembly on 21st May 1997 adopted the “*Convention on Non-Navigational Uses of International Watercourses*”, after considerable discussions between 1991-1997, popularly known as the “*UN Watercourses Convention*” and is based on the “*1966 Helsinki Rules*”.⁵⁸ After Turkey’s request, the General Assembly voted on the Resolution 51/229 for the implementation of the Convention and out of 133 countries, 103 nations voted in favour, 27 abstained and 3 nations voted against the Convention.⁵⁹

The Convention was open for signature from 21 May 1997 till 20 May 2000 provided under Article 34, however, Article 36 provided that States or regional economic integration organizations may continue to ratify, accept, approve or accede to the Convention indefinitely. Only 16 countries as of 9 January 2008 had ratified or consented to be bound by the UN Watercourses Convention. But, as per the wordings of Article 36(1) a minimum of 35 instruments of acceptance, ratification and approval are necessary to bring the Convention into force.

Although this Convention has not been brought into force yet, it provides for the general customary principles of international water law that was developed by international judicial bodies and scholars of relevant field.

⁵⁸ United Nations Declaration Programme, 2006

⁵⁹ IWLP 2008.

The following part of the research discusses the scope of the Articles of the Convention relevant to the principles of international water law.

As per the Article 1(1), the scope of the Convention applies to *“non-navigational uses of international watercourses and their waters.”* The navigational uses are out of the scope of the Convention except insofar non-navigational uses affect navigation or are affected by navigation (Article 1, paragraph 2). Article 2 of the Convention defines ‘international watercourse’ as *“a system of surface waters and ground waters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus, parts of which are situated in different states.”*

Article 5 provides for the theory of equitable and reasonable utilization:

“Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse.”

Article 5(2) provides for the watercourse States: *“to participate and cooperate in the use, development and protection of the watercourse in an equitable and reasonable manner.”*

Article 6(1) state that *“all relevant factors and circumstances should be taken into account in determining equitable and reasonable utilization.”*

These factors include:

- Population that is dependent on the watercourse in each water-course State.
- Social and economic needs of the Watercourse States.
- Effects of the uses of the watercourses in one watercourse state on another.

- Ecological, hydrological, hydro-graphic, climatic, geographic, and other factors of a natural character.
- Safety, preservation, growth and economic use of the water resources of the watercourse.
- Existing and potential uses of the watercourse.

For Articles 5 and 6(1) to apply, Article 6(2) mandates states to “*enter into consultations in a spirit of cooperation.*” Moreover, it is to be noted that, neither of the above mentioned factors in Article 6(1) can be clearly defined as they are ambiguous in nature and entail larger aspects of the same.

The Preamble and the Article 24(2) highlights the need to “manage international watercourse by promoting the rational and optimal utilization, protection and control of the watercourse.” Article 7 of the Convention provides for the principle of the “*obligation not to cause significant harm*” in its paragraph 1, which reads:

“Watercourse States shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse States.”

Article 7(2) provides that all states should comply with the provisions of Articles 5 and 6 to diminish significant harm on another watercourse State. Article 10 states that “*any conflict among uses of an international watercourse shall be resolved with reference to Articles 5-7.*” Articles 12,15,16,17 and 19 prohibits the execution of any action on an international watercourse that are contradictory to the provisions of Articles 5 and 7.

Article 27 provides for taking “*appropriate measures to prevent or mitigate conditions that may be harmful to other watercourse states, whether resulting from natural causes or human conduct, such as flood, siltation, erosion, water-borne disease and drought.*”

The UN Watercourses Convention however endorses the “*principles of co-operation and exchange of information.*” Article 8(1) and Article 8 (2) in this context places an obligation upon States for the cooperation for utilization and proper protection of international watercourses and also obligates the States for the establishment of mechanisms or commissions for the facilitation of cooperation amongst themselves. For exchanging data and information, the States are obliged under Article 9 for “*proper dissemination of such information relating to hydrological, meteorological and ecological nature of the water quality as well as such related forecasts.*” Articles 24(1) and 25(1) provide for joint management mechanism of the international watercourse and that the States shall “*cooperate to respond to the needs and opportunities for the regulation of the flow of the waters respectively.*”

