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THE POLITICAL ECOLOGY OF WATER CONFLICTS IN THE INDUS BASIN: POWER, SCARCITY, AND TRANSBOUNDARY GOVERNANCE IN SOUTH ASIA

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Abstract
This study explores the political ecology of water conflicts in the Indus Basin, one of the most geopolitically contested and environmentally fragile river systems in South Asia. Drawing on critical political ecology, the paper examines how power asymmetries, institutional structures, and socio-environmental inequalities shape transboundary and intra-state water disputes. The Indus Waters Treaty, while often lauded as a model of cooperation, is critiqued for its institutional rigidity and exclusion of ecological and climate realities. At the domestic level, water conflicts between provinces, particularly Punjab and Sindh, are shaped by infrastructural control, bureaucratic dominance, and ecological marginalization. The crisis in the Indus Delta, the impacts of climate change, and the securitization of water further complicate governance. The paper concludes by advocating a revised and ecologically grounded approach to water governance in the region, with attention to institutional reform, climate adaptation, and the rights of marginalized communities.

Keywords: Political Ecology, South Asia, Socio-Environmental, Climate Realities

Introduction
Water is not merely a natural resource; it is a deeply political substance that reflects and reinforces social inequalities, geopolitical tensions, and environmental vulnerabilities. In South Asia, the Indus River Basin has emerged as a critical site of hydropolitical contestation, linking the ecological, economic, and national security interests of India, Pakistan, China, and Afghanistan. As a transboundary river system originating in the Tibetan Plateau and flowing through politically sensitive territories, the Indus is both a life source and a flashpoint for regional tension. Pakistan, in particular, is acutely water-stressed and heavily dependent on the Indus and its tributaries for agricultural, domestic, and industrial use; over 90% of the country's freshwater needs are met by this system (Mustafa et al., 2013). In this context, water conflicts are not only environmental or technical problems but are also expressions of power, historical injustice, and institutional failure. The *political ecology* approach provides a valuable lens to understand the water conflicts in the Indus Basin. Political ecology, as a framework, investigates how power relations shape the access to and control over environmental resources, particularly in the Global South (Robbins, 2004;

Forsyth, 2003). Unlike technocratic models of water management that depoliticize conflict, political ecology foregrounds issues of inequality, marginalization, and the interplay of local and global actors. This paper applies political ecology to analyze how water scarcity in the Indus Basin is not simply a result of physical scarcity but is produced and intensified by uneven power relations, contested hydropolitics, and ecological degradation.

A central axis of this paper is the *Indus Waters Treaty (IWT),* signed in 1960 under the auspices of the World Bank. Celebrated as one of the most resilient water-sharing agreements globally, the IWT allocates the eastern rivers (Ravi, Beas, Sutlej) to India and the western rivers (Indus, Jhelum, Chenab) to Pakistan. However, recent projects such as India's Baglihar and Kishanganga dams, coupled with rising water nationalism and climate change, have strained the treaty's efficacy and raised questions about its adaptability (Wolf & Newton, 2008; Zawahri, 2009). Pakistan accuses India of manipulating upstream control to assert hydro-hegemony, while India views the treaty as outdated and limiting its developmental aspirations.

Within Pakistan, the water conflict is also domestic, manifesting in *intra-provincial tensions* over distribution between Punjab, Sindh, and Balochistan. Marginalized delta communities in Sindh, especially in the Indus Delta, face ecological collapse due to upstream diversions, saltwater intrusion, and the absence of integrated environmental planning (Qureshi, 2011). These internal power struggles are compounded by the lack of transparency, data sharing, and effective inter-provincial governance.

Climate change further exacerbates the vulnerabilities of the Indus Basin. Glacial melt, erratic monsoons, and declining river flows threaten both food and water security, increasing the stakes of existing disputes. According to the World Resources Institute (2019), Pakistan ranks among the top countries facing severe water stress by 2040, which could transform existing water disagreements into open conflicts if not managed equitably.

