INDIAN WATER AGGRESSION: VIOLATION OF INDUS WATERS TREATY (IWT) AND THREATS TO PAKISTAN'S WATER RESOURCES

Brig Dr Raashid Wali Janjua (retd), Tanzeela Khalil,
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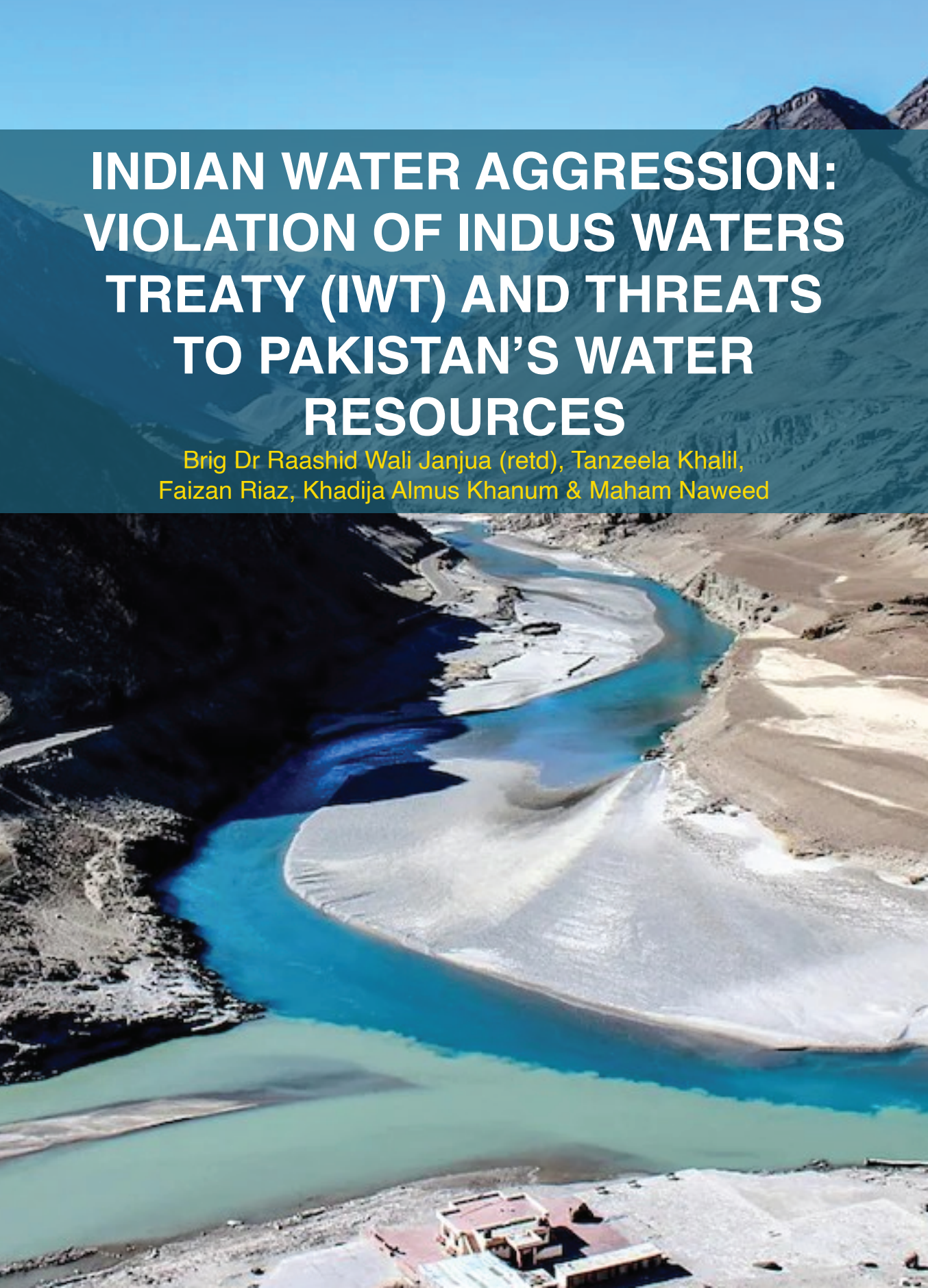

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Acronyms

CoA	Court of Arbitration
DSL	Dead Storage Level
GDP	Gross Domestic Product
GERD	Grand Ethiopian Renaissance Dam
GLOF	Glacial Lake Outburst Floods
HKH	Himalaya–Karakoram–Hindu Kush
ICJ	International Court of Justice
IIOJK	Indian Illegally Occupied Jammu and Kashmir
IWT	Indus Waters Treaty
KHEP	Kishanganga Hydroelectric Project
MAF	Million Acre-Feet
NE	Neutral Expert
NHPC	National Hydroelectric Power Corporation
NSC	National Security Committee
OIC	Organisation of Islamic Cooperation
PCA	Permanent Court of Arbitration
PCRWR	Pakistan Council of Research in Water Resources
PIC	Permanent Indus Commission
RHEP	Ratle Hydroelectric Projects
RUDA	Ravi Urban Development Authority
SCADA	Supervisory Control and Data Acquisition
TVA	Tennessee Valley Authority
UN	United Nations
UNGA	United Nations General Assembly
UNSC	United Nations Security Council
VCLT	Vienna Convention on the Law of Treaties

Chapter 1
Introduction

Water is an essential resource underpinning agriculture, industry, and human survival, yet its transboundary nature often makes it a source of political friction and strategic leverage. In South Asia, the Indus River system is a lifeline for Pakistan, with nearly all major rivers originating in Indian-administered territory before flowing downstream. This geographic reality creates acute vulnerability for Pakistan and has made water a persistent flashpoint in Indo-Pak relations. The 1960 Indus Waters Treaty (IWT), brokered by the World Bank, was designed to provide a durable framework for water sharing by allocating the western rivers to Pakistan and the eastern rivers to India, while outlining mechanisms for cooperation and dispute resolution.

Despite its longevity, the IWT has been repeatedly tested. India's recent unilateral decision to hold the treaty in abeyance, violation of design features of dams and hydroelectric projects on western rivers, delayed data sharing, and political rhetoric about restricting flows have led Pakistan to believe that India is pursuing water aggression. These actions not only raise legal and diplomatic concerns but also threaten Pakistan's food security, hydropower generation, and fragile ecosystems. Climate change, population growth, and declining storage capacities further intensify these challenges, making water security a critical national and regional issue.

This study examines India's violations of the IWT, the historical and legal context of these disputes, and their implications for Pakistan's economic, environmental, and strategic security. It also explores legal, diplomatic and infrastructural actions available to Pakistan to safeguard its water rights under international law and for ensuring sustainable transboundary water governance in South Asia.

Understanding Water Aggression

Water is a vital resource for human civilisation, sustaining agriculture, industry, and daily life. However, in regions where water sources are shared across borders, it can become a significant point of contention and a tool for

geopolitical influence. For instance, in South Asia, India has time and again strategically manipulated water resources to exert pressure on neighbouring countries, particularly Pakistan. This analysis explores the concept of water as a geopolitical tool, historical precedents of water conflicts, and specific actions taken by India that have led to water aggression.

Concept of Water as a Geopolitical Tool

Water is increasingly recognised as a geopolitical asset, with nations in control of upstream sources wielding considerable influence over downstream countries. This influence can manifest in various ways, including imposition of restrictions on water flows, construction of infrastructure to manipulate water access, or use of water scarcity as a means of economic and political coercion. In transboundary water disputes, upstream nations may employ such tactics to assert dominance, gain leverage in negotiations, or punish adversaries.

In South Asia, the Indus River system is a prime example of how water can become an instrument of coercion. The rivers of the Indus Basin - comprising the Indus, Jhelum, Chenab, Ravi, Beas, and Sutlej - flow from India into Pakistan, making Pakistan heavily reliant on water originating from Indian-administered territory. This dependence has fuelled concerns over India's ability to control and potentially weaponise the water flow to harm Pakistan's economic and agricultural stability.

Historical Precedents and Examples in Global Context

Water disputes have a long history, with several notable examples demonstrating how countries have leveraged water resources for strategic purposes:

- **Egypt and Ethiopia:** The construction of the Grand Ethiopian Renaissance Dam (GERD) on the Blue Nile has sparked tensions between Ethiopia, which seeks hydropower benefits, and Egypt, which fears reduced water flow crucial for agriculture and drinking supplies.

- **Turkey and Syria/Iraq:** Turkey's extensive dam projects on the Tigris and Euphrates Rivers have reduced water flow to Syria and Iraq, causing economic and agricultural difficulties downstream.
- **Israel and Jordan:** Water access has been a contentious issue in the Middle East, with Israel controlling critical water sources and negotiations over water allocation playing a role in diplomatic relations.

These cases illustrate the potential for water conflicts to escalate into political and even military confrontations, underscoring the relevance of water aggression as a global concern.

India's Actions Post-Indus Waters Treaty (IWT)

The IWT, signed in 1960 and brokered by the World Bank, governs water-sharing between India and Pakistan. It grants Pakistan control over the western rivers (Indus, Jhelum, and Chenab) while allowing India to utilise the eastern rivers (Ravi, Beas, and Sutlej) with certain restrictions on water usage from the western rivers for non-consumptive purposes. Despite this agreement, India has remained engaged in water aggression through construction of various dams and hydropower projects and strategic manipulation of water flows.

Although the IWT permits India to harness the hydropower potential of the Chenab and Jhelum rivers before they flow into Pakistan; yet, this usage is conditional on the assurance that neither the volume of water reaching Pakistan is reduced nor the natural timing of the flows is disrupted.[1] Despite these clear indications in the treaty, India has undertaken multiple hydroelectric projects on the western rivers (See Table 1), which Pakistan perceives as violations of the IWT. Notable examples of Indian violations shall be discussed later in the study.

[1] Article – III (para 2), Provisions Regarding Western Rivers, *Indus Waters Treaty Text* (1960).

