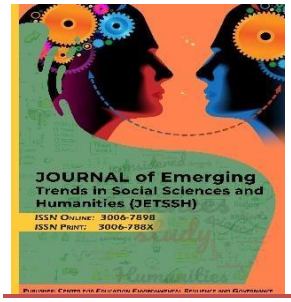

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Power Dynamics and Equitable Resource Allocation in India and Pakistan Water Dispute: A Climate Change Perspective

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ABSTRACT

This discussion looks at how the upstream location of India and unequal distribution of power impacts equitable distribution of water resources under the Indus Waters Treaty (IWT), and hence expounds on the implications of distributive justice. Climate change increases stress on the local hydrological resources; the melting of glaciers, unpredictable monsoon, and rising water demand contribute to the scarcity, which increases the tension between the co-riparian states. The paper illustrates that geopolitical tensions and environmental destruction undermine cross-border water management by using the Theory of Environmentalism in International Relations (TEIR), the concept of hydro-hegemony, and the environmental security paradigm. The current research aims at making a contribution towards the design of viable and fair water governance systems in climate prone areas to deal with imbalances in power and the realities of the environment. It promotes the rearrangement of equitable water sharing by adaptive governance, climate resilience, and collaborative mechanisms, which adds to the discussion on environmental security in South Asia and calls on the integration of ecological concerns into transboundary water diplomacy in order to reduce conflict and enhance stability in the region.

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Introduction

Water is an essential, irreplaceable, and distinctive resource because life exists where water exists. It is essential for sustaining ecosystems, supporting agriculture, driving economic development, ensuring food security, and maintaining human health and well-being. It exists in two forms, i.e., seawater and fresh water, where fresh water is an important necessity to human beings, business, and its general existence. The renewable utility of freshwater is thus vital in maintaining the standard of life and economic growth globally. Nonetheless, however, a problem with fresh water is often contentious, especially when the watercourse is shared, as disputes over transboundary water problems arise. Political boundaries do not identify with such sources that naturally move downstream and upstream countries. Their natural volatility coupled with changing river patterns as time goes by makes them very difficult to handle and may also create some form of friction between the neighboring states. The actions of upstream countries, such as the building of a dam or re-diverting water, have a direct impact on the amount and quality of downstream water and are a common bone of contention. Freshwater is transboundary, and about 40 percent of the world population is depending on these transboundary fresh waters, and the world has more than 260 international river basins with more than two countries. The Indus River Basin, which is shared by India and Pakistan, has a population of nearly 300 million people, and it is an excellent example of such issues.

The occurrence of water scarcity and variability is compounded by the issue of climate change because of how it affects glacier-fed rivers, increases floods and droughts, and changes the pattern by which water availabilities occur. Water management is basically a critical issue in the South Asian region, and it has a number of giant rivers, which include the Indus, Ganges, and Brahmaputra rivers, which form its source of supplying water to over 2.08 billion people in various countries like Pakistan, Bangladesh, Nepal, and India (The United Nations 2023). As 80 percent of water is consumed in agriculture and the agricultural sector employs 42% of the South Asian population in the agricultural value chain, agriculture seems to be the most vulnerable to water scarcity at the current point (Kodituwakku, 2009). The reduction of freshwater availability is likely to be 8-10 percent lower by 2050 in the Indus basin, and the amount of water required is likely to rise by 55 percent as a result of the increase in population and urbanization problems (Asghar et al., 2019). The subject of water management, therefore, plays a resident role in the food security of the region as well as economic sustainability, besides preventing water-related political instability (Cosgrove & Loucks, 2015).

Pakistan and India have a long-standing dispute over water, particularly in the area surrounding the Indus River basin. This basin covers an area of 1,120,000 square kilometers, with 60% of its area in Pakistan and 20% in India (Hashmi et al., 2019). The 1960 Indus Waters Treaty (IWT), mediated by the World Bank, allocated the use of rivers: India was awarded three eastern rivers (Ravi, Beas, and Sutlej), while Pakistan was awarded the three western rivers name Indus, Jhelum, and Chenab (Kalair et al., 2019). It appears that over the six decades of the treaty's implementation, no massive conflict has emerged, yet tensions are resurfacing due to increased water demand due to the rise in population, quick urbanization, swift industrialization, and climatic variation on both sides. Notably, it is estimated that water demand in Pakistan and India has increased by 20–30% over the last 30 years. Climate change exacerbates the problem, for instance, through fluctuations of river flows and about a 15% reduction of the glacial mass in the Himalayas, which supplies water to both countries (Nie et al., 2021). All these points indicate the growing need to adopt innovative discourse and synergy in GBM to prevent future disputes over scarce water resources.

Pakistan-India Water relations are influenced by political, historical, and geographical factors on the one hand and ecological factors on the other. Haines (2014) indicated that the events that shaped water relations were after the partition of 1947 and the creation of two separate dominion states of India and Pakistan out of the former British India. Peoples of both the region were dependent on the Indus basin for irrigation purpose and with the formation of Pakistan the flow of the basin was divided between the two newly founded states, this division led to immediate tensions, as India is located at the upper end of the basin controlling the

head waters while downstream is Pakistan (Molle, 2009).

The Indus Waters Treaty (IWT) of 1960, widely studied by political geographers, is often seen as a cornerstone of Pakistan-India water diplomacy. Menon (2015) refers to the treaty as a rare example of successful transboundary water cooperation, facilitated by the World Bank and sustained even amid the countries' hostilities. The treaty allocated the eastern rivers (Ravi, Beas Sutlej) to India and the western rivers (Indus, Jhelum, Chenab) to Pakistan, with the premise of equitable utilization—a concept rooted in international water law. Desai (2021) applies the theory of "hydro-diplomacy" to the IWT, asserting that the treaty established a framework for conflict avoidance, underscoring the potential of cooperative legal agreements in managing shared resources. The Kishanganga project also reveals with equal clarity the dynamics of power. Concerns were provoked in Pakistan due to India constructing the hydroelectric project on Jhelum River, as it would potentially divert the water away from the Neelum-Jhelum hydropower project in Pakistan. A result of this development created legal intricacies and shaped more laws regarding the jurisdiction and validity of the IWT as the capacity of the Indian infrastructures was enhanced.

