INTERNATIONAL WATER LAWS AND THEIR POTENTIAL TO ACHIEVE INTEGRATED MANAGEMENT OF THE INDUS BASIN

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Abstract: *This article examines the legal framework governing water management in the Indus basin and identifies its gaps and limitations. The author suggests that adopting international water laws, such as the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, could provide a more comprehensive and impartial legal structure for managing water resources in the region. Additionally, the author argues that implementing an integrated management approach involving India and Pakistan could create a favourable opportunity for sustainable development based on limited territorial sovereignty, consultation, notification, and information exchange principles. Overall, the article proposes solutions to the legal challenges of managing water resources in the Indus Basin, intending to achieve sustainable development and equitable utilization of water resources while minimizing conflicts between the two riparian states.*

Keywords: *Indus River Basin; International Water Laws; IWRM; Equitable Allocation.*

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Introduction

The water of the Indus basin is undoubtedly the spark of life for the inhabitants.[1] It finds its source in the Tibetan Mountains range near the resplendent Lake Mansarovar, from whence it meanders through the uneven terrain of the Hindukush, Karakoram, and Himalaya juncture, nourishing the fertile plains of the south.[2] This basin, encompassing an expanse of 1.10 million square kilometers, is partitioned among four nations, with 47% falling under the jurisdiction of Pakistan, 39% in India, 8% in China, and 6% in Afghanistan.[3] The basin is the lifeblood of more than three hundred million people, with 61% residing in Pakistan, 35% in India, and 4% in China and Afghanistan. This basin encompasses the principal Indus River and its tributaries, including the Kabul, the Khurram, the Swat, the Jhelum, the Ravi, the Beas, and the Chenab.[4] Mountains and crosses the frontiers of four states, the Indus basin empties into the Arabian Sea.

Water management is a term that involves cooperation between states to distribute shared transboundary watercourses and to make optimum use of these watercourses. The Indus Water Treaty (IWT) is a paradigmatic instance of a bilateral accord that nurtures amicable relations for allocating and utilizing the Indus River and its tributaries amidst erstwhile adversarial nations, namely India and Pakistan.[5] Regardless of being a shining example for dispute resolution, it is today's focus of dispute.

[1] Adeel, Z., & Wirsing, R. G. (Eds.). (2016). *Imagining Industan: Overcoming water insecurity in the Indus basin*. Springer. P, 7.
[2] Khan, S., & Adams, T. (2019). The Indus River basin: water security and sustainability. Retrieved from https://www.researchgate.net/publication/333071046_The_Indus_River_Basin_Water_Security_and_Sustainability P, 3.
[3] Khalid, I. (2010). Transboundary water sharing issues: A case of South Asia. Journal of Political Studies, 17(2), 79-93.
[4] Raman, D. D. (2015). Governance of International Rivers: Threats, Gaps and Challenges (Doctoral dissertation, University of Waikato). Retrieved from https://hdl.handle.net/10289/9494.
[5] The Indus Waters Treaty, India-Pak., Sept. 19, 1960, Ministry of External Aff., http://mea.gov.in/bilateral-documents.htm?dtl/6439/Indus.

Unfortunately, the treaty is outdated. IWT does not consider some problems associated with environmental degradation, water quality, climate change, and downstream flow.

International water laws have significant potential towards achieving integrated Indus basin management. These statutes lay the groundwork for shared water resource management strategies and policies among basin countries. By fostering cooperation and coordination, international water laws can aid in addressing the complex challenges facing the Indus basin and ensuring the future sustainability of its water resources.

This paper serves three goals. Its primary objective is to introduce readers to the general tenets that underpin the evolution of IWL. The second objective is to analyze how the Helsinki Rules (1966), UNWC and the UNECE Water Convention address the management of transboundary water resources, emphasizing the fair and reasonable use of international waterways. Finally, the paper will evaluate the Indus Water Treaty and the riparian states' commitment to international water law principles by examining the Indus Water Treaty. Based on the study's findings, the paper suggests improving Indus basin water management through integrated water resource planning.

Research Questions(s)

The study seeks to answer the following questions:

1. What are the key principles of international water law, and how do they apply to the Indus Basin?
2. How can international water laws, such as the Helsinki Rules and the UN Watercourses Convention, contribute to the integrated management of the Indus Basin?
3. What are the challenges to achieving integrated management of the Indus Basin, including political context, climate change, and conflicting interests?