Table 1

Ser.	River	Project	Location (District, UT/State)	Type	Capacity (MW)	Status (Done / In-progress / Proposed)
1.	JHELUM	Kishanganga	Bandipora, J&K (India)	Run-of-river	330	Operational
2.	JHELUM	Uri-I	Baramulla, J&K (India)	Run-of-river	480	Operational
3.	JHELUM	Uri-II	Baramulla, J&K (India)	Run-of-river	240	Operational
4.	JHELUM	Lower Jhelum	Baramulla, J&K (India)	Run-of-river	105	Operational
5.	JHELUM	Upper Sindh-I	Ganderbal, J&K (India)	Run-of-river	22.6	Operational
6.	JHELUM	Upper Sindh-II	Ganderbal, J&K (India)	Run-of-river	105	Operational
7.	JHELUM	New Ganderbal	Ganderbal, J&K (India)	Run-of-river	93	In-progress (revived EPC)
8.	JHELUM	Mohura (rehab)	Baramulla, J&K (India)	Run-of-river	~9	Rehabilitation under way
9.	JHELUM	Parnai	Poonch, J&K (India)	Run-of-river	37.5	In-progress
10.	JHELUM	Karnah	Tangdhar, Kupwara, J&K (India)	Small hydro	12	Proposed/Revived
11.	CHENAB	Salal	Reasi, J&K (India)	Storage + ROR	690	Operational
12.	CHENAB	Dulhasti	Kishtwar, J&K (India)	Run-of-river	390	Operational
13.	CHENAB	Baglihar-I	Ramban, J&K (India)	Run-of-river	450	Operational
14.	CHENAB	Baglihar-II	Ramban, J&K (India)	Run-of-river	450	Operational
15.	CHENAB	Ratle	Kishtwar, J&K (India)	Run-of-river	850	In-progress (NHPC–JKPCL JV)
16.	CHENAB	Pakal Dul	Kishtwar, J&K (India)	Storage + ROR	1000	In-progress
17.	CHENAB	Kiru	Kishtwar, J&K (India)	Run-of-river	624	In-progress
18.	CHENAB	Kwar	Kishtwar, J&K (India)	Run-of-river	540	In-progress
19.	CHENAB	Sawalkote	Ramban/ Udhampur, J&K (India)	Run-of-river (large)	1,856	Proposed/cleared (TEC)
20.	CHENAB	Kirthai-II	Kishtwar, J&K (India)	Run-of-river	930	Proposed/cleared (revived)

21.	CHENAB	Bursar	Kishtwar, J&K (India)	Storage (dam)	800	Proposed (env. clearances stage)
22.	CHENAB	Lower Kalnai	Doda/ Kishtwar, J&K (India)	Run-of-river	48	Stalled/under revival
23.	CHENAB (HP)	Dugar	Chamba, Himachal Pradesh (India)	Run-of-river	500	Proposed
24.	CHENAB (JK)	Chenani-I	Udhampur, J&K (India)	Run-of-river (Tawi)	22.6	Operational
25.	CHENAB (JK)	Chenani-II	Udhampur, J&K (India)	Run-of-river (Tawi)	23	Operational
26.	CHENAB (JK)	Chenani-III	Udhampur, J&K (India)	Run-of-river (Tawi)	23	Operational
27.	INDUS	Nimoo Bazgo	Leh, Ladakh (India)	Run-of-river	45	Operational
28.	INDUS	Chutak	Kargil, Ladakh (India)	Run-of-river	44	Operational
29.	INDUS	Karkit HEP	Leh	Run-of-river	30	Proposed/not widely regarded as operational
30.	INDUS	Khaltsi HEP	Leh	Run-of-river	60	Reported as planned scheme
31.	INDUS	Takmachki HEP	Leh	Run-of-river	30	Proposed/ not yet fully commissioned
32.	INDUS	Parkhachik-Panikhar HEP	Kargil	Run-of-river	60	Proposed

Pakistan claims that India deliberately manipulates water flows to disrupt agricultural cycles and infrastructure stability. Pakistani concerns include:

- Deliberate water releases causing floods: Pakistan has experienced sudden floods attributed to unexpected water releases from Indian dams.[2]
- Water withholding during dry seasons: Reduced water availability during critical agricultural periods affects crop yields and food security in Pakistan.

[2] "India releases water from Baglihar dam; Pakistan faces floods in low-lying areas," *Business Recorder,* 8 July 2005, accessed on November 13, 2024, available at https://www.brecorder.com/news/3177828

- Political rhetoric on water control: Statements by Indian officials suggesting restrictions on water flow to Pakistan reinforce fears of water being used as a pressure tactic.[3]

[3] "Not a drop of water will go to Pakistan: Jal Shakti minister," *Economic Times,* 25 April 2025, https://economictimes.indiatimes.com/news/india/not-even-a-drop-of-water-will-go-to-pakistan-india-works-on-measures-after-suspending-indus-water-treaty/articleshow/120622768.cms?from=mdr

Chapter 2
Genesis of Indus Waters Treaty

Evolution of the Treaty

Geography of the Indus River Basin

The Indus river basin spreads over an area of 1.12 million km^2 distributed between Pakistan (520,000 km^2), India (440,000 km^2), China (88,000 km^2) and Afghanistan (72,000 km^2)[4]. The Indus River originates in Tibet, in the upper reaches of the Himalayas[5], and after passing through Indian Illegally Occupied Jammu and Kashmir (IIOJK), enters Pakistan. Flowing through fertile plains of Punjab and Sindh, it eventually drains into the Arabian Sea[6]. The Indus River system consists of six rivers: the Indus, Jhelum, Chenab, Ravi, Beas and Sutlej (See Figure-I).

[4] FAO, *AQUASTAT Transboundary River Basins – Indus River Basin* (Food and Agriculture Organization of the United Nations, Rome 2011)

[5] NASA Earth Observatory, 'Indus River, Pakistan' (NASA Earth Observatory, December 18, 2009) earthobservatory.nasa.gov/images/43890/indus-river-pakistan.

[6] Erum Sattar, Jason Robison and Daniel McCool, 'Evolution of Water Institutions in the Indus River Basin: Reflections from the Law of the Colorado River' (2018) 51 University of Michigan Journal of Law Reform 715 repository.law.umich.edu/mjlr/vol51/iss4/3.

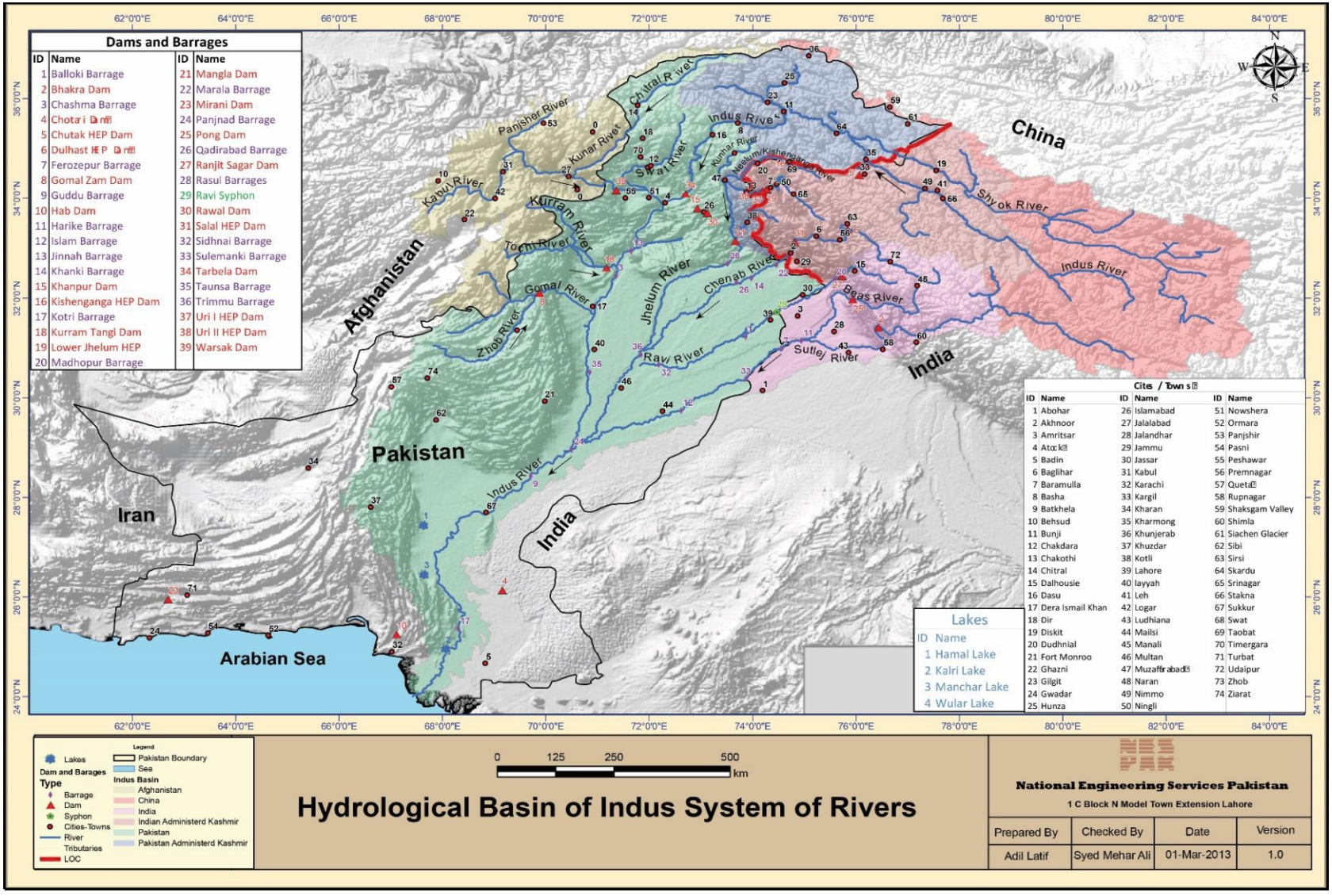

Figure I: Hydrological Basin of Indus System of Rivers

Source: *Ministry of Water Resources, Government of Pakistan, March 1, 2013*

Impact of Partition & Radcliffe Award on Water Distribution

The partition of the Indian Subcontinent in 1947 was marked by the Radcliffe Award, which drew the boundary line between India and Pakistan[7]. This line bisected the Indus Basin, leaving India with control over the eastern rivers (Ravi, Beas, and Sutlej) and Pakistan with the western rivers (Indus, Jhelum, and Chenab). The division created immediate disputes as India became the upper riparian state controlling vital water sources that fed into Pakistan's irrigation systems.