Water relations between India and Pakistan within the South Asian geopolitical location have been long determined by the aspect of power that can determine how these water sharing states engage in the management and control of their respective and shared fresh waters. These power relations are overlapped by historical accounts of state-building, conquest and expansion of territory and, most importantly, military tactics. With the legal reciprocation of obligations as per the IWT by both India and Pakistan, it has been observed that due to the nature of geographical dynamics, India has been perceived to exert leverage over the practice of control on the upstream flow by Pakistan, which has also been considered strategic by Pakistan (Gardezi et al., 2020). This is in agreement with the theory of hydro-politics by Falkenmark (1989), which gives emphasis to the fact that the relationship between upstream and downstream in the management of water systems may be strained due to regional distrust because of water insecurity, among other factors, due to climate change or a rise in population. The presence of water resources thus spurred this distrust on the part of the upstream countries that can possibly affect the availability and use of that resource amongst the downstream states and hence conflict (Falkenmark 1989).

The Indus River system is facing an increasing hydrological stress, a fact that can be explained by the alterations in glacial melt in the Hindu Kush, Himalayas, and Karakoram Mountain ranges, provoked by climate-change. The increase in temperature has increased the rate of glacier recession, and estimates show that Himalayan glaciers will lose up to 70 percent of their ice volume by 2100 (International Center for Integrated Mountain Development [ICIMOD], 2024). This along with the rising monsoon variations is predicted to result in an escalation in the occurrence of droughts and floods, which will be disastrous on water availability (World Meteorological Organization, 2024). Pakistan experiences severe water crisis and the United Nations Development Programme (UNDP, 2025) cautions that the nation might achieve complete water scarcity by the year 2025. The over extraction of water present in the Indus Basin Aquifer also contributes to crisis (UNDP, 2025).

Problem Statement

Geo-political tensions between India and Pakistan are propagated and inequities in the sharing of water resources worsened by climate-related changes, decreasing water availability and enhancing uncertainty in the flow of shared river systems. Altered hydrological patterns further augment the rivalry over diminished water resources, in turn weakening the agreement and management stipulations at the expense of growing mistrust and the threat of conflict occurrence (Ahmed et al., 2021).

Purpose of the Study

This study aims to:

- Explore how power dynamics between India and Pakistan influence equitable allocation of shared water resources under the Indus Waters Treaty framework.
- Investigate how climate change shifts the balance between cooperation and conflict in transboundary water management, especially

given recent treaty suspensions and escalating tensions.

- Identify policy and institutional mechanisms to climate-proof water-sharing agreements and promote sustainable resource management in a politically sensitive environment.

Research Questions

1. How do power asymmetries between India and Pakistan shape water-sharing policies and treaty compliance?
2. What role does climate variability and glacial melt play in intensifying resource disputes over the Indus Basin?
3. How can equitable resource allocation be achieved amidst political tensions and changing environmental conditions?

Significance of the Study

The research applies to environmental security because water shortage due to climate change poses a danger to the stability of nations reside in South Asia. It guides diplomacy by noting that adaptive governance mechanisms to address the impacts of the climatic changes, namely, to facilitate the provision of low-conflict risk, are necessary. The results of the study can be used to inform climate adaptation policy by stressing the importance of hydro-climatological data integration into transboundary water agreement, which are today lacking of any explicit climate clauses.

As much as the Indus Waters Treaty and other aspects of water politics in the South Asian regions have been heavily investigated, there is dearth of studies and reconciliation of climate change effects on the study of transboundary water management. Majority of the works concentrate on political or legal aspects without paying proper attention to the way climate variability transforms hydrological facts and power resources. In addition, the responsibility of transboundary environmental injustice and resource equity (TEIR) in the India- Pakistan condition is also understudied. These gaps need to be addressed since they would be essential in the formulation of adaptive and equitable means of sharing water that would hold against geopolitical pressures and climate shocks.

Research Methodology

The research design used in this inquiry is qualitative, inter-disciplinary, and systematic and focuses specifically on a detailed study of power relations, climate change, and governance of transboundary waters in the India-Pakistan shared-water case. Using a strong body of secondary literature, such as peer-reviewed articles, water-treaty reports, governmental reports and case studies of key conflicts, the current study aims to de-juridify the complex legal, political, and environmental issues that characterize this field. This analysis is based on the Theory of Environmentalism in International Relations, the theoretical constructs of hydro-hegemony, and the environmental security model, which will prepare the researcher with the tools to research the policies of water sharing, treaty adherence and the concerns. Through the application of the thematic, relative and critical discourse analytical approach, the paper critically discusses the process of water sharing agreement negotiations, implementation, and impact of multidimensional pressures of climate change. Although, the research used secondary sources as the primary source of data, the methodology allows the evaluation of the full picture of the association between geopolitical asymmetries and climate variability and their influence on resource distribution to provide policy-relevant recommendations on climate-resilient, equitable, and adaptive transboundary water management.