1. Objectives of the study

The primary objective of this study is to examine the fundamental principles of international water law and their applicability to the Indus Basin. It further explores the potential contributions of international water laws, such as the Helsinki Rules and the UN Watercourses Convention, towards achieving integrated management of the Indus Basin. Additionally, the study seeks to identify the various challenges associated with attaining integrated management, which include political context, climate change, and conflicting interests.

The Framework of International Water Law

Transboundary water resources refer to bodies of water such as rivers, lakes, and groundwater aquifers traversing two or more nations, necessitating joint management and regulation. These hydrological resources are governed by a complex array of legal principles, rules, and agreements that constitute the foundation of international water law. Over time, changes in international water law have been shaped by precedents set in treaties, treaty negotiations, and court decisions. These statutes lay out a plan for the riparian states to work together to improve and administer their common water supply. The principal aim of international water law is to avert or settle conflicts among riparian states and foster fair and sustainable utilization of transboundary water resources.

This section summarises the current international water law instruments that align with generally accepted international legal norms for managing transnational water resources.

Principle of Equitable and Reasonable Utilization

Within the framework of limited territorial sovereignty, this principle postulates that nation-states are obligated to employ international watercourses under their control fairly without compromising neighbouring states' needs.[6]This principle considers various factors, including geography, population, economy, and ecology, to regulate an equitable share of water resources.[7]

[6] "Article IV, Helsinki Rules 1966 and UN Watercourses Convention 1997 Article 5."
[7] "Article V, Helsinki Rules 1966 and UN Watercourses Convention 1997 Article 6."

The principle of equitable water consumption can encourage Indus riparian states to take a more sustainable approach to water management. This can include implementing water-saving measures, promoting water conservation, and developing more efficient irrigation practices. The principle of equitable water utilization represents a potent mechanism for encouraging collaboration and ensuring sustainable governance of the transboundary waters of the Indus Basin.

No Harm Principle

Conferring the principle, a riparian state is obligated to mitigate any negative effects it may have on another, and it must not inflict any new or substantial harm on another state due to its water management activities.[8] As per the principle of non-significant harm, no nation sharing a transboundary watershed may exploit the hydrological resources of a watercourse situated within its borders in a manner that inflicts detriment on other states within the same basin, including their ecological systems, public health, and even the security of their populace. Upstream states can be held accountable for minimizing these impacts and ensuring that downstream states are not harmed by applying the principle of the obligation not to cause significant harm.

The principle of "sic utere tuo ut alienum non laedas," which embodies this notion, enjoys broad recognition by international laws pertaining to water and the environment. Its essence lies in the injunction that one must utilize their own resources in a manner that does not cause harm to others).[9] However, how to define harm as "significant harm" and what the word "significant" means remains an open question. This cardinal principle finds expression in all modern international treaties, conventions, accords, and proclamations pertaining to the environment and water resources.[10]

Additionally, the responsibility not to cause significant harm can help promote collaboration and relationships between states in Indus Basin. By recognizing the interconnectedness of water resources and the potential for one state's actions to affect others, the principle can encourage dialogue and negotiation between states to develop mutually beneficial water management strategies.

Principles of Notification, Consultation and Negotiation

In instances where the proposed utilization of a shared watercourse by a fellow riparian may pose a significant peril to its rights or interests, each riparian nation within an international river basin is entitled to receive advance notification, engage in consultations, and participate in negotiations. Most international conventions, agreements, and treaties embrace these concepts.

Article 3 of the Complementary rules applicable to international resources of the International Law Association states:

"When a basin State proposes to undertake or to permit the undertaking of a project that may substantially affect the interests of any co-basin State, it shall give such State or States notice of the project. The notice shall include information, data and specifications adequate for assessment of the effects of the project."[11]

By adhering to the abovementioned principle, the Indus states can establish a framework for effective communication, cooperation, and collaboration, which are critical for achieving integrated Indus Basin management. These principles promote transparency, inclusiveness, and collaboration, which are necessary to endorse sustainable water management and avoid conflicts over water resources.