India's Water Disruptions

In December 1947, a Standstill Agreement was signed to maintain the status quo, requiring India to continue the flow of water in the canals until a permanent arrangement was established.[8] However, the agreement expired on 31 March 1948. The very next day, India cut off the water supply from the Ferozpur Headworks to the Dipalpur Canal, which irrigated Pakistan's Kharif crops. To resolve this crisis, an "Inter-Dominion Accord" was signed on 4 May 1948, under which India agreed to release sufficient water through existing canals to meet Pakistan's needs, in exchange for annual payments.[9] However, this temporary arrangement failed to resolve the underlying issues. As part of the accord, India demanded that Pakistan should recognise its complete rights over the three eastern rivers and develop alternative water sources, as the flow from these rivers would eventually be unavailable. Both countries initiated projects to meet their respective water needs, but India's assertion of proprietary rights over the rivers remained a constant threat to Pakistan's water security.[10] By 1950, tensions had escalated, which were further exacerbated by border skirmishes and the unresolved Kashmir issue.[11]

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[7] Aloys Arthur Michel, *Indus Rivers: A Study on the Effects of Partition* (Yale University Press 1967) 134–195.

[8] Ahmad A, 'Indus Waters Treaty: A Dispassionate Analysis' (2011) 8(2) Policy Perspectives 73 www.jstor.org/stable/42909289.

[9] Michel, *Indus Rivers* 202–205.

[10] Michel, *Indus,* 205 – 219.

[11] Miriam R Lowi, *Water and Power: The Politics of a Scarce Resource in the Jordan River Basin* (Cambridge University Press 1993) 64.

The Role of the World Bank in Facilitating Water Dispute Negotiations

In 1951, David E. Lilienthal, former chairman of the Tennessee Valley Authority (TVA) and later the head of the US Atomic Energy Commission, visited India and Pakistan on a fact-finding mission for Collier's magazine. Upon his return, he wrote a report, emphasising the need to resolve the water issues in South Asia. According to Lilienthal, this resolution was a prerequisite for broader peace efforts, especially regarding the contentious Kashmir region. He argued that addressing the Indus waters dispute was crucial to preventing potential conflicts and promoting cooperation between the newly created India and Pakistan. Lilienthal proposed the involvement of the World Bank to facilitate negotiations and finance the infrastructure projects, in Pakistan and India, for the effective management of water in both countries. Acting on his suggestion, the then World Bank President, Eugene Black, offered the World Bank's good offices and agreed to facilitate negotiations between the two countries.[12]

In 1952, both countries agreed to form a Working Group consisting of engineers from each side to develop a comprehensive plan for managing the Indus Waters Basin. The World Bank appointed an engineer as an impartial adviser. Both sides presented their plans; Pakistan aimed to maintain its existing water rights, while India sought control over all waters from the eastern rivers and a portion of the western rivers. This led to a deadlock, as neither plan was acceptable to the other.

After a period of stalled negotiations, discussions resumed in December 1954 when the World Bank proposed a compromise, assigning the eastern rivers to India and the western rivers to Pakistan, with a transition period to allow Pakistan to build the requisite infrastructure and adjust its water supply systems. However, Pakistan criticised the plan for lacking provisions for adequate storage reservoirs and raised concerns about the fairness of the proposed allocations. Acknowledging these concerns, the World Bank suggested development of plans that included storage reservoirs.

[12] Michel, *Indus Rivers* 219–225

Over the next six years, negotiations continued intermittently, marked by both cooperation and contention. Key issues included infrastructure development for irrigation and hydropower projects necessary for both nations to utilise their allocated waters effectively. Pakistan increasingly focused on maximising the potential of its allocated western rivers to meet the demands of its growing population.

Final Agreement: The Indus Waters Treaty (1960)

In May 1959, Eugene Black presented a draft *Heads of Agreement*, outlining specific provisions for water division, development projects in Pakistan without Indian involvement, and financial contributions toward these projects. The World Bank successfully secured financial support from several countries, including the United States and the United Kingdom, for a comprehensive water settlement estimated at US$ 1 billion. This was an essential step in advancing negotiations.

The final round of talks took place in August 1960. After extensive discussions, involving engineers from both countries and World Bank experts, an agreement was reached. On 19 September 1960, Indian Prime Minister Jawaharlal Nehru, Pakistani President Ayub Khan and the Vice President of the World Bank, signed the IWT in Karachi.[13]

Division of Rivers and Usage Rights

Eastern Rivers (Sutlej, Beas and Ravi)

Under the IWT, waters of the Eastern Rivers (Sutlej, Beas and Ravi) have been allocated to India for unrestricted use. As stipulated in Article II of the IWT, Pakistan is required to allow the natural flow of the waters of any tributary that, in its natural course, joins the Sutlej Main or the Ravi Main before these rivers enter Pakistan. Except for purposes such as domestic, non-consumptive, and agricultural uses specified in Annexure B, Pakistan is not permitted to interfere with these waters.[14] According to the provisions of Annexure B with regards

[13] Michel, *Indus Rivers…*

[14] Article-II (para 2), "Provisions Regarding Eastern Rivers," *Text of the Indus Waters Treaty* (1960).

to irrigation, Pakistan may withdraw waters from the tributaries of River Ravi (Basantar, Bein, Tarnah, Ujh) as may be available and as may be necessary for the irrigation.[15]

Western Rivers (Indus, Jhelum and Chenab)

All waters of the Western Rivers (Indus, Jhelum and Chenab) have been allocated for unrestricted use by Pakistan. India is obligated to allow the unrestricted flow of all waters of the Western Rivers and is prohibited from interfering with them, except for purposes such as domestic use, non-consumptive use, agricultural use (as detailed in Annexure C), and the generation of hydroelectric power (as outlined in Annexure D). Furthermore, Article III, paragraph 4, stipulates that India may not store water from, or construct storage works on, the Western Rivers beyond what is permitted in Annexures D and E of the Treaty. The total permissible storage capacity is limited to 3.6 million acre-feet (MAF), a quota that India has not yet fully utilised.[16] With regards to irrigation, India is allowed to irrigate 1.3 million acres in total on Western rivers.

Disputes under Indus Waters Treaty over Hydropower Projects

IWT has faced significant challenges due to hydropower projects initiated by India, raising concerns from Pakistan over treaty compliance.

Salal Dam

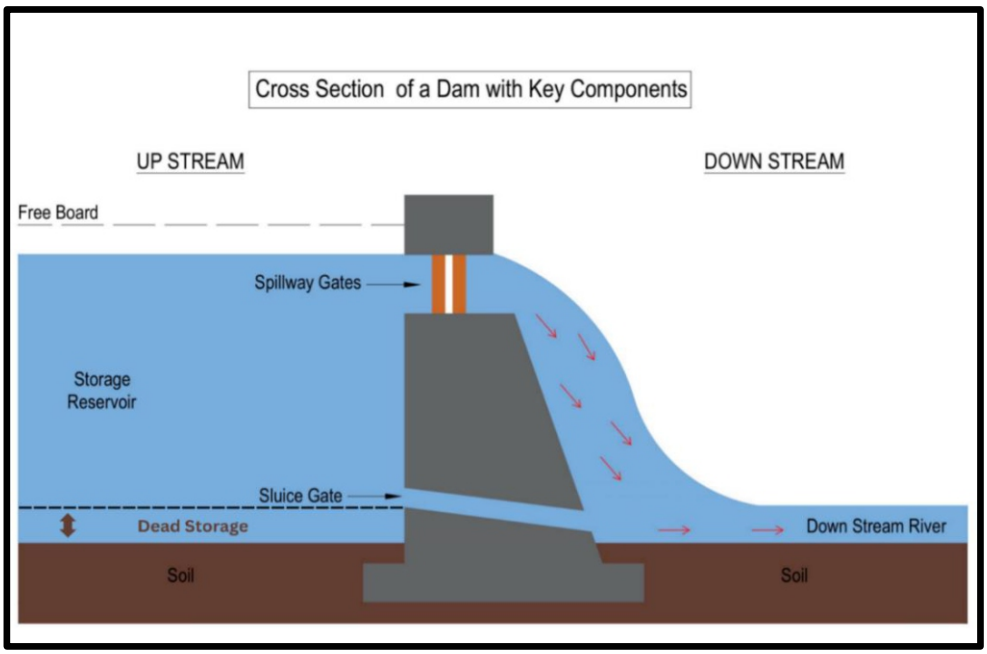
The Salal Dam, located on the Chenab River, became the first point of contention when Pakistan raised objections in 1970 on the use of River Chenab's water, a western river allocated for Pakistan's unrestricted use. Pakistan raised specific objections on construction of the dam including; installation of iron gates that could create hurdles in the free flow of water of the Chenab River, construction of sluices (measuring 15x11 feet) below the Dead Storage Level (DSL), Indian installation of a gated spillway and that the proposed design was in contravention of para. (e) of Annexure D. Besides that

[15] Annexure B (Para 3), "Agricultural Use by Pakistan from Certain Tributaries of the Ravi," *Text of the Indus Waters Treaty* (1960).

[16] Interview with Additional Secretary at Ministry of Water Resources Meher Ali Shah on July 29, 2025.

the design of the proposed dam placed the top intakes at a depth of 13.5 feet which was also the DSL (See Figure – II to understand the parts of a Dam). As per IWT, the drawdown of water is not allowed below the DSL and is only permitted in unforeseen emergency conditions with smallest possible sluices placed at the highest possible point. According to the treaty, it is the responsibility of India as an upper riparian to select the dam sites for permissible use under the treaty in a manner that siltation is avoided. The PIC failed to resolve the issue, escalating it to bilateral talks. The dispute was settled in 1978 when India agreed to modify the dam's design by keeping the height of the dam at 1600 feet to store maximum of 303,300 acre-feet of water and install six sluices at the height of 1365 feet which could be closed after filling of the reservoir.[17]

Figure II: Key Components of a Dam



[17] Waseem Ahmad Qureshi, "Dispute Resolution Mechanisms: An Analysis of the Indus Waters Treaty" (2018) 18 *Pepperdine Dispute Resolution Law Journal* 75, 103–105 digitalcommons.pepperdine.edu/drlj/vol18/iss1/4.

