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Allocation to Adaptation: Rethinking India-Bangladesh River Relations in a Changing Climate

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Abstract:

India and Bangladesh share some of the most complex and climate-sensitive river systems in South Asia. For decades, river water disputes between the two countries have largely been discussed in terms of water sharing arrangements, treaties, and diplomatic negotiations. However, growing climate variability is steadily reshaping the very basis on which these agreements were conceived. Changes in rainfall patterns, increasing frequency of floods and droughts, and declining dry-season flows in the Ganga-Brahmaputra-Meghna basin have added new layers of uncertainty to transboundary water management. This paper argues that India-Bangladesh river water disputes can no longer be understood only through traditional hydro political frameworks. Instead, they need to be examined through the combined perspectives of climate change governance and environmental politics. By doing so, the study highlights how environmental vulnerability, developmental priorities, and domestic political considerations influence bilateral water relations under conditions of climatic stress. The paper adopts a qualitative and analytical approach, drawing on secondary literature, policy documents, and existing institutional arrangements. Rather than portraying river disputes as outcomes of political confrontation, the study emphasizes the structural and governance-related challenges created by climate change. It suggests that reframing water disputes as shared environmental challenges can open space for cooperation, adaptive governance, and more flexible institutional mechanisms. Such an approach is essential for ensuring sustainable and equitable transboundary river management between India and Bangladesh in an era of climate uncertainty.

Keywords: Climate change, Ganga-Brahmaputra-Meghna (GBM) basin

Introduction

India and Bangladesh are connected by a dense network of rivers that play a central role in sustaining life, livelihoods, and ecosystems across the region. Rivers such as the Ganga, Brahmaputra, and their tributaries support agriculture, fisheries, and transportation while shaping the environmental stability of South Asia. For decades, the governance of these shared rivers has been dominated by discussions on water-sharing agreements, bilateral treaties, and diplomatic negotiations. As a result, transboundary river disputes

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between the two countries have largely been understood in terms of allocation, control, and treaty compliance.

These arrangements, however, were formulated at a time when river flows were assumed to be relatively predictable. In recent years, this assumption has become increasingly untenable. Shifts in rainfall patterns, rising temperatures, and the growing occurrence of floods and droughts have begun to alter the behavior of major river systems. In the Ganga-Brahmaputra-Meghna basin, climate variability has introduced a level of uncertainty that existing water-sharing mechanisms were not designed to manage. This has intensified concerns over water security and has complicated already sensitive bilateral relations.

Climate change has affected not only the quantity and timing of river flows but also the political context within which rivers are governed. Declining dry-season water availability, recurrent flooding, and environmental degradation have heightened anxieties around river management. At the same time, national development goals, domestic political pressures, and unequal capacities continue to shape how India and Bangladesh respond to shared water challenges. In this evolving context, river disputes cannot be explained solely as political disagreements or failures of cooperation.

This paper argues that India-Bangladesh river disputes need to be reconsidered through the combined lenses of climate change governance and environmental politics. Such a perspective allows for a broader understanding of how environmental vulnerability, governance constraints, and political priorities interact under conditions of climatic stress. Rather than viewing disputes simply as struggles over water sharing, the paper treats them as outcomes of deeper structural challenges emerging from climate-induced uncertainty.

The study adopts a qualitative and analytical approach based on secondary literature, policy documents, and existing institutional arrangements governing India-Bangladesh water relations. By situating transboundary river disputes within the framework of climate governance, the paper shifts attention away from rigid allocation-based debates toward more adaptive and cooperative forms of river management.

From Hydro politics to Climate Governance

Transboundary river disputes have traditionally been analysed through hydro political frameworks that emphasize power relations, sovereignty, and negotiations over water allocation. Within this approach, rivers are viewed as strategic resources, and governance is shaped primarily through treaties, joint commissions,

and diplomatic engagement. In the case of India and Bangladesh, such perspectives have long dominated both academic and policy discussions.

While hydro political approaches are useful in explaining bargaining dynamics and asymmetries between riparian countries, they rest on the assumption of hydrological stability. Most water-sharing agreements rely on historical flow patterns and fixed allocation principles, leaving limited room for adjustment when environmental conditions change. Climate change has exposed the limitations of these assumptions by introducing greater variability in rainfall, river flows, and seasonal cycles.

Climate change governance offers an alternative way of understanding transboundary river management. Instead of focusing narrowly on control and allocation, it emphasizes uncertainty, adaptability, and shared risk. From this perspective, rivers are not merely contested resources but interconnected ecological systems that require flexible and forward-looking governance arrangements. Climate governance highlights the importance of scientific knowledge, data exchange, and long-term planning in managing shared environmental systems under stress.