[8] Alston, P., & Knuckey, S. (2015). "The Transformation of Human Rights Fact-Finding." Oxford University Press.
[9] Khalid, A. R. M. (2004). "The interlinking of rivers project in India and International water law: an overview." Chinese Journal of International Law, 3, 553.
[10] Rahaman, M. M. (2005). "The potentials of international water laws towards achieving integrated Ganges basin management. In Proceedings of XII World Water Congress: Water for sustainable development towards innovative solutions," New Delhi (pp. 22-25).
[11] Manner, E. J., Metsälampi, V. M., & International Law Association. (1988). The work of the International Law Association on the law of international water resources.

Principles of Cooperation and Information Exchange

Each riparian state of an international watercourse is obligated to cooperate and exchange data and information regarding the condition of the watercourse and its present and planned future use. The International Water Laws recommend this principle.[12]The 1960 IWT (ArticleVI–VIII) incorporate this principle.

Peaceful Settlement of Disputes

Resolving disputes over the utilization and sustainability of shared water resources is a cornerstone of international water law.[13] This idea proposes that the governments of countries on both sides of a transnational waterway should work together to find a solution. Mediation, negotiation, and conciliation are all methods established by international law to settle disputes peacefully. The United Nations Convention of 1997 offers a game-changing method of dispute resolution by unilaterally launching an inquiry system in the event of a disagreement, making it easier to get the support of all parties involved.[14]

The New York Convention is not the only international agreement that adheres to this principle; the UNECE Water Convention from 1992 (Article 22, Annex IV), the Helsinki Accords from 1966 (Articles XXVI-XXVII), and the Indus Waters Treaty (Article IX, Annexure F, G) fully endorse this principle.

Basin-wide Joint Management

The concept of joint water management is gaining significant traction in the global discourse on water governance as the most effective means of regulating water flow across international boundaries. It ensures that all parties involved in the collective management of shared water resources derive mutual benefits while fostering equitable utilization, sustainable progress, and comprehensive administration of water resources. The nations comprising the Indus Basin could adopt this approach to collaborate in managing and advancing the basin for optimal gain. By executing every water management endeavour through mechanisms of joint management, which involve consultation, sanction, and participation, the two countries can forestall water-related conflicts by implementing joint-management schemes for the Indus basin.

Analysis of International Water Laws Relevant to the Indus Basin

International water law for navigational purposes has been evolving and codified since the adoption of the Act of the Congress of Vienna in 1815.[15]

However, these early agreements focused on navigational applications of transboundary watercourses. Innovations in the law about non-navigational water uses, such as flood control, hydropower development, water quality management, and water allocation, have resulted from the subsequent acceleration of industrialization and the rising demand for water resources. As a result, non-navigational regulations have become increasingly commonplace in state practice and water conventions.[16] This section analyses the Helsinki Rules (1966), the UNWC (1997) and UNECE Water Convent to evaluate how transboundary river basin principles are incorporated into the modern international accordion.

The Helsinki Rules

The International Law Association passed the Helsinki Rules for the Uses of International Rivers at its 52nd annual meeting in Helsinki that August of 1966. When it comes to the administration of watersheds on a global scale, the Helsinki Rules are an essential piece of legislation.

[12] "1966 Helsinki Rules (Article XXIX, paragraph 1), and Article 8 and 9 of the UN Convention incorporate this principle."

[13] Jacobs, I. M. (2012). "*The politics of water in Africa: norms, environmental regions and transboundary cooperation in the Orange-Senqu and Nile rivers*." A&C Black.

[14]See article 33.3 at: http://legal.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf.

[15] Salman, S. M., & Uprety, K. (2021). "Conflict and cooperation on South Asia's international rivers: A legal perspective. In Conflict and Cooperation on South Asia's International Rivers." Brill Nijhoff.

[16] Biswas, A. K. (1999). Management of international waters: opportunities and constraints. *International Journal of Water Resources Development*, *15*(4), 429-441. P, 437.

Article II defines an 'international drainage basin' as "A geographical area extending over two or more states determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus."[17]

Article IV recognizes the principle of the equitable and reasonable use of the international drainage basin's water resources: "Each basin State is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin."[18]Article V lays out the criteria that should be used to divide up a global watershed fairly and equitably. These include, but are not limited to, the basin's hydrology and geography, the basin's climate, the socio-economic needs of the population, and the population's reliance on the water supply.