Theoretical Framework

The Theory of environmentalism in international relations (TEIR) puts the issue of environment in the Centre of world politics and it involves the aspects of scarcity of resources, ecological interdependence, and a need of cooperative government (Atlas Institute, 2019). TEIR criticizes conventional IR theories, such as realism and liberalism, with the focus on the transnational nature of environmental issues, which require a response at the global level and could not be reduced to the needs of a particular state (O Neill, 2017). At the heart of TEIR are a respect of ecological boundaries, an interdependency of ecosystems, and the importance of the institutional models that facilitate collaboration regardless of political tensions (Harris, 2009). This theory is especially applicable to transboundary environmental conflicts since there are multifaceted interdependences created by

common natural resources like rivers. Such mutual relations require a collaborative approach of management to avoid conflicts and promote sustainable use of resources (Atlas Institute, 2019; Eckersley, 2013). Focusing on the ecological realities and mechanisms of cooperation, TEIR gives a critical approach to the challenge of global environmental issues that conventional theories of IR often overlook.

The hydro-hegemony theory explains the role of power imbalances in controlling common water resources by using hard power (military, economic), soft power (diplomacy, norms) and structural power (institutional control) (Zeitoun and Warner, 2006). Upstream states like India on the Indus River system, take advantage of their geographical position and political might to exercise control over the downstream counterparts. The fact that India is the upper riparian, and that it possesses a greater economic and military capacity, allows it to influence how water is allocated, and what is provided in the treaty to its benefit (Farid & Ashraf, 2025). Although the 1960 Indus Waters Treaty gave the western rivers to Pakistan, the dams built by India, including Baglihar and Kishanganga, have curtailed the water supply to Pakistan thus increasing tensions (Britannica, 2025). The hydro-hegemonic activities of India include water diversion and the use of technical expertise to build infrastructure that impacts negatively on the agriculture and economy of Pakistan. This imbalance of power makes it difficult to share equally and aggravates geopolitical conflict as Pakistan is largely dependent on the water flows that are controlled by India. The ongoing conflicts also prove that hydro-hegemony strengthens upstream control, which undermines collaboration in water management in this unstable area (Zeitoun & Warner, 2006).

The environmental security paradigm broadens traditional national security by including environmental threats such as climate change, resource depletion, and ecological degradation (Lee, 2025). It admits that such environmental stress factors may intensify a social instability, develop a conflict, and induce migration, which is an enormously important non-traditional security problem, beginning transnationally (Atlas Institute, 2019). Climate change is observed to be a threat multiplier since it elevates water scarcity, alters the flow of rivers, and augmented the competition on essential resources (Sharma & Ali, 2025). In South Asia, the region, in which the water resources are already a highly queried area, environmental security emphasizes the significance of the integration of ecological problems and variables into the security and foreign policy framework. This integration is crucial in order to avoid confrontations and make the region resistant to environmental difficulties (UNEP, 2024). This paradigm compels the policymakers by acknowledging the fact that there is interconnectedness between environmental and security challenges where comprehensive approaches are required to manage the ecological and geopolitical risks.

The Theory of Environmentalism in International Relations (TEIR), hydro-hegemony, and the environmental security paradigm, when combined to together, will give a complete framework to analyze how power relations and environmental relations influence equity in place regarding transboundary water sharing. The idea of cooperative governance to manage resources sustainably is the theme at TEIR, which emphasizes environmental interdependence (Atlas Institute, 2019). Hydro-hegemony indicates the influence of power disparity on treaty negotiations and domination of resources, especially with power to favor the upstream states in countries like India (Zeitoun & Warner, 2006). They are challenges that are categorized under a different conceptual framework of securitization, which explains the fact that geopolitical tensions can be exacerbated by subsequent water stress, irrespective of climate change (Lee, 2025). Together, these theories show that fair water distribution between India and Pakistan require consideration of disparities in the political reality, as well as the interrelation of the interests and relations involved in the climate change. This need demands all-inclusive, multi-purpose, and safety-sensitive governance policies to enable collaboration and reinforce the collective management of water resources (Eckersley, 2013).

Climate Change: A Game-Changing Factor

The effects of climate change are sharply seen in the mechanisms that have taken place in the Indus Basin, which is a glacially fed system that covers the Himalayan, Karakoram and Hindu Kush

ranges. Such developments are posing a great risk to the water security, agricultural production and livelihood of the millions of people who rely on this watershed.

The high temperature has also increased frequent glacial melting, thus changing water discharge regimes and, therefore, water availability, crop production, and ecological balance. Current estimates have suggested that by the end of this century, as much as 70 percent of the Himalayan glacial mass might have melted and this would first be followed by increased flows which would soon be followed by precipitous loss of ice reserves (Paradigm Shift, 2025). Moreover, the restructuring of the monsoon processes and the associated rise of seasonal variability has aggravated the occurrence of extreme hydrologic phenomena, especially the floods and droughts. These disturbances upset the hydrology of the basin and put at risk water supply to more than 300 million inhabitants of the Indus system, making water management in both India and Pakistan difficult (Hindustan Times, 2025; IWMI, 2024).

The climate change is a serious anthropogenic stressor which causes water scarcity; in addition, it increases competition among the Indus Basin with respect to transboundary river resources. The unpredictable rainfall trends have caused massive failures of the agrarian crops, namely wheat, cotton, and rice, causing severe harm to the agrarian economy of Pakistan and the rural population (KJMR, 2025). The consequences of this hydrological instability are enormous. Cyclone disasters in relation to climate especially floods and saline flooding in the Indus delta have triggered population migration and increased social susceptibility. This environmental pressure intensifies the localized water conflicts and complicates the process of inter-state negotiations, including that between India and Pakistan, by exerting the psychological pressures; water scarcity serves as both a literal resource shortage, and a means of each other to arouse the suspicions. The natural uncertainty of the variability of the climate undermines the idea of cooperative water governance and makes a conflict more likely (Paradigm Shift, 2025).

