# Equitable Apportionment of Shared Transboundary River Waters: A Case Study of Modifications of the Indus Waters Treaty

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## ABSTRACT

The principle of equitable utilization and the doctrine of equitable apportionment are regarded highly in customary international law for the apportionment of transboundary river waters between upper and lower riparian states. In this regard, the Indus Waters Treaty is an excellent example of the pragmatic implementation of the principle of equitable utilization, as well as of the principles of equity and justice. The treaty allotted three eastern rivers to India and three western rivers to Pakistan in an attempt to equitably divide the shared Indus River basin and its five tributaries between the neighboring countries. However, India has now expressed an eagerness to modify the Indus Waters Treaty as it wants to gain a higher water share of the western rivers for its hydropower projects. Pakistan has not accepted Indian calls to modify the treaty because it considers Indian demands for a higher share of the western rivers as inequitable and unjust in nature. Furthermore, Pakistan is already receiving an insufficient flow of waters in its western rivers and negligible water flow from the eastern rivers; it cannot forgo more water to India as this could be detrimental to its agricultural economy.

## INTRODUCTION

The principles of equity allocate resources between people equitably and justifiably, with the core rationale of upholding justice among humans.[1] In this regard, the allocation and apportionment of transnational river waters have been a matter of concern among states,[2] particularly in the subcontinent

1. *See* Dinah Shelton, *Equality*, *in* OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW 652, 654 (Daniel Bodansky ed., 2007).

2. *See* Peters Rogers, *Management of Water Sources, in* TREATISE ON WATER SCIENCE 4 (Peter Wilderer ed., 2011).

region[3] where the upper riparian state of India and the lower riparian state of Pakistan share the Indus River basin, which emerges from the Himalayas and passes through northern India to Pakistan.[4] The majority of the population of Pakistan is directly dependent on the waters of this river basin for agriculture, food, and drinking,[5] whereas India aims at constructing hydropower projects in the Indus basin in its territory.[6] In this regard, there are some principles and theories that regulate the allocation of water between the upper and lower riparian states, and these principles are applicable for water apportionment between Pakistan and India.[7]

The first section of this paper sets out the "inequitable" and "equitable" water-apportionment frameworks, which were devised to divide transboundary river waters between two or more states. The inequitable frameworks disregard the principles of equity and justice, whereas the equitable frameworks follow the principles of justice, fairness, and equity in the allocation of waters between states. The second section of this paper evaluates the significance of the Indus Waters Treaty in resolving water-apportionment disputes between upper riparian India and lower riparian Pakistan, as well as the underlying water-sharing principles of this treaty. The third section includes the rationale for the modification of the Indus Waters Treaty, the respective Indian and Pakistani stances related to the treaty's modification, and the perceived benefits and harms associated with the modification of the treaty. The idea of needs and wants is addressed in the third section in relation to the contemporary utilization of river waters by India and Pakistan.

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3. *See* AMITA BATRA, REGIONAL ECONOMIC INTEGRATION IN SOUTH ASIA: TRAPPED IN CONFLICT? 78 (2013).

4. *See* MALCOLM COOPER, *River Tourism in the South Asian Subcontinent*, *in* RIVER TOURISM 25–26 (Bruce Prideaux ed., 2009).

5. *See* Peter S. Meadows et al., *The Indus River and Pakistan's Economy: Energy, Environmental Resources, and Developmental Policy*, *in* TECHNOLOGY AND DEVELOPING COUNTRIES: PRACTICAL APPLICATIONS, THEORETICAL ISSUES 40 (Richard Heeks ed., 1995); *see also* Adrien Courton, *Tackling the Water Crisis in Pakistan: What Entrepreneurial Approaches Can Add*, *in* RUNNING ON EMPTY: PAKISTAN'S WATER CRISIS 118 (Michael Kugelman ed., 2009).

6. *See* M. Dinesh Kumar et al., *Water Scarcity and Pollution in South and Southeast Asia: Problems and Challenges*, *in* ROUTLEDGE HANDBOOK OF ENVIRONMENT AND SOCIETY IN ASIA (Paul Harris & Graeme Lang eds., 2015).

7. Robert Speed et al., *Basin Water Allocation Planning*, UNESCO 24 (2013), http://unesdoc.unesco.org/images/0022/002208/220875e.pdf [https://perma.cc/E98E-DY32].

## 1. THE DEBATE OVER WATER APPORTIONMENT

With the rapid upsurge in population in the twentieth century, a strain on water resources has been felt by almost every nation.[8] Technological advancement has convinced states to construct dams in order to store massive quantities of water to cater for the ever-increasing needs of the general population for water utilization for irrigation, hydropower generation, and industrial and domestic purposes.[9] This has steered the inequitable distribution of water and consequent instigation of conflicts between upper and lower riparian countries, particularly when the upper riparian states have used major portions of the shared river water for agricultural and hydropower generation purposes, leaving behind an inadequate flow of waters in the shared river basin, which proves insufficient to fulfill the water-related needs of the lower riparian state.[10]

As a result, the international community has proposed a number of theories and principles for regulating the utilization and distribution of the rivers that flow across international borders among the upper and lower riparian countries. Some individual contributors of international law have proposed their own theories for the apportionment of water among states; however, only some of these theories have been widely accepted by the international community. These have become doctrines and principles of water apportionment, owing to their suggested reasonable and equitable water-sharing frameworks. On the other hand, some theories for water apportionment have been rejected and have become obsolete with the passage of time owing to their unjustified water-sharing formulas. Section 1 of this paper sets out the prominent water-sharing theories and doctrines of the two categories, which are explained below.

### *A. Inequitable Water-Apportionment Frameworks*

As mentioned above, some doctrines have followed inequitable and unjust water-apportionment formulas because they supported and favored either the upper riparian or the lower riparian region. Moreover, these frameworks ignored the *jus cogens* of equity and justice. These frameworks are referred

8. G. TYLER MILLER & SCOTT E. SPOOLMAN, LIVING IN THE ENVIRONMENT: PRINCIPLES, CONNECTIONS, AND SOLUTIONS 328 (2009).

9. YU B. MGALOBELOV & YU A. LANDAU, NON-CONVENTIONAL CONSTRUCTION OF CONCRETE DAM ON ROCK FOUNDATIONS vii (Margaret Majithia ed., Dr. G. Venkatachalan trans., 1997).

10. Ine Frijters & Jan Leentvaar. *Rhine Case Study*, UNESCO 10 (2003), http://www.ce.utexas.edu/prof/mckinney/ce397/topics/rhine/the_rhine_case_study.pdf [https://perma.cc/E5YU-JX5P].

to in this paper as "inequitable water-apportionment frameworks." The particular details of these theories are set out below.

### *1. Absolute Territorial Sovereignty Theory*

According to the absolute territorial sovereignty theory, every country has the right to use all of the water resources that pass through its territory. Traditionally, this theory has been favored by only the upper riparian states.[11] It was presented by former U.S. Attorney General Judson Harmon in 1895 and is therefore known as the "Harmon Doctrine."[12] The core rationale of this theory is that any river that originates from a country, or any portion of a river that flows through the territory of that country, is the natural property of that country and can be considered as analogous to its natural resources.[13] As a result, it is the legitimate right of that country to use the water resource in any proportion and for any purpose it sees fit. Hence, this theory ensures full legitimate authority to the upper riparian states to use or divert all river waters toward their own land for any purpose and to completely neglect the water needs of the lower riparian states.[14]

Because of this theory's inequitable and unjust water-apportionment suggestions, the United States soon withdrew its support of it.[15] Furthermore, some circles of international law also criticized the practicalities of this theory for its unjustifiable water-sharing principles.[16] As the application of this framework allowed the upper riparian state to exploit or block the transboundary river water destined to reach to the lower riparian state, it can cause significant harm to the lower riparian state by creating a shortage of water in its river basins. Furthermore, this caused an imbalance in the water-sharing between the two riparian states by depriving the lower riparian state of shared river waters. To avoid such an injustice and discrimination

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11. Stephen C. Lonergan & David B. Brooks, *Watershed: The Role of Fresh Water in the Israeli Palestinian Conflict*, INT'L DEV. RESEARCH CTR 168 (1994).

12. DANTE CAPONERA, PRINCIPLES OF WATER LAW AND ADMINISTRATION 216 (Marcella Nanni ed., 2d ed. 2007) [hereinafter CAPONERA].

13. AFRICAN INSTITUTE OF SOUTH AFRICA, COOPERATIVE DIPLOMACY, REGIONAL STABILITY AND NATIONAL INTERESTS: THE NILE RIVER AND RIPARIAN STATES, 41 (Korwa G. Adar & Nicasius A. Check eds., 2011).

14. NAHID ISLAM, THE LAW OF NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES 102 (2010).

15. AARON WOLF & JEROME DELLI PRISCOLI. MANAGING AND TRANSFORMING WATER CONFLICTS 58 (2010).

16. *See* ISLAM, *supra* note 14, at 105.

to the lower riparian state, the "absolute territorial sovereignty theory" was never applied for water apportionment between countries.[17] Furthermore, it has never been accepted by the international community[18] because it does not uphold the principles of equity and justice.

To demonstrate the unjustifiability of this theory, consider the following scenario: if we attempt to apply it in the South Asian region, where India is the upper riparian state and Pakistan is the lower riparian state,[19] then India can enjoy surplus waters by exercising autonomy over the rivers it shares with Pakistan. Under this theory, India could justify its aggressive water control through the principle of the exclusive rights of the upper riparian state, consequently denying any rights of the lower riparian state, Pakistan.

However, if we apply the same argument to China and India, where China is the upper riparian state and India is the lower riparian state, then this theory will mean that China has exclusive water rights over the rivers that originate in its territory and reach India. India would not be willing to accept the same theory because it does not in fact support justice. This creates an inconsistency in the application of this theory when India accepts it for the apportionment of water with its lower riparian state but rejects it for its upper riparian state. This paper argues that a theory should be universal and aligned with the principles of equity and justice, such that any country is willing to accept it in any given conflict, whether that is with the lower riparian state or with the upper riparian state; therefore, owing to India's inequitable and unjust approach toward this theory it cannot be implemented practically. The theory has been criticized by scholars and has never been able to take root in international law.[20]

### *2. Territorial Integrity Theory*

The territorial integrity theory contrasts with absolute territorial sovereignty theory. It was developed by renowned scholars, including Oppenheim, Huber, and Fleischman,[21] and later included in Article 2(4) of the Charter of the United Nations, which prevents UN members from engaging in any threatening action against another state.[22] The theory states that a lower riparian state has the absolute right to utilize waters that reach its territory and the upper riparian state cannot decrease or increase the natural flow

17. *See* WOLF & PRISCOLI, *supra* note 15, at 58.
18. *Id.*
19. C.A. BREBBIA, WATER AND SOCIETY II 107 (2013).
20. KORWA GOMBE ADAR & NICASIUS CHECK, *Cooperative Diplomacy*, REGIONAL STABILITY AND NATIONAL INTERESTS 12 (2011) [hereinafter ADAR & CHECK].
21. *See* ISLAM, *supra* note 14, at 106–07.
22. L. ALI KHAN, A THEORY OF INTERNATIONAL TERRORISM 61–62 (2006).

of such waters.[23] It prohibits the upper riparian states from storing or utilizing excessive water within their own territory for any purpose—including agricultural or hydropower purposes—to such a degree that can cause a shortage of shared river water for the lower riparian state. If the diversion or utilization of shared waters is required by the upper riparian for a beneficial purpose, then the upper riparian state is required to seek the consent of the lower riparian state.[24]

In actuality, this theory endorses the application of international obligations on upper riparian states such that they may not perform any transgressions of their assigned responsibilities related to respecting the rights of lower riparian states, but it completely disregards any responsibilities of the lower riparian states.[25] Therefore, this theory makes the lower riparian state a water transgressor and hence avoids the equitable and reasonable utilization of shared transboundary river waters between the upper and lower riparian states, which causes the exploitation of the upper riparian state's fair share of water. As this theory overlooks the water rights of the upper riparian states, it has been denounced not only by upper riparian states but also by the international community.[26] Consequently, this theory was unable to take hold in international law, owing to its inequitable preferential treatment for the lower riparian states and its underlying biased and unjust nature.[27]

For instance, a water-sharing dispute emerged between France (the upper riparian state) and Spain (the lower riparian state) over the usage of water of Lake Lanoux and the Carol River in the early nineteenth century. France wanted to use the water of Lake Lanoux to generate electricity and therefore it needed to construct a hydropower facility on the Carol River; however, Spain protested and maintained that the project could affect the flow of water in the Carol River, to which Lake Lanoux was connected.[28]

Spain applied the territorial integrity theory as a principle of water apportionment and proposed that France could not initiate the hydropower

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23. FACING GLOBAL ENVIRONMENTAL CHANGE: ENVIRONMENTAL, HUMAN, ENERGY, FOOD, HEALTH AND WATER SECURITY CONCEPTS 657 (Hans Günter Brauch et al., eds., 2009) [hereinafter Brauch et al.].