Wullar Barrage/ Tulbul Navigation Project

The Tulbul Navigation Project, referred to as the Wullar Barrage by Pakistan, was initiated by India in 1984 without prior consultation or sharing of designs, violating IWT obligations. In 1986, the project designs were only shared under persistent pressure from Pakistan. The treaty forbids India to store water or construct any storage work except as laid down in Annexures D and E. According to Annexure E, sub-para. 8(h), the storage should not exceed 10,000 acre-feet, whereas the design shared by India indicated that the barrage will have the capacity to store 300,000 acre-feet of water which is 30 times more than the allowed capacity. Pakistan was of the view that the barrage or control structure would enable India to release or withhold water at its discretion affecting water supplies which are essential for its agriculture and hydroelectric power generation.[18] Pakistan's apprehensions were well grounded in history when India in 1948 shut off water supplies from Ferozpur headworks to canals in Pakistan at the critical kharif sowing period. Since the start of the project to March 2012, there were fourteen rounds of secretary-level talks between the two countries; however, no agreement was reached and India unilaterally resumed construction work on the project. In May 2013, Pakistani commissioner visited the project site and reported that there are indications that India is ready to make adjustments to the design which may facilitate an agreement. India, so far, has not been able to complete the construction of the project. Recently, soon after announcing to hold the treaty in abeyance, a statement by Union Minister of Jal Shakti C.R. Patil said that discussions are at an advanced stage to bring the project back on track. A feasibility study has been conducted and the National Hydroelectric Power Corporation (NHPC) is preparing a detailed project report on it.[19]

Baglihar Dam

The third dispute between the two countries relates to Baglihar Dam, which is a 450 MW power project built on Chenab River. India shared the design of the

[18] Ijaz Hussain, "Treaty in Action – I," in *Political and Legal Dimensions of Indus Waters Treaty* (Karachi: Oxford University Press, 2017), 223.

[19] "Tulbul Project Resumes as Indus Water Treaty Stalls," *Deccan Chronicle,* 26 June 2025, available at https://www.deccanchronicle.com/nation/india-pushes-ahead-with-tulbul-project-plans-4-hydro-plants-as-iwt-remains-in-abeyance-1887752

Baglihar Dam with Pakistan in 1992, prompting immediate objections from Pakistan on the gated spillways structures which according to Pakistan were in violation of clauses (a), (c), (e) and (f) of para. 8 of Annexure D. Gated spillways would artificially raise the water levels above the full pondage subsequently increasing the storage capacity of the dam and enabling India to manipulate river flows. The matter could not be resolved at the PIC level and subsequent bilateral negotiations.[20] A notice from Pakistan was served to the Indian government to meet the following conditions;

i) Stop work on the project,
ii) Allow an on-site inspection by the Pakistani commissioner, and
iii) Resolve the dispute by September 2003. It was also indicated in the notice that if India fails to fulfill these demands, Pakistan reserved the right to approach the Bank for the appointment of a Neutral Expert (NE).

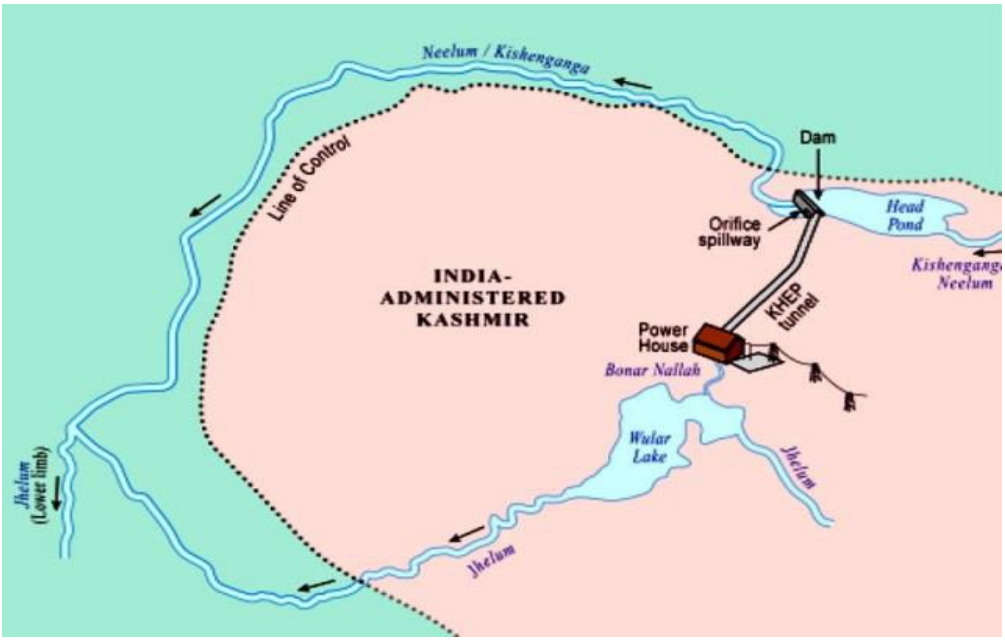
In 2005, Pakistan formally requested the World Bank to appoint a NE. The NE upheld some of Pakistan's objections, recommending design modifications including reductions in free board (from 4.5 meters to 3 meters) and pondage, while also upholding India's right to construct gated spillways. The decision was declared final and binding on both parties.[21]

Kishanganga Dam

In 2010, the fourth dispute between India and Pakistan arose over the Kishanganga Hydroelectric Project (KHEP), which India built on a major tributary of the Jhelum River. The project involves the diversion of water from a dam site on the Kishanganga/Neelum River through a 22km long tunnel to the Bonar Nullah which is another tributary of the Jhelum River (See Figure – III).

[20] Ijaz Hussain, "Treaty in Action – I," in *Political and Legal Dimensions of Indus Waters Treaty* (Karachi: Oxford University Press, 2017), 232.
[21] Ijaz Hussain, "Treaty in Action…

Figure III: Neelum/Kishanganga Dam Site



Source: *Express Tribune, December 22, 2013*

On 17 May 2010, Pakistan initiated proceedings against India in the PCA, stating that the two parties had failed to resolve the "Dispute" concerning the KHEP pursuant to Article IX (4) of the Treaty.[22] In its request, Pakistan clearly identified two concerns that were at the center of the dispute, which include;[23]

- Whether India's proposed diversion of the river Kishanganga (Neelum) into another Tributary, i.e. the Bonar-Madmati Nallah, being one central element of the Kishanganga Project, breaches India's legal obligations owed to Pakistan under the Treaty, as interpreted and applied in accordance with international law, including India's obligations under Article III (2) (let flow all the waters of the Western rivers and not permit

[22] Ijaz Hussain, "Treaty in Action – II," in *Political and Legal Dimensions of Indus Waters Treaty* (Karachi: Oxford University Press, 2017), 284.

[23] "PCA Final Award in the Matter of the Indus Waters Kishanganga Arbitration," December 20, 2013, available at https://pcacases.com/web/sendAttach/48

any interference with those waters) and Article IV(6) (maintenance of natural channels).

- Whether under the Treaty, India may deplete or bring the reservoir level of a run of river Plant below DSL in any circumstances except in the case of an unforeseen emergency.

In the Partial Award issued in February 2013, the court decided that;[24]

- India is permitted to divert water from the Kishanganga/Neelum River for power generation through the KHEP and may discharge the released water downstream into the Bonar Nallah.
- However, India is obligated to design and operate the KHEP in a manner that ensures the maintenance of a minimum flow in the Kishanganga/Neelum River, with the specific rate to be determined by the Court in its Final Award.
- Except in cases of unforeseen emergencies, the Treaty prohibits lowering the water level in the reservoirs of Run-of-River Plants on the Western Rivers below the DSL.
- The buildup of sediment in the reservoir of a Run-of-River Plant on the Western Rivers does not qualify as an unforeseen emergency and, therefore, does not justify depleting the reservoir below the DSL for drawdown flushing.
- Consequently, India is not permitted to carry out drawdown flushing at the KHEP reservoir if it results in the water level falling below the Dead Storage Level.

It is important to note that in response to India's request for clarification or interpretation concerning the second dispute on the DSL, the Court unanimously ruled that the restriction on lowering the water level below the DSL in the reservoirs of Run-of-River Plants on the Western Rivers - except in cases of unforeseen emergency – is of general application.[25] According to

[24] "PCA Final Award…
[25] "PCA Final Award…

Meher Ali Shah,[26] the 2013 ruling was a strategic victory for Pakistan, as it invalidated India's justification for low-level outlets and sediment flushing, which had been India's core argument for greater control over water flows. This outcome, along with the unanimous decision of the seven-member Court of Arbitration (CoA) (including two Indian-appointed arbitrators), demonstrated the strength of the treaty's dispute resolution system under Article IX. India later filed a request for clarification, arguing that sediment management should be decided on a case-by-case basis, but the Court rejected this, reiterating that India must choose project sites compatible with the treaty's limitations.

Regarding the first dispute concerning the diversion of water, the court in its final decision concluded that;

- India must ensure a minimum release of 9 cubic meters per second (cumecs) of water into the Kishanganga/Neelum River downstream of the KHEP whenever the daily average flow in the river immediately upstream of the KHEP is equal to or greater than 9 cumecs.
- When the daily average flow in the Kishanganga/Neelum River immediately upstream of the KHEP falls below 9 cumecs, India is required to release the entire (100 percent) daily average flow from upstream into the river below the KHEP.

Although the treaty allows India to divert water between tributaries of the Western Rivers; however, according to Annexure D, para. 15 (iii) India is only permitted to divert water from one tributary of Jhelum to another tributary of Jhelum (not to the main stem), provided that, the then existing agricultural and hydroelectric uses on the donor tributary are not adversely affected.[27]

The 2013 Supplemental Award made India realise that as long as Article IX remains, Pakistan can use the CoA to block Indian designs that violate treaty principles. After Salal, Baghliar, and Kishanganga, India concluded that the

[26] Interview with Indus Waters Commissioner Meher Ali Shah.
[27] Interview with Meher Ali Shah

existing dispute resolution mechanism restricts its ability to pursue projects freely. India now seeks to limit the scope of dispute resolution, possibly by mandating a tiered approach - requiring disputes to first go to a NE before reaching the CoA, rather than allowing Pakistan the current choice of forum. This proposed change appears aimed at reducing legal constraints and maintaining greater flexibility in India's future projects.[28]

The issues of storage and pondage were further deliberated and the CoA in its recent Award (8 August 2025)[29] on Issues of General Interpretation of the IWT has held that the general rule is that India must "let flow" the waters of the Western Rivers for Pakistan's unrestricted use, subject only to narrowly defined exceptions. It endorsed Pakistan's view that India's run-of-river projects must conform strictly to the Treaty, rather than to best engineering practices that could afford India greater control over flows. This reinforces Pakistan's position that India should not operate projects in a way that allows it a disproportionate control over the rivers. The specific clauses in the Award regarding design of run-of-the-river projects include;

- Low-level outlets are prohibited below Dead Storage Level unless necessary for sediment control or another technical purpose, and such outlets must be minimal in size and located highest in the dam; similarly, gated spillways should be avoided unless necessary due to site conditions, and if necessary, gate bottoms must be at the highest level possible; likewise, power intakes must be located at the highest level consistent with satisfactory and economic operation, and customarily, shallow intakes are preferred unless unsuitable.
- In addition, maximum pondage must be calculated based on water accumulated over a seven-day period at minimum mean discharge, considering downstream release requirements and realistic projections of installed capacity and load, and maximum pondage shall not exceed

[28] Interview with Meher Ali Shah

[29] PCA Case No. 2023-01, The Islamic Republic of Pakistan v The Republic of India, Award on Issues of General Interpretation of the Indus Waters Treaty (Court of Arbitration constituted under the Indus Waters Treaty 1960 https://pcacases.com/web/sendAttach/83591

twice this amount. Freeboard (the dam wall height above full supply level) is permitted only to the extent necessary for dam safety against overtopping according to internationally recognised standards, while additional freeboard for other purposes is prohibited.