Environmental politics further deepens this analytical shift by drawing attention to the domestic and social contexts within which environmental decisions are made. Transboundary river governance is shaped not only by interstate negotiations but also by national development priorities, public expectations, and differing levels of vulnerability to climate impacts. In both India and Bangladesh, concerns related to food security, energy needs, flood control, and livelihood protection strongly influence how river governance is framed and pursued.

By combining climate governance with environmental politics, this paper adopts a more comprehensive framework for analysing India-Bangladesh river disputes. This approach moves beyond viewing disputes as isolated political confrontations and instead situates them within broader governance challenges shaped by environmental change.

Climate Stress in the Ganga-Brahmaputra-Meghna Basin

The Ganga-Brahmaputra-Meghna basin forms the ecological and hydrological foundation of India-Bangladesh relations. Stretching across diverse climatic and geographical zones, the basin supports millions of people whose livelihoods depend directly on river systems. Any disruption in the flow or seasonal behaviour of these rivers therefore has wide-ranging social, economic, and political implications.

One of the most significant impacts of climate change in the basin is increased variability in rainfall. Monsoon patterns have become more erratic, with intense rainfall events often followed by extended dry periods. This has contributed to frequent flooding during the monsoon season, particularly in downstream areas, while intensifying water scarcity during the dry months. Existing water management systems, which were developed around predictable seasonal flows, struggle to cope with these fluctuations.

Climate stress is also evident in declining dry-season river flows and the growing frequency of drought-like conditions. Reduced water availability during critical agricultural periods threatens food security and rural livelihoods. For Bangladesh, lower dry-season flows increase the risks of salinity intrusion, ecological degradation, and loss of livelihoods. In India, upstream regions face rising demand for water driven by agriculture, urban expansion, and energy generation, all under changing climatic conditions.

Environmental vulnerabilities such as riverbank erosion, sedimentation, and wetland loss have further weakened the basin's ability to absorb climatic shocks. These changes have intensified human vulnerability and placed additional pressure on governments to manage water resources effectively. As environmental stress increases, water-related concerns become more politically salient, influencing policy priorities and public discourse.

Together, these climate-related changes reveal a growing gap between existing governance arrangements and evolving environmental realities. Limited institutional flexibility, insufficient coordination, and weak mechanisms for joint climate assessment have constrained adaptive responses. Climate stress in the GBM basin has therefore exposed not only material challenges but also structural weaknesses in transboundary river governance.

Rethinking River Disputes under Climate Uncertainty

India-Bangladesh river disputes have often been framed as disagreements over allocation, infrastructure development, and treaty implementation. While these elements remain important, climate uncertainty has transformed the context in which such disputes unfold. Increasing variability in river flows has made fixed agreements difficult to implement and has created recurring tensions during periods of extreme weather.

Under conditions of climate uncertainty, disputes are less about deliberate political confrontation and more about the inability of existing institutions to respond to rapid environmental change. Most governance arrangements were designed to manage average conditions rather than extremes. As climate change amplifies variability, institutional rigidity often turns environmental stress into diplomatic strain.

Climate uncertainty has also blurred the boundary between national and shared responsibilities. Floods, erosion, and ecological degradation cross political borders, yet governance responses remain largely state-centred. Measures taken to manage domestic climate risks can generate downstream concerns, even when they are not intended to disrupt cooperation. This dynamic complicates trust-building and reinforces mutual suspicion.

Risk perception plays an increasingly important role in shaping disputes. As vulnerability increases, governments face domestic pressure to secure water resources and protect livelihoods. These pressures influence negotiation positions and reduce political space for compromise. Climate change thus affects disputes not only through physical impacts but also through its influence on political decision-making.

Viewing river disputes through the lens of climate uncertainty allows for a more nuanced understanding of bilateral tensions. Rather than treating disputes as failures of diplomacy, they can be understood as governance challenges arising from environmental change.

Environmental Politics and Domestic Constraints

Domestic political dynamics play a crucial role in shaping transboundary river governance between India and Bangladesh. Climate-related water challenges are filtered through national development priorities, political accountability, and public expectations, often limiting the scope for cooperation.

In India, river governance is closely linked to agricultural growth, energy security, and regional development. Climate variability has increased the need for reliable water supplies, particularly in upstream regions. India's federal structure further complicates transboundary water management, as state-level interests influence national policy positions. Environmental concerns related to floods and droughts therefore become embedded within domestic political debates.