24. *See* ISLAM, *supra* note 14, at 106–07.

25. *See* Melissa Lopez, *Border Tensions and the Need for Water: An Application of Equitable Principles to Determine Water Allocation from the Rio Grande to the United States and Mexico*, 9 GEO. INT'L ENVTL. L. REV. 489, 501 (1996-1997).

26. *See* Brauch et al., *supra* note 23, at 657 (detailing the sentiments of the upper riparian states and the international community towards the territorial integrity theory).

27. *Id.*

28. *See* ISLAM, *supra* note 14, at 106–07.

project without consent from Spain.[29] This restricted France from commencing the hydropower project for around 40 years,[30] until 1957, when the differences between the two countries were resolved when the Arbitral Tribunal rejected territorial integrity theory,[31] concluding that the theory did not serve justice to the upper riparian states. Subsequently, territorial integrity theory lost its significance owing to its unreasonable bias toward lower riparian states and its apparent neglect of the water-related demands of the upper riparian.

The absolute territorial sovereignty and territorial integrity frameworks as set out above cannot produce positive results when they are implemented for water apportionment between upper and lower riparian states. These doctrines are not aligned with the principles of equity, justice, and international law that advocate the allocation and utilization of shared resources (including water resources) equitably and justly without causing harm to other riparian states. Hence, for a water-apportionment framework to be implemented and acceptable to every state, it would have to be based on the principles of justice and allocate water reasonably and equitably among the riparian states, as it is the essential responsibility of the international community to devise frameworks for resolving transboundary water-sharing disputes among states to avert prejudice and discrimination to any riparian state.

### *B. Equitable Water-Apportionment Frameworks*

Many of the water-apportionment frameworks provided by the international law community endorse the "equitable," "just," and "reasonable" distribution of water between upper and lower riparian states. Most of these principles are currently followed in different regions of the world for the utilization and division of shared river basins by upper and lower riparian states. These frameworks are detailed below.

#### *1. Limited Territorial Sovereignty Theory*

The apparent denunciation of the absolute territorial sovereignty and territorial integrity theories paved the way for a new principle, termed the "limited territorial sovereignty theory."[32] Under this theory, every country could utilize its water resources and the rivers that pass through its territory to reach another country only if such utilization does not harm any other

29. Nitza Shapiro Libai, *Development of International River Basins: Regulation of Riparian Competition*, 45 IND. L.J. 20, 31 (1969).

30. *Id.*

31. *See* ISLAM, *supra* note 14, at 106–07; *see also* Lake Linux Arbitration (Fr. v. Spain), 12 R.I.A.A. 281 (Arb. Trib. 1957).

32. CAPONERA, *supra* note 12, at 213.

riparian country.[33] This theory has roots in Roman law, which prohibits causing any injury to neighbors in the utilization of property. Therefore, this theory is also famously called the "theory of good neighborliness."[34] Scholars have also used different other names for this theory: the limited territorial integrity theory, the restricted territorial integrity theory, the restricted territorial sovereignty theory, and the qualified territorial sovereignty theory.[35] All of these refer to the same theory.

This theory fosters the idea of "equality of rights" and therefore has been appreciated by a number of international lawmakers.[36] It also states that the allocation of water between the riparian states should be "reasonable" and "equitable." As it preserved the principles of equity and justice, this theory was adopted for international water laws.[37] It was first used and ratified by the Permanent Court of International Justice (PCIJ) in 1929 in the River Oder Commission Case.[38]

### *2. Riparian Rights Doctrine*

The doctrine of riparian rights has its source in English common law and has been adopted by the United States for devising a commonly acceptable formula for sharing water between the upper and lower riparian states within the U.S.[39] This doctrine requires that all riparian states possess collective ownership of the shared water resources. Furthermore, the riparian states are obliged not to cause harm to other riparian states while utilizing water for any purpose.[40]

The riparian rights doctrine employs two techniques for sharing water. The first technique involves the "reasonable utilization" of water by each riparian state, which means the unlimited utilization of the water of shared

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33. *Id.*; *see also* Salman M.A. Salman, *The Helsinki Rules, The UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law*, 23 WATER RESOURCES DEV. 625, 627 (2007).

34. *See* ISLAM, *supra* note 14, at 108.

35. *Id.*

36. ADAR & CHECK, *supra* note 20, at 41; *see also* ISLAM, *supra* note 14, at 129.

37. Muhammad Mizanur Rahaman, *Principles of International Water Law: Creating Effective Transboundary Water Resources Management*, INT'L J. OF SUSTAINABLE SOC'Y 207, 210 (2009).

38. *See* CAPONERA, *supra* note 12, at 213.

39. JOHN BURCH JR., WATER RIGHTS AND THE ENVIRONMENT IN THE UNITED STATES xiv (2015) [hereinafter BURCH].

40. ANDREW ALBERT DZURIK, WATER RESOURCES PLANNING 26 (2003) [hereinafter DZURIK].

rivers by the upper riparian state, subject to the condition that the usage must not deny the lower riparian state from any "reasonable utilization" of river water.[41] This was proposed by Judge Joseph Story in deciding water apportionment in the case of *Tyler v. Wilkinson*.[42] In this regard, this technique recommends the use of water for the basic needs of life necessary for human survival, for instance drinking and irrigation, and it does not endorse the mass utilization of water for industrial purposes.[43]

On the other hand, the second technique involves the idea of "correlative rights" and suggests a proportional share of water for the upper and lower riparian states in relation to their respective land areas.[44] This idea is also applicable to the usage of ground waters by each riparian state.[45] Moreover, the same notion can be applied for claiming the ownership of a natural resource that may be found in the shared territory of two or more riparian states.

The riparian rights doctrine has pragmatic implications as it assigns equitable water shares to each riparian state and suggests the proportional ownership of land to each riparian state for assigning the ownership of their respective shares of water.[46] Moreover, the riparian states can also decide through mutual agreement that they can adopt either the "reasonable utilization" principle to share water equitably or the "correlative rights" principle to share it proportionally, which averts the occurrence of any kind of injustice and unfairness in the distribution of water resources. Therefore, this principle, when implemented, can fairly distribute the water of a shared river basin to the concerned riparian states.[47] As the riparian rights doctrine presents such a reasonable and justifiable water-apportionment framework, it is followed in eastern Canada,[48] as well as in almost all of the eastern states of the United States for sharing water among them for reasonable purposes, such as domestic, industrial, and agricultural utilization.[49]

If we apply this doctrine between two hostile international riparian states, for example, India as the upper riparian and Pakistan as the lower

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41. *Id.*
42. *See* BURCH, *supra* note 39, at xiv.
43. *Id.*; *see also* DZURIK, *supra* note 40, at 26.
44. *See* DZURIK, *supra* note 40, at 26.
45. *See* Lucy Allen & Juliet Christian-Smith, *Legal and Institutional Framework of Water Management*, *in* A TWENTY-FIRST CENTURY U.S. WATER POLICY 23, 39–42 (2012).
46. *See* DZURIK, *supra* note 40, at 26.
47. Xuetao Hu, Dissertation: Fair Allocation And Trading Of Surface Water Rights Under The Riparian Doctrine, ii–iii (Jan. 6, 2010) (unpublished Ph.D. dissertation, Univ. of Ill. At Urbana-Champaign) (on file with author).
48. ISOBEL W. HEATHCOTE, INTEGRATED WATERSHED MANAGEMENT: PRINCIPLES AND PRACTICE 321 (1998).
49. MINGTEH CHANG, FOREST HYDROLOGY: AN INTRODUCTION TO WATER AND FORESTS 118 (3d ed. 2012).

riparian state, then each would need to respect the rights of the other for equitably utilizing their shared rivers. If India adopts the "reasonable utilization" condition of this doctrine, then it would have the essential duty not to cause any harm to Pakistan, whether by obstructing water flow in its rivers or by inundating its river basins. Furthermore, it would have to reevaluate its water-storage and hydropower projects over the western rivers so that they not affect the natural flow of water in the western river basins, which were originally allocated to Pakistan by the Indus Waters Treaty.

On the other hand, if India chooses to adopt the "correlative rights" condition, then this would necessitate that Pakistan be given the major share of the western rivers because most of the area of the western river basins is located in Pakistan. Both countries would need to hold dialogues for deciding upon the equitable, just, and reasonable proportions of water from each river basin to be used according to the "reasonable utilization" or "correlative rights" principle.

### *3. Prior Appropriation Doctrine*

The prior appropriation principle assigns the ownership of a shared water resource to the region that uses the water resource first. This doctrine is also called "prior in time, prior in right."[50] The time factor is crucial to allocating ownership of the resource of water because the one who uses water first will be considered the owner of that water resource.[51] The first user is called the "senior appropriator" and the second user is the "junior appropriator" by this principle.[52]

This theory gives the legitimate and justified right to the senior appropriator for using the water and diverting its course as per its needs.[53] The Junior Appropriator cannot steal the rightful and reasonable water share of the senior appropriator. However, according to this principle, it is also mandatory that the senior appropriator use or divert river water only for beneficial purposes and that its actions not cause any harm to the junior appropriator. Subsequently, the junior appropriator can use the remaining portion of water for reasonable purposes. Hence, the principle assigns superior ownership

50. WATER AND SUSTAINABILITY IN ARID REGIONS 224 (Graciela Schneier-Madanes & Marie-Francoise Courel eds., 2009) [hereinafter Schneier-Madanes & Courel].

51. GABY NEUNZERT, SUBDIVIDING THE LAND: METES AND BOUNDS AND RECTANGULAR SURVEY SYSTEMS 113 (2010) [hereinafter NEUNZERT].

52. *See* DZURIK, *supra* note 40, at 27.

53. *See* Schneier-Madanes & Courel, *supra* note 50, at 224.

of water to the senior appropriator only for beneficial use; thus, it prevents any harmful diversion of water.[54] This stands in accordance with the theory of good neighborliness, which prohibits causing any harm to the neighbor state, along with the principles of morality and "equity theory," which specifically supports the upholding of justice in the division of shared resources. Owing to such attributes, this principle has also been incorporated into the 1966 Helsinki Rules,[55] which were honored until 2004, when they were modified and replaced by the "Berlin Rules."[56]

Originally, the prior appropriation rule was devised in the United States in the first half of the nineteenth century, when gold miners were digging for gold in California, resulting in the diversion of streams of the Colorado River to the western states of the United States.[57] With the emergence of the prior appropriation doctrine, it was mandated that the prior user of the river water had the right to use the water unrestrictedly for reasonable purposes as well as to divert the water for beneficial pursuits.[58] Ultimately, this rule endorsed the utilization and diversion of Colorado River water by the miners in California as legitimate, because they were diverting water for beneficial purposes. At present, this doctrine is still followed in nine states in the U.S.—Wyoming, New Mexico, Colorado, Arizona, Alaska, Idaho, Utah, Montana, and Nevada[59]—due to its justified pragmatism and reasonableness in allocating the ownership of water among states.