Detailed interpretations of Annexure D, on outlets, spillways, intakes, pondage, and freeboard, align with Pakistan's technical objections to the Kishanganga and Ratle plants, underscoring that Treaty compliance requires India to limit storage and manipulation of the Western Rivers, as Pakistan contends.

Kishanganga-II and Ratle Hydroelectric Projects (RHEP)

In 2016, Pakistan formally instituted arbitral proceedings against India's construction and design of hydroelectric projects on the Western Rivers, particularly the Kishanganga-II (Neelum) and Ratle Hydroelectric Projects (RHEP). Pakistan raised objections regarding pondage calculation methods, the siting of power intakes, sediment outlets, and flood control mechanisms, all of which it argued were inconsistent with the Treaty. While Pakistan approached the CoA, asserting that the issues involved legal interpretation, India maintained that the matter should be referred to a NE. The initiation of parallel processes gave rise to a procedural standoff and reflected India's unwillingness to engage with the dispute resolution mechanism set out in the Treaty.[30]

Although Pakistan's request for the empanelment of the CoA was made first, the World Bank, acting as a facilitator under the IWT, called for a "pause" in December 2016 to allow both parties to reach an understanding on the appropriate forum. In essence, the World Bank halted the arbitration process. In 2022, the World Bank resumed both proceedings after Pakistan and India failed to agree on a single procedural pathway.[31] Pakistan maintains that the matter rightfully falls within the jurisdiction of the CoA under the Treaty's

[30] World Bank, "Fact Sheet: The Indus Waters Treaty 1960 and the World Bank," www.worldbank.org/en/region/sar/brief/fact-sheet-the-indus-waters-treaty-1960-and-the-world-bank .

[31] World Bank, "Fact Sheet….

provisions, whereas India continues to insist on referring the issue to a NE, demonstrating noncompliance with the dispute resolution framework outlined in Article IX. The proceedings before the CoA commenced in The Hague before the Permanent Court of Arbitration (PCA), though India chose to boycott the hearings. However, CoA's supplemental award rendered on 8 August 2025, as discussed earlier, also aligns with Pakistan's reservations on Kishanganga and Ratle plants. The award clearly stated that despite India's boycott, the PCA is competent to adjudicate the Kishanganga dispute under the IWT.

Chapter 3
Current Developments

Insufficient Data/Information Sharing

India's noncompliance with the IWT is not just limited to its approach to dispute resolution, which according to Indian perspective restricts its autonomy in developing projects on Western rivers. India also argues that sediment management, hydropower optimisation, and design flexibility are essential for modern projects, which the treaty allegedly does not fully accommodate. This has created long-term frustration on the Indian side and likely influences their current push for modification.

Besides the dispute resolution mechanism, Pakistan has also raised concerns regarding India's failure to fulfil the Treaty's information-sharing obligations. Under Article VII(2) and Para 9 of Annexure D, India is required to provide detailed data and design information on hydroelectric projects planned on the Western Rivers well in advance, enabling Pakistan to assess their conformity with the technical criteria provided in the IWT. However, India has often delayed the communication of such information or shared it only after projects are substantially advanced, effectively denying Pakistan a meaningful opportunity to register objections or seek modifications. The data provided has repeatedly lacked the level of detail necessary to allow Pakistan to verify compliance with the design and operational requirements of the Treaty. In recent years, the functioning of the Permanent Indus Commission (PIC) has further deteriorated, with fewer meetings, delayed or denied inspections, and an overall decline in cooperative engagement. Pakistan has raised these concerns in its submissions before the CoA in the ongoing Kishanganga II case, framing India's conduct as a pattern of Treaty violations. This obstructive approach has significantly undermined the Treaty's cooperative framework and eroded its intended function of minimising disputes through transparency and timely exchange of information.[32] This specific concern of data sharing was, once again, emphasised in the recently rendered CoA's Award on Issues of General Interpretation of the IWT where it mentioned that, "the Parties must

[32] PCA Case No 2023-01 (Pakistan v India), Memorial (First Phase on the Merits), Court of Arbitration constituted in accordance with the Indus Waters Treaty 1960, Volume I (March 22, 2024) section 6C, https://pcacases.com/web/sendAttach/61434 .

cooperate from an early stage in the planning of new run-of-river hydro-electric plants on the Western Rivers to allow design modifications in response to valid concerns, and India bears the burden of proving the compliance of its designs with the Treaty."[33]

Although India has boycotted the proceedings and has not participated in any of the hearings, the PCA has held that it is competent to adjudicate the Kishanganga dispute under the IWT. It affirmed that a party's non-appearance or boycott does not affect the tribunal's jurisdiction or the binding nature of its awards. India has rejected the PCA's rulings, characterising the tribunal as illegitimate and its decisions as non-binding. However, the PCA maintains that the arbitration is valid and its awards are legally binding under the Treaty framework.[34] The final decision in the case remains pending before the Court.

Cooperation and Dispute Resolution Mechanism

The IWT establishes a structured cooperative and dispute resolution mechanism. Article VIII of the Treaty establishes the cooperative mechanism of the PIC, a bilateral body tasked with overseeing the implementation of the treaty's provisions. Each country is required to appoint a Commissioner for Indus Waters, typically a high-ranking engineer with expertise in hydrology and water use. These Commissioners are representatives for their respective governments on matters related to the treaty. Both Commissioners form the PIC, which serves as the primary channel for communication and coordination regarding treaty implementation.[35] Article IX of the IWT sets out the dispute resolution mechanism for addressing issues between Pakistan and India concerning the interpretation or application of the Treaty. This mechanism is two-pronged, providing for the appointment of either a NE or the constitution of a CoA. Under Article IX, a "difference" is to be addressed by a NE, whereas a "dispute" is to

[33] PCA Case No. 2023-01, The Islamic Republic of Pakistan v The Republic of India, Award on Issues of General Interpretation of the Indus Waters Treaty (Court of Arbitration constituted under the Indus Waters Treaty 1960 https://pcacases.com/web/sendAttach/83591.

[34] PCA Case No 2023-01 (Pakistan v India), Award on the Competence of the Court, Court of Arbitration constituted in accordance with the Indus Waters Treaty 1960, July 6, 2023, https://pcacases.com/web/sendAttach/49612 .

[35] PCA Case No 2023-01…Art 8.

be referred to the CoA. A "difference" falls within the scope of Part I of Annexure F, which enumerates twenty-three specific questions that are to be addressed by the NE.[36] These questions primarily pertain to technical and factual issues relating to water availability, usage, drainage, storage works, hydroelectric operations, and compliance with the Treaty's procedural and engineering standards.[37] For a matter to be validly referred to a NE under the Treaty, two requirements must be satisfied: a subject-matter requirement, whereby the issue must fall within the list of twenty-three technical questions enumerated in Part I of Annexure F; and a procedural requirement, which necessitates that one of the Commissioners formally elevates the issue to the governmental level and a formal request for the appointment of a NE is sent to the World Bank by either Pakistan or India.[38]

Any question concerning the treaty's interpretation or application is first examined by the PIC. According to Article IX (para 2), if the Commission cannot reach an agreement, the matter is classified as a "difference" depending on the nature and legal character of the issue.[39] If the issue does not qualify as a "difference" and extends beyond the technical matters reserved for the NE, it is deemed to constitute a "dispute", and a CoA is constituted to resolve the matter. The CoA is competent to handle disputes under the IWT that involve legal interpretation, application of treaty provisions. The procedure for the establishment and functioning of the Court is set out in Annexure G of the Treaty.[40]

While the Treaty lays down a clear and structured dispute resolution framework, Pakistan and India have interpreted its application differently. Pakistan views the mechanism as consequential, meaning that once the PIC fails to resolve a matter, the choice of forum should depend on the nature of the issue itself. India, on the contrary, adopts a sequential approach, asserting that a reference must proceed first to a NE before it can be escalated to the

[36] PCA Case No 2023-01...
[37] PCA Case No 2023-01, Part 1 Annexure F.
[38] PCA Case No 2023-01, Art 9.
[39] PCA Case No 2023-01, Art 9(1)(2).
[40] PCA Case No 2023-01, Art 9(5).

CoA. This divergence became particularly evident during the Kishanganga II proceedings initiated in 2016, where both states pursued parallel paths under Article IX.

Modification of the Indus Waters Treaty

India has been seeking to modify the IWT over the past few years. In 2023,[41] 2024,[42] and 2025,[43] it issued notices to Pakistan proposing a review and modification of the Treaty through government-to-government negotiations. India alleges that Pakistan was in material breach of the Treaty due to the simultaneous proceedings before the CoA and the NE. India wants to restrict or base the dispute resolution mechanism on a tiered approach as discussed earlier. India believes this will prevent Pakistan from directly approaching the CoA, which it views as a disadvantageous forum for India. Pakistan, however, firmly opposes any modification, arguing that the treaty provisions were the result of painstaking negotiations and cannot be reopened merely because these do not suit India's current interests. Pakistan's position is that Article IX is fundamental to the treaty's enforcement, and any dilution would undermine Pakistan's ability to check Indian violations. Therefore, Pakistan will not agree to a purely bilateral mechanism or a tiered approach that limits access to the CoA.[44]

Besides its discomfort with the dispute resolution mechanism, India in the notices issued to Pakistan, cited a range of concerns which include;

- Changing population demographics
- Requirement to accelerate development of clean energy

[41] "India sends notice to Pakistan to amend 1960 Indus Waters Treaty," *The Hindu,* January 27, 2023, https://www.thehindu.com/news/national/india-notifies-pakistan-on-modification-of-indus-waters-treaty/article66438780.ece.