The enclosure of the term "without causing substantial injury" in Article V (II) demonstrates the adoption of the doctrine "not to cause significant harm." Articles IX through XI contain clauses for regulating the contamination of an international watershed founded on the principle of fair utilization. It mentions, "Consistent with the principle of equitable utilization of the waters of an international drainage basin, a State must prevent any new form of water pollution or any increase in the degree of existing water pollution in an international drainage basin which would cause substantial injury in the territory of a co-basin State." Therefore, any human activity resulting in water pollution falls within the purview of the "not to cause significant harm" principle.

Procedures for avoiding and resolving disputes are addressed in Articles XXVI–XXXVII of the Helsinki Rules. The primary goal is the promotion of conflict avoidance and the use of peaceful dispute resolution mechanisms. Each basin state is encouraged to share information about the drainage basin waters within its borders with the other basin states as outlined in paragraph 1 of Article XXIX. Article XXIX, paragraph 2, states that:

"A State, regardless of its location in a drainage basin, should in particular furnish to any other basin State, the interests of which may be substantially affected, a notice of any proposed construction or installation which would alter the regime of the basin in a way and the notice should include such essential facts as will permit the recipient to assess the probable effect of the proposed alteration."[19] This demonstrates that the principle of consultation and notification was included in the Helsinki Rules of 1966.

Analysis of the UN Watercourses Convention

The Convention on Non-Navigational Uses of International Watercourses also referred to as the UN Watercourses Convention, was endorsed by the UN General Assembly on 21 May 1997, after prolonged discussions on the ILC's draft text between 1991 and 1997. Drawing inspiration from the Helsinki Rules of 1966, this Convention formulated the legal framework for apportioning transboundary watercourses.[20]

A system of surface waters and groundwaters that, by virtue of their physical relationship, form a unitary whole and normally flow into a common terminus, even though its components may be located in different states, is defined as an "international watercourse" in Article 2 of the Convention. The principle of equitable and reasonable utilization is established in Article 5: "Watercourse States shall in their respective territories utilize an international watercourse equitably and reasonably. In particular, an international watercourse shall be used and developed by watercourse States to attain optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse."

The Convention also deals with the promise not to cause severe damage, and it mandates that all countries along a waterway take all necessary precautions to avoid causing severe damage to any other countries along that watercourse. In this context, lower riparians typically support the no-harm rule

[17] Helsinki Rules 1966 at https://www.internationalwaterlaw.org/documents/intldocs/ILA/Helsinki_Rules-original_with_comments.pdf P, 2.
[18] Ibid P, 8.
[19] Ibid Helsinki Rules 1966 Article XXIX
[20] Jenkins, M. W., & Sugden, S. (2006). Human development report 2006. *New York: United Nations Development Programme*. P 128.

because it protects existing uses from damage caused by upstream nations.[21] In contrast, the upper riparian has more weightage towards the equitable and reasonable utilization principle, giving states more leeway in using their portion of the watercourse, even if that use has consequences for downstream states. The riparian state is specifically prohibited by Article 7 of the UNWC from causing serious harm to the upstream state. It reads

"Watercourse States shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to another watercourse States."[22] The United Nations Watercourses Convention upholds the tenets of cooperation and the exchange of information. Article 8(1) underscores the overarching responsibility to collaborate in ensuring the optimal utilization and appropriate safeguarding of international watercourses. Article 9 obliges the watercourse states "to exchange the data and information on the state of the watercourse, particularly that of a hydrological, meteorological and ecological nature and related to the water quality and related forecasts."[23]

Part III of the Convention (Articles 11-19) and Article 24(1) embody the principle of consultation and notification. Article 11 underscores the significance of this doctrine in this way: "Watercourse States shall exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse."[24] Articles 13 through 19 provide a meticulous exposition of the procedural aspects relating to notifications, consultations, and negotiations concerning any proposed action in an international watercourse. Article 24 (1) stipulates, "The Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism."[25] Hence, these articles unequivocally espouse the doctrine of consultation, notification, and collaboration. They further advise watercourse nations to align their policies to safeguard watercourse ecosystems. Article 33 of the Convention lays down comprehensive regulations for resolving disputes.