In addition to the implementation of this principle among states within a country, this principle can be justifiably applied for equitably and reasonably distributing water resources between two or more international states, i.e., upper and lower riparian countries. Let us again consider the example of upper riparian India and lower riparian Pakistan. In this example, Pakistan has since 1960 been allotted the exclusive ownership right to consume waters of its western rivers by the Indus Waters Treaty for the equitable apportionment of shared river basins between India and Pakistan. Therefore, as per the prior appropriation rule, Pakistan became the senior appropriator for the western rivers and India the junior appropriator in an equitable and justified response to Pakistan's role of a junior appropriator for the eastern rivers, over which India became the senior appropriator in 1960. In this

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54. *See* NEUNZERT, *supra* note 51, at 113.

55. KISHOR UPRETY & SALMAN M.A. SALMAN, CONFLICT AND COOPERATION ON SOUTH ASIA'S INTERNATIONAL RIVERS xviii (2002) [hereinafter UPRETY & SALMAN]; *see also* KAI WEGERICH ET AL., WATER AND SECURITY IN CENTRAL ASIA: SOLVING A RUBIK'S CUBE 104 (2016).

56. SUSTAINABILITY OF INTEGRATED WATER RESOURCES MANAGEMENT 449 (Maria Concepcion Donoso & Shimelis Gebriye Setegn eds., 2015).

57. Denise Fort, *Prior Appropriation, in* WATER ENCYCLOPEDIA (2017).

58. *See* DZURIK, *supra* note 40, at 27.

59. GRENETTA THOMASSEY & ZACHARY ALDEN SMITH, FRESHWATER ISSUES 22 (2002).

regard, the junior appropriators were not allowed consumptive usage, i.e., the diversion of each other's rivers.[60] This distribution was precisely equitable and reasonable in its approach; it was based on the principles of equity because there were three rivers allocated to each country: the three eastern rivers were allocated to India and the three western rivers to Pakistan.[61]

As a further practical illustration of this theory, the Indian construction works of massive water-storage dams on the western rivers basins that fall within its territory are appropriate to discuss here. For instance, India's Kishanganga dam has the capability to cause diversion in the flow of a tributary of the Indus basin, the Neelum River, where it meets with the Pakistani Jhelum River in Indian-held Kashmir's Baramula District.[62] Originally, the Neelum River met with the Jhelum River in Pakistani territory, in Muzaffarabad.[63] As per the prior appropriation principle, Pakistan uses the Neelum and Jhelum Rivers as a senior appropriator and India is the junior appropriator.[64] The IWT also endorses the prior appropriation rule as its Annexure D includes this paragraph:

> [W]here a Plant is located on a Tributary of The Jhelum on which Pakistan has any Agricultural Use or hydro-electric use, the water released below the Plant may be delivered, if necessary, into another Tributary but only to the extent that the then existing Agricultural Use or hydro-electric use by Pakistan on the former Tributary would not be adversely affected.[65]

Therefore, as per the abovementioned point of the IWT and as according to the prior appropriation doctrine, India cannot divert the Neelum–Jhelum River in such a way that may cause harm to the natural flow of the tributary of the river in Pakistan.[66] If India does otherwise, it will stand as a violator of the bilateral Indus Waters Treaty, the prior appropriation principle, and the equity principle.

In this regard, it is pertinent to mention that the prior appropriation rule, for a specific water resource or river basin, is not biased toward any one riparian side; rather, it allocates ownership of the water resource to the rightful owner of that specific water resource based on the first reasonable

60. *See* Indus Waters Treaty, India-Pak., art. II–IV, Sept. 19, 1960, 419 U.N.T.S.
61. *Id.*
62. *Kishanganga Dam—Another Set of Failed Water Talks*, DAWN (Dec. 5, 2005, 12:00 AM), https://www.dawn.com/news/168442 [https://perma.cc/G98N-DG9G].
63. *Id.*
64. *See generally* Schneier-Madanes & Courel, *supra* note 50, at 224.
65. *See* Indus Waters Treaty, *supra* note 60, Annexure D, part 16-III.
66. AK CHATURVEDI, WATER: A SOURCE FOR FUTURE CONFLICTS 170 (2013).

utilization of that resource.[67] The rightful owner of a resource should be allowed to exercise full control over its legal possession. In the aforementioned example, Pakistan is the rightful owner of the western rivers according to the 1960s Indus Waters Treaty[68] and, therefore, only Pakistan can divert the course of the western rivers. Moreover, Pakistani regions were also unrestrictedly utilizing western river waters prior to the partition[69] and before the construction of Indian mass storage facilities on these rivers;[70] therefore, Pakistani regions can claim ownership of the western river waters on the basis of the prior appropriation rule even in the absence of the Indus Waters Treaty.

### *4. The Unity of River Basin Principle*

Another principle that echoes in international law is "the unity of the river basin principle," which was first coined in the International Law Association's Conference in 1958.[71] The acceptance of this principle invalidates the inequitable water-apportionment frameworks, i.e., the territorial sovereignty and territorial integrity theories, as it supports an unbiased and equitable distribution of water between upper and lower riparian states for the benefits of both.[72] According to this principle, "[a] system of rivers and lakes in a drainage basin should be treated as an integrated whole."[73]

This principle suggests that a river basin that is shared by two or more states should be considered as a single river basin.[74] Because of the unity of the river basin, neither state can claim absolute ownership of the entire river basin. Therefore, the river basin area should be regarded as a shared territory between the states. This implies that states would be required to share the water of the river basin, but no state is allowed to exploit the water share of the other state. To uphold the principles of justice and equity, the states can equitably share water with each other.[75]

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67. *See* Schneier-Madanes & Courel, *supra* note 50, at 224.

68. *See* BRAHMA CHELLANEY, WATER: ASIA'S NEW BATTLEGROUND 77 (2013).

69. GWYNNE DYER, CLIMATE WARS: THE FIGHT FOR SURVIVAL AS THE WORLD OVERHEATS 40–50 (reprint 2011).

70. MATTHEW ZENTNER, DESIGN AND IMPACT OF WATER TREATIES: MANAGING CLIMATE CHANGE 136–41 (2012).

71. LUDWIK TECLAFF, THE RIVER BASIN IN HISTORY AND LAW 154 (Albert H. Garretson ed., 1967).

72. Raj Krishna & Salman M. A. Salman, *International Groundwater Law and the World Bank Police for Projects on Transboundary Groundwater, in* GROUNDWATER: LEGAL AND POLICY PERSPECTIVES 163, 177 (Salman M.A. Salman ed., 1999) [hereinafter Krishna & Salman].

73. OWEN MCINTYRE, ENVIRONMENTAL PROTECTION OF INTERNATIONAL WATERCOURSES UNDER INTERNATIONAL LAW 42 (reprint 2016) [hereinafter MCINTYRE].

74. *See* Libai, *supra* note 29, at 32–34.

75. *Id.* at 33–34*; see* Krishna & Salman, *supra* note 72, at 177.

This principle also recommends the development and upgrading of the shared river basins to cater sustainably for the water-related needs of both riparian states;[76] however, it does not provide the exact and pragmatic mechanism for this purpose.[77] Unfortunately, the political rivalry among the riparian states may not facilitate the implementation of this principle effectively because a rival state may not be willing to coordinate with another rival state for the equitable distribution of shared river waters. However, the principle of equitable apportionment eradicates these limitations and recommends the justified and reasonable allocation of waters of the shared river basin,[78] which is discussed at the end of this section.

The unity of the river basin principle can be applied to the Indus basin, shared between India and Pakistan. Both countries have set up a treaty, the Indus Waters Treaty, for equitably and justly sharing the water of the Indus basin between them in accordance with the principles of equity and justice. Moreover, both countries regard the systems of streams, lakes, and rivers related to the Indus basin as part of a single basin. Therefore, as per the unity of the river basin principle, neither India nor Pakistan can claim full authority over the Indus River basin. The basin will remain shared territory between the two states and the upper riparian state—i.e., India—may not block the water of this river basin from flowing to the lower riparian state—Pakistan—as the occurrence of such an event is not only against this principle, but also against the principles of equity and justice.

### *5. The Helsinki Rules and the Berlin Rules on Water Courses*

The International Law Association proposed the Helsinki Rules in 1966 in Helsinki, Finland. These rules were aimed at creating a framework for the equitable and reasonable allocation of transboundary river waters.[79] For this purpose, these rules evaluated different factors such as climate, hydrology, geography, water utilization, socioeconomic aspects of river basins, and the water-related needs of the population dependent on the

76. E.M. Mokuoane, *Revised Protocol on Shared Watercourses in the Southern African Development Community, in* INTERSECTORAL MANAGEMENT ON RIVER BASINS 343, 349 (Charles Abernethy ed., 2001).

77. *See* Libai, *supra* note 29, at 34.

78. William Olcott, *Equitable Apportionment: A Judicial Bridge over Troubled Waters*, 6 NEBRASKA L. REV. 734, 734–45 (1987) [hereinafter Olcott].

79. ASIT BISWAS ET AL., MANAGEMENT OF TRANSBOUNDARY RIVERS AND LAKES 128 (2008) [hereinafter BISWAS ET AL.].

shared river basins.[80] The Helsinki Rules endorsed the utilization of the river water only for reasonable purposes and nonnavigational usages.[81]

Although the Helsinki Rules contained express suggestions for the equitable apportionment of water among countries owning one or more transborder shared river basins,[82] they could not offer an exact framework for the implementation of a common formula that would sustainably apportion water between the upper and lower riparian states and be acceptable to both for sharing one or more river basins.[83] Because of the neglect of sustainability and other factors, the International Law Association modified the Helsinki Rules in 2004 and replaced them with the new Berlin Rules on Water Courses at the Berlin Conference on Water Resources.[84] The Berlin Rules included some elements of the Helsinki Rules but supplemented more exactness to them; moreover, these rules also incorporated the fundamentals of the Bonn Declaration 2001, the Johannesburg Declaration 2002, the New Delhi Declaration 2002, and the Rio Declaration 1992, which highlighted the importance of sustainable development.[85]

The Berlin Rules are the guiding principles for the equitable allocation and sustainable use of the international transboundary rivers and domestic water resources, including ground water reserves.[86] Furthermore, these rules, in a similar way to the Helsinki Rules, advise all international states to avoid invoking any injury to another state, particularly the states that share a transboundary river basin.[87] Furthermore, in the events of armed conflicts and wars, the Berlin Rules also prohibit states from destroying any facility for storing water, such as dams and barrages that are located in the country with which they are at war.[88]

Furthermore, as per Article 3 of the Berlin Rules, the protection of the natural environment is obligatory on all states, and governments must adopt necessary measures to counter any threats, including floods, droughts, and water shortages, to the ecosystem.[89] This obligation also necessitates cooperation among states to protect the natural environment, fauna, and flora, and to

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80. WOLF & PRISCOLI, *supra* note 15, at 55.
81. *See* BISWAS ET AL., *supra* note 79, at 128.
82. U.N. DEP'T OF ECON. COMM. FOR EUR., RIVER BASIN COMMISSIONS AND OTHER INSTITUTIONS FOR TRANSBOUNDARY WATER COOPERATION, at 7, U.N. Sales No. E.09.II.E.16 (2009).
83. *See* BISWAS ET AL., *supra* note 79, at 128.
84. BRAHMA CHELLANEY, WATER, PEACE, AND WAR: CONFRONTING THE GLOBAL WATER CRISIS 350 (2013).
85. Alan Boyle et al., *Berlin Conference 2004 – Water Resources Law*, 4 International Law Association 12 (2004) [hereinafter Boyle et al.].
86. *See* BISWAS ET AL., *supra* note 79, at 128.
87. LEO SANTBERGEN, AMBIGUOUS AMBITIONS IN THE MEUSE THEATRE 38–39 (2013).
88. *See* Boyle et al., *supra* note 85, art. 50–55, at 43–45.
89. *Id.* at 9–12.

devise proper strategies to measure and prevent any threats related to their survival.[90]

The Berlin Rules propose water apportionment to the states in a manner that obliges states to give priority to the allocation and utilization of water for basic human needs.[91] This implies that the utilization of water by the common population for drinking and irrigation are of higher importance than water utilization for any other purpose.[92] The same rule is applicable to the allocation of transboundary river waters shared by two or more states. That is, states must ensure that any allocation of their shared river waters by either side must not compromise the basic necessities of life of the general population.[93] The implementation and universal acceptance of this rule can ensure a justifiable apportionment of shared waters between states, because once the survival of the population is ensured through the fulfillment of the basic needs of life related to water utilization, then states can move on to allocating and utilizing water for other developmental purposes.