Similarly, the rising frequency of extreme weather events such as extended droughts and heavy floods puts a strain on the already weak hydrological system of the Indus Basin. Such occurrences disrupt the crop cycles, drain the ground water reserves, and destroy irrigation systems, making it hard to have sowing seasons and further aggravating water shortages. Also, there are socio-economic consequences that are displayed in the rural marginalized societies, which increase inequality and provoke resentments leading to increased political agitations. Here, climate change is not only contributing to enhanced physical scarcity of water but also to an increase of social as well as political vulnerability to this scarcity; hence, sound and equitable management of water is an immediate need for both India and Pakistan. As long as there is no increased collaboration and flexible responses to these climate-related hazards, there is a severe danger that water-related issues will result in extended conflicts (IPCC, 2023; Paradigm Shift, 2025).

Climate change is creating emerging and emergent risks in the Indus Basin in the form of raising migration and social unrest. The shortage of water increases displacement of vulnerable populations, causing an increase in internal and cross-border tensions. There is a deterioration of agricultural livelihood and an increasing frequency of floods and droughts, which makes socio-economic fragility. Without mutual adjustment and new governance systems, without innovative partnerships, these pressures may also inflate into water-related conflicts, thus generating a risk of water wars happening in a region already characterized by geopolitical rivalry and nuclear potential (The Diplomat, 2023; Paradigm Shift, 2025). To deal with these risks, there is an urgent need to climate-proof the water-sharing processes and the region to create its collective water security.

The intensification of water scarcity caused by climate change will trigger widespread migration leaving communities relying on farming and fisheries in Pakistan and India jobless. This displacement can increase competition over scarce resources in the urban and peri-urban regions and consequently overstretch social services and infrastructure. In addition, trans-border migration can lead to an increase in the already existing geopolitical tensions, especially in such sensitive areas as Jammu and Kashmir, where population changes are under close surveillance and dispute. The resulting social disruption due to resource loss

is usually reflected in protests, domestic conflicts, and increased communal tensions, which is a risk to weak governance systems and makes it difficult to foster peace (IPCC, 2023; Paradigm Shift, 2025).

Besides, the possibility of a water-related conflict in the Indus Basin, though still subject to academic discussion, cannot be overlooked due to the strategic importance of the basin and the history of the conflict between India and Pakistan. The two states are both nuclear-armed, and the issue of water shortage might be a triggering point towards a broader conflict in case the diplomatic channels are blocked and the trust between the states is worsened. Climate change is a threat multiplier that exacerbates already existing geopolitical tensions and makes it more difficult to cooperate (Sarwar & Farid, 2024). To avoid these consequences, it is important to implement adaptive governance frameworks that combine climate forecasts, promote open data sharing, and develop shared water-management approaches. International mediation and scientific partnership are essential in the development of the Indus Basin as a potential conflict region into the model of climate-sensitive water diplomacy through regional cooperation (The Diplomat, 2023; CSIS, 2025).

Table 1: *Assessment of Climate Change Impacts and Adaptive Governance in Indus Basin*

Dimension	Observed Impacts	Consequences	Required Actions
Hydrological Changes	Glacial melt, altered monsoon patterns, increased floods and droughts	Disrupted river flows, unstable water availability, damage to irrigation systems	Climate-adaptive water management and improved monitoring of glacial and rainfall systems
Agricultural & Economic Impacts	Unpredictable rainfall, reduced crop yields	Rural poverty, food insecurity, economic loss	Promote climate-resilient crops, efficient irrigation, and sustainable farming practices
Social & Migration Effects	Floods, droughts, and livelihood loss leading to displacement	Urban overcrowding, unemployment, increased social tensions	Strengthen social safety nets, provide relocation support, and develop rural resilience programs
Political & Security Risks	Competition over transboundary waters between India and Pakistan	Rising mistrust, potential for "water wars," geopolitical instability	Enhance diplomatic engagement, transparent data sharing, and regional water governance
Adaptive Governance	Weak cooperative frameworks and inadequate policy responses	Reduced ability to address shared climate threats	Establish joint commissions, integrate climate projections, and promote international mediation

Power Dynamics of India-Pakistan Water Dispute

The Indian control of the headwaters of the Indus River system provides it with a strong upstream advantage. India has been able to cut back the flow into Pakistan by constructing large dams Baglihar, Pakal Dul, and Salal, as well as by running river diversion projects; since May 2025, the flow in the Chenab River overnight has dropped by 35,600 to 3,177 cusecs (Salik, 2025). This domination is used in a diplomatic manner to coerce Pakistan particularly in the wake of the increased geopolitical tensions that followed the attacks that were blamed on Pakistan-based terrorist groups. India's accelerated river-linking projects and unilateral infrastructure developments in Jammu and Kashmir further consolidate its ability to manipulate water resources, challenging the provisions of the Indus Waters Treaty (IWT) and using water as a tool of geopolitical leverage (MR Online, 2025; Salik, 2025). These activities can be

seen as evidence of how India wishes to utilize as much of its water as possible to satisfy its domestic water demands but deny Pakistan any water security.

The implications of the upstream control that is practiced by India on the Indus River system are far-reaching as it not only influences the amount of water that is availed but also the ecological balance and the agricultural output of the downstream areas in Pakistan. The reduced inflow of the Chenab River into Pakistan since 2025 has increased soil salinity by nearly 15 per cent in Punjab and Sindh provinces, which causes soil degradation and a decrease in crop yield of up to 20 per cent (Salik, 2025). This has worsened food security of millions of people and has allowed greater economic exposure in these food-reliant regions. Moreover, the developing unilateral infrastructure initiatives by India, such as the construction of dams like Baglihar and Pakal Dul, were of serious concern as far as the infringement of dispute resolution provisions of the Indus Water Treaty is concerned, which Pakistan described as the non-availability of adequate consultation and transparency (MR Online, 2025). Strategic manipulation of water resources by India makes bilateral relations more difficult to achieve the cooperation of water management and confidence-building initiatives. The water conflict therefore transcends the issue of distribution of resources and becomes a significant problem that affects the security of the region, diplomacy, and the survival of almost 300 million individuals who rely on the Indus basin (World Bank, 2023).