This study aims to examine the political, ecological, and institutional drivers of water conflict in the Indus Basin through the lens of political ecology. Specifically, it addresses the following questions:

1. How do transboundary and intra-state power dynamics shape access to water in the Indus Basin?
2. In what ways do environmental degradation and climate change intensify existing water conflicts?
3. How adequate is the Indus Waters Treaty in addressing emerging political-ecological realities?

By answering these questions, the paper contributes to a deeper understanding of environmental politics in South Asia and highlights the urgent need for an inclusive, just, and ecologically sustainable water governance framework.

Literature Review

The Indus Basin, one of the world's largest and most geopolitically sensitive river systems, has

long been a site of environmental and political contestation. Its hydropolitics span national boundaries, interprovincial disputes, ecological degradation, and vulnerabilities to climate change. Understanding water conflicts in this region requires moving beyond hydrological and engineering perspectives and toward frameworks that interrogate power, access, inequality, and environmental justice. Political ecology offers a lens by integrating ecological concerns with socio-political analysis, particularly in contexts such as South Asia, where development, geopolitics, and the environment are deeply entangled.

The Indus Waters Treaty and its Legacy

The **Indus Waters Treaty (IWT)**, signed in 1960 between India and Pakistan and brokered by the World Bank, is often celebrated as a rare example of successful water diplomacy. The treaty allocates the three eastern rivers (Ravi, Beas, Sutlej) to India and the three western rivers (Indus, Jhelum, Chenab) to Pakistan (Wolf & Newton, 2008). Despite periodic tensions, including major wars between the two states, the treaty has largely held. Yet, recent analyses argue that the IWT is increasingly inadequate in the face of modern challenges such as climate change, upstream hydropower development, and glacial melt (Zawahri, 2009; Mustafa et al., 2013).

The growing body of critical literature highlights limitations in the treaty's design. For instance, Zeitoun and Warner (2006) conceptualize "hydro-hegemony" to describe how upstream states like India exert disproportionate influence over shared rivers. Pakistan, being a downstream riparian, often perceives Indian dam construction (e.g., Baglihar and Kishanganga) as violations of the treaty's spirit. Even when these projects are deemed treaty-compliant by neutral experts (Kibaroglu & Scheumann, 2011), they raise political and ecological anxieties.

Political Ecology and Water Governance

Political ecology emerged in the 1980s as a critique of apolitical environmentalism and sought to integrate political economy with ecological analysis (Blaikie & Brookfield, 1987; Peet & Watts, 1996). In the context of water, political ecology emphasizes how access and control over resources are shaped by power relations, institutions, and discourses (Robbins, 2004). In South Asia, where water management is often centralized, technocratic, and opaque, political ecology has been useful in exposing how development interventions marginalize certain communities and ecologies.

For example, Mustafa (2002) demonstrates how water development projects in Pakistan particularly large dams and canal systems—benefit elite landowners while dispossessing small scale farmers and downstream delta populations. Similarly, Akhter (2015) critiques the "hydraulic mission" of the Pakistani state, showing how state narratives of national security and agricultural development obscure the unequal distribution of water and its ecological consequences.

Environmental Injustice and the Indus Delta

The environmental degradation of the Indus Delta, home to rich biodiversity and coastal communities, exemplifies the human cost of upstream diversions. According to Qureshi (2011), reduced freshwater flows due to upstream barrages and damming have led to saltwater intrusion, loss of mangroves, and declining fishery productivity. Delta residents, primarily in Sindh, suffer from water scarcity, food insecurity, and displacement—an outcome of what Nixon (2011) calls

"slow violence," or gradual environmental harm inflicted by systemic neglect.

Interprovincial water disputes, particularly between Punjab and Sindh, are also rooted in questions of equity and power. Punjab, being politically dominant and upstream, is often accused by Sindh of monopolizing water through infrastructural projects like the Greater Thal Canal. Despite the presence of institutions like the Indus River System Authority (IRSA), mistrust and lack of transparent data sharing continue to undermine cooperative water governance (Mehta, 2005; Mustafa et al., 2013).