[42] "India issues second notice to Pakistan for '64-year-old' Indus Waters Treaty," *Express Tribune,* September 19, 2024, https://tribune.com.pk/story/2497213/india-issues-second-notice-to-pakistan-for-a-64-year-old-indus-waters-treaty

[43] "India's Notices to Pakistan to 'Modify' the Indus Water Treaty," *Indian Council of World Affairs,* February 6, 2025, https://www.icwa.in/show_content.php?lang=1&level=1&ls_id=12363&lid=7542

[44] Interview with Meher Ali Shah.

- Climate change
- Alteration of security landscape with respect to cross-border terrorism in IIOJK.

India has claimed that a fundamental change of circumstances, also known by the Latin maxim of *rebus sic stantibus*, has taken place, since 1960, that mandates a modification of the IWT. Rooted in customary international law, the fundamental change of circumstances doctrine is codified in Article 62 of the Vienna Convention on the Law of Treaties 1969 (VCLT), according to which, the fundamental change of circumstances allows for the termination or suspension of a treaty only if the circumstances under which the treaty parties operate have departed radically from those existing at the time of its conclusion. This provision must be read against the background of another Latin maxim, *pacta sunt servanda* (translated: agreements must be kept), which is enshrined in Article 26 of the VCLT.

Pacta sunt servanda establishes that treaties are intended to be enduring documents that, as a general rule, cannot be avoided easily. As such, the mechanisms under the VCLT that allow a State to escape a treaty obligation are carefully policed. This is written in Article 62 of the VCLT and its account of fundamental change of circumstances. The provision establishes a series of prerequisites for its invocation, the cumulative effect of which is to make the doctrine very difficult to invoke. These are:

- The change must be fundamental and must relate to the circumstances that existed when the treaty was originally concluded.
- The change must not have been anticipated by the parties at the time of the treaty's conclusion.
- The circumstances in question must have formed an essential basis for the parties' consent to be bound by the treaty.
- The impact of the change must be such that it fundamentally alters the scope of the obligations yet to be fulfilled under the treaty.

In the light of the VCLT, the doctrine of fundamental change of circumstances can only be invoked when a change is fundamental, unforeseen and radically alters treaty obligations. None of the grounds for invoking "fundamental change of circumstances", by India, have any merit.

Pakistan, in response, has consistently maintained that any discussion on modification must be preceded by a formal statement of concern clearly identifying the specific provisions India seeks to amend. It has reaffirmed that the Treaty remains a viable and effective framework for addressing disputes and adapting to changing circumstances. Pakistan has also underscored that the PIC is the appropriate forum for raising and addressing such concerns, and that bypassing the PIC in favour of direct government-to-government negotiations undermines the Treaty's procedural integrity. Moreover, Pakistan has rejected India's argument of fundamental change, asserting that the developments cited are neither unforeseen nor sufficiently fundamental to warrant a renegotiation of the Treaty.[45]

India's Holding of Treaty in Abeyance

In April 2025, following the Pahalgam attack in Indian-occupied Jammu and Kashmir, the Indian government, based on unverified information, blamed Pakistan for its alleged "support for cross-border terrorism" and announced that "*the IWT 1960 will be held in abeyance with immediate effect.*"[46]

Pakistan responded[47] firmly to this allegation, reaffirming its condemnation of terrorism in all its forms and expressing its willingness to participate in a neutral and transparent investigation into the incident. It further asserted that

[45] Maham Naweed, "Indus Waters Treaty and the Fundamental Change of Circumstances: Misinterpretations and Misapplications of International Law," *RSIL,* May 20, 2025, https://rsilpak.org/2025/indus-waters-treaty-and-the-fundamental-change-of-circumstances-misinterpretations-and-misapplications-of-international-law/

[46] Statement by Foreign Secretary on the decision of the Cabinet Committee on Security (CCS)' (Ministry of External Affairs, April 23, 2025) https://www.mea.gov.in/Speeches-Statements.htm?dtl/39442/Statement_by_Foreign_Secretary_on_the_decision_of_the_Cabinet_Committee_on_Security_CCS .

[47] "Pakistan rejects Indian announcement to hold Indus Waters Treaty in abeyance," *Radio Pakistan,* April 24, 2025, https://www.radio.gov.pk/24-04-2025/pakistan-rejects-indian-announcement-to-hold-indus-waters-treaty-in-abeyance.

any attempt to hold the Treaty in abeyance is without legal basis and emphasised that the Treaty remains fully in force and binding.

Article XII of the IWT stipulates that the Treaty may only be terminated through mutual consent, expressly stating that it shall remain in force "until terminated by a duly ratified treaty concluded for that purpose between the two governments."[48] India's attempt to place the Treaty in abeyance constitutes a perpetual violation of its terms. There is no provision in the Treaty, and no basis in international law, for holding a treaty in abeyance. This position was reaffirmed in the Supplemental Award of the Permanent CoA, which upheld its competence to hear the dispute following India's unilateral action. The Court concluded unequivocally that *"the text of the Treaty, therefore, does not provide for the unilateral 'abeyance' or 'suspension' of the Treaty*." It further observed that such an approach would defeat the object and purpose of the Treaty and would fundamentally undermine the value and efficacy of the Treaty's compulsory third party dispute settlement mechanism.[49]

Is Treaty Abeyance an Act of War?

In the National Security Committee (NSC) meeting held on 23 April 2025, following India's aggressive measures against Pakistan in the wake of Pahalgam attack, it was clearly stated that, "any attempt to stop or divert the flow of water belonging to Pakistan as per the IWT, and the usurpation of the rights of lower riparian will be considered as an Act of War and responded with full force across the complete spectrum of National Power.[50]" It is important to understand here the threshold which will constitute a grave and existential threat to Pakistan that may justify using force against India. As rightly pointed out in the NSC statement also, the actual diversion of water by India will constitute an act of war. In an interview with Meher Ali Shah, it was pointed out that, technically,

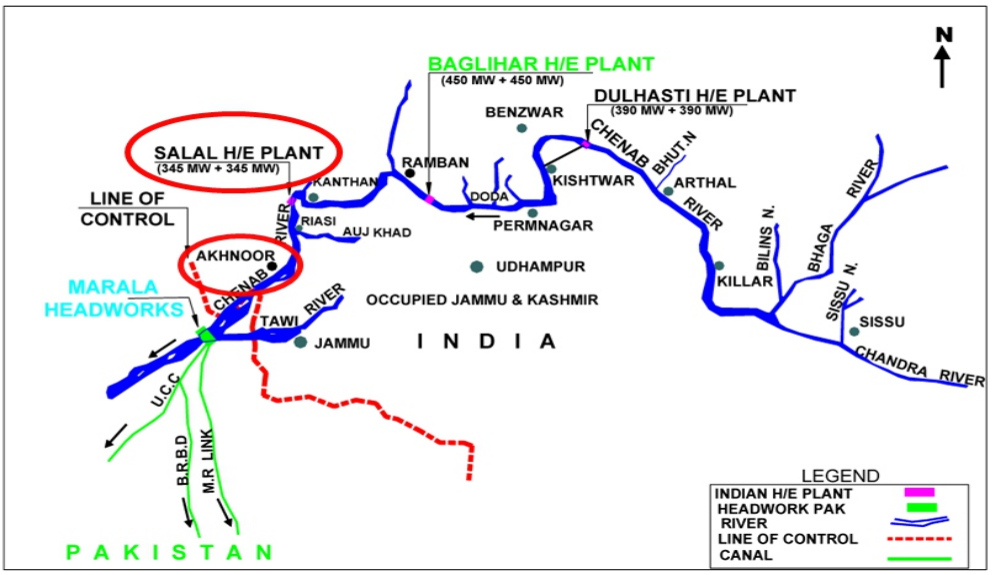
[48] Indus Waters Treaty (n 11) Art 12.

[49] PCA Case No 2023-01 (Pakistan v India), Supplemental Award on the Competence of the Court (27 June 2025) Court of Arbitration constituted in accordance with the Indus Waters Treaty 1960, https://pcacases.com/web/sendAttach/75789 .

[50] Press Release, "Prime Minister Muhammad Shehbaz Sharif chaired a meeting of the National Security Committee (NSC)," *MOFA,* April 24, 2025, https://www.pmo.gov.pk/press_release_detailes.php?pr_id=6034

the diversion is possible, but it is highly challenging now because: India has already developed hydropower projects like Kiru, Kawar, Ratle, Baglihar, and Salal downstream of earlier-identified diversion sites. Hydropower projects with a total capacity of 15,000 MW are currently under construction in India, which will enable the country to see an expected rise from 42,000 MW to 67,000 MW by 2031–32.[51] Diverting waters would harm India's own infrastructure investments in these areas. However, there are two locations of concern: Downstream of Salal and upstream of Akhnor, where the river enters plains, making diversion through a gravity canal technically feasible (See Figure-IV). From there, India could potentially divert water towards Ravi, and eventually to Rajasthan or even Delhi via the Yamuna. This remains a strategic risk if India disregards the Treaty framework.

Figure IV: Potential Diversion Sites



Source: *Baglihar Hydroelectric Plant - Issue between Pakistan and India*
AquaPedia, Case Study Data Base - Water Diplomacy, Last modified 30 January 2015

[51] Press Release, "Hydroelectric power projects with aggregate capacity of 15 GW under construction," *PIB,* April 5, 2024, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2017271.

From an International Law perspective, as of now, there are no formal examples of the use of or a kinetic 'armed attack' as a response to the stoppage or diversion of transboundary water. To understand the parameters of the use of force in self-defence under Article 51 of the UN Charter, it is essential to clarify the terminology. Pakistan has consistently "threatened to use force" in response to any preparatory constructions on the Indian side that may lead to the diversion of water, impacting the water flow to Pakistan.

International law stipulates specific guidelines under Article 51 of the UN Charter, as well as the authorisation processes of the UN Security Council or, at best, the Uniting for Peace resolution. However, established precedents and customs indicate that, in extreme cases of imminent and grave threats to water flow channels, the possibility of employing force cannot be entirely dismissed.

Historical instances, such as the conflict between Kyrgyzstan and Tajikistan in 2021, and Israel's military actions against Syrian attempts to divert the River Jordan's headwaters, underline the reality of such scenarios. It is imperative to note that the use of force should not be the first resort. Instead, Pakistan must present a series of factual circumstances to demonstrate that the use of force could become necessary if certain steps are not taken.