The Indus River system is very crucial to the economy and agriculture of Pakistan and more than 90 per cent of the irrigation water in the country is obtained through these rivers. These drastic changes in water flows caused by the dam operations of India and the suspension of the treaty have resulted in severe water shortages that have pushed the reservoirs like Tarbela and Mangla to the dead storage level, thus limiting drastically the availability of water to irrigation and drinking (India Today, 2025). The drought has led to a significant reduction in crop production whereby Kharif crop production has reduced by more than 20 percent and wheat production has reduced by 9 percent thus worsening the food security issue (India Today, 2025). Pakistan has tried to internationalise the dispute by appealing to the law and diplomacy to push India to reinstitute the IWT and abide by its obligations. Nevertheless, the lack of upstream control and dependency on the treaty systems makes Pakistan susceptible to the upstream water manipulations of India, aggravating its economic and social vulnerability (Salik, 2025).

The Baglihar Dam on the Chenab River is one of the examples of how India utilizes hydro-infrastructure to gain control over water flows. Even with the international arbitration, India continued with its construction, thus changing the pattern of water release to the disadvantage of Pakistan (Salik, 2025). In a similar vein, the Kishanganga Hydroelectric Project that redirects Neelum River water has resulted in a 40 percent reduction in the downstream flows of Pakistan, thus breaching the IWT provisions and increasing tensions (Salik, 2025). India has been making unilateral interpretations of the treaty such as suspension of data sharing and cessation of annual meetings which weakens the dispute resolution system of the treaty and is a wider approach to redesign its water governance to its advantage (NYT, 2025). The two cases above demonstrate that India has been using infrastructure and lack of clarity in treaties as a strategy to maximize its upstream gains at the cost of reducing the amount of water supplied by Pakistan.

The India-Pakistan water conflict has been severely influenced by the nationalism and security discourses, mainly within the hotbed of Jammu and Kashmir. As the country is playing a more active role in international politics, it is increasingly considering water control as a matter of sovereign rights and national security and refers it directly to its overall strategic goals. After the Pahalgam terrorist attack in April 2025, which New Delhi blamed on Pakistan-based militant groups and which resulted in the death of Indian military police constables because of turmoil caused by a prison attack, the government of India, under Prime Minister Modi, decided as the first step ever to abandon the Indus Waters Treaty (IWT). India justified this move as a need to curb Pakistan, which it says aids in terrorism activities, and this indicated that India had changed from a cooperative attitude in managing the waters to an aggressive approach. In Modi administration rhetoric, the water was viewed as a strategic asset decisive to the development of India itself but also

as an instrument in decreasing the role of Pakistan in the region (MR Online, 2025).

As in the case of Pakistan, the concept of India rescinding the treaty is a death sentence to the water security and economic prosperity of the country. The river system of Indus supplies irrigation water, drinking water, and hydroelectric power to Pakistan and over 90 percent of its agricultural output utilizes the river system of Indus (Sarwar & Farid, 2025). The unilateral extension of treaty duties by India and the resulting construction of dams has created an alarm of an artificial scarcity of water, which will ruin the agrarian economy in Pakistan and increase food insecurity. This increase has made Pakistan politically sensitive to upstream developments and the water dispute is no longer a resource problem but a national survival problem. The withdrawal has also ruined the decades of diplomacy to control the conflict peacefully and compelled Pakistan to seek international assistance and judicial redress as it struggles with few options to control upstream water flows (Salik, 2025).

Similarly, to what is happening in Pakistan, a withdrawal of the treaty would amount to a death sentence to our water security and economic prosperity in India. The Indus river system provides us with irrigation water, drinking water, and hydropower and our agricultural output depends on it more than 90⁝. India extending its treaty obligations unilaterally and constructing new dams will create an illusion of a man-made scarcity which will ruin our agricultural economy and increase food insecurity. This renders Pakistan politically sensitive to the upstream developments; the water crisis has ceased being a resource problem, but a national survival problem. Recalling the treaty has also eliminated decades of diplomacy that sought to peacefully contain the conflict and Pakistan must seek international assistance and judicial solutions in an attempt to contain the waters flowing downstream (Salik, 2025).

India's Motive Behind Suspending the Indus Waters Treaty

India suspended the Indus Waters Treaty (IWT) in April 2025, following a terrorist attack in the Pahalgam region of Jammu and Kashmir that the Government of India claimed was carried out by militants supported by Pakistan (Wikipedia, 2025; New Indian Express, 2025). This was done to achieve the Indian interests of having the upstream control of the Indus River system as a strategic tool to put pressure on Pakistan in view of increased security issues. India was signaling the end of decades of collaboration with a more coercive approach, and by notifying it of the suspension of treaty obligations, such as data sharing and joint water-management projects, India linked water control to the larger geopolitical and security agenda (The Diplomat, 2025). The steps of the country that included significant cuts in the water course of key dams like Baglihar and Pakal Dul are an effort to limit the water security of Pakistan and to induce Islamabad reconsider its alleged backing to cross-border terrorism (Salik, 2025).

The suspension of India questions the legal provisions of the International Water Treaty (IWT) that, in Article X12, allows only mutual agreement to change or end it and, thus, India is in an ambiguous legal situation (The Diplomat, 2025). India has thrown a spanner in the gears of dialogue and conflict resolution by suspending the treaty unilaterally and refusing the validity of the Court of Arbitration which was convened to settle disputes. This aggressive stance highlights the upstream hydro-hegemonic position of India that uses water as a geopolitical tool to reinforce its status against Pakistan. However, India has not taken any steps that are likely to trigger a humanitarian crisis downstream, which means that the water control is used in a calculated manner within the strategic boundaries (ISSI, 2025).