UNECE Water Convention

The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes is a regional Framework Convention that became effective in 1992 and has been signed by all Member States and States with consultative status with the Economic Commission for Europe. The Convention, which became an international legal framework in 2016, regulates transboundary water cooperation.[26]

The UNECE Water Convention contains a general principle that Parties should take "all appropriate measures to prevent, control and reduce any transboundary impact."[27] For Riparian Parties specifically, the UNECE Water Convention encourages them to "Cooperate in order to develop harmonized policies, programs and strategies aimed at the prevention, control and reduction of transboundary impact and protection of the environment of transboundary waters or the environment influenced by such waters."[28]

The riparian parties should establish and implement joint programmes for monitoring and assessing the condition of the shared waters, agree upon pollution parameters and pollutants whose discharges and concentrations would be regularly monitored and at regular intervals, and conduct joint or coordinated

[21] Salman, S. M. (2007). The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: perspectives on international water law. *Water Resources Development*, *23*(4), 625-640. P, 633.
[22] Ibid
[23] Article 9 of UN Watercourses Convention 1997
[24] Article 11 of UN Watercourses Convention 1997
[25] Article 24 of UN Watercourses Convention 1997
[26] UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, The Water Convention: responding to global water challenges, https://unece.org/sites/default/files/2021-04/ECE_MP.WAT_52_ENG_WEB.pdf P, 3.
[27]UNECE Water Convention; Article 2(1). While transboundary impact is defined in article 1(2) "Transboundary impact means any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of a Party, within an area under the jurisdiction of another Party. Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; they also include effects on the cultural heritage or socio-economic conditions resulting from alterations to those factors;"
[28] UNECE Water Convention; Article 2(6).

assessments of the conditions of the transboundary waters and the effectiveness of measures taken for the prevention, control, and reduction of transboundary pollution.[29]

While it specifically provides that Parties must ensure that "transboundary waters are used reasonably and equitably, taking into particular account their transboundary character, in the case of activities which cause or are likely to cause transboundary impact."[30] The Convention requires the Parties to ensure that transboundary waters are used equitably and reasonably, as well as for ecologically sustainable and reasonable water management, conservation of water resources, environmental protection, and, if necessary, restoration of ecosystems.[31] The Convention also endorses the ecosystem approach to further its goal of fostering sustainable water resource management.[32]

The 1992 SAARC Regional Convention on the Promotion of the Environment

The South Asian Association for Regional Cooperation (SAARC) Regional Convention on the Promotion of the Environment, also known as the "SAARC Convention on Environment," was signed by all eight member states, including India and Pakistan. The SAARC Convention on the Promotion of the Environment, also known as the SAARC Convention on Environment, was signed by all eight member states in 1992.[33] The SAARC Convention on Environment aims to promote cooperation among member states to achieve sustainable development and to protect and improve the environment in the region. One of the key areas of focus of the Convention is the management and protection of water resources in the region, which is critical for the region's socio-economic development and the well-being of its people. The Convention establishes guidelines and principles for member states to adopt to promote the sustainable use of water resources and prevent and control water pollution.

Member states are required to take measures to prevent and control water pollution, including developing and implementing pollution prevention and control strategies, establishing water quality standards, and regulating point and non-point sources of pollution.[34] Furthermore, member states are encouraged to adopt measures to conserve water resources, including promoting water-saving technologies and practices, protecting and restoring natural water systems, and developing water reuse and recycling systems. SAARC states are encouraged to cooperate and collaborate in managing and protecting water resources, including sharing data and information, developing joint projects and initiatives, and establishing joint monitoring and surveillance systems under the Convention.[35]

The SAARC member states must implement the Convention's provisions in their national policies and legislation and work collaboratively to achieve the Convention's objectives. The Convention remains an important agreement for promoting regional cooperation on environmental issues in South Asia.

Analysis of the Indus Water Treaty

The Indus Waters Treaty (IWT) is an agreement between India and Pakistan, brokered by the World Bank and signed in 1960, which governs the sharing of the Indus river system's waters. The treaty is considered a significant international water treaty as it has withstood multiple political crises and military conflicts between India and Pakistan. The World Bank brokered the IWT to resolve disputes between India and Pakistan over sharing the Indus River system's waters. The treaty allocated the eastern rivers (Ravi, Beas, and Sutlej) to India and the western rivers (Indus, Jhelum, and Chenab) to Pakistan.[36]

[29] UNECE Water Convention; Article 11(1)-(3), respectively.
[30] UNECE Water Convention; Article 2(2)(c).
[31] UNECE Water Convention; Article 2(2)(d).
[32] UNECE Water Convention; Article 3(1)(i).
[33] SAARC Secretariat. (1992). SAARC Convention on the Promotion of the Environment. Retrieved March 14, 2023, from https://www.saarc-sec.org/index.php/resources/agreements-conventions/47-saarc-convention-on-cooperation-on-environment/file.
[34] Ibid
[35] Ibid 37.
[36] "The Indus Waters Treaty," World Bank, accessed March 9, 2023, https://www.worldbank.org/en/topic/water/brief/indus-waters-treaty.