Pakistan also needs to carefully deliberate on its response options and adequately highlight its threshold i.e. diversion of waters by India – at all available international legal and diplomatic fora. For instance, Pakistan may seek a clear, time-bound clarification regarding the existing status of IWT. This would emphasise the distinction between holding an agreement in abeyance versus outright abrogation. The Indian government has temporarily held IWT in abeyance, which has not yet become a permanent status. In the interim, it is hoped that no developments on the ground will occur that would violate the existing Treaty provisions.

Pakistan must frame a legal narrative that positions it as a reasonable and responsible state. At the same time, it should assert that all options remain available. The phrase "countermeasures" or "suitable measures" or "appropriate measures" could effectively communicate this stance. The term "measures" has been used in various UN Security Council resolutions to

encompass all actions, including sanctions, non-coercive measures, and the use of force, thereby ensuring a legally comprehensive response strategy. This would, if and when the time comes, reduce the likelihood of the international community labelling our actions/response as disproportionate and escalatory. Stating that India's unilateral actions with respect to IWT will be responded with all elements of national power is a prudent stance, which does not rule out a kinetic response yet it does not specifically bind the policymakers in a potential commitment trap to use force.

Threats to Pakistan's Water Resources

Impact on Agriculture

Agriculture constitutes the largest sector of the economy of Pakistan. Covering an area of 30.5 million hectares, nearly 47 per cent of Pakistan's land is dedicated to agriculture.[52] Majority of the population, directly or indirectly, is dependent on this sector. It contributes about 24 per cent of Gross Domestic Product (GDP), accounts for half of employed labour force, and is the largest source of foreign exchange earnings.[53] Since more than 90 percent of Pakistan's crops rely on irrigation, the country's economic health is inseparable from the strength of its water reservoirs.[54] As these storage systems shrink, the risk is not just lower farm yields — it is the threat of food and water insecurity for millions of people. Furthermore, because of sediment deposition, the storage capacities of the Tarbela and Mangla Dams have diminished by 43 per cent and 11 per cent, respectively.[55] Considering that India can control water flow in critical times, a reduction in the flow of the Indus River will significantly diminish its assimilative capacity, which is the natural ability of

[52] "Food and Agriculture Organization of the United Nations (FAO), 'Pakistan at a Glance,' accessed September 9, 2024, https://www.fao.org/pakistan/our-office/pakistan-at-a-glance/en.

[53] Pakistan Bureau of Statistics. "Agriculture Statistics," Last modified 2023. https://www.pbs.gov.pk/content/agriculture-statistics.

[54] Hilal Khan and Zamil Bin Zahid, "Projecting irrigation demand under IPCC climate change scenarios using WEAP modeling in the Rechna Doab, Pakistan," *Cleaner Water* 2 (2024): 100040 https://www.sciencedirect.com/science/article/pii/S2950263224000383?

[55] Civil Engineering Department, University of Engineering & Technology, Lahore (CED, UET Lahore), *Annual Report 2023* (Lahore: CED, 2024), 1–130, https://civil.uet.edu.pk/wp-content/uploads/2024/08/CED-Annual-Report_2023.pdf

a river to absorb, dilute, and break down pollutants without causing harmful effects on water quality or the ecosystem. The disruption in irrigation flows can result in lower crop yields, diminished agricultural output, and, ultimately, food shortages. Additionally, the discharge of industrial wastewater combined with untreated sewage, will exacerbate the situation, creating a severe environmental challenge as well.

Pakistan's growing population is intensifying the demand for water, and with agriculture being the backbone of the economy, the worsening water scarcity poses a serious threat to the sector's growth and sustainability. Compounding this issue is the looming threat from India, which poses a major risk to Pakistan's already strained water resources. During key growing seasons, India can directly impact crop production, leading to reduced agricultural output and, ultimately, food shortages. Lower river flows can cause increased salinity levels in both water and soil, and high salinity significantly reduces crop yields, thereby degrading agricultural land. According to the IMF, Pakistan's annual per capita water availability has steadily declined, from 1,500 cubic meters in 2009 to 1,017 cubic meters in 2021.[56] This indicates a 32 per cent shortfall in water requirements, potentially leading to a food shortage of approximately 70 million tons.[57] As of 2025, per capita availability has further fallen to just 908 cubic metres, dangerously close to the water scarcity threshold of 500 cubic metres.[58]

Economic Consequences

Indus River System has not only been crucial for Pakistan's agricultural sector, but it has also been equally significant for power generation, the preservation of environment, and the industrial sector.[59] When it comes to power generation,

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[56] "ANI News, 'Growing Water Crisis Disastrous for Pakistan's Stability, Says Report,' September 9, 2021, https://www.aninews.in/news/world/asia/growing-water-crisis-disastrous-for-pakistans-stability-says-report20210909124218/."

[57] Shahmir Janjua, Ishtiaq Hassan, Shoaib Muhammad, Saira Ahmed, and Afzal Ahmed, "Water Management in Pakistan's Indus Basin: Challenges and Opportunities," *Water Policy* 23, no. 6 (2021): 1329-1343.

[58] Hussain Ahmad Siddiqui, "Overcoming the water challenge", *Dawn*, March 22, 2025 https://www.dawn.com/news/1899549

[59] Muhammad Uzair Qamar, Muhammad Azmat, and Pierluigi Claps, "Pitfalls in transboundary Indus Water Treaty: a perspective to prevent unattended threats to the global

Pakistan already lags behind India. India's total hydropower potential is about 145,000 MW, but it produces only 37,500 MW, which accounts for 26 percent of the potential. At a 60 percent load factor, this potential could reliably supply 85,000 MW of demand.[60] In comparison, Pakistan has a hydropower potential of 60,000 MW, out of which only about 10,800 MW has been developed, meaning just 18 percent of its potential is currently being utilised.[61] Pakistan's hydroelectric power plants depend on a steady and sufficient water flow for electricity generation. By controlling water flow, especially during critical periods, India can lower water levels in the reservoirs and rivers that supply these power plants. Reduced water availability can lead to lower electricity production, causing widespread power shortages across the country. For example, India's construction of the Kishanganga Dam on the Kishanganga (Neelum) River is estimated to reduce the river's flow into Pakistan by 21 per cent.[62] This reduction in water will result in a 9 per cent reduced power generation.[63] Electricity shortages have reduced GDP growth by 4 per cent, led to the shutdown of hundreds of manufacturing plants, and decreased agricultural productivity. These issues undermine the country's economic security by causing GDP fluctuations, currency devaluations, and rising unemployment.[64]

Moreover, if India continues building dams or diverts water, being an upper riparian state, from the rivers that flow into Pakistan, it can reduce the volume

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security." *npj Clean Water* 2, no. 1 (2019): 22. https://www.nature.com/articles/s41545-019-0046-x.

[60] Akanksha Srivastava and Alka Misra, "Hydro-Energy Sector in India: A Review." *International Journal for Multidisciplinary Research* 6, no. 6 (2024): 1-10, https://www.researchgate.net/publication/387465324_Hydro-Energy_Sector_in_India_A_Review.

[61] *International Hydropower Association*, "Hydropower in South and Central Asia," https://www.hydropower.org/region-profiles/south-and-central-asia.

[62] Ghulam Mustafa Shahid and Dr. Muhammad Ramzan, "Water Scarcity in Pakistan: Hydro-Politics in Indus Basin" (2021).

[63] Saqib Riaz, Waseem Ishaque, and Muhammad Afzal Baig, "Indian Aqua Aggression: Investigating the Impact of Indus Water Treaty (IWT) on Future of India-Pakistan Water Dispute," *NDU Journal* 34 (2020): 131-146.

[64] Jinsong Tao, Muhammad Waqas, Muhammad Ali, Muhammad Umair, Wangwei Gan, and Hussain Haider, "Pakistan's Electrical Energy Crises, a Way Forward Towards 50 per cent of Sustain Clean and Green Electricity Generation," *Energy Strategy Reviews* 40 (2022): 100813.

of water reaching downstream ecosystems. This will not only affect the access to water of the people who are its regular consumers, especially people from Punjab, but will also disrupt the natural flow patterns, impacting seasonal flows that are essential for sustaining riverine habitats. As a consequence of the diminished water availability, the rivers, wetlands, and floodplains could dry up, jeopardising the critical habitats that support a diverse range of species, including fish, amphibians, birds, and plants. For instance, the completion of the Shahpur Kandi Dam on the Ravi River, located at the border of Indian Punjab and IIOJK, on 25 February 2024, effectively halted the flow of the Ravi River into Pakistan, further exacerbating Pakistan's water security.[65] Lahore's dependence on Ravi is notable as this river plays a crucial role in groundwater recharge that supplies Lahore. Currently, the annual groundwater recharge deficit stands at approximately 21 billion cubic feet, leading to an average decline of 4 feet in groundwater levels each year.[66] Moreover, Lahore-based projects such as the Ravi Urban Development Authority (RUDA), aimed at rejuvenating the Ravi River and promoting urban growth along its banks, may face significant setbacks.[67] Furthermore, reduced water flow combined with increased nutrient levels can trigger algal blooms, resulting in eutrophication. This process depletes oxygen in the water, creating dead zones where most aquatic life cannot survive.

Due to the reduced capacity of Tarbela and Mangla because of years of silt build-up, farmers increasingly face surface-water shortages. As a result, they are compelled to rely more heavily on groundwater. Tube wells now work overtime, and the cost of pumping groundwater keeps climbing. Experts at Pakistan Council of Research in Water Resources (PCRWR) warn that if this trend continues, Pakistan could be spending as much as $50 billion each year

[65] Rahul Lad and Ravindra Jaybhaye , "The Shahpur Kandi Balance: India's Gain, Pakistan's Concern," *South Asian Voices*, April 4, 2024, https://southasianvoices.org/geo-m-in-n-shahpur-dam-04-04-2024/.https://southasianvoices.org/geo-m-in-n-shahpur-dam-04-04-2024/.

[66] Lad and Jaybhaye, 2024

[67] Lad and Jaybhaye, 2024.

just to make up the shortfall, with wheat and rice harvests shrinking by as much as a third by 2030.[68]

Environmental and Social Effects

India, like Pakistan, is facing an exponential rise in population, which is straining the available water resources. India's growing population pressure and climate-induced water scarcity have started exerting exceptional stress on its food and agricultural productivity.[69] Because of the disturbed water cycle, more than 300 million people in India do not have access to clean water. According to a report published in 2018, major cities of India will have least or no access to clean drinking water by 2030.[70] This situation in India poses direct threats to Pakistan; as whenever the water availability in India deteriorates, India shifts to a more aggressive stance on water cooperation in order to meet its growing national needs.