Article 11-19, Articles 24(1), 26(2), 27, 28 and 30 of the Part III of the UN Watercourses Convention entails the “*principles of information exchange, cooperation, consultation, notification and negotiation.*” Articles 11-19 provides for the “*detailed procedures for the notifications, information exchange, consultations and negotiations on any planned measure in an international watercourse.*” Article 11 stresses: “*Watercourse States shall exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse.*” Article 12 makes notification of the planned measure in an international watercourse obligatory and states:

“Before a watercourse State implements or permits the implementation of planned measures which may have a significant adverse effect upon other watercourse States, it shall provide those States with timely notification thereof. Such notification shall be accompanied by available technical data and information, including the results of any environmental impact assessment, in order to enable the notified States to evaluate the possible effects of the planned measures.”

Article 24(1) states, “*Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism.*” Article 26(2) requires states to “*enter into consultation in case any installations, facilities and other works related to an international watercourse causes or poses to cause significant adverse effects to watercourse states.*” Article 28(2) requires all “*watercourse states to notify other states by the most expeditious means in case of emergency situation that causes, or poses a threat of causing, serious harm to watercourse states.*” Paragraphs 3 and 4 of the Article 28 call for “*cooperation among all potentially affected states to prevent mitigate and eliminate harmful effects of the emergency situations and to develop contingency plan for responding to emergencies.*” Article 30, recommends amongst states who do not have direct contact for the “*cooperation, data and information sharing, notification, consultations and negotiations through any indirect procedure accepted by the states concerned.*” Thus, the above mentioned Articles provide for the “*principles of information exchange, notification, cooperation, consultation and negotiation.*”

Articles 20 to 22, point at the conservation and enrichment of watercourse ecosystem on the basis of the principle of “*not to cause significant harm*”. Paragraph 2 of the Article 21 entails “*watercourse states to individually and/or jointly prevents, reduce and control the pollution of the international watercourse that may cause significant harm to other watercourse states, or to their environment, including harm to human health, to the use of any beneficial uses of the waters or to the living resources of the watercourse.*” Article 22 provides “*all states to prevent the introduction of alien or new species that may cause significant harm to ecosystem and other watercourse states.*”

Thus, the above mentioned Articles (Articles 21 and 22) expand the span of the “*not to cause significant harm*” principle provided in Article 7(1) of the UN Watercourse Convention, for the preservation of watercourse ecosystems and human health and recommends “*watercourse States to take measures to harmonize their policies for preserving watercourse ecosystems*”. Detailed provisions for settlement of disputes are provided under Article 33 of the Convention. Article 33(1) state that “*in the absence of*

agreement, all states shall settle the disputes by peaceful means in accordance with the provisions of Article 33.”

The UN Watercourse Convention though not operative, became norms of international legal follow and adds towards progressive growth and codification of international water law. However, the ILC’s draft Articles even before its adoption has influenced many regional treaties and international agreements , such as “*1992 UNECE Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes, the 1995 SADC Protocol on Shared Watercourse Systems (revised in 2000), the 1995 Mekong river basin agreement.*”

I.6.iv. The 2004 Berlin Rules on Water Resources

In the ILA’s 71st conference held in Berlin, the Berlin Rules on water resources were approved on 21st August 2004 and unlike the earlier principles provided in Helsinki Rules and UN Watercourses Convention, the Berlin Rules also include “*international human rights law and the humanitarian rights law relating to the war and armed conflict.*”

Articles 4-9 provided under Chapter II addresses the principles of international law governing the management of all waters. Articles 5 and 6 assimilate the need for connective and integrated management of water resources. Article 5 entails states to manage groundwater, surface water and other sources of water together. Article 6 recommends states to integrate appropriately the management of waters with other resources. Article 8 requires states to take all appropriate measures to prevent or minimize environmental harm.