In Bangladesh, environmental vulnerability is central to water politics. As a lower riparian country, Bangladesh faces acute exposure to flooding, erosion, salinity intrusion, and declining dry-season flows. These challenges directly affect livelihoods and human settlements, making river governance a highly sensitive political issue. Domestic expectations often push the government to adopt firm negotiation stances, especially during periods of climatic stress. Public discourse in both countries frequently frames water issues in terms of rights, justice, and survival. Such narratives, while understandable, can harden positions and reduce political flexibility. Environmental concerns are thus shaped not only by ecological realities but also by political interpretation.

Recognizing these domestic constraints is essential for understanding why cooperation remains difficult. Without addressing the political contexts within which water decisions are made, transboundary governance efforts are likely to remain reactive and fragmented.

From Dispute to Cooperation: Climate-Oriented Governance

Climate change has highlighted the limitations of rigid, allocation-focused approaches to transboundary river management. In the India-Bangladesh context, climate uncertainty calls for governance models that prioritise adaptability, shared risk management, and cooperation.

Climate-oriented governance emphasises flexibility and learning rather than fixed commitments. Periodic adjustments based on changing hydrological conditions, joint climate assessments, and long-term planning can help both countries respond more effectively to extremes. Strengthening existing arrangements rather than replacing them offers a pragmatic path forward.

Data sharing and scientific cooperation are central to adaptive governance. Joint monitoring and timely exchange of information can reduce uncertainty and improve trust. Flexible institutions that engage in continuous dialogue and planning are better suited to managing shared environmental risks.

Framing cooperation as a means of reducing climate vulnerability can make collaborative approaches more politically acceptable. Recognising shared exposure to climate impacts helps move relations away from zero-sum thinking.

Conclusion

This study has sought to move the discussion on India-Bangladesh river disputes beyond the familiar focus on water-sharing arrangements and treaty-based negotiations. While such frameworks remain important, they are no longer sufficient to explain or address the challenges facing transboundary river governance in the region. Climate change has altered the hydrological behaviour of shared rivers and, in doing so, has reshaped the political and institutional contexts within which river relations are managed. Increasing uncertainty, rather than scarcity alone, has emerged as a defining feature of contemporary transboundary water interactions.

By bringing together the perspectives of climate change governance and environmental politics, the study has highlighted how river disputes are increasingly shaped by structural and governance-related constraints. Climate variability in the Ganga-Brahmaputra-Meghna basin has intensified environmental vulnerability,

exposed institutional rigidities, and amplified domestic political pressures in both India and Bangladesh. These factors interact in complex ways, often transforming environmental stress into diplomatic tension even in the absence of deliberate political confrontation. Understanding disputes in this broader context allows for a more nuanced interpretation of bilateral relations, one that goes beyond narratives of conflict and blame.

The analysis also underscores the limits of rigid, allocation-centric approaches in an era of climatic uncertainty. Agreements and institutions designed around assumptions of stable river flows struggle to remain effective when hydrological conditions become unpredictable. As climate change continues to disrupt established patterns, governance frameworks that lack flexibility risk becoming sources of tension rather than instruments of cooperation. This does not imply that existing arrangements are irrelevant, but rather that they require reinterpretation and adaptation to remain meaningful under changing environmental conditions.

Importantly, the study has drawn attention to the role of domestic political dynamics in shaping transboundary river governance. Environmental stress heightens political sensitivity around water issues, narrowing the space for compromise and reinforcing national priorities. Without acknowledging these domestic constraints, efforts to promote cooperation are likely to remain disconnected from political realities. A climate-oriented approach to governance must therefore engage not only with interstate institutions but also with the internal political contexts that influence decision making in both countries.

Reframing India-Bangladesh river disputes as shared environmental challenges offers a more constructive pathway forward. Climate oriented transboundary governance, grounded in adaptability, data sharing, and long-term planning, provides a pragmatic basis for managing shared rivers under conditions of uncertainty. Such an approach encourages cooperation not as an idealistic goal but as a practical response to common risks that neither country can address in isolation.

In the broader context of South Asia, the findings of this study suggest that climate change will increasingly act as a governance stressor across transboundary river basins. The India-Bangladesh case illustrates how environmental change can challenge existing political arrangements while simultaneously creating opportunities for new forms of cooperation. Addressing transboundary water disputes through the lens of climate governance is therefore not only relevant for bilateral relations but also essential for ensuring sustainable and equitable river management in a region that is highly vulnerable to climate impacts.

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