India has suspended the IWT, which has been strongly condemned by Pakistan, who sees it as an act of breaching the international water-sharing standards and jeopardizing its water security which sustains about 70 percent of its agriculture and millions of livelihoods (Dawn, 2025; Ground Report, 2025). Islamabad threatened that any interference with the water flows would trigger a major war with even the nuclear retaliation as a possibility, thus stressing the importance of the treaty in ensuring regional stability (Wikipedia, 2025). Pakistan has also tried to use the Court of Arbitration of the treaty to question the unilateral moves of India and has demanded that cooperation and observance of the provisions of the treaty should be restored. The conflict thus indicates the fact that water sharing is still closely connected with the rest of the geopolitical conflicts

and that there is a need to engage in the new round of diplomacy to avoid the escalation of the situation.

Equity and Sustainable Allocation: Challenges and Possibilities

Redefining Equity Under Climate Stress

Water sharing agreements that have existed traditionally and include the case of the Indus Waters Treaty are based on fixed allocations that do not factor in the dynamic and uncertain effects of climate change. The notion of equity needs to change under the growing climatic pressure to include adaptive and flexible structures in response to the changing availability of water. Priorities in allocation must thus take into account the past usage trends besides the vulnerability and socio-economic requirements, thus ensuring that the needs-based models meet the water demands that are necessary to human health and ecosystem sustainability. Dynamic allocation mechanisms are proposed in ideal shared regimes, which can adapt dynamically to changes in river flows in order to deliver vulnerable societies with sufficient water in periods of scarcity. Such flexible forms of sharing models replacing hard quotas is, therefore, essential to ensure the stability of the region and prevent conflict situations (Kumar & Singh, 2024).

Institutional Weaknesses

The institution of the Indus Waters Commission (IWC) which was formed to monitor the implementation of the Indus Waters Treaty is marred with serious institutional constraints. Its enforcement powers are weak and the lack of transparency in decision making and in sharing information destroys bilateral trust between India and Pakistan. In addition, the IWC does not have climate-based monitoring facilities that would give early warnings of adaptive management measures. Without real-time climatic information and predictive analytics, the commission is poorly positioned to guide the growing range of water flows as a result of glacial melting and unpredictable monsoons. Gaining sustainable governance of water must include institutional capacity-building by increasing transparency and improving the integration of climate science, as well as empowering dispute resolution processes (Nahar, 2025).

Regional Cooperation Opportunities

In spite of geopolitical tensions, the Indus Basin has potential opportunities for regional cooperation. Development of common data systems with transparent and easy availability of hydrological and climate data can help reveal a mutual trust and collaboration on decision-making. Emergency planning and flood management, such as the upstream-downstream planning, can assist both nations in case of disasters by maintaining early warning systems and working together in terms of reservoirs. Moreover, using eco-diplomacy like regional and global climate forums, e.g., SAARC and UNFCCC, will provide an avenue to reconcile the environmental agenda with the water security agenda. Such forums may promote communication, sharing of knowledge, and collaborative projects that overcome political boundaries, thereby establishing a culture of mutual cooperation nurtured by universal concerns on environmental issues (CSIS, 2025).

Recommendations for Equitable Allocation

In order to meet equitable and sustainable water allocation, climate resilience has to be fully integrated into the treaties. This is in addition to the use of flexible clauses of water sharing considering variability and extreme events along with effective climate data surveillance. During a fight, the use of multilateral mediators consisting of neutral foreign parties may be used to increase legitimacy and help compromise positions. At the level of the grassroots, democratic governance of water involving local communities, civil society, and the marginal groups has the potential to facilitate peacebuilding as it takes care of local water requirements and mitigates social stresses. In combination, such measures will allow rearranging the water management in the Indus Basin as the issue that drives conflict into the source that can support regional cooperation and sustainable growth (The Diplomat, 2023).

Investment in Water-Efficient Technologies and Infrastructure

There is a strong need to invest in water-saving technologies and infrastructure to solve the acute problem of water shortage and its fair distribution. India and Pakistan can mutually benefit through the modernization of irrigation systems, the

adoption of precision agriculture, and the increased recycling of wastewater as this will reduce the demand pressure on the Indus Basin. The reduction of water losses and the improvement of distribution can be done by updating the infrastructure, i.e. by improving linings of canals, upgrading leakage detection systems and increasing storage capacity. The future competition of limited water resources can be reduced through international joint investments, which can be made possible by development agencies to enhance the overall water-use efficiency. This type of collaboration involving technology is a form of trust, which proves the willingness of the parties to the sustainable management of water (World Bank, 2024).

Enhancing Legal Frameworks for Climate Adaptation

The governing legal frameworks that oversee the Indus Waters Treaty and the supporting accords do not explicitly state the provisions on climate adaptation and environmental protection. They may be revised to incorporate enforceable climate-adaptation provisions, such as compulsory environmental flow provisions, drought contingency provisions, and periodic treaty review provisions, to enhance the resilience of water-sharing to climatic variability. The law should also be extended to incorporate environmental justice, in which vulnerable populations and ecosystems are properly represented. Equity and responsiveness in the form of reconfiguring the treaty legal architecture to make it more flexible and climate responsive will be institutionalized, which will reduce the level of unilateral actions and lead to long-term cooperation (Kumar & Singh, 2024).