Articles 10-16 provided under Chapter III deal with internationally shared waters. Article 10 ascertains that “*basin states have the right to participate in the management of waters of international drainage basin in an equitable reasonable and sustainable manner.*”

Article 12 mentions:

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

To draw a comparison between Helsinki Rules, UN Watercourses Convention and the Berlin Rules, it can be observed that the earlier Rules emphasize the *“right of each basin state to a reasonable and equitable share and the Berlin Rules oblige each basin state in international drainage basin to manage water in equitable and reasonable manner.”*

Article 13(2) of the Berlin Rules provides *“for the list of all the factors that should be considered in determining the equitable and reasonable use as provided in Article 12. In addition to the factors listed in Article 6(1) of the UN Watercourses Convention, Berlin Rules include two new factors to be considered, i.e.”*

- the sustainability of proposed or existing uses and
- the minimization of environmental harm.

Article 14 (1) clearly mentions that *“in determining equitable and reasonable use, allocation of waters to satisfy vital human needs should receive the first preference over the other uses of water.”* Article 16 requires states to *“refrain from and prevent acts within their territory that causes significant harm to another basin state.”*

Article 11 requires that *“the basin states should cooperate in good faith for proper management of waters of international drainage basin.”* In Chapter XI *“international cooperation and administration”* is provided for in which Article 56 requires *“basin states to exchange relevant and available information on the quantity and quality of waters.”* Article 64 provides for the establishment of *“basin wide commission or a joint agency to ensure the sustainable and equitable use of waters and the prevention of harm.”* Articles 57, 58, 59 and 60 recognize that *“each basin state is entitled to receive*

prior notice, consultation and negotiation in cases where the proposed programme, plan, project or activity may cause significant effect to its rights or interest.” Articles 72 and 73 provided under Chapter XIV provides for the “*peaceful settlement of water disputes as well as guidelines for arbitration and litigation.*”

A point however should be noted here that though the ILA is significant, the proposals and rules made by them have no force unless:

- the United Nations adopts them in a Convention.
- the International Court of Justice uses the rules in some ruling.
- A trans-boundary water sharing agreement is adopted by countries.

I.7.WATER CONFLICTS BETWEEN INDIA AND BANGLADESH

Water is a magnificent substance. It has been described as the noblest of the elements and the first of things.⁶⁰ *Mccaffery* in his book has expatiated upon various writers and poets⁶¹ who have written well on the usage and importance of water. In this regards he quotes Benjamin Franklin, “*we tend not to appreciate water fully until we are without it, when the well’s dry, we know the worth of water.*”⁶²

Water rejuvenates all sectors of society. Nearly half of the world’s accessible surface water is found in 263 international stream basins, and groundwater resources that account for over hundred times the quantity of surface water, cross below a minimum of 273 international borders. National boundaries make water problems political so way more advanced. All trans-boundary water bodies produce social, economic and hydrological interdependencies between societies.

History has usually shown that the important nature of freshwater may be a powerful

⁶⁰ McCaffrey, *The Law of International Watercourses*, Oxford University Press, 2nd Edition, (2010)

⁶¹ Poets as early as Ovid have drawn inspiration from water’s remarkable properties as a solvent: “What is harder than rock, or softer than water? Yet soft water hollows out hard rock. Only preserve.”