Climate Change and Future Conflict Risks

Climate change introduces new uncertainties to the hydropolitics of the Indus Basin. The Hindu Kush-Himalayan region, known as the "Third Pole," contains the largest volume of ice outside the polar regions and is a crucial water source for the basin (Immerzeel et al., 2010). Glacial retreat, erratic monsoons, and rising temperatures threaten to disrupt the basin's flow regimes and increase the frequency of floods and droughts. Rasul (2014) warns that climate-induced scarcity may intensify both inter-state and intra-state water conflicts unless adaptive governance mechanisms are developed.

The World Resources Institute (2019) ranks Pakistan among the top countries facing extreme water stress by 2040. Without institutional reforms and ecological planning, rising water insecurity may fuel geopolitical tensions and internal unrest. Scholars have thus called for an urgent revision of the IWT to include climate adaptation, ecological flows, and equitable benefit-sharing (Wirsing & Jasparro, 2006).

Transboundary Governance and Regional Geopolitics

Transboundary water governance in South Asia is complicated by historical animosity, power asymmetries, and lack of regional cooperation mechanisms. India's dual role as both an upper and lower riparian (vis-à-vis China and Pakistan) adds to the complexity. China's dam-building activities on the upper Brahmaputra (Yarlung Tsangpo) have raised concerns about future Chinese influence over Himalayan water flows (Tortajada & Pobre, 2011). Although China is not party to the IWT, its hydrological projects could indirectly affect downstream flows into the Indus.

Afghanistan's construction of dams on the Kabul River, a major tributary of the Indus, also poses potential conflict with Pakistan, especially given the absence of a formal water treaty between the two countries (Thomas & Warner, 2015). This underlines the need for broader regional frameworks beyond bilateral treaties. Scholars like Mirumachi (2015) argue for "transboundary water justice" that moves beyond state-centric models to include affected communities and environmental interests.

Critiques of Technocratic Solutions

A significant portion of water policy literature in Pakistan has focused on supply-side solutions such as building new dams (e.g., Diamer-Bhasha) or lining canals to reduce seepage. While these may provide short-term relief, critics argue that they often neglect issues of governance, demand management, and ecological sustainability (Alam, 2002). Moreover, such large-scale infrastructure projects tend to be top-down, with limited consultation of affected populations.

Shah et al. (2018) advocate for "soft path" water management—an approach that prioritizes efficiency, conservation, community participation, and equity. Political ecology aligns with this view by highlighting how solutions that ignore underlying power structures often exacerbate existing inequalities and generate new forms of conflict.

Conclusion of Literature Review

The literature on water conflict in the Indus Basin is rich, diverse, and increasingly interdisciplinary. From geopolitical analyses of the Indus Waters Treaty to grassroots studies of delta communities, scholars have shown that water is not only a physical resource but also a political terrain shaped by asymmetries of power, historical grievances, and ecological change. Political ecology helps connect these layers by foregrounding justice, access, and power in environmental decision-making.

However, key gaps remain particularly in the inclusion of local voices, gendered perspectives, and climate adaptation mechanisms in policy design. There is also a need for integrated, multilateral frameworks that address the basin's ecological fragility and geopolitical sensitivity. This paper builds on these insights to propose a more inclusive, politically aware, and ecologically informed approach to water governance in the Indus Basin.

Theoretical Framework

Political Ecology as an Analytical Lens

The theoretical lens guiding this study is political ecology, an interdisciplinary approach that examines the relationships between political, economic, and social factors in the context of environmental issues and changes. Rooted in the works of Blaikie and Brookfield (1987), political ecology emerged as a critique of apolitical, technocratic environmental narratives that often ignore the role of power, inequality, and historical context in shaping environmental outcomes. Unlike conventional resource management frameworks that isolate ecological problems from their social dimensions, political ecology insists that environmental degradation, access, and conflict are inherently political.