The aforementioned applicability of the Berlin Rules can also be related to the Indus basin's water utilization by India and Pakistan. As per the Berlin Rules, both states are required to give preference to the allocation of shared river water for satisfying basic human necessities, and once these necessities are fulfilled on both sides of the border the water can be justifiably utilized for hydropower and other projects.[94] In this regard, more responsibility naturally falls on the upper riparian state, India, because river water comes from this region and flows to the lower riparian country, Pakistan.[95] Therefore, any obstruction of water from the Indian side to Pakistan will eventually deny water to people in Pakistan.[96]

It is also to be noted here that Pakistan allocates a significant share of river water for irrigating crops, which is necessary for the production of

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90. *Id.*

91. DAWN A. RUSSELL AND DAVID L. VANDERZWAAG, RECASTING TRANSBOUNDARY FISHERIES MANAGEMENT ARRANGEMENTS IN LIGHT OF SUSTAINABILITY PRINCIPLES: CANADIAN AND INTERNATIONAL PERSPECTIVES 506 (2010); *see also* TAKELE SOBOKA BULTO, THE EXTRATERRITORIAL APPLICATION OF THE HUMAN RIGHT TO WATER IN AFRICA 206 (2013).

92. *Id.*

93. *See* Boyle et al., *supra* note 85, art. 14, at 21–22.

94. *Id.*

95. ROBERT G. WIRSING & ZAFAR ADEEL, IMAGINING INDUSTAN: OVERCOMING WATER INSECURITY IN THE INDUS BASIN 42 (2016) [hereinafter WIRSING & ADEEL].

96. *See* ANDREW GUZMAN, OVERHEATED: THE HUMAN COST OF CLIMATE CHANGE (2013).

food for its population.[97] However, over the last two decades, India has been initiating several mass water-storage projects for hydropower generation by utilizing the waters of the Pakistani rivers within Indian territory.[98] These water-storage projects have generated a threat to the survival of the vast agrarian community in Pakistan,[99] because the storage of a substantial amount of water by the Indian dams has the potential to cause a significant shortage of water in Pakistani river basins.[100] To highlight the issue, Pakistan has also raised objections to recent Indian water-storage facilities, such as the Kishanganga and Baglehar Dams, the Wullar Barrage, and some other projects capable of storing substantial quantities of Pakistani western river waters, which can eventually result in shortage of water in the western rivers within Pakistan.[101]

In pursuance of the Berlin Rules, India is required to consider the utilization of water for agricultural and domestic needs by the Pakistani rural community as of higher importance than its own mass water-storage projects of hydropower generation.[102] For this purpose, India either needs to halt the construction of its dams, which are harmful in terms of blocking adequate water supply to Pakistan, or it needs to change the design and water-allocation capacities of these dams so that their functionality would not cause water shortage in Pakistan. This will uphold justice and the spirit of the Berlin Rules in the region. Furthermore, it will ensure an equitable apportionment and utilization of water if India allocates water to its hydropower projects after ensuring that Pakistan has received a substantial amount of water for its agrarian community.

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97. *See* CHRISTOPHER JASPARRO ET AL., INTERNATIONAL CONFLICT OVER WATER RESOURCES IN HIMALAYAN ASIA 58 (2012).

98. Matthew Zentner, Design and Impact of Water Treaties: Managing Climate Change 140 (2011); *see also* Narottam P. Banskota, South Asia Trade and Energy Security: The Role of India 80–81 (2012).

99. Naeem Shehzad, *Averting a Water War through Surface Water Management in Pakistan*, 140 PROCEEDINGS OF THE PAKISTAN ACADEMY OF SCIENCES: B. LIFE AND ENVIRONMENTAL SCIENCES 53(3): 139–48 (2016) [hereinafter Shehzad].

100. *Id.* at 144.

101. Pia Malhotra, *Another Baglihar in Making*, EPILOGUE, July 2010, Vol. 4, Iss. 7, at 10–11.

102. As mentioned earlier, Article 14 of the Berlin Rules places stress on states to prioritize the allocation of water for fulfilling the basic human needs of not only their population, but also of their neighboring countries; therefore, India needs to follow this principle by giving importance to the basic human needs related to water for its own population and for the population of its lower riparian international state, Pakistan, instead of making hydro-power water storage capacities, which are secondary in their importance. For details about Berlin rules, *see* Boyle et al., *supra* note 85, art. 14, at 21–22.

### *6. Equitable Apportionment and Utilization*

The concept of equitable apportionment recommends an equitable, reasonable, and justified water apportionment between two or more states based on equality,[103] justice, and equity, and endorses an equitable and just allocation of resources.[104] In the United States, the courts recognize this principle as the equitable apportionment doctrine.[105] Its origin dates back to the 1902 U.S. Supreme Court ruling in the *Kansas v. Colorado* case for the apportionment of shared river waters between Kansas and Colorado.[106]

Subsequently, similar rulings based on the equitable apportionment of shared waters were issued by U.S. courts in *Missouri v. Illinois, Nebraska v. Wyoming,* and *Connecticut v. Massachusetts*, which led to the popularity of this doctrine.[107]

On the other hand, the concept of equitable utilization emerged from the equitable utilization theory, which necessitates an equitable and reasonable utilization of shared water resources based on equality of rights.[108] This originated from the Helsinki Rules and is sometimes used interchangeably with the aforementioned equitable apportionment concept.[109] In this section, we will discuss both the equitable apportionment and equitable utilization concepts together for endorsing an equitable allocation and utilization of shared river waters. Both concepts, especially equitable utilization, are recognized as universally acclaimed principles of customary international law for the sharing of water among riparian states.[110] Furthermore, equitable utilization has also been endorsed in the Berlin Rules 2004 and is regarded

103. BABU RAM CHAUHAN, SETTLEMENT OF INTERNATIONAL AND INTERSTATE WATER DISPUTES IN INDIA 31 (1992) [hereinafter CHAUHAN].

104. J.E. ROECKELEIN, ELSEVIER'S DICTIONARY OF PSYCHOLOGICAL THEORIES 195 (2006) [hereinafter ROECKELEIN].

105. RADHA D'SOUZA, INTERSTATE DISPUTES OVER KRISHNA WATERS: LAW, SCIENCE AND IMPERIALISM 471 (2006).

106. JOHN E. MOERLINS ET AL., TRANSBOUNDARY WATER RESOURCES: A FOUNDATION FOR REGIONAL STABILITY IN CENTRAL ASIA 214 (2007).

107. *See* Olcott, *supra* note 78, at 737–40.

108. GEBRE TSADIK DEGEFU, THE NILE: HISTORICAL, LEGAL AND DEVELOPMENTAL PERSPECTIVES 80 (2003) [hereinafter DEGEFU].

109. *See* JÁNOS BRUHÁCS, THE LAW OF NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES 157 (1993); *see also* CHELIKANI VENKATA VERMA ET AL., CONFERENCE ON WATER RESOURCES DEVELOPMENT—FLOOD CONTROL, IRRIGATION, WATERWAYS, ELECTRIC POWER AND ITS EVACUATION: PROCEEDINGS 16 (2002).

110. ANTON EARLE, TRANSBOUNDARY WATER MANAGEMENT: PRINCIPLES AND PRACTICE 66 (2013) [hereinafter EARLE].

by the United Nations as the main guiding principle for international watercourses.[111]

The theoretical basis of this principle rests upon the notion of equality of rights,[112] which is a central feature of the constitutions of Pakistan, India, and the United States, and is recognized universally in the constitutions of other nations.[113] Equality of rights is also a core element of international law, which favors the idea of equality of rights at the individual as well as at the state level. This principle requires states to apply the notion of equality of rights for allocating shared waters for mutual benefit of states, irrespective of their riparian orientation.[114] It completely rejects the territorial supremacy principle, i.e., territorial sovereignty theory, and supports some aspects of limited or restricted territorial sovereignty theory.[115] While favoring the principles of equity, justice, and the impartial allocation of waters among riparian states, it proscribes any exploitative utilization or diversion of shared water by the upper riparian state stirred by political rivalry or any conflicts between the riparian states.[116]

In this regard, the equitable apportionment principle also describes a technical approach for the development and upgrading of a unified river basin. The essential goal of this approach is the welfare of the whole region, without any particular preference being given to any riparian state.[117] The positive aspect of this approach is that it aims to achieve benefits for each riparian state to finalize the arrangements of the apportionment of water, and this symbiosis induces the riparian states to cooperate with each other to devise mechanism and strategy to equitably distribute their shared river water.[118] Hence, it necessitates the cooperation between upper and lower riparian states and suggests exchanging information between them for planning and allocating "equitable" and "reasonable" shares of water between them.[119] For this purpose, mediation or dialogues between riparian states can also play a vital role in establishing cooperation between them for the successful and pragmatic implementation of this approach.

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111. MCINTYRE, *supra* note 73, at 27.
112. *See* CHAUHAN, *supra* note 103, at 31.
113. IMTIAZ OMAR, EMERGENCY POWERS AND THE COURTS IN INDIA AND PAKISTAN 4 (2002).
114. *See* SLAVKO BOGDANOVIĆ, INTERNATIONAL LAW OF WATER RESOURCES 7, 11 (Patricia Wouters & Sergui Vinogradov eds., 2001).
115. Joseph Dellapenna, *The Customary International Law of Transboundary Fresh Waters*, 1 INT'L J. OF GLOBAL ENVTL. ISSUES 264, 269–70 (2001) [hereinafter Dellapenna].
116. *See* Libai, *supra* note 29, at 37.
117. *Id.*
118. *See id.*
119. INES DOMBROWSKY, CONFLICT, COOPERATION AND INSTITUTIONS IN INTERNATIONAL WATER MANAGEMENT 74–75 (2007).

The equitable apportionment doctrine also suggests an international legal approach that strictly incorporates and applies international law and its contemporary implications for constructing a pragmatic framework for equitable water apportionment between the riparian states.[120] The legal approach necessitates the allocation of reasonable shares to each riparian state.[121] The core focus resides upon ensuring mutual benefits for both riparian states and rejecting any unilateral exploitation of shared water resources.[122] This approach has also been endorsed by the International Law Association, which stated the equitable principle for reasonable water apportionment between the upper and lower riparian states in these words:

> Except as otherwise provided by treaty or other instruments or customs binding upon the parties, each co-riparian state is entitled to a reasonable and equitable share in the beneficial uses of the waters of the drainage basins.[123]

The extent to which equitable sharing can be decided by mutual agreement among the states can be determined by holding dialogues and meetings of public officials, who may decide upon a common formula for the equitable and reasonable sharing of water. Furthermore, each state can also approach a third party to devise a framework for the equitable allocation and utilization of shared water that would be acceptable to both states. In this regard, the Salzburg Session, organized by the French Institute of International Law in 1961,[124] endorsed a restrictive right for each riparian state to use the shared river waters in a regulated manner to prevent any likelihood of unilateral control of the shared river waters that may result in depriving the neighboring riparian state.[125]

If both states approach a third party to plan and adjudicate the equitable portion of each state of the shared river waters, then the third party must take into consideration the overall relevant settings of the shared river basin and must also analyze the use of the river basin by both states in historic and contemporary times. It should then compare these factors with the

120. *See* Libai, *supra* note 29, at 38–39.
121. *Id.*
122. *Id.*
123. Cecil J. Olmstead, *The Helsinki Rules on the Uses of the Waters of International Rivers*, *in* INTERNATIONAL LAW OF WATER RESOURCES, CONTRIBUTION OF THE INTERNATIONAL LAW ASSOCIATION 89, 91 (Slavko Bogdanović ed., 2001).
124. Institut de Droit International (IDI).
125. Charles B. Bourne, *The Development of International Water Resources: The 'Drainage Basin Approach'*, *in* INTERNATIONAL WATER LAW, SELECTED WRITINGS OF PROFESSOR CHARLES B. BOURNE 3, 9 (Patricia Wouters ed., 1997).

socioeconomic requirements of both states to decide upon an equitable share of each riparian state justifiably, pragmatically, and reasonably. The third party should also take into account the likelihood of any conflicts related to the planned apportionment and perceived utilization of water or any other conflict related to regional geopolitical issues.[126] The third party should take countermeasures to prevent the occurrence of any conflicts that could thwart the equitable apportionment frameworks and rules between the two states, either now or in the future. These considerations were also highlighted by the International Law Association during the proceedings of the Helsinki Conference in 1966–67 and were included in Article 6 of the Helsinki Rules.[127]

In the event of any disagreements or bilateral disputes between the states, the Salzburg Session in 1961 presented effective recommendations to the states for resolving bilateral or international disputes in pursuance of the principles of equitable utilization and apportionment.[128] It suggested that the states must agree to methods of settling disputes by devising a mechanism for conciliation through a commission or by making a third party a mediator for resolving the dispute.[129] Subsequently, the conciliation would pave the way for the apportionment of water based on the principles of justice and equity, assigning an equal share of resources to each side.[130] This divides the river waters in an equitable proportion as per the needs of the population of each side and also considers the geographical factors on both sides, while also conciliating the bilateral disputes.