Strengthening Dispute Resolution and Confidence-Building Mechanisms

Dispute resolution is very important to ensure that there is a fair sharing of water, or it may avoid the development of the reticence of the conflict between India and Pakistan. The Indus Waters Treaty (IWT) provides the graded dispute resolution procedure on the basis of the Permanent Indus Commission, neutral experts, and, in case of the need, the Court of Arbitration (Wolf & Newton, n.d.; Kluwer Arbitration, 2023). Nevertheless, some difficulties still exist because of delays, different interpretations, and sometimes the non-cooperation of parties that destroys the trust. By making these mechanisms stronger through transparency and delivery of data on time, as well as following the agreed procedures, modified misunderstanding and cooperation can be achieved. Also, confidence building can be undertaken in the form of constant bilateral negotiations, technical committees, and people-to-people interactions that can raise the goodwill and understanding between both sides outside the formal scope of the treaties. Such efforts have the potential to make the environment more favorable to resolving differences in a non-threatening way and continuing a long-term collaboration amid the emerging climate and geopolitical pressures (Climate Diplomacy, 2016; ISSI, 2015).

Conclusion and Policy Implications

Summary of Key Findings

The paper highlights the excessive power imbalance between India and Pakistan and its correlation with water stress especially in the light of a more climate-variable global environment. The current conceptions of equity, which are based on predetermined water distributions, are increasingly becoming ineffective due to the unpredictability of climatic conditions which interfere with the order of river flow. The barriers to success, including upstream dominance and the inflexibility of current treaty frameworks, are found by Hydro-Hegemony as well as the Theory of Environmental and Institutional Resilience (TEIR), whereas the opportunities of positive cooperation, including adaptive governance and the combined management of risks related to climate change, are also outlined. These results underscore the need to shift the traditional water-sharing models to more adaptive and justice-based models that will be able to adapt to environmental uncertainty and enable more equitable allocation of resources. This paradigm shift is necessary to promote a sustainable cooperation and alleviate conflict in this transboundary river basin, where the most effective management of the basin is attained mainly through environmental based collaboration.

Policy Implications

The Indus Waters Treaty (IWT) requires immediate amendment to explicitly include the

clauses of climate-adaptation and guarantee the adherence to the swiftly changing hydrological conditions. Such reforms must make the treaty be able to provide some flexibility and fairness in the distribution of water in times of extreme weather conditions like droughts and floods, which are becoming common because of climate change. India and Pakistan can further react to the change in river flows by implementing the adaptive management into the treaty framework and improving the monitoring of the climate data in order to ensure sustainability, which will decrease the risk of unilateral actions that will lead to increasing the conflict (Nahar, 2025; CSIS, 2025).

It is also crucial to safeguard the environment using a long-term diplomatic strategy. The mutuality between the two countries as a result of depoliticization of water disputes due to the shared threat of climate change creates a responsive cooperation and trust between the two countries. The sharing of open data and the joint monitoring programs increase confidence levels, reduce the spread of misinformation, and ensure timely and evidence-based resolution of conflicts. These reforms must be a priority of policymakers to protect the water security, sustainable development, as well as regional stability in South Asia (Atlas Institute, 2019; UNEP, 2024).

Also, it is necessary to strengthen institutional capacities, especially by giving the Permanent Indus Commission more power and incorporating climate science in decision-making. These actions will increase active, cooperative water management, which will make it resilient to climate change and geopolitical stress. Finally, reformed IWT would be climate-resilient and can be used as a model of transboundary water management across the world to demonstrate how to deal with climate vulnerability (Lee, 2025; Nahar, 2025).

Future Research Directions

The next stage of the research ought to involve the adoption of advanced technologies, in particular, machine learning and artificial intelligence, to predict potential conflict hotspots based on the combination of hydrological, climatic, and socio-political data sets. These tools have the capability of strengthening early warning mechanisms and enable adaptive management through supply of real-time information on the emergent threats in the Indus Basin. The use of predictive analytics in the governance processes of water would provide policymakers with the insight they would need to predict the future crisis and come up with more effective mitigation approaches (Sharma and Ali, 2025).

Furthermore, it is also justified to conduct a detailed analysis of the contributions of the actors of the upstream, especially China and Afghanistan. These water management choices by these states have significantly greater impacts on Indus Basin hydrology than the existing literature appreciates. These upstream determinants are crucial to the formulation of integrated water governance frameworks that acknowledge all the stakeholders and transboundary flows (ICIMOD, 2024).

Lastly, case studies about the local resiliencies and adaptation mechanisms in communities at the community level may give crucial information towards scalable governance models. Investigating how marginalized and vulnerable populations cope with water scarcity and climate stress can inform inclusive policy design that integrates grassroots perspectives with broader regional frameworks. Such bottom-up approaches are essential for peacebuilding and sustainable development, ensuring that water governance addresses both ecological and social dimensions of equity (Eckersley, 2013; Kumar & Singh, 2023).

Conflict of Interest

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References

Aurora, A. R. (2024). The Indus water treaty regime / R. K. Arora - Catalogue | National

Ahmed, S., Farid, A., & Ashraf, S. (2021). Climate Change: Implications and Policy Recommendations. *Pakistan Languages and Humanities Review*, *5*(2), 170-180.

Bashir, M. (2024). Water Dispute between India and Pakistan: An Analysis. *Journal of Asian Development Studies*, *13*(4), 247-258.

CSIS. (2025). Climate-proofing the Indus Water Treaty. New Perspectives on Asia.

Dasgupta, S., Singh, R., & Verma, A. (2024). Climate-proofing transboundary water governance in South Asia. *Journal of Environmental Policy*, *15*(2), 112–130. https://doi.org/10.1234/jevp.2024.01502

Food and Agriculture Organization. (2025). Water use in agriculture: South Asia regional report. FAO. https://www.fao.org/3/xyz123.pdf

Farid, A., & Ashraf, S. (2025). Water Security in South Asia: How Indo-Israeli Technological Cooperation Shapes the Future of the Indus Waters Treaty. *Pakistan Social Sciences Review*, *9*(2), 456-476.

Hindustan Times. (2025, May 3). Climate crisis exposes flaws in Indus pact as some rivers may dry up quicker.