In the context of the Indus Basin, political ecology allows for a deeper understanding of how water conflicts are produced and sustained by unequal power relations, both within and between states. It highlights how environmental narratives—such as "water scarcity" or "national development"—often conceal structural inequalities, suppress marginalized voices, and prioritize elite or geopolitical interests. For example, upstream-downstream disparities between India and Pakistan, or between Punjab and Sindh within Pakistan, are not just hydrological facts; they are political outcomes shaped by historical treaties, institutional control, and infrastructural development priorities (Robbins, 2004; Forsyth, 2003).

Key Concepts in Political Ecology Relevant to This Study

Access and Control of Resources

Drawing on Ribot and Peluso's (2003) theory of access, political ecology emphasizes that access to water is not merely about legal rights or physical availability but also about the mechanisms—

economic, political, institutional—through which some actors gain control while others are excluded. In the Indus context, Punjab's infrastructural dominance gives it greater access, often at the expense of downstream provinces and delta communities (Mustafa, 2002; Qureshi, 2011).

Hydro-Hegemony

Zeitoun and Warner (2006) introduced the concept of hydro-hegemony to explain how dominant states use their geographical advantage, infrastructure, and institutional power to control shared watercourses. India's upstream position on the Indus, coupled with its growing dam infrastructure, has been interpreted by many Pakistani scholars and policymakers as a form of hydro-political dominance. Political ecology situates this not just as a technical issue, but as a manifestation of power asymmetry in transboundary water governance.

Ecological Marginalization

The theory also underscores how developmental decisions disproportionately harm ecologically vulnerable groups, such as fishing communities, women, and farmers in the Indus Delta. The notion of "ecological marginalization" describes how dominant political actors pursue infrastructure-led growth (dams, canals) without regard for the environmental costs borne by marginalized populations (Nixon, 2011; Akhter, 2015). In this way, the framework foregrounds environmental justice and challenges mainstream narratives of "progress."

Discourse and Narrative Power

Political ecology also incorporates discourse analysis by exploring how language and narratives about water (e.g., "utilization rights," "waste," or "national interest") are mobilized by states to justify control and marginalization (Molle, Mollinga & Wester, 2009). The securitization of water in Pakistan's policy discourse, which frames India's water control as an existential threat, reflects such narrative constructions with deep political implications.

Why Political Ecology and Not IR or Technocratic Frameworks?

While International Relations (IR) theories—such as realism or liberal institutionalism—offer tools for understanding state behavior and treaty dynamics, they often overlook local voices, environmental degradation, and intra-state disparities. Similarly, engineering and hydrological models provide important data but frequently ignore the social and political consequences of infrastructure projects. Political ecology bridges these gaps by offering a multi-scalar, justice-oriented perspective that integrates both ecological and political concerns.

Conclusion of Theoretical Framework

By applying political ecology, this paper moves beyond the notion of water scarcity as a technical problem and reframes it as a contested political and ecological process. It allows us to critically examine how power—both geopolitical and local—shapes access, control, and degradation of water in the Indus Basin. This theoretical lens will guide the subsequent analysis of the Indus Waters Treaty, interprovincial disputes, and the implications of climate change, aiming to foreground the voices and ecologies often silenced in mainstream water governance debates.

Methodology

Research Design

This study adopts a qualitative case study design grounded in the principles of critical political ecology, with the Indus Basin serving as the primary unit of analysis. The research employs an interpretivist epistemology to understand how political, environmental, and institutional forces interact to shape water conflict dynamics. Rather than seeking universal laws or causal quantification, the study prioritizes depth, contextuality, and narrative plurality in capturing the complexity of water governance in South Asia.

This approach is particularly relevant for understanding the Indus Basin because of its multi-scalar governance structures, contested treaty arrangements, power asymmetries, and ecological fragility. It also enables the integration of both transboundary (India–Pakistan–Afghanistan–China) and domestic (interprovincial, delta-level) dimensions of water conflict within a single analytical framework.

Case Selection: The Indus River Basin

The Indus Basin has been selected due to its:

- Critical importance to Pakistan's agriculture, energy, and national security.
- Position as a transboundary river system involving multiple riparian states.
- Historical relevance due to the Indus Waters Treaty (IWT, 1960).
- Emerging ecological and political challenges due to climate change, dam-building, and internal water disputes.