If we attempt to apply the aforementioned implications of the equitable principle to India and Pakistan, then it should be noted that the Indus Waters Treaty has already apportioned the shared river waters equitably to both states in 1960.[131] The Indus Waters Treaty apportioned the river waters equitably because the three eastern rivers were given to India while the three western rivers were allocated to Pakistan, despite the hostile mutual relations of both states throughout their history.[132] It is the finest example of the pragmatic implementation of the equitable apportionment and equitable utilization concepts.

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126. *See* Dellapenna, *supra* note 115, at 286–87.
127. *Id.* at 286.
128. *See* Libai, *supra* note 29, at 38–39.
129. *See* Institut de Droit International [IDI] [Institute of International Law] Sessions of Salzburg – 1961, International Conciliation, http://www.justitiaetpace.org/idiE/resolutionsE/1961_salz_02_en.pdf **[ ]** (Austria) (explaining in more detail the suggestions of the session).
130. *See* ROECKELEIN, *supra* note 104, at 195.
131. WIRSING & ADEEL, *supra* note 95, at 42.
132. *Id.*

## II. THE INDUS WATERS TREATY AND ITS SIGNIFICANCE

The Indus Waters Treaty, signed in 1960, proved to be a landmark in resolving the water conflict between India and Pakistan. The treaty acted as a principal formula of water apportionment between the two states and, to a great extent, resolved the water conflict between them.[133] Before this treaty, the main contention between the two countries was the use of the waters of the six shared rivers, which flowed from India to the Pakistani province of Punjab and were part of a common Indus River basin.[134]

These rivers irrigated major crops that were vital for the economic and food sustenance of Pakistan.[135] Pakistan adopted the stance that the major portion of the Indus basin—which includes the streams of five other shared rivers, the Sutlej, Beas, Ravi, Chenab, and Jhelum Rivers—is situated in Pakistani territory and, therefore, Pakistan has the natural right to use the water from the Indus basin and its connected river streams.[136] However, on the other hand, India exercised larger control over these rivers owing to its upper riparian position,[137] and it wanted the sole right of ownership over the waters of these rivers based on the territorial supremacy principle.[138]

Overriding the implications of the territorial supremacy and territorial integrity principles, which were used by both riparian countries, the Indus Waters Treaty allocated the water of the Indus basin on the basis of the principle of equity in a very reasonable and equitable manner that appealed to both states.[139] In this regard, the World Bank played the role of a mediator between India and Pakistan and its efforts were highly regarded in brokering the IWT and in finalizing the equitable and reasonable water-sharing framework in it.[140] Since then, the treaty has stood as the sole guide and standard for the sharing of river waters between the states.

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133. UPRETY & SALMAN, *supra* note 55, at 57.

134. *Id.*, at 41–43; *see also* Arnold P. Kaminsky and Roger D. Long, Ph.D., India Today: An Encyclopedia of Life in The Republic 734 (2011).

135. *See* WIRSING & ADEEL, *supra* note 95, at 42.

136. V.P. MALHOTRA, SECURITY AND DEFENCE RELATED TREATIES OF INDIA 273 (2010) [hereinafter MALHOTRA].

137. *See* WIRSING & ADEEL, *supra* note 95, at 42.

138. The absolute territorial supremacy principle is another term for the absolute territorial sovereignty theory. *See* discussion *supra* Part I.A.1; VANDANA SHIVA, WATER WARS: PRIVATIZATION, POLLUTION AND PROFIT 77 (2002).

139. IBRAHIM KAYA, EQUITABLE UTILIZATION: THE LAW OF NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES 75–76 (2003) [hereinafter KAYA].

140. DHIRENDRA VAIPEYI, WATER RESOURCE MANAGEMENT: A COMPARATIVE PERSPECTIVE 9 (1998).

### *A. IWT Rules of River Waters Apportionment*

The IWT allocated the western rivers, the Chenab, Indus, and Jhelum Rivers, to Pakistan, while the eastern rivers, the Beas, Ravi, and Sutlej Rivers, were given to India.[141] Both countries were allowed the unrestricted use of their allocated river waters; however, both were also given the right to the restricted use of water of the other's allotted rivers for the following purposes:[142]

1. domestic usage, which includes water for drinking, sanitation, etc.,
2. agricultural usage, which implies irrigating crops,
3. nonconsumptive use, which includes fishing, navigating, wildlife, or any other usage in such a manner that does not cause a substantial shrinkage in the flow of water that reaches the other riparian state, and
4. hydropower production, which means the generation of electricity for the local population; however, this production is restricted by certain conditions, illustrated below.

### *B. Conditions on Use*

Certain conditions were applied on each country for the utilization of water of the three rivers allocated to the other country. The first condition was that the usage must not harm the natural flow of the river.[143] This means that India, which is an upper riparian state, can create water-storage dams or barrages for agricultural usage or hydroelectricity generation by using the river waters of Pakistani rivers; however, these dams, barrages, and hydropower projects must not interrupt the natural flow of the western rivers. Any consumptive use or diversion of water that may result in a decline or a substantial increase in the natural flow of the western rivers is recognized as a direct violation of Article IV of the Indus Waters Treaty.[144]

### *C. Dispute Resolution Mechanism Enshrined in the IWT*

Article IX of the IWT is related to dispute resolution and proposes a three-step process for resolving disagreements related to water utilization of either a trivial or bitter nature. The first step is the Permanent Indus Commission. This commission conducts meetings in which the official

141. *See* UPRETY & SALMAN, *supra* note 55, at 57.
142. *See* Indus Waters Treaty, *supra* note 60, art. 3.
143. *See id.* arts. 2, 4.
144. *See id.* art. 4.

representatives of both countries collaborate to find a solution acceptable to both states.[145] The second step is a neutral expert. If the countries are unable to resolve their differences, the World Bank can appoint a neutral expert, who will hear the concerns of both states. In this regard, the decision of the neutral expert would be considered binding on both states.[146] The third step is the Court of Arbitration. If neither the Indus Commission nor the neutral expert is able to resolve the disagreements, then the World Bank facilitates by establishing a Court of Arbitration upon request from both countries. The Court determines the conflict after hearing the case from both sides and gives a final verdict that is binding on both states.[147]

## III. MODIFICATION OF THE IWT

Despite the fact that the Indus Waters Treaty has equitably and reasonably distributed the shared rivers between India and Pakistan,[148] India wants to modify it to gain a higher allocation of the waters of the western rivers, allocated to Pakistan.[149] Nonetheless, it is also important to consider that such a modification in the treaty would only be acceptable where it could be crafted in accordance with international law and the principles of equity and justice. In this context, the principle of equitable utilization, as explained at the end of the first section, is well esteemed by the International Law Association in customary international law for equitably apportioning water between two or more states.[150] Therefore, an equitable water apportionment is necessary between the two states whether or not the treaty is modified. This section of the paper will investigate the rationality of modifying the treaty and the official stance adopted by India and Pakistan regarding the modification.

145. To know more about the roles and responsibilities of Permanent Indus Commission assigned by the IWT, *see id.* art. 8.
146. *See id.* art. 9.
147. *See id.* art. 9(5).
148. KAYA, *supra* note 139, at 75–76.
149. SATISH KUMAR, INDIA'S NATIONAL SECURITY: ANNUAL REVIEW 2010, 413 (2013) [hereinafter KUMAR].
150. EARLE, *supra* note 110, at 66.

### *A. Pragmatic Rationales for Modifications*

Until now, Pakistan has opposed any idea of modifying the IWT, though India has keenly advocated for the modification.[151] However, there are certain problems related to water allocation, dispute resolution, and some other limitations in the IWT that drive the arguments in favor of slight modification of IWT for the reasonable and just allocation and utilization of water for both countries. For instance, the failure to consider climatic changes and hydrological factors is also an important limitation of the treaty. Both countries are facing problems related to inefficient water usage and management,[152] but blame each other for causing hindrances in their water-management ambitions. The main factors in modifying the IWT are set out in detail below.

#### *1. Issues in River Waters Utilization*

The IWT allocated the three western rivers to Pakistan and the three eastern rivers to India in accordance with the principles of equity and equitable utilization; however, the contemporary nature of the usage of western river waters by India has made the utilization contentious.[153] India is technically enjoying the waters of all six rivers as it is constructing hydropower projects on the western rivers within its territory and utilizing the waters of the eastern rivers for agricultural and other purposes to their full magnitude.[154] On the other hand, Pakistan is facing the danger of being deprived of the waters of the western rivers allotted to it by the IWT, because Indian hydropower projects and dams on the western rivers are inviting massive shortages of waters in the western rivers.[155] In the continuation (and exacerbation) of this water shortage risk, the portions of the eastern river basins located in Pakistan have nearly become marshlands due to the almost complete absence of water in these rivers, particularly

151. Anwer Iqbal, *Pakistan not to accept alteration in Indus Waters Treaty*, DAWN (Dec. 17, 2016), http://www.dawn.com/news/1302848 [https://perma.cc/5AA9-GEZG] [hereinafter Iqbal].

152. BINAYAK RAY, CLIMATE CHANGE: IPCC, WATER CRISIS, AND POLICY RIDDLES WITH REFERENCE TO INDIA AND HER SURROUNDINGS 121 (2011).

153. *See* Shehzad, *supra* note 99, at 142; *see also* NAROTTAM P. BANSKOTA, SOUTH ASIA TRADE AND ENERGY SECURITY: THE ROLE OF INDIA 81 (2012).

154. WIRSING & ADEEL, *supra* note 95, at 42; *see also* Adnan Nawaz & Rizwanullah Kokab, *Indus Water Treaty: Need For Review*, 2 ASIAN JOURNAL OF SOCIAL SCIENCES & HUMANITIES 210, 212 (2013) [hereinafter Nawaz & Kokab].

155. *See* Nawaz & Kokab, *supra* note 154, at 212; *see also* WIRSING & ADEEL, *supra* note 95, at 42.

during winter, when there is inadequate rainfall in the region; moreover, the availability of water in the western rivers has also fallen substantially.[156]

Thus, the situation is now that India, being the upper riparian state, is getting the full amount of water from the western and eastern rivers. On the other hand, Pakistan cannot even reasonably use the eastern rivers and also risks of losing the waters of its western rivers due to the perceived completion in the near future of India's mass water-storage dams on the western rivers, which have the potential to cause a shortage in the western river basins.[157] Therefore, Pakistan, being the lower riparian state, receives a share of water that is less than it was allocated by the IWT. This situation indicates an inequitable utilization and unbalanced availability of river waters between the two states, which is against the principles of equity, justice, and morality, and against the Indus Waters Treaty, which gives legitimate ownership of the western rivers to Pakistan.[158]

Because of the inequitable availability and utilization of water, there is a need to implement a strategy that could allow the lower riparian Pakistani region to equitably and justly use waters from the eastern and western rivers in a fashion similar to India's utilization of the six rivers.