One of the key features of the treaty is the establishment of a Permanent Indus Commission (PIC) to resolve any disputes arising between the two countries over water sharing. The PIC consists of two commissioners, one from each country, and meets regularly to exchange information and discuss any issues.[37] The PIC comprises one commissioner from each country, and the two commissioners jointly appoint a neutral expert to advise them on technical matters. The PIC has been instrumental in resolving disputes between India and Pakistan and has continued functioning even during heightened political tension.

Article III of the treaty requires that the two countries notify each other of any new projects they plan to undertake that could affect the quantity or quality of the Indus river waters.[38] This notification provision is crucial as it allows the two countries to discuss potential impacts on their respective water shares and agrees on mitigating any adverse effects. Article V of the treaty provides that the waters of the Indus River system shall be used only for irrigation, power generation, and domestic and industrial consumption.[39] The provision ensures that the water is used efficiently and sustainably and that neither country uses the water for military purposes.

While the Indus Water Treaty has successfully maintained peace and cooperation between India and Pakistan over using the Indus River system for more than five decades, some experts argue that the treaty has become outdated and needs to be updated to reflect the changing geopolitical realities of the region.

One of the main criticisms of the treaty is that it does not consider the effects of climate change on the river system. The melting of glaciers in the Himalayas is reducing the flow of the Indus river, which could potentially affect the water supply for both India and Pakistan. Additionally, the construction of dams and other water infrastructure projects by both countries is affecting the flow of water, which could lead to future disputes. In recent years, Pakistan has accused India of violating the treaty by constructing hydroelectric projects on the western rivers, which it claims are reducing water flow to Pakistan.[40] Conversely, India has argued that the projects are permissible under the treaty and do not violate Pakistan's rights.[41]

Another criticism of the treaty is that it does not address the issue of groundwater sharing. Groundwater is becoming an increasingly important water source in the region, particularly in India, and the treaty does not regulate its use.

Furthermore, the treaty does not address the issue of water pollution, which has become a serious problem in India and Pakistan. The use of pesticides and fertilizers in agriculture and industrial waste has led to the contamination of rivers and groundwater, which threatens human health and the environment.

Potentials of International Water Laws in Achieving Integrated Indus Basin Management

Integrated water management is essential for the sustainable development of water resources in transboundary river basins such as the Indus Basin. The principles of international water law play a crucial role in achieving integrated water management by providing a framework for cooperation and coordination among riparian states. In this text, we will discuss the potential of international water laws in achieving integrated Indus basin management, the potential role of dispute resolution mechanisms in resolving conflicts, and examples of successful international water management in other basins.

International water law is based on several principles that support the integrated management of transboundary water resources. These principles include the equitable and reasonable utilization of water resources, the obligation to prevent significant harm to other riparian states, the duty to notify

[37] "Permanent Indus Commission," Ministry of Water Resources, Government of India, accessed March 9, 2023, https://mowr.gov.in/permanent-indus-commission.

[38] Indus Water Treaty Article III.

[39] Indus Water Treaty Article V.

[40] Al Jazeera. (2021, October 4). Pakistan accuses India of violating Indus Water Treaty. https://www.aljazeera.com/news/2021/10/4/pakistan-accuses-india-of-violating-indus-water-treaty.

[41] NDTV. (2016, September 26). India says all its Indus basin projects 'absolutely legal'. https://www.ndtv.com/india-news/india-says-all-its-indus-basin-projects-absolutely-legal-1465683.

and consult on planned measures that may affect other states, the duty to cooperate in the management of shared water resources, and the obligation to use water resources in a way that is sustainable and environmentally sound.[42]

These principles promote the integrated management of water resources by ensuring that water allocation is equitable, that potential harm to other riparian states is minimized, that planned measures are communicated and coordinated among riparian states, and that water resources are managed sustainably. The principles also encourage cooperation among riparian states, essential for achieving integrated water management.

Several examples of successful international water management in other basins can serve as models for the Indus basin. The Mekong River Commission, for example, is a regional intergovernmental organization that manages the shared water resources of the Mekong River Basin.[43]The Commission promotes the integrated management of water resources through cooperation among riparian states, the establishment of joint monitoring and data-sharing systems, and the development of basin-wide plans for water resource management.