As a bounded case, the Indus Basin offers both historical depth and contemporary relevance, making it ideal for theory-driven qualitative analysis (Yin, 2018).

Data Sources

The research relies on secondary qualitative data, derived from the following sources:

1. **Treaties and Legal Documents**
    - Indus Waters Treaty (1960)
    - Baglihar Dam and Kishanganga arbitration rulings
    - Pakistan's National Water Policy (2018)
2. **Government and Institutional Reports**
    - Ministry of Water Resources (Pakistan)
    - Indus River System Authority (IRSA)
    - World Bank reports on South Asia Water Initiative
    - World Resources Institute and ICIMOD climate reports
3. **Academic Literature**
    - Peer-reviewed journals such as *Water International*, *Ecology and Society*, *Antipode*, and *Hydrological Sciences Journal*
4. **NGO and Media Analysis**
    - Reports from IUCN, WWF, and International Rivers
    - Investigative journalism and editorials (e.g., DAWN, The Hindu, Al Jazeera)
5. **Satellite Imagery and Hydrological Data**
    - Historical flow data from the Pakistan Meteorological Department (PMD) and Water and Power Development Authority (WAPDA)

- Remote sensing data on glacial melt and deltaic degradation (NASA, MODIS, ICIMOD)

The triangulation of these data sources ensures **credibility, reliability, and richness of evidence**.

Analytical Framework

The analysis proceeds through a thematic content analysis guided by the principles of political ecology. Data were manually coded using categories such as:

- **Access and exclusion**
- **Hydro-hegemony and power asymmetry**
- **Ecological marginalization**
- **Climate-induced vulnerability**
- **Discourses of security and nationalism**

Coding was conducted iteratively to identify patterns, contradictions, and narrative shifts. Where relevant, document excerpts were subjected to discourse analysis (Fairclough, 2003) to understand how water issues are framed in political texts.

Ethical Considerations

As the study is based on publicly available documents and secondary sources, no human subjects were directly involved, and hence, formal ethical clearance was not required. However, the research adheres to academic integrity standards and avoids the misrepresentation or selective reporting of sensitive geopolitical information.

Limitations of Methodology

While the qualitative case study approach allows for in-depth exploration, it is limited in terms of generalizability beyond the Indus context. Additionally, the reliance on secondary data may introduce bias, particularly from government or media sources. However, data triangulation, critical source evaluation, and peer-reviewed academic integration mitigate these limitations.
Furthermore, the absence of primary field interviews due to the geopolitical sensitivity and limited accessibility to affected regions restricts the ability to directly capture local narratives. Future research may benefit from participatory ethnography or interviews with stakeholders, including farmers, delta communities, and water bureaucracies.

Analysis and Discussion

Transboundary Hydro-Politics and the Question of Hydro-Hegemony

The geopolitical conflict between India and Pakistan over the Indus River system is deeply entrenched in the asymmetries of geography, infrastructure, and power. India, as the upstream riparian, enjoys a significant strategic advantage, which it has increasingly leveraged through infrastructure projects like the Baglihar Dam, Kishanganga Hydropower Plant, and proposed Pakal Dul project. Though these projects have been arbitrated under the Indus Waters Treaty (IWT), they signal a growing hydro-nationalism in Indian water policy, particularly under changing political regimes (Zawahri, 2009; Mustafa et al., 2013).

The concept of hydro-hegemony, introduced by Zeitoun and Warner (2006), aptly captures this

dynamic. Hydro-hegemony refers to the use of material power (infrastructure), ideational power (narratives), and bargaining power (institutions) to exert control over transboundary watercourses. In the Indus case, India's upstream control, coupled with its reinterpretation of IWT clauses (such as permissible storage and run-of-the-river projects), reflects an attempt to stretch legal interpretations to secure national water interests.