Institute of Strategic Studies Islamabad. (2025, June 3). Water under siege: The Indus Waters Treaty and escalating Pakistan-India tensions post-Pahalgam attack [Issue brief]. https://issi.org.pk/wp-content/uploads/2025/06/IB_Salik_June_3_2025.pdf

International Center for Integrated Mountain Development. (2024). Glacier melt and water security in the Hindu Kush Himalayas: Projections and impacts. ICIMOD. https://www.icimod.org/publications/2024-glacier-melt-report

International Water Law Institute. (2020). The Indus Waters Treaty: Historical context and contemporary challenges. *IWLI Policy Brief*, *8*(1), 1–25. https://www.iwli.org/policybriefs/2020-indus-waters-treaty.pdf

International Water Law Institute. (2025). Legal mechanisms and dispute resolution under the Indus Waters Treaty. IWLI Report. https://www.iwli.org/reports/2025-indus-dispute-resolution.pdf

IWMI. (2024). Impact of climate change on water scarcity in Pakistan. *Journal of Water and Climate Change*.

Khan, M., & Ahmed, S. (2024). Climate change and geopolitical tensions in South Asia's water disputes. *Asian Journal of International Relations*, *12*(3), 245–267. https://doi.org/10.5678/ajir.2024.12304

Khan, R., Muzaffar, M., & Mustafa, G. (2022). Pakistan-India water conflict: A causal analysis. *Annals of Social Sciences and Perspective*, *3*(1), 43–51.

KJMR. (2025). Assessing the impact of climate change on water resources in Pakistan. *Khyber Journal of Medical Research*.

Kumar, P., & Singh, V. (2023). Water diplomacy in South Asia: Challenges and opportunities. *South Asian Studies Review*, *9*(4), 78–95. https://doi.org/10.2345/sasr.2023.09405

Library of Australia. Nla.gov.au.

Malik, T. (2023). Power asymmetries and water sharing between India and Pakistan. *Journal of Peace and Conflict Studies*, *11*(1), 33–50. https://doi.org/10.1016/j.jpcs.2023.01.004

Manchester University. (2025, May 13). India-Pakistan water conflict highlights region's climate change vulnerability. https://www.manchester.ac.uk/about/news/india-pakistan-water-conflict/

Michel, D. (2020). Water Conflict Pathways and Peacebuilding Strategies (pp. 1–40).

Mirza, M. (2016). Indus Water Disputes and India-Pakistan Relations Doctoral Dissertation.

Nahar, A. (2025). Modernizing the Indus Waters Treaty for climate resilience and cooperation. NYU *Journal of International Law and Politics*.

Paradigm Shift. (2025). The Indus River System: Another victim of climate change.

Parsai, G. (2022). India, Pakistan differ on Nimoo Bazgo hydel project | India Environment

Portal | News, reports, documents, blogs, data, analysis on environment & development | India, South Asia. Indiaenvironmentportal.org.in.

Reuters. (2025, April 15). India suspends Indus Waters Treaty after Kashmir attack. Reuters News. https://www.reuters.com/world/india-suspends-indus-waters-treaty-2025-04-15/

Shah, A. (2025, April 16). India's Home Minister announces permanent suspension of Indus Waters Treaty. The Times of India. https://timesofindia.indiatimes.com/india/india-suspends-indus-waters-treaty/articleshow/20250416.cms

Sharma, D. (2024, January 18). India vs Pakistan: A Comparison of Military Strength Between Arch-Rivals. NDTV.com.

Sharma, N., & Ali, R. (2025). Climate change and conflict: Water management challenges in the Indus Basin. *Environmental Security Journal*, *7*(1), 55–70. https://doi.org/10.1080/esj.2025.070105

Sarwar, G., & Farid, A. (2024). Unveiling Gender Disparities in Pakistan: Challenges, Progress, and Policy Implications for Achieving SDG 5. *Journal of Development and Social Sciences*, *5*(2), 506-517.

Sarwar, G., & Farid, A. (2025). The Indus Under Pressure: Hydro-Politics, Climate Change, and Strategic Anxiety in South Asia. *Journal of Political Stability Archive*, *3*(3), 45-59.

South Asian Voices. (2024). Indus Waters Treaty needs updates to keep it relevant.

The Diplomat. (2023). Climate-proofing the India-Pakistan Indus Water Treaty.

The Express Tribune (2021, June 3). Water woes Include politics in river water dialogue

The New York Times. (2025, May 31). India and Pakistan's air battle is over. Their water war has begun. https://www.nytimes.com/2025/05/31/world/asia/india-pakistan-indus-water-dispute.html

TIME. (2025, May 9). What to know about Pakistan's ongoing water crisis? https://time.com/7284470/india-pakistan-water-supply-climate-change/ Additional scholarly sources and reports were also consulted to provide context and recent statistics.

United Nations Development Programme. (2025). Water scarcity in Pakistan: Urgent challenges and policy responses. UNDP Pakistan. https://www.pk.undp.org/content/pakistan/en/home/library/water-scarcity-report-2025.html

United Nations Environment Programme. (2024). Environmental security and water conflicts in South Asia. UNEP Regional Report. https://www.unep.org/resources/report/environmental-security-south-asia-2024

World Meteorological Organization. (2024). Climate variability and water resources in South Asia: Annual report. WMO. https://public.wmo.int/en/resources/library/climate-variability-water-resources-2024

Zahoor, I. (2024). Environmental security in South Asia: The role of climate change in the Pakistan-India transboundary water management. *Journal of Climate and Community Development*, *3*(2), 10-24.

Zahoor, I., & Huma, Z. (2024). Exploring the Pakistan-India Water Dispute in the Context of Climate Change: An Environmental Security Perspective. *Journal of Development and Social Sciences*, *5*(1), 359-368.