⁶² *Supra* note 60.

incentive for cooperation, compelling the stakeholders, to reconcile even the foremost contrary views. Water additionally usually unites than divides peoples and societies. It has been observed that out of the known water conflicts, only 37 occurrences of acute conflicts have arisen since 1948 and around 295 international water agreements have been signed and negotiated since the same time. Clearly, avoidance of disputes is usually a robust political driver for initiating cooperation on trans-boundary waters, as riparian States acknowledge that they have to safeguard their larger common interests.⁶³

The so called inter-state and international water disputes often occur, recur and continue over years and generate issues with numerous economic, social and political implications additionally to the legal disputations and tensions. These tensions arise from the unsatisfactorily addressing of the problems of water insecurity, modified environmental condition, ever growing demographic pressure, and therefore the organic process desired by the contesting stakeholders described by the governments. Most of the states in Republic of India have inter-state water disputes and also India has International Water Disputes with Asian nations, like, Pakistan, Nepal, Bangladesh and China, where the parties have tried to seek out solutions through legal and even non-legal means. Efforts for settlement of international water disputes through negotiation, agreement and arbitration also are occurring so as to deal with the issues arising from ever-changing economic, environmental condition and geographic conditions.

As distinct from the past, today's laws on water disputes prominently point on the issues of environmental protection, human rights, development with justice and fair access to resources. Amongst all this the concept of federalism and international comity also undergo critical test.

Water stress and climate change are some issues which States are experiencing on a rising number and such issues will also increase the numbers of countries experiencing high variations in their water resource availability and higher frequencies or intensities of

⁶³ Trans-boundary Waters: Sharing Benefits, Sharing Responsibilities, UN Water, Thematic Paper, 2008

floods and droughts. These issues can further lead to competitions over water, which in turn can increase tensions between States and can lead to open conflict.

In-order to identify the root cause of water tensions, one can make an assessment of past water-related conflict, which shows that dam construction, water abstraction, water scarcity and chronic and accidental water pollution by industry, as well as non implementation and non-acceptance of existing treaty provisions, often are the main causes for the same. There are much greater risks because of the growing populations, urbanization and economic development all require more water for agricultural, municipal and industrial uses.

One of the continuing vital problems is that the deficiency and sharing of fresh water resources between India and Bangladesh, where large rivers like the Indus, Ganges, and the Brahmaputra River are born within the lofty heights of the Himalaya Mountains and are controlled for electricity power before flowing to the huge plains of the Deccan and on to either the Arabian sea to the west or the Bay of Bengal region to the east. The matter of water resource allocation and sharing, mainly for irrigation functions, has infested relations between India and its neighbours, and has led to a real case example of environmental security wherever environmental problems are entwined with national security problems.

Flowing from the Himalayas in Nepal and Tibet the rivers Ganges and Brahmaputra form some of the largest river basins in South Asia encompassing over 1.6 million km and ultimately join Bangladesh wherever they discharge into the Bay of Bengal. Before the Ganges enters Bangladesh, it divides off a smaller stream, the Bhagirathi- Hooghly that flows through the port of Calcutta. Four-fifths of Bangladesh, is straddled by this delta system whose half of the GDP is predicated on agriculture, and therefore this river's irrigation value is important to the country's economy and its over a hundred and twenty million inhabitants.⁶⁴ The topography of East Pakistan and its geographical location

⁶⁴ P.H. Gleick(ed.), *Water, Politics, and International Law*, in *Water in Crisis: A Guide to the World's Fresh Water Resources*, (Oxford University Press, 1993)

create it extraordinarily prone to natural disasters. Typhoons associate degreed monsoons manufacture multiple floods virtually on an annual basis, and through the season between Jan and May, the Ganges might drop to levels that have a powerful damaging impact on agriculture and fisheries.

Water has been a cause of conflict since very oolden times. One of the earliest water conflicts in the sub-continent is recorded in the famous Goutama Buddhar Kappiyam: a conflict over the sharing of Rohini river water between the Sakyan and Koliyan clans, which was, according to Dr. Ambedkar, the cause of the Buddha"s leaving home. As the Kappiyan describes it,

*“When the Sakiyas and Koliyas waged a terrible war
About sharing the river Rohini,
Blood, gushing like a spring, flooded the waters,
The Buddha, coming to know of it,
Did what was needful
To end the long-drawn discord and
To bring both sides together
All shall be well if good men try.”⁶⁵*