Environmentally, Pakistan confronts recurring floods and drought cycles, which not only threaten food and water security but also drive internal displacement. India's construction of dams on Transboundary Rivers risks further ecological disruption which will impact the entire hydrological cycles of the region. For instance, India's Kishanganga has the ability to create drought in the Neelum Valley of Azad Kashmir. This situation is further exacerbated by the lack of exchange of data between India and Pakistan on climate change and its devastating impacts on the region.[71]

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[68] Alina Arain, "Pakistan's Water Conflict: Indus Treaty Crisis," *The Agricultural Economist*, May 12, 2025 https://agrieconomist.com/pakistans-water-conflict-indus-treaty-crisis.

[69] Tahira Mumtaz, Fatima Bilal, and Sobia Younas. "Indus Water Treaty and Water Scarcity in India: Implications for Pakistan." *Journal of South Asian Studies* 11, no. 1 (2023): 11-18. https://journals.esciencepress.net/index.php/JSAS/article/view/4446

[70] Bhasker Tripathi, "Bengaluru, Delhi, Chennai And Hyderabad Among 21 Cities To Run Out Of Groundwater By 2020", *India Spend,* June 25, 2018, https://www.indiaspend.com/bengaluru-delhi-chennai-and-hyderabad-among-21-cities-to-run-out-of-groundwater-by-2020-ad.

[71] Waseem Ahmad Qureshi, "The Indus Basin: Water Cooperation, International Law and the Indus Waters Treaty." *Mich. St. Int'l L. Rev.* 26 (2017): 43.

Chapter 4
Findings and Recommendations

Findings

Weaponisation of Water as a Geopolitical Tool

India, being the upper riparian state, possesses significant control over river flows, a capability it exploits to weaponise water as a coercive tool to extract political concessions.

Persistent Violations of the Indus Waters Treaty

India has been persistently violating the flow through the planning and execution of hydroelectric projects that enable it to manipulate the river water flow in the Western Rivers allocated to Pakistan in the IWT. The excuses given in support of design violations that give the water storage and diversion capacity to India have consistently been based on technicalities meant to mislead the World Bank's appointed neutral experts and arbitrators.

Inadequate Information Sharing

India often fails to provide Pakistan with timely and detailed design data of its projects on Western Rivers as required under IWT. Delayed disclosures deny Pakistan the chance to object or verify compliance early, undermining the Treaty's cooperative spirit.

Exploitation of Dispute Resolution Loopholes

India has tried to alter the IWT's dispute resolution framework by advocating a sequential "neutral expert first" approach, limiting Pakistan's direct recourse to the CoA. India, after going through the dispute resolution process in Salal, Kishanganga, and Baglihar dam, concluded that Article IX of the treaty constrains its ability to plan and execute hydroelectric projects on Western Rivers. Pakistan views this as an attempt to weaken its legal safeguards against Indian violations.

Treaty Modification/Abeyance is Legally Unfounded

India's attempts to modify or hold in abeyance the IWT citing "fundamental change of circumstances" lack merit under international law (Vienna Convention). Pakistan views such moves as unlawful and strategically destabilising, with potential escalation risks.

Impact on Pakistan's Water Security & Economy

Reduced river flows threaten Pakistan's agriculture sector (which employs nearly half its labour force and contributes 24 per cent of GDP) and hydropower generation, with cumulative projected economic losses including lower GDP growth, crop yield reductions, and groundwater depletion costs potentially reaching $50 billion annually by 2030.

Environmental & Societal Risks

River flow manipulation and reduced water availability exacerbate environmental degradation, salinity, ecosystem damage, and displacement risks. It also threatens urban centres like Lahore, where Ravi's flow is crucial for groundwater recharge.

Recommendations

Legal and Diplomatic

- ***Invoke the Dispute Resolution Mechanism Provided Under the IWT***

  Pakistan can present the matter as a legal dispute under Article IX of the IWT and initiate proceedings before a CoA constituted by the World Bank. Pursuing this course would underscore Pakistan's commitment to resolving issues within the Treaty's established framework while reaffirming that the IWT remains valid and binding despite India's unilateral declaration.

- ***Engagement with International Organisations***

  While Pakistan cannot unilaterally take the matter to the International Court of Justice (ICJ) under its contentious jurisdiction, international organisations can be engaged to seek an advisory opinion from the ICJ.

  World Bank

  - As the original broker of the IWT, the World Bank has a central and continuing role in facilitating dispute resolution. Pakistan should actively press the World Bank to fulfil its fiduciary responsibilities and guarantee impartial application of the Treaty's dispute resolution mechanisms.
  - Pakistan may lobby with the World Bank to seek an advisory opinion from the ICJ on the legality of India's purported "abeyance" of the Treaty.

  United Nations General Assembly (UNGA)

  - An advisory opinion may be sought from the ICJ through the UNGA, by framing the issue as the one that adversely impacts the peace and security of the entire South Asian region. However, this will depend on the voting composition of the Assembly and Pakistan's ability to muster sufficient support. Pakistan should highlight the economic, human rights, and legal costs by taking up the case with the UNGA's Second, Third, and Sixth Committees.

- Besides seeking an advisory opinion through the UNGA, Pakistan may also present a resolution in the UNGA highlighting the issue and specific actions to be taken in response to India's unilateral and illegal abeyance of the IWT. For this, Pakistan needs to be proactive in lobbying with the major capitals of the world to gather support for the adoption of the intended resolution in the UNGA.

United Nations Security Council (UNSC)

- Under Chapter VI of the UN Charter, UNSC has the authority to make recommendations or take provisional measures aimed at preserving international peace and security in situations involving such threats or violations. In this context, Pakistan may bring the matter before the UNSC by characterising India's actions as an existential threat to Pakistan, a potential danger to international peace, and an act of aggression.
- Apart from seeking UNSC recommendations, Pakistan also has the right to take up the matter to the UNSC to seek a resolution under Chapter VII.
- Besides, recommendations and a resolution, an advisory opinion may also be sought from the ICJ through the UNSC by framing the issue as the one that impacts the regional peace and security.

- ***Mobilise Diplomatic Support through Bilateral and Multilateral Channels***

  Engaging with key allies such as Turkiye and China, along with multilateral platforms like the Organisation of Islamic Cooperation (OIC) and Shanghai Cooperation Organisation (SCO), can enable Pakistan to build diplomatic pressure on India. Coordinated diplomatic efforts would strengthen the legitimacy of Pakistan's stance and emphasise the need for compliance with international norms.

- ***Frame the Narrative as a Negative Global Precedent in Transboundary Water Cooperation***

  A total of 153 countries share territory within at least one of the world's 286 transboundary river and lake basins and 592 transboundary aquifer systems. India's conduct risks setting a dangerous precedent for global transboundary water governance and management. Pakistan should publicly frame India's actions as a violation of international law and a breach of a landmark transboundary water agreement. Highlighting the humanitarian and ecological consequences for millions across the region can help draw international attention and generate broader support for Pakistan's position.

- ***Prepare a Legal White Paper on Treaty Provisions and their Violations***

  Pakistan should prepare a comprehensive legal white paper that explains the Treaty's provisions, summarises the relevant annexures, documents India's violations of the IWT and assesses possible breaches under international law. This document would serve as an authoritative domestic reference as well as a valuable instrument for international advocacy and potential legal action.

Kinetic Response

Pakistan must frame a legal narrative that shows it as a reasonable and responsible state. At the same time, it should assert that all options remain available in case of a serious threat to Pakistan's water security. The phrase "countermeasures" or "suitable measures" or "appropriate measures" could effectively communicate this stance. Stating that India's unilateral actions with respect to IWT will be responded with all elements of national power is a prudent approach, which does not rule out a kinetic response, yet does not specifically bind the policymakers in a potential commitment trap to use force.

Bilateral Dialogue/ Negotiations

At the bilateral level, India and Pakistan should explore launching a Track 1.5 or Track 2 water dialogue to reassess and align their positions on areas of

disagreement and mutual concern. While this may seem unlikely in the politically charged environment following the Pahalgam incident and India's unilateral suspension of the IWT, the dialogue remains the most practical and constructive path forward, if India decides to come back and abide by the Treaty. Such an initiative could begin by resuming and enhancing communication channels between the Indus Commissioners.

Joint Studies

In addition to the above proposed dialogue, joint studies should be conducted by experts from both countries on the following key issues, such as:

- The effects of climate change on the Himalaya–Karakoram–Hindu Kush (HKH) glaciers.
- Reasons for the diminishing water availability upstream in India, resulting in reduced water flowing into Pakistan.
- Sustainable management of the shared Indus Aquifer.
- Regular and timely exchange of hydrological data for dry-season flows.
- Enhanced preparedness for, and management of, climate-induced extreme events, including glacial lake outburst floods (GLOF).
- Collaboration on adopting modern micro-irrigation methods to conserve and optimise water use.
- Joint research on monsoon variability.
- Ensuring environmentally essential flows in the eastern rivers.

Technical and Infrastructural Solutions

- Integrated information sharing and early warning systems binding both India (upper riparian) and Pakistan (lower riparian) in an institutionalised and technology enabled information/data sharing system should be created after bilateral negotiations.
- Modern telemetry systems to share water discharge data should be installed at dam sites of both upper and lower riparian, duly linked in real-time monitoring mode through robust and reliable Supervisory Control and Data Acquisition (SCADA) systems. This information/data sharing besides bringing transparency would foster

trust between India and Pakistan, which is currently lacking in the absence of a reliable system of real time monitoring of water flows.

Media Strategy

Pakistan should launch a proactive international media campaign to frame India's unilateral actions on the IWT as a violation of international law and a threat to regional and international security. This effort should include commissioning op-eds and expert analyses in leading global newspapers and magazines; engaging renowned think tanks to host discussions on transboundary water governance; and leveraging social media platforms for digital diplomacy. By highlighting the humanitarian, environmental, and economic consequences of India's actions - particularly for Pakistan's agriculture and ecosystem - Pakistan can win international support. Coordinated messaging through embassies in the shape of fact sheets, infographics, and short multimedia explainers will help present Pakistan as a responsible actor committed to upholding international norms and preserving one of the world's most successful water-sharing treaties.

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