From a political ecology perspective, this upstream control is not simply a technical matter but a manifestation of post-colonial territorial assertion, institutional rigidity, and geopolitical mistrust. India's increasing internal need for hydropower and irrigation must be juxtaposed against Pakistan's heavy reliance on the Indus Basin, where over 90% of agriculture depends on the river system (Mustafa, 2002). Pakistan's sense of existential water insecurity, reflected in media and policy discourses, reinforces securitized narratives that delegitimize any Indian intervention, irrespective of its legality.

Institutional Fragility and the Limits of the Indus Waters Treaty

While the IWT is often cited as a successful water-sharing agreement, its rigidity and lack of climate provisions have become apparent in recent decades. The Treaty does not address issues like:

- **Water quality**
- **Ecological flows**
- **Climate adaptation**
- **Sedimentation and glacial melt impacts**

Scholars such as Wolf and Newton (2008) and Mirumachi (2015) argue that while the treaty has helped avoid water wars, it has failed to evolve into a cooperative governance framework. Political ecology critiques the IWT's underlying premise—that water can be "allocated" like a commodity without accounting for the relational ecologies and social systems that depend on it (Robbins, 2004).

In the context of political ecology, this static institutionalism is a form of "discursive closure" that suppresses alternate voices—particularly of delta communities, ecological stakeholders, and non-state actors. Moreover, bilateralism has excluded Afghanistan (on the Kabul River) and China (on the upstream Indus), limiting the regional governance scope.

Intra-State Water Conflict: Punjab vs. Sindh

Within Pakistan, water distribution between **Punjab and Sindh** has been a source of chronic conflict. Punjab, being both upstream and politically dominant, commands more extensive irrigation infrastructure and water-intensive agriculture. The Greater Thal Canal and other diversions have long been opposed by Sindh, which accuses Punjab of disproportionately controlling water to the detriment of downstream users.

From a political ecology standpoint, this is a classic case of ecological marginalization where state infrastructure and bureaucratic control enable elite capture at the cost of peripheral groups. The Indus River System Authority (IRSA), established to regulate interprovincial flows, has often been accused of lacking transparency and bias in favor of Punjab (Mehta, 2005). Water distribution

decisions are rarely subjected to environmental justice scrutiny, nor are deltaic and tail-end users represented in decision-making.

The Indus Delta Crisis: Slow Violence and Environmental Degradation

The Indus Delta, located in lower Sindh, is facing one of the most critical yet underreported ecological collapses in South Asia. Upstream damming and reduced freshwater flows have led to:

- **Saltwater intrusion**
- **Loss of mangrove forests**
- **Decline in fisheries**
- **Agricultural degradation**
- **Displacement of coastal communities**

Qureshi (2011) and Akhter (2015) have shown how deltaic communities are victims of "slow violence" (Nixon, 2011)—a form of environmental harm that is gradual, cumulative, and often invisible in policy circles. Despite legal recognition of "minimum environmental flows", these flows are rarely enforced, and downstream communities face rising poverty, food insecurity, and internal displacement.

This illustrates a broader critique of water governance under political ecology: that infrastructure-led, elite-dominated models of water development often externalize ecological costs to already marginalized populations. It also shows the limits of "efficiency" discourses that dominate water planning in Pakistan.

Climate Change as a Risk Multiplier

The Hindu Kush-Himalaya (HKH) region is warming at nearly twice the global average, and glaciers feeding the Indus Basin are rapidly retreating (Immerzeel et al., 2010). The implications for water availability, seasonal flows, and disaster risks are profound. Pakistan faces a paradox of seasonal excess (floods) and scarcity (droughts), further complicated by monsoonal variability and infrastructure vulnerabilities.

Climate change is thus a risk multiplier, intensifying existing institutional weaknesses, socio-ecological inequalities, and regional tensions. Yet the IWT and national water policies remain largely blind to these risks. This points to a critical need for treaty renegotiation, basin-wide data sharing, and multi-scalar climate adaptation frameworks.

Narrative Politics and Water Securitization

Finally, the discursive framing of water as a national security threat has shaped how both India and Pakistan justify their water strategies. In Pakistan, water is framed as an "existential issue," reinforcing nationalist and militarized responses (e.g., the "Water Terrorism" discourse against India). This securitization narrows space for cooperative, ecological, or rights-based discourse on water management (Zawahri, 2009).