The Southern part of Asia is finite by the mountain range on the north and also the Indian Ocean on the south, includes India, Bhutan, Nepal, Bangladesh, Afghanistan, Sri Lanka, Pakistan, and the Maldives. It covers a diversity of ecosystems and agro-climatic conditions that vary from tropical and temperate forest to dry deserts and from immense drought prone regions to flood affected plains and areas with the best rain within the world. It is additionally one amongst the foremost thickly settled regions in the planet. Since it might take another few decades for the population of the region to stabilize, the demand for water – each for domestic use and for production and process is predicted to travel up considerably within the close to future. More than half of the world's poorest

⁶⁵ S. Guhan, The Cauvery River Dispute: Towards Conciliation 47(Madras Frontline Publication, Kasturi and Sons.1993)

people live here and virtually forty per cent of its population falls below the poverty level. It is all-time low average Gross Domestic Product (GDP) compared to the other major geographical regions of the planet.⁶⁶ It is additionally one amongst the foremost conflict stricken regions within the world and these conflicts between the neighbouring countries are coupled with civil unrest in these countries. The region is additionally distinctive in terms of the various political regimes⁶⁷ and social systems⁶⁸ that exist in the region.

I.7.i. Duration: 1951 till Date

The origin of the water conflict between India and Bangladesh can be traced to 1951 when Bangladesh was part of Pakistan.⁶⁹ India, during this period had long term plans to build a barrage at Farakka which would be a mile long. This barrage was supposed to be built 18kms from the Bangladeshi border and the main object of building this barrage was to increase the diversion of Ganges water to the Bhagirathi-Hooghly River and keep Calcutta harbour operational during the dry season as was believed that by increasing the river flow, the Calcutta harbour could be kept away from deteriorating from silt deposition. However, the then Pakistan protested on the grounds that this action would wreak havoc on it's land and also the environmental impact would be great. However, India continued, with the plan of the construction and started it in 1962. With no other recourse left, the then Pakistan took the matter before the United Nations General Assembly in 1968 and discussions continued in that forum until 1976. However, the attention garnered by this issue internationally made India recognize that the Ganges was an international river, and that each riparian State was entitled to a reasonable and

⁶⁶ Rural Poverty Report 2001 (Kulkarni, Seema and Nagmani Rao, 2002)

⁶⁷ For example countries like India, Pakistan, Bangladesh and Sri Lanka, and recently, Nepal have elected "democratic" governments whereas in Bhutan it is the hereditary "rule" of the Royal family with limited powers to the elected representatives. Afghanistan is a post-war society in transition and the political system is still evolving.

⁶⁸ Broadly, one can characterize the social systems in India, Pakistan, Bangladesh and Sri Lanka are more modernist in their outlooks and their social relations are more capitalist in nature as compared to Nepal, Bhutan and Afghanistan where feudal relations and value systems are much stronger Nevertheless there is tremendous regional and sectional variation in all these societies and caste, ethnicity and religion too play an important role in the social, economic, political and cultural spheres.

⁶⁹ A. Swain, Conflicts over Water: The Ganges Water Dispute, Security, 24, 429-439(1993)

equitable share of the waters of an international river.⁷⁰

After Bangladesh became an independent nation in 1971, it was expected that better relations between India and Bangladesh would result, but India's persistence on building of the Farakka barrage led to a general spoiling of the relationship. However, in 1972, an Indo-Bangladesh Joint Rivers Commission was formulated to study the flow of the river and develop the river water on a cooperative basis, but work on the Farakka barrage continued, which was finally completed in 1975 and a short-term agreement was signed by India and Bangladesh to conduct a 40 day trial test of the barrage during the dry season.

However, four months later, the President of Bangladesh was assassinated for being too co-operative with India and in the next dry season, India began the diversion of water at Farakka one-sidedly, and continued to do so until 1977 when a treaty on "*Sharing of the Ganges Waters at Farakka and on Augmenting its Flows*"⁷¹ was signed between the two countries which guaranteed a minimum level of flow for Bangladesh for a period of five year. After the expiration of this treaty in 1982, two more short-term agreements were signed on water sharing till 1988, but, India continued unilateral diversions of water.