### *2. Construction of Dams*

A major drawback of the Indus Waters Treaty is that it does not apply a limit on the construction of dams on the rivers allotted to the other country.[159] That is, there is nothing mentioned in the Indus Waters Treaty to restrict an upper riparian state from building dams over the rivers of another country.[160] Owing to such an absence of any restriction on the construction of dams over the other country's allotted rivers, India is continuing to build as many dams as it can on the western rivers.[161] Furthermore, it also plans to construct

156. *See* GWYNNE DYER, CLIMATE WARS: THE FIGHT FOR SURVIVAL AS THE WORLD OVERHEATS (2010); *see also* Jane Qiu, *Stressed Indus River threatens Pakistan's water supplies*, NATURE (June 29, 2016), http://www.nature.com/news/stressed-indus-river-threatens-pakistan-s-water-supplies-1.20180 [https://perma.cc/7VTM-SUQK].

157. *See* Nawaz & Kokab, *supra* note 154, at 212.

158. NAROTTAM P. BANSKOTA, SOUTH ASIA TRADE AND ENERGY SECURITY: THE ROLE OF INDIA 80-81 (2012) [hereinafter BANSKOTA].

159. *See* Nawaz & Kokab, *supra* note 154, at 213.

160. This assertion can be inferred after reading the complete draft of the Indus Waters Treaty that there is nothing mentioned in the treaty that restricts a country from building dams beyond a certain number on the rivers allotted to another country.

161. *See* Shehzad, *supra* note 99, at 142.

more water-storage dams and barrages on the western rivers in the near future,[162] while ignoring the fact that these projects can cause a shortage of water in the western river basins in Pakistan.[163] Pakistan has commented on these facts on a number of occasions in bilateral dialogues and in the meetings of various international forums.[164]

To avert any serious water shortage in Pakistan caused by Indian dams on the western rivers, a limit could be imposed on the construction of dams over the rivers of the other country. The Indus Waters Treaty needs to consider these aspects and the relevant issues to equitably allocate waters to both countries, rather than letting the upper riparian to install benefits while leaving the lower riparian state to remain naturally disadvantaged in its share of waters from the shared river basins.

### *3. Slow Dispute Resolution Mechanism*

Another aspect of the IWT with which both India and Pakistan are discontented is the slowness of the dispute resolution mechanism of the IWT.[165] India blames Pakistan for causing a delay in its developmental projects over the western rivers, while Pakistan raises concerns over Indian projects on the western rivers and has approached the dispute resolution mechanism of the IWT.[166] On the other hand, the UNDP has also recently published a report in which it put the blame on Pakistan for causing a delay in resolving the dispute with India over the contemporary water conflict.[167] However, the truth is that if we analyze the pace of the dispute resolution process offered by the IWT, then we can identify that the delay is inherent in almost all of the phases of this process. It is neither India nor Pakistan that causes the delay, rather the inherent nature of the IWT dispute resolution mechanism, which takes years to resolve a single dispute.[168]

For instance, when the dispute is first raised, dialogues are held between the officials of the two states through the Permanent Indus Commission.[169] These dialogues can take several months or years to produce a mutually

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162. *See* Dr. Shaheen Akhtar, *Emerging Challenges to Indus Waters Treaty*, INSTITUTE OF REGIONAL STUDIES 27–28 (2011) [hereinafter Akhtar].

163. *Id.* at 46, 53.

164. *Id.*

165. ASIF BAIG MIRZA, PERFORMANCE OF DISPUTE RESOLUTION MECHANISM OF THE INDUS WATERS TREATY 18 (2013) [hereinafter MIRZA].

166. *See* Akhtar, *supra* note 162, at 15.

167. *See UN report blames Pakistan for delay in resolution of Indus water issues with India*, THE TIMES OF INDIA, Feb. 2, 2017, http://timesofindia.indiatimes.com/world/pakistan/un-report-blames-pakistan-for-delay-in-resolution-of-indus-water-issues-with-india/articleshow/56935697.cms [https://perma.cc/QV66-DFHC].

168. *See* MIRZA, *supra* note 165, at 18.

169. *See id.* at 11.

agreed framework. In this regard, the mutual distrust of both countries also prevents the speedy resolution of differences in the bilateral talks and, most of the time, leads to an impasse between both them.[170] In the aftermath of the failure of dialogues, meetings are held with the officials of World Bank to decide upon the appointment of a neutral expert. Here again, the meetings with the World Bank officials can take several weeks or months, especially when both parties lack confidence in the neutral expert suggested by the World Bank.

Nonetheless, after the appointment, the neutral expert may also take several months, or over a year, to decide on the disagreements between the states, because both states present their cases in a very rational and convincing manner.[171] If the neutral expert is unable to determine the dispute, a similar delay occurs in the hearings of the case after it is referred to the Court of Arbitration.[172] Hence, the process takes several years.[173]

Meanwhile, if the World Bank or the Court orders India to temporarily pause its disputed water-storage construction work until the final verdict is given on the legality of the construction work, this raises the cost of the project for India owing to the delay in completing the project.[174] For instance, the delay increases the interest rate charges when most of the capital deployed in construction is borrowed by the state.[175] Such a delay outweighs the societal benefits of the project.[176]

Similarly, if the construction work is not paused, then it damages the Pakistani stance[177] because India continues construction during the hearing of the case. When the judgment is subsequently handed down, India has

170. *See* THE MAHBUB UL HAQ HUMAN DEV. CTR., HUMAN DEVELOPMENT IN SOUTH ASIA 26 (2005), http://mhhdc.org/wp-content/themes/mhdc/reports/HDSA_2005.pdf [https://perma.cc/8U2N-3FAQ].

171. For instance, for the case of Baglihar dam, request to World Bank for appointment of neutral expert was made on January 15, 2005, and the neutral expert was appointed after four months on May 12, 2005. Afterwards, the neutral expert took 20 months to decide on the issue and gave his ruling on February 12. This was quite a long period as a substantial portion of the Baglihar dam got completed during this period, which weakened Pakistan's case against the dam. For details, see Akhtar, *supra* note 162, at 38–39.

172. Gregory F. Treverton, Dividing Divided States 119 (2014).

173. *See* Nawaz & Kokab, *supra* note 154, at 213.

174. *See* NEEL MANI P. VERMA, IRRIGATION IN INDIA 57, 59, 62 (1993).

175. STEPHEN MERRETT, WATER FOR AGRICULTURE 63 (2002).

176. VIRENDRA KUMAR, COMMITTEES AND COMMISSIONS IN INDIA 104 (1976).

177. *See* Akhtar, *supra* note 162, at 65.

already a completed major portion of the contentious project.[178] Therefore, it is impractical for the Court or the neutral expert to cancel the Indian project or to order the demolition of the construction. Hence, the delay in the dispute resolution causes harm, predominantly to Pakistan, as is evident from the disputes that were referred to the Court of Arbitration or to the neutral expert over the last two decades.[179]

The dispute related to Baglehar Dam and the consequent decision by the neutral expert is an example of the delay caused by the dispute resolution mechanism. The dispute started in 1999, when India commenced the construction of Baglehar Dam.[180] Pakistan raised concerns with India over the design of the dam in 2008.[181] After five years of bilateral talks with India,[182] when no resolution was reached, Pakistan approached the World Bank in 2005.[183] The World Bank appointed Raymond Lafitte as the neutral expert to hear the dispute between India and Pakistan.[184] Unfortunately, the final verdict by the neutral expert came too late, in 2007, because India had already completed more than 70 percent of the construction and was scheduled to complete it only one year later.[185]

Even though the decision of the neutral expert was not in favor of Pakistan,[186] what could have been done if the decision had been in its favor? The answer is contentious, as India would not have wanted to abandon the almost-completed dam, wasting the enormous amount of money it had spent on construction. This result could have increased hostility between the two nuclear powers of South Asia. To avoid the occurrence of such hostilities, and to resolve the water-sharing disputes quickly, it is necessary to solidify and quicken the dispute resolution process of the IWT, which can be achieved by slightly modifying the treaty by mutual agreement between the states.

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178. For instance, India had already completed the gate-structure of the Baglehar Dam in 2004 and a major part of the dam when the dispute was referred by Pakistan to the World Bank for mediation. India continued the construction during the hearings of the dispute by the neutral expert. *See id.* at 38.

179. *See id.* at 37, 49 (for previous examples of India continuing construction despite Pakistan raising dispute over the construction).

180. CHRISTINA LEB ET AL., INTERNATIONAL LAW AND FRESHWATER: THE MULTIPLE CHALLENGES 417 (2013) [hereinafter LEB ET AL].

181. *See* Akhtar, *supra* note 162, at 35–38.

182. *Id.*

183. *Id.* at 38*; see also* LEB ET AL., *supra* note 180, at 417.

184. *See* Akhtar, *supra* note 162, at 38.

185. *Id.* at 38–39.

186. *See generally 2007: Neutral expert gives his judgement on Baglihar Dam*, DAWN (July 2, 2002), http://www.dawn.com/news/640989 [https://perma.cc/W3QT-YMSR].

### *4. Failure to Consider Climatic Changes*

Climatic changes and their impacts on water quantity in the shared river basins have not been addressed expressly by the IWT.[187] For instance, the IWT does not guide Pakistan to make the arrangements necessary to protect its region from flooding if large flows of waters are discharged from India into Pakistani rivers.[188] Similarly, the IWT also provides no instructions for averting the situations of droughts and utilizing water shares appropriately in times of shortage of water in the river basins.[189] For instance, if either the eastern or western river basin faces a shortage of water due to inadequate rain, there are no provisions on the suitable pattern of water utilization by each country from a single basin.[190] These limitations, related to the impacts of climate change, need to be addressed by the IWT and, for this purpose, appropriate modification can be done to the treaty via bilateral discussions.

### *5. Failure to Consider Underground Waters*

Another limitation of the IWT is that it does not fully consider the hydrological factors and usage of groundwater.[191] For instance, Pakistan is not getting adequate water from the eastern river basins, because these rivers were allocated to India.[192] In such a case, the agrarian regions that were previously dependent on the waters of the eastern rivers are using groundwater by installing tube-wells to irrigate crops. A similar case is the Indian Punjab, where the majority of the villages use tube-wells to irrigate crops despite the availability of river waters and canals there.[193] This usage is significantly lowering the levels and overall amount of groundwater in both countries.[194] IWT says nothing about the utilization of groundwater and the relevant hydrological factors.[195] To cater to the water-related needs of both states, the IWT should include provisions that provide equitable, reasonable,

187. Hamid Sarfraz, *Revisiting the 1960 Indus Water Treaty*, 38 Water International 204, 205 (2013), http://www.devconsult.pk/wp-content/uploads/2013/09/Revisiting-the-1960-Indus-Waters-Treaty-Water-International.pdf [https://perma.cc/2GRP-M3CW].
188. *See id.*
189. *See id.*
190. *See id.*
191. *See* Nawaz & Kokab, *supra* note 154, at 210–11.
192. *See* BANSKOTA, *supra* note 158, at 80–81.
193. Asma Yaqoob, *Indus Waters Across 50 Years: A Comparative Study of The Management Methodologies Of India And Pakistan* 26–27 (2013).
194. *See* Sarfraz, *supra* note 187, at 5.
195. *See* Nawaz & Kokab, *supra* note 154, at 211, 214.

justifiable, and efficient allocation and consumption of groundwater because IWT is the only bilaterally agreed treaty that equitably apportions the shared waters between the two hostile countries.