Another example is the Senegal River Basin Development Organization, which manages the shared water resources of the Senegal River Basin.[44] The organization promotes integrated water management by developing basin-wide plans for water resource management, establishing joint monitoring and data-sharing systems, and implementing projects that benefit all riparian states.

Challenges to Integrated Indus Basin Management

The basin supports the livelihoods of more than three hundred million people and provides water for agriculture, industry, and domestic use. However, basin management faces several challenges, including political tensions, climate change, and conflicting interests and demands for water resources. This part discusses the challenges in detail and examines how they impact the integrated management of the Indus basin.

Political Context of the Indus Basin

Water disputes between India and Pakistan over the Indus basin go all the way back to the partition of the subcontinent in 1947. In 1960, India and Pakistan signed the Indus Waters Treaty (IWT) that established rules for sharing the Indus River. This treaty, however, has been the source of many disagreements and tense moments between the two countries. The history of conflict and war between the two countries has contributed to a lack of trust and cooperation.

The political context of the Indus basin poses significant challenges for the integrated management of the basin. The lack of trust and cooperation between India and Pakistan makes developing joint strategies and plans to manage the basin difficult. It also makes resolving disputes and conflicts over water sharing and use challenging. The political tensions can lead to unilateral actions by either country, which can significantly impact the downstream countries.

Impact of Climate Change

The Indus Basin is also facing the impacts of climate change, which are exacerbating the existing water management challenges. Climate change is leading to changes in the timing, frequency, and intensity of rainfall and snowmelt in the basin. These changes affect the availability and distribution of water resources, leading to increased variability and uncertainty in the water supply.

The impacts of climate change are expected to be particularly severe for the downstream regions of the basin, which are already water-stressed. The increased variability and uncertainty in the water supply

[42] United Nations, International Law Commission. (2003). “Draft articles on the law of the non-navigational uses of international watercourses.” A/58/422.

[43] Campbell, I. C. (2016). Integrated management in the Mekong River Basin. Ecohydrology & Hydrobiology, 16(4), 255-262.

[44] Varis, O., Rahaman, M. M., & Stucki, V. (2008). The rocky road from integrated plans to implementation: Lessons learned from the Mekong and Senegal River basins. International Journal of Water Resources Development, 24(1), 103-121.

can lead to conflicts and tensions over water resources, especially during drought. Climate change can also impact the reliability and efficiency of the basin's infrastructure and water management systems.

Conflicting Interests and Demands for Water Resources

The Indus basin is home to various stakeholders, including farmers, urban residents, industry, hydropower, and ecosystems. These stakeholders have different interests and demands for water resources, which can lead to conflicts and tensions over water allocation and use. For example, farmers may demand more water for irrigation, while urban residents may demand more water for domestic use. Hydropower and industry may require water for energy production and manufacturing processes.

The conflicting interests and demands for water resources can lead to sub-optimal water allocation and use and can also lead to environmental degradation and loss of ecosystem services. The lack of coordination and cooperation between stakeholders can also lead to wasteful use of water resources and inefficient water management practices.

2. Conclusion

In order to efficaciously administer the water resources of the Indus basin, all riparian states must engage in collaborative efforts. Any treaties or agreements pertaining to the Indus basin must be grounded in the fundamental principles of consultation, negotiation, and information exchange, as well as the duty to avoid causing substantial harm.

Exemplars of such treaties include the 1960 Indus Waters Agreement between India and Pakistan, which confers access to the Indus River and its tributaries upon both countries. This treaty features a conflict resolution mechanism and mandates regular consultation and communication between the two nations.

However, the Indus Waters Treaty confronts disputes over water consumption and storage infrastructure and concerns about water scarcity and climate change. In order to guarantee sustainable water resource management in the Indus basin, it is essential to ensure the effective implementation of the treaty and to build upon its principles.

To diminish conflicts and secure regional development in the Indus basin, a multilateral treaty that is negotiated involving all riparian states is necessary. This treaty should be based on the principles of equitable and reasonable utilization, the duty to avoid significant harm, and the principles of consultation, notification, cooperation, and information exchange. The most promising prospect of realizing the Millennium Development Goals and ensuring the region's economic and environmental sustainability rests upon its integrated basin management.