A sense of stability came up when in 1992; the then prime ministers of both the countries met for a concerted effort to come to a solution. In addition, Bangladesh was also reviving its attempts to internationalize the issue by bringing forth the dispute before the UN General Assembly and the Commonwealth Heads of Governments Meeting in 1993 and also in the South Asia Association for Regional Co-operation (SAARC),⁷² with no definite action being taken.

⁷⁰ Supra note 17.

⁷¹ Sharing of the Ganges Waters at Farakka and on Augmenting its Flows, signed between India and Bangladesh on November 5, 1977, NO - 14(1)76 -EP. IV

⁷² SAARC comprises Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka, and its main goal is to "accelerate the process of economic and social development in member states, through joint action in the agreed areas of cooperation.

An atmosphere of regional cooperation evolved in 1996 when there was a change of government in India, and in December of 1996, a *Ganges Water Sharing Treaty* was signed that is to last for thirty years. The Treaty addresses the main issue of the conflict: *“water allocation during the five months of the dry season (January-May). During the rest of the year, there is sufficient water that India can operate the Farakka diversion without creating problems for Bangladesh.”* However, increasing upstream withdrawal in Northern India has further lowered the dry-season flow at Farakka, further complicating matters. Hence, the Treaty stipulates that *“below a certain flow rate, India and Bangladesh will each share half of the water. Above a certain limit, Bangladesh will be guaranteed a certain minimum level, and if the water flow exceeds a given limit, India will withdraw a given amount, and the balance will be received by Bangladesh, which will be more than 50%.”*

I.7.ii. Historical Evolution of Water Conflicts and Negotiations between India and Bangladesh⁷³

YEAR	EVENT
1951	<p>India declares its intentions to build a Barrage across the Ganges Bangladesh objects on 29th October 1951.</p> <p>The Barrage diverts water into the Baghirathi-Hooghly River to flush out silt and increase navigation accessibility to Calcutta.</p>
1961	<p>India formally admitted the sole construction of the barrage on 30th January 1961.</p>
1972	<p>India and Bangladesh signed Indo- Bangladesh Joint River Commission (JRC) On 24th November 1972.</p>
1974	<p>Construction of Farakka Barrage is completed.</p> <p>In a joint statement both the prime ministers of Bangladesh and India on 24th November 1972, recognized the need for augmentation in the lean season flow of Ganges and expressed their determination that before the commissioning of the Farakka Project, both the countries would arrive at a mutually accepted allocation of water available during the periods of minimum flow in the Ganges.</p>

⁷³ Trans-boundary Water Politics and Conflicts in South Asia: Towards 'Water for Peace', Richa Singh, Centre For Democracy And Social Action, http://in.boell.org/sites/default/files/downloads/water._Final.pdf

1975	<p>On 21st April 1975, the Barrage was commissioned.</p> <p>With this commissioning India gained control over Ganges flows into Bangladesh even during the dry season.</p> <p>In the spring of 1975 India withdrew 40,000 of the 55,000 ft³/s of water from the Ganges, which led to disastrous consequences on Bangladesh.</p> <p>India and Bangladesh however, were unable to reach to an agreement.</p>
1976	<p>Bangladesh on 26th November 1976 raised this issue in the U.N. which adopted a consensus statement and directed both countries to urgently negotiate a reasonable and expeditious settlement of the problem to promote the sustainability of the region.</p>
1977	<p>On 5th November 1977 India and Bangladesh signed the <i>Ganges Water Agreement</i> on for the period of 5 years. This treaty gave Bangladesh 80% of Ganges flow during the dry season and was followed by two memorandums of understanding lasting through 1988, which did not include any minimum flow into Bangladesh.</p>
1982	<p>A Memorandum of Understanding (MoU) was signed between the two countries on 7th October 1972 for sharing dry season flow of Ganges at Farakka and this MoU was followed by the understanding reached between the then prime ministers of both the countries at the Delhi Summit on November 1982.</p>