### *B. Indian Stance Toward Modification*

The Indian stance largely favors the modification of the IWT; however, this mainly relates to the utilization of Pakistani river waters by India. India's rationale for modifying the treaty is that it wants a greater share of the waters of the Indus basin to satisfy the agrarian and electricity demands of its growing population,[196] and, for this purpose, it wants to modify the treaty to increase its share and override any objections from Pakistan.[197]

However, it is pertinent to note that the aforementioned Indian demands actually involve an inequitable and unreasonable reapportionment and utilization of the Indus waters, as the fulfillment of such demands would result in a shortage of river water in Pakistan.[198] Such a situation would cause significant harm to Pakistan's agricultural economy.[199] More importantly, such an allocation of a higher share to upper riparian India at the price of depriving Pakistan of vital water rights is also against the principles of equity, justice, and equitable utilization, which all necessitate water apportionment on the basis of equality and justice.[200] As these principles are universally recognized principles of international law,[201] and therefore, it can be asserted that the Indian stance related to acquiring a larger share in the Pakistani rivers by modifying the treaty is largely unacceptable and not in accordance with international law.

#### *1. Perceived Benefits for India from Modification*

If India is able to modify the IWT as per its propositions, then India can acquire a greater, but unreasonable share, of water in the western rivers, especially in the Indus River, which has a larger quantity of water than the

196. *See* KUMAR, *supra* note 149, at 413.

197. *Govt Decides to Fast-track Irrigation Projects in Indus Basin*, HINDUSTAN TIMES (Oct. 23, 2016), http://www.hindustantimes.com/india-news/govt-decides-to-fast-track-irrigation-projects-in-indus-basin/story-veUrap7NSYcQTJTFKNeIML.html [https://perma.cc/X9L6-TJEA].

198. *See* Shehzad, *supra* note 99, at 144; *see also* Nawaz & Kokab, *supra* note 154, at 212.

199. *See* Shehzad, *supra* note 99, at 144.

200. DEGEFU, *supra* note 108; *see also* CHAUHAN, *supra* note 103.

201. For equitable apportionment, *see* EARLE, *supra* note 110, at 66. For principles of justice and equity, *see* JACKSON H. RALSTON, SUPPLEMENT TO 1926, REVISED EDITION OF THE LAW AND PROCEDURE OF INTERNATIONAL TRIBUNALS 31 (1936).

other two western rivers. The apparent benefits for India from IWT modification are illustrated below:

1. India would be able to allocate more water for its agricultural and hydropower projects, while ignoring the fact that such an allocation is principally inequitable in nature.[202]
2. In the event of an inequitable and greater share owned by India, it would be able to disrupt the water flow of the western rivers by either discharging extra water or by blocking a significant amount of water flow to put Pakistan under pressure.[203] Thus, India can employ its share of the western rivers as a bargaining tool for the resolution of its geopolitical and strategic issues with Pakistan.[204] Consequently, India can attempt to become a regional hegemon after it has successfully pressurized Pakistan, by using water as a "trump card."
3. Any modification that quickens the dispute resolution process of the IWT would prevent delays in dispute resolution and a consequent increase in the costs of completing the Indian projects that would be disputed by Pakistan owing to their contentious design.[205]

Most of the abovementioned benefits for India would, in fact, result in harm to Pakistan by depriving it of a large quantity of water that would be allocated to India, in contradiction to the principles of equity and justice.[206] Therefore, instead of implementing the Indian suggestions, a neutral and mediated perspective should be included for the modification of the IWT for upholding the principles of equity and justice.

### *2. Dangers to India from Modification*

In addition to the benefits, there are also certain harms for India related to the modifications of IWT. These are explained below:

1. The Indus River basin is broad enough to inundate the nearby lands if its water is diverted disproportionately for the sake

202. *India Speeding Up Indus Basin Water Plan: Report*, Dawn (Dec. 23, 2016), http://www.dawn.com/news/1304008 [https://perma.cc/8574-VEZV].
203. *Id.*
204. AMITA GUPTA, GLOBAL SECURITY WATCH—INDIA 52 (2012) [hereinafter GUPTA].
205. *See* Akhtar, *supra* note 162, at 37–39, 49, 15.
206. *See* Nawaz & Kokab, *supra* note 154, at 215.

of using surplus water in the upper riparian state.[207] Therefore, if the IWT allocates the Indus River water to India, and consequently India is able to divert substantial amounts of Indus river water away from Pakistan, then in the monsoon season the quantity of water flow in the Indus River within Indian territory would increase substantially and may result in inundating vast agrarian lands within India. This can result in damage to crops and, subsequently, in a shortage of food in India. Therefore, India must not consider diverting the western river toward its own land as an option for getting surplus water.

2. An inequitable and unjust allocation of river waters resulting from the modification of the treaty could ignite conflicts with Pakistan. Moreover, any hindrance caused by India in the flow of Pakistani rivers would be considered by Pakistan a threat to its solidarity and survival, because more than half of the Pakistani population is dependent on agriculture, which employs western river waters to irrigate crops.[208] This threat can never be considered lightly by Pakistan; therefore, it can increase the chances of violent conflict between the two states if the dispute is not resolved by peaceful means.[209] Such a situation would tarnish India's reputation and would portray it as a state involved in a water-allocation conflict with its neighbor state.[210] Consequently, India would no more be able to depict its positive image to the international world, which it does at present, as it is included in the G-20.[211]
3. It is plausible to assert that India may not get its desired amount of waters even after the modification of the treaty because, at present, Pakistan faces a shortage of water in its eastern and western river basins,[212] because India is already availing itself of the full amount of water in its eastern and western river basins.[213] Therefore, it is possible that India

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207. For previous instances of similar flooding, *see* James Syvitski & Robert Brakenridge, *Causation and Avoidance of Catastrophic Flooding along the Indus River, Pakistan*, 7–9 GSA TODAY (January 2013), https://floodobservatory.colorado.edu/publications/gsatv23n01_13-sc[1].pdf [https://perma.cc/2JKV-Z6RA].

208. AARON MARCUS, DESIGN, USER EXPERIENCE, AND USABILITY 574 (2014).

209. *See* GUPTA, *supra* note 204.

210. *See* BANSKOTA, *supra* note 158, at 81.

211. *India's Participation*, G20 INDIA SECRETARIAT, http://www.g20india.gov.in/about-ip.asp?lk=about4 [https://perma.cc/EU4X-YKET] (last visited Mar. 28, 2017).

212. *See* Nawaz & Kokab, *supra* note 154, at 212.

213. *Id.*

> will lose its share in the western rivers if modification of the treaty is called on to uphold the justice and equity principles. This can harm the Indian intentions to gain control over the Indus basin[214], however such harm may be helpful in maintaining the balance of power and justice in the region.[215]

### *C. Pakistani Stance Toward Modification*

Pakistan has not officially accepted the suggestions of modifications of the IWT because it has concerns over the Indian call to modify the treaty.[216] It has adopted the stance that the IWT has been a solid regulatory framework for apportioning shared waters between India and Pakistan for more than five decades and, therefore, this treaty should be honored and followed now and in the future.[217] Moreover, the Indus Waters Treaty was devised after several years of rigorous negotiations,[218] whereas the contemporary nature of hostility between India and Pakistan could prevent the modification of such a deal.[219]

Furthermore, Pakistan has serious apprehensions over Indian attempts to gain regional political domination.[220] Pakistan views the Indian call to modify the IWT as primarily hegemonic in nature.[221] Any such attempts are unacceptable to Pakistan as they can result in increasing its existing hostility with India, as both countries have historically been archrivals.[222] Therefore, Pakistan does not accept the Indian call for modifications of the treaty. However, it can negotiate over its stance if a third party offers to act as a neutral guarantor in facilitating arbitration between the countries and in protecting the interests of both states, especially those of the lower

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214. *See* WIRSING & ADEEL, *supra* note 95, at 40.
215. Satish Kumar, India's National Security: Annual Review 2010 (2010-11).
216. Hussain Zaidi, *The Indus Waters Treaty*, NEWS INT'L (Oct. 8, 2016), https://www.thenews.com.pk/print/155658-the-indus-waters-treaty [https://perma.cc/V9ZK-JSUC] [hereinafter Zaidi].
217. *See* UPRETY & SALMAN, *supra* note 55.
218. *See* MALHOTRA, *supra* note 136.
219. V.K. Sashikumar, *Why Indus Waters Treaty Has Stood The Test of Time*, HERALD DAWN (Sept. 30, 2016), http://herald.dawn.com/news/1153544 [https://perma.cc/4SC7-MD36].
220. *See India's objection to a Pakistani secretary general may hurt Saarc*, DAWN (Feb. 2, 2017), http://www.dawn.com/news/1311965 [https://perma.cc/FU9P-T46L].
221. *See* Zaidi, *supra* note 216.
222. *See* GUPTA, *supra* note 204.

riparian state, because a third party acting as a guarantor would be more trustworthy for Pakistan than its hostile neighbor, India.[223]

### *1. Apparent Benefits for Pakistan from Modification*

Certain modifications of the IWT could also bring the following positive results for Pakistan if the modification can allocate an equitable share of the river waters to Pakistan, as the country is currently utilizing a diminished share of the water, as explained above.[224] The following rewards can be attained by Pakistan by modifying the IWT in its favor:

1. A quickened dispute resolution mechanism will facilitate Pakistan to seek justice quickly over the water shortage disputes raised by it in response to any unjust utilization of shared river waters by India.[225] Justice would not be delayed and this would compel India to not use shared waters unreasonably and inequitably within its own territory. Consequently, Pakistan would get the full flow of waters in the western rivers.
2. A reasonable and adequate water supply in the western rivers can also increase Pakistani agricultural production, because sufficient water would be available for irrigating crops, which is not the case at present.[226]
3. An increase in water supply resulted from the modification in IWT will also decrease the pressure on groundwater in Pakistan and would result in reducing the usage of groundwater resources for irrigation.[227] Subsequently, it will also reduce salinity and other factors harmful to agrarian lands in Pakistan.
4. An adequate water flow in rivers would provide a larger amount of fresh water to a number of regions in Pakistan.[228] As a result, more of the population could utilize fresh water for fulfilling their drinking, sanitation, and domestic needs, because a significant population in Pakistan depends on river waters for their needs.

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223. *Id.* at 184–85.
224. Nawaz & Kokab. *supra* note 154, at 210, 212–17.
225. *See* MIRZA, *supra* note 165, at 18.
226. Bashir Ahmad Solehria et al., *Use of Poor Quality Groundwater Through Conjunctive Water Management*, *in* JEHANGIR W.A., SUSTAINING SURFACE AND GROUNDWATER RESOURCES 166 (2002).
227. *Id.*
228. SAMI UL-ALLAH, TOWARDS A WATER AND NUTRIENT EFFICIENT FORAGE PRODUCTION IN SEMI-ARID REGIONS OF PAKISTAN 62 (2014).

The aforementioned benefits for Pakistan are possible only if the issues that are faced by Pakistan in accessing an equitable portion of river waters are acknowledged by its upper riparian neighbor, India, and by any third party that may become involved in the future for mediation between India and Pakistan in the modification of the IWT. Regrettably, the possibility of such cooperation between the states is highly unlikely as India has a notorious track record of not accepting Pakistan's concerns and issues of a bilateral nature;[229] therefore, Pakistan has maintained an official stance of not accepting the Indian standpoint toward modifying the IWT.[230] Nonetheless, Pakistan can turn toward the modification of the treaty if a reasonable and equitable share of water resources is guaranteed to Pakistan and, preferably, if a neutral third party offers to broker the modification process for upholding the principles of equitable utilization, equity, and justice.[231]

### *2. Dangers to Pakistan from Modification*

In addition to some perceived benefits of modification, there are some potential risks for Pakistan associated with the modification of IWT. These are identified below:

1. If modification takes place according to Indian preferences, then Pakistan would be deprived of its fair share of the western rivers.[232]
2. On the other hand, if the modification that occurs in accordance to Pakistani demands for water, then it can compel India to increase the water supply to Pakistan.[233] In the aftermath, a threat exists that India may discharge a significantly higher amount of water that could not be managed by the Pakistani government as the country does not have substantial water-storage facilities. The consequent effect would be the inundation

229. As evident from the history as explained in, DEVLEENA GHOSH ET AL., WATER, SOVEREIGNTY AND BORDERS IN ASIA AND OCEANIA 90 (2009).
230. *See* Iqbal, *supra* note 151.
231. For instance, IWT was also brokered by a neutral party, World Bank. *See* GUY J.-M. LE MOIGNE, AND SYED S. KIRMANI, FOSTERING RIPARIAN COOPERATION IN INTERNATIONAL RIVER BASINS: THE WORLD BANK AT ITS BEST IN DEVELOPMENT DIPLOMACY 5 (1997).
232. ARIEL DINAR, BRIDGES OVER WATER: UNDERSTANDING TRANSBOUNDARY WATER CONFLICT, NEGOTIATION AND COOPERATION 279 (2007).
233. *See* WIRSING & ADEEL, *supra* note 95, at 86.

of a massive swathe of land in Pakistan, which can also damage crops.