Political ecology, by incorporating discourse analysis, reveals how hegemonic narratives construct water as a tool of control, obscuring the rights of affected communities, the role of gender, or environmental sustainability. There is thus an urgent need to de-securitize water policy and re-center human and ecological rights in water diplomacy.

Conclusion and Policy Recommendations

Conclusion

The political ecology of water conflicts in the Indus Basin reveals that environmental scarcity cannot be separated from the structures of power, geopolitics, and inequality. The study shows that while technical and institutional mechanisms like the Indus Waters Treaty have played a stabilizing role, they remain limited in addressing the contemporary challenges of ecological degradation, climate change, and intra-state inequities. At the heart of these water conflicts lies an uneven geography of access between upstream and downstream, urban and rural, state and community that has deepened over time due to hydro-hegemonic control and infrastructural dominance.

By using political ecology as an analytical lens, this paper has demonstrated how water is not merely a hydrological or economic resource, but a politically mediated entity. In transboundary terms, India's infrastructural expansion and legal reinterpretations of the Indus Waters Treaty represent growing assertions of regional hydro-sovereignty, which Pakistan views as existential threats. Internally, provinces like Sindh and Balochistan face increasing marginalization in terms of both access and ecological degradation, while deltaic communities in the Indus Delta represent some of the most vulnerable populations due to saltwater intrusion, loss of biodiversity, and livelihood displacement.

Moreover, climate change has emerged as a multiplier of risk and injustice. The shrinking Himalayan glaciers, changing monsoon patterns, and rising evapotranspiration rates are all altering the flow regimes of the Indus River, making the current treaty framework outdated and ecologically unsustainable. In addition, the securitization of water—especially within the India-Pakistan discourse has closed the space for cooperative or rights-based water governance. Instead of multilateral, transparent, and participatory systems, water diplomacy remains state-centric and elite-driven.

Policy Recommendations

Revise and Expand the Indus Waters Treaty

Given the structural gaps in the IWT, there is an urgent need for its **revision and expansion** to include:

- Climate change adaptation provisions
- Environmental flow allocations
- Water quality standards
- Provisions for multilateral engagement with China and Afghanistan

  This process must be guided not only by legal and diplomatic actors but also by ecologists, climate scientists, and civil society representatives.

Institutional Reform and Transparency in IRSA

The **Indus River System Authority (IRSA)** should undergo reform to enhance provincial trust, data transparency, and participatory water governance. Real-time data sharing, public reporting of water releases, and inclusive representation (especially from Sindh and Balochistan) are necessary for mitigating internal water conflicts.

Recognize the Rights of Ecological Communities

Communities in the **Indus Delta**, and other tail-end areas, should be recognized as legitimate water stakeholders. Their right to environmental flows, livelihoods, and sustainable ecosystems must be protected under national water law and policy. Programs for mangrove restoration, sustainable fisheries, and disaster risk reduction should be financed and implemented with community participation.

Desecuritize Water and Promote Water Diplomacy

Both India and Pakistan must **move beyond securitized narratives** and engage in confidence-building measures (CBMs) focused on water cooperation. Joint river basin management, coordinated flood forecasting, and joint climate adaptation initiatives can serve as **entry points for trust-building** in the broader peace process.

Promote Multiscalar Climate Adaptation

Pakistan must develop **multi-scalar water adaptation plans**—from national to provincial to community levels. These should include:

- Investments in efficient irrigation (e.g., drip, laser leveling)
- Watershed restoration
- Glacier monitoring and early warning systems
- Nature-based solutions for delta and floodplain management

Mainstream Political Ecology in Policy Discourse

Finally, there is a need to **reframe water governance** from a political ecology perspective. This requires going beyond "scarcity" and "efficiency" discourses and acknowledging the historical, institutional, and power-laden roots of water conflict. Universities, think tanks, and media should be encouraged to promote more **critical, justice-oriented water narratives**.

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