1988-1996	The MoU's expired and no further agreements were reached between 1988 to 1996. However, India withdrew 40- 45,000 ft ³ /s from the Ganges every dry season during this period.
1995	Bangladesh once again brought the issue to the notice of the 50th UN General Assembly about the misery of the people of Bangladesh due to the unilateral water diversion at Farakka Barrage on 23rd October 1995,
1996	On 12th December 1996, the two countries reached a 30 year agreement which provides that Bangladesh will receive a minimum flow of 35,000 ft ³ /s from January to May. This resulted in further agreements between India and Bangladesh.
2005	The 36th Indo-Bangladesh Joint River Commission meeting was held on September 2005, in which Bangladesh again proposed to have tripartite talks involving Nepal for building reservoirs in Nepal in order to augment the dry season flow of the Ganges.

To conclude, it is hence pertinent to note that a serious water crisis, centered on transnational water sharing now confronts the world, and has the potential of becoming worse. Water being a tool of sustainable development and having an over-reaching value has the potential of causing conflicting interests among nations. The sharing of international watercourses can have wide reaching significant implications for states. History has been a witness to such water conflicts that prevailed in the early civilizations. In this context, the important thing is to have a better water management system in place so as to build a better harmonious system in place. Hence, water security is essential for maintenance of a central balance and in achieving preventive diplomacy between nations. So as to incorporate all characteristics of an international watercourse, i.e. cultural, political, social, economic, physical and environmental, it is essential to manage water resources particularly basing on geographical restrictions than merely based on political and administrative limitations of a state or nation. The global challenge of transboundary water sharing requires a proper allocation of water between riparian states, thereby ensuring that each nation in the basin has an access to water sharing based on the principle of equity. In situations wherein, water poor countries are involved in an international sharing of water resource, the only option available is to sustainably optimize water resources and to cooperate and collaborate with co-riparian states on a holistic and an efficient water sharing.

Despite having numerous initiatives undertaken and having water treaties between nations, there is a clear lack of a detail and legal institutionalized framework, clearly laying down and specifying guidelines for water sharing and water cooperation along with effective dispute resolution mechanisms involving riparian countries. Water treaties and cooperative water arrangements can help in improving the social accord only when they are backed by equity and planning, hence contributing to political stability between riparian nations. The underlying problem being that water treaties involving a transboundary resource, lack definite specified sharing numbers of allocation. In case where the treaties do specify the sharing figure, are quite rigid in nature, hence it becomes a challenging task to adjust the allocation of the water resource as per changing dynamics of the basin or according to hydrological variations. Further, such

transboundary water sharing agreements often ignore the aspect of water quality and its sustainability. To make matters worse, most existing water sharing arrangements are toothless in the absolute sense as they lack enforcement at the elementary level, conflict-resolution mechanisms and the basic monitoring provisions. The lack of a clear and a well-defined comprehensive framework of water laws lead to arbitrariness and opaque decision making, therefore leading to fragrant violations.

Henceforth, it is essential that the water treaties regulating the sharing of transnational waters are significantly revised so as to ensure proper allotment of shared waters between nations or states in the basin. Furthermore, where water flow between nations is uncontrolled, and becomes a subject of water disputes, such conflicts can be taken to the judiciary for settlement.

The issue of transboundary water sharing is essentially a significant one which crucially affects the aspect of water quality and its sharing, thereby generating enormity between nations at large. The international principles relating to the same though help in coordination among nations relating to the same and management of water yet are insufficient as a whole and need work in enforcement and ensuring its implementation. In diplomatic, economic and political, manner water wars have long been fought between the riparian neighbours, thereby inflicting a series of accusation, worsening water challenges, and nurturing distrust that prevents larger regional integration and cooperation. Thus, to mitigate this challenge of transboundary water sharing, the only way forward is to build stable and entrenched cooperation among the participating parties for a mutual benefit.