3. If the Indian stance is not accepted in the modification of the treaty and only the Pakistani stance is approved, then there is a chance of the modification process failing or of the Indus Waters Treaty being cancelled on the Indian side.[234] This would result in a crisis in the absence of any principle for regulating the share of water between the two hostile nations. Consequently, such a situation can instigate water conflicts in a similar fashion as arose after partition, when India stopped all water supplies to Pakistan.[235] The recurrence of such a situation will be more damaging to Pakistan because, compared to the past, a larger population is dependent on river waters for irrigating crops and for domestic usage.[236] It is also noticeable that the resultant nature of the conflict between India and Pakistan now or in the future can be of a more serious nature than previously because both countries now possess nuclear weapons.

### *D. The Idea of "Needs" and "Wants"*

This section discusses "needs" and "wants" in relation to access to water by a state. The word "need" originated from the twelfth-century Anglo-Saxon word "nied," which means "a necessity or duty."[237] On the other hand, the word "want" means "a wish" or "lacking."[238] John Maerz has illustrated these differences in his book *A Mile in Your Shoes*. He further explains:

> The indispensable part seems to be mostly attached to a need . . . the words need and necessity relating to the survival of the individual [whereas] a desire or a want as the product of a real or imagined luck.[239]

In this context, the "need to access water" implies a nonnegotiable requirement of a state to access and use water for the survival of its population, whereas the "want to access water" is not mainly focused on the utilization of water for survival but for economic development. Clearly,

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234. *See* Zaidi, *supra* note 216.

235. Awais Piracha & Zahid Majeed, *Water Use in Pakistan's Agricultural Sector: Water Conservation under the Changed Climatic Conditions*, INT'L J. OF WATER RESOURCES AND ARID ENV'TS 170, 172 (2011).

236. M. Mushtaq Chaudry, *Integrated Water Resources Management in Pakistan*, NETWORK OF ASIAN RIVER BASIN ORG. 1–3 (2014), http://www.narbo.jp/data/01_events/materials/gm01_pas_b02_pa.pdf [https://perma.cc/J62Z-8GZ3].

237. JOHN MAERZ, A MILE IN YOUR SHOES 69 (2012) [hereinafter MAERZ].

238. *Id.* In the Oxford English Dictionary, the word "want" means "desire."

239. *See* MAERZ, *supra* note 237, at 69.

human survival is anterior to economic development, in accordance with international water law; therefore, in apportioning and utilizing waters, it is obligatory for states to give preference to such a utilization of water necessary for human survival.[240] This is also evident from the Berlin Rules on Watercourses 2004, which are globally accepted principles for water allocation and utilization, prioritizing the allocation of water to human survival.[241]

The need to access water can be intended for drinking, irrigating crops, and sanitation purposes.[242] Drinking water is necessary for human life, whereas irrigating is a requirement for producing crops for producing adequate food for the sustenance of the population. Meanwhile, sanitation is required for the protection of the people's health. On the other hand, the desire to access and use water implies making water-storage facilities, i.e., dams for the production of electricity by installing hydropower projects and barrages for diverting adequate water supply of rivers to these dams. In this regard, such utilization is "not a basic need" for the survival of the population, which is possible without such storage facilities and projects. As the need to use water for human survival is seen as higher than the want or desire to use water for economic development, the utilization of water for basic needs should be given preferential treatment over the utilization of water for electricity generation.

If we apply the aforementioned concepts of "needs" and "wants" to accessing and using water in the case of the upper and lower riparian states, for example Pakistan and India, then the following implications are notable:

1. Pakistan "needs" adequate water supply for irrigating crops and for the survival of a large proportion of its population to fulfill their basic needs of life, i.e., drinking and irrigating.
2. Pakistan is not pursuing any "wants" to construct hydropower projects over any of the eastern or western rivers that could lead to any population being deprived from satiating basic needs related to water usage.[243]

240. *See* BISWAS ET AL., *supra* note 79.
241. *See* Boyle et al., *supra* note 85, art. 14, at 21–22.
242. *Id.*
243. Being a lower riparian state, Pakistan has no other lower riparian international state whose share of transboundary river water it can compromise over.

3. India is pursuing its "wants" to construct dams on the western rivers for hydropower projects to produce electricity.[244] These wants have the potential effects of overriding and negating Pakistanis' needs to access and use water because the relevant Indian projects of mass water-storage facilities could affect the natural flow of water of rivers in Pakistan, resulting in an overall shortage of water in these rivers.[245]
4. India also "needs" an adequate water supply to irrigate its agrarian lands to meet the food requirements of its population, which it is already meeting from the full utilization of the waters of the eastern and western rivers.[246] Hence, its needs are already fulfilled.
5. India "wants" to access more water of the western rivers by exploiting its allocated water share for agriculture, electricity, or any other economic development projects in the near future.[247] It is looking to fulfill its wants, not needs, to utilize water.

The above points illustrate the differences between the needs and wants of Pakistan and India in utilizing waters of the shared river basins. The Indian population can survive without the hydropower projects, whereas it is impossible for a significant number of the Pakistani population to survive if an adequate water supply is impeded by the Indian mass water-storage projects. Because there is already significant stress on water resources in Pakistan owing to the scarcity of water and the surge in the population dependent on these water resources, India should not excessively use Pakistani river waters to produce electricity. While the manufacturing of electricity is beneficial for the economic development of India, there are certainly several ways other than the utilization of precious water resources to produce electricity, i.e., through solar energy, wind energy, coal, and biofuel. India can use these alternate sources to produce electricity. This can also ensure the availability of adequate water for the people of Pakistan for drinking and irrigating purposes, and, eventually, will uphold the principles of equitable utilization, equity, and justice.

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244. For details of the Indian planned and continued projects, *see* Akhtar, *supra* note 162, at 27–28.

245. INST. REGIONAL STUD. & NAT'L COMM'N HUM. DEV., NON-TRADITIONAL AND HUMAN SECURITY IN SOUTH ASIA 172 (2007) [hereinafter IRS & NCHD]; *see also* UNESCO, *Managing Water Under Uncertainty and Risk*, 1 U.N. WORLD WATER DEV. REP. 4, 219 (2012).

246. Nawaz & Kokab, *supra* note 154, at 212, 214–15.

247. UNESCO, *Managing Water Under Uncertainty and Risk*, 1 U.N. WORLD WATER DEV. REP. 4, 219 (2012).

## CONCLUSION

Adherence to the principles of equity and justice is necessitated by international law for the equitable allocation of resources, including transnational river waters between two or more states.[248] Several theories and doctrines have been presented to do this. The absolute territorial theory favored the upper riparian state's right to use and allocate water,[249] whereas the territorial integrity theory rejected any such right.[250] Due to the inequitable water-sharing suggestions of these theories, they were rejected by lower riparian states and upper riparian states, respectively.[251] Subsequently, the limited sovereignty theory was presented, which applied a limit on the supreme right to access and use water by upper and lower riparian states.[252] Doctrines endorsing the equitable apportionment of shared river water between states were then presented.[253] The riparian rights doctrine proposes two strategies for water apportionment: (1) the reasonable utilization of water for equitably apportioning the shared water and (2) correlative rights, which entail a proportional utilization of water resources according to the proportion of the shared water territory owned by a state.[254] On the other hand, the prior appropriation right gives ownership of the water resource to the first user of the water resource.[255]

The unity of the river basin principle declares a transboundary river to be a single river basin that cannot be owned by either of the two states sharing this river.[256] A collective ownership of the river basin is assigned to both riparian states.[257] On the other hand, the equitable utilization and apportionment doctrine suggests equitably and justifiably apportioning water between two or more states. It upholds the principles of equity and justice[258] and therefore has been incorporated into the Berlin Rules, which are considered standards

248. *See* DEGEFU, *supra* note 108.
249. Stephen C. Lonergan & David B. Brooks, *Watershed: The Role of Fresh Water in the Israeli Palestinian Conflict*, INT'L DEV. RESEARCH CTR. 168 (1994).
250. Brauch et al., *supra* note 23, at 657.
251. For absolute territorial sovereignty theory, *see* ADAR & CHECK, *supra* note 20, at 12; for absolute territorial integrity theory, *see:* ISLAM, *supra* note 14, at 106–07.
252. *See* Dellapenna, *supra* note 115.
253. *Id.*
254. *See* DZURIK, *supra* note 40, at 26.
255. *See* Schneier-Madanes & Courel, *supra* note 50.
256. *See* MCINTYRE, *supra* note 73.
257. *See* Libai, *supra* note 29, at 21–55, 31.
258. *See* CHAUHAN, *supra* note 103; *see also* DEGEFU, *supra* note 108.

for reasonably and sustainably allocating shared waters between two or more states.[259]

The Indus Waters Treaty is a very good example of equitably distributing water between upper riparian India and lower riparian Pakistan as it divided the six shared rivers between India and Pakistan in an equitable manner by allocating the three western rivers to Pakistan and the three eastern rivers to India.[260] However, India wants to modify this long-standing treaty in order to get a legal basis for acquiring and utilizing a larger share of water from the Pakistani western rivers.[261] Pakistan has rejected Indian aims to modify the treaty because it considers that Indian plans for modifications are largely related to legitimizing its construction works of mass storage dams on Pakistani rivers. According to Pakistan, these dams have the tendency to cause a shortage of water in Pakistan.[262]

Currently, India is enjoying the full amount of water in the eastern and western rivers in its territory because it is an upper riparian state where water naturally reaches it in full flow, whereas Pakistan is being deprived of the full flow of waters in its western rivers owing to Indian mass storage dams.[263] This contrasts with the principles of equity and justice as well as with the Indus Waters Treaty, which has assigned legal ownership of the western rivers to Pakistan and restricted India to using waters only for nonconsumptive purposes.[264]

Pakistan's access to and utilization of these river waters are required for basic human subsistence within its territory, whereas Indian mass storage dams are only intended for economic development purposes, i.e., for the generation of electricity.[265] As per the Berlin Rules, the preference is assigned to the utilization of water for basic human subsistence over utilization for any other purposes.[266] Therefore, to uphold the principles of justice, morality, and equity, India needs to respect the Pakistani people's basic needs for water.

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259. *See* EARLE, *supra* note 110.

260. *See* WIRSING & ADEEL, *supra* note 95.

261. CHRISTOPHER JASPARRO ET AL., INTERNATIONAL CONFLICT OVER WATER RESOURCES IN HIMALAYAN ASIA 210 (2012); *see also India builds huge reservoirs to stop Pakistan's water,* THE NATION (23 December 2016), http://nation.com.pk/national/23-Dec-2016/india-builds-huge-reservoirs-to-stop-pakistan-s-water [https://perma.cc/UDA9-P4H9].

262. *See* IRS & NCHD, *supra* note 245; *see also* UNESCO, *supra* note 247.

263. *See* Nawaz & Kokab, *supra* note 154, at 212, 214–15.

264. *See* Indus Waters Treaty, *supra* note 60, art. III.

265. *See* UNESCO, *supra* note 247.

266. *See* Boyle et al., *supra* note 85, art. 14, at 21–22.