

**ADDRESSING THE CASCADING IMPACTS
OF CLIMATE CHANGE**

SCOPE OF TRANSBOUNDARY ADAPTATION IN THE SOUTH ASIAN DELTA

November 2024



IMPRINT

Center for Participatory Research and Development-CPRD
House 1219, Road 10, Avenue 10, Mirpur DOHS,
Dhaka 1216, Bangladesh
Email: info@cprdbd.org;
Web: www.cprdbd.org

WRITTEN BY

Sumaiya Binte Anwar
Elmee Tabassum
Md Shamsuddoha

CONTRIBUTED BY

Shahnawaz Whara
Shamsuddin Illius
Shanjia Shams

ACKNOWLEDGEMENT

The Center for Participatory Research and Development (CPRD) extends its gratitude to all those who contributed to the development of this policy brief, "Addressing the Cascading Impacts of Climate Change: Scope of Transboundary Adaptation in the South Asian Delta."

We thank the climate adaptation experts, regional stakeholders, and local partners for their invaluable insights, which have enriched this work with practical perspectives. Special appreciation also goes to the CPRD team for their commitment to climate justice.

Lastly, we extend our heartfelt reverence to the climate-vulnerable communities of the South Asian delta, whose lived experiences amidst climate challenges have been a profound source of insight and inspiration. Their strength and adaptability in the face of cascading climate impacts underscore the urgent need for collaborative, transboundary solutions that address shared vulnerabilities. It is their voices and experiences that drive our commitment to advancing meaningful and inclusive adaptation strategies across the region.

DECLARATION

The policy brief titled "Addressing the Cascading Impacts of Climate Change: Scope of Transboundary Adaptation in the South Asian Delta" has been published by the Center for Participatory Research and Development (CPRD) in Dhaka, Bangladesh. Developed through extensive consultations, this brief explores the interconnected climate risks faced by the South Asian delta regions and the urgent need for cooperative, transboundary adaptation approaches. By analyzing shared vulnerabilities and proposing regional adaptation strategies, this brief advocates for collaborative solutions that address the compounding impacts of climate change across national borders, fostering resilience in one of the world's most climate-vulnerable regions.

Photo Credit: CPRD/Open Access Web Resources

Back Cover Photo: GMB Akash

Printing: Vector Graphics & Printing, Dhaka, Bangladesh

Publication: November 2024

Online Version: <https://www.cprdbd.org/scope-of-transboundary-adaptation/>



SYNOPSIS

Climate change impacts are often addressed within national borders or framed within local contexts. However, many climate-induced challenges, such as floods, cyclones, and extreme rainfall, are not confined by these borders and instead create cascading, transboundary effects that extend across regions. The cross-border impacts of climate change—like floods, cyclones, and extreme rainfall—present serious challenges to shared water resources, food security, and human mobility, particularly in vulnerable regions like South Asia. Global drivers, such as global warming and land use changes, further complicate these impacts, affecting all countries in interconnected ways. This highlights the need for climate adaptation plans that go beyond national borders to address common vulnerabilities, especially in areas with shared water resources.

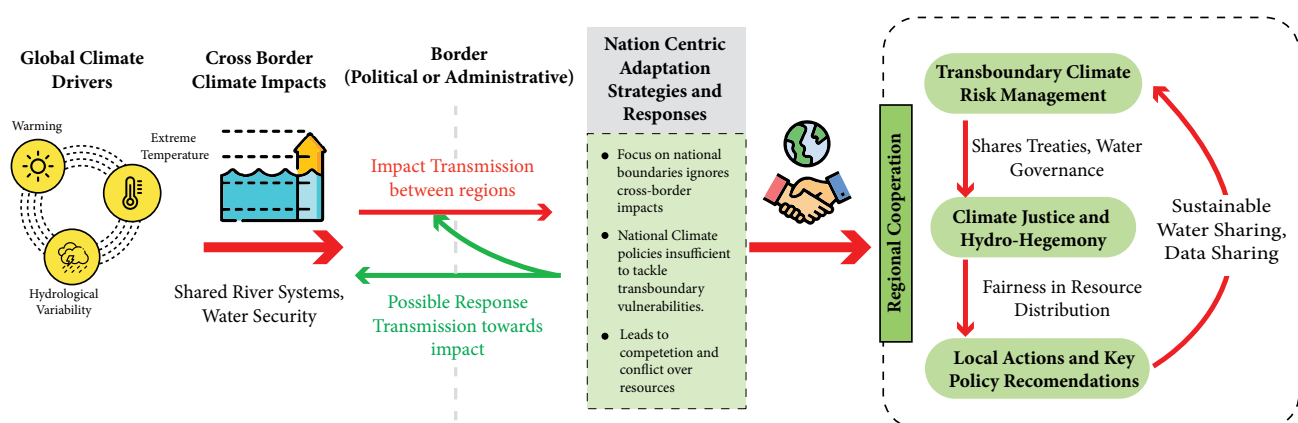
Current international frameworks, such as the IPCC and UNFCCC, often fall short of addressing the complexities of transboundary risks. This underscores the need for a shift towards regional collaboration that integrates both local and transboundary concerns. In South Asia, unequal power dynamics between Bangladesh and India, particularly over shared transboundary rivers, magnify issues of hydro-hegemony and climate justice. This dynamic calls for equitable water-sharing agreements and joint management strategies that support sustainable water governance. Drawing on successful models like the Mekong River Commission, Nile Basin Initiative, and Indus Waters Treaty, this paper advocates for stronger transboundary water governance based on transparency, data sharing, regional cooperation, and justice. The recent August 2024 floods in Bangladesh serve as a case study, illustrating the urgency of enhanced water diplomacy and collaboration with India to address both the scientific and political challenges posed by climate change. This briefing paper aims to inform and encourage policymakers to prioritize sustainable water management and climate adaptation strategies that extend beyond national borders, effectively addressing shared vulnerabilities.

KEY MESSAGES

- **Transboundary Climate Risks:** South Asian countries, particularly India, Bangladesh, and Pakistan, face climate change challenges affecting shared river systems like the Ganges and Indus, leading to complex water management issues.
- **Hydro-Hegemony and Climate Justice:** Unequal power dynamics between upstream (India) and downstream (Bangladesh) nations raise climate justice concerns, as upstream water management impacts downstream availability and flood risks.
- **Limitations of National Adaptation Strategies:** Current nation-centric climate adaptation strategies are inadequate for addressing cross-border climate impacts and neglect the interconnected nature of shared water systems.
- **Need for Regional Cooperation:** Effective management of shared water resources necessitates regional frameworks, collaborative governance, and equitable water-sharing agreements, as demonstrated by models like the Indus Waters Treaty.
- **The urgency of Joint Adaptation Measures:** Mitigating cross-border climate risks requires enhanced regional cooperation, transparent data sharing, joint flood management, and early warning systems to ensure long-term sustainability and resilience.

HOW DO CLIMATE IMPACTS SPILL OVER NATIONAL BORDERS?

Climate change impacts now transcend national borders, triggering regional and global ripple effects that threaten shared resources such as water, food, and human livelihoods. These cross-border impacts arise from both extreme events—like cyclones, floods, and droughts—and long-term trends such as rising sea levels and salinity intrusion. Countries in regions with interconnected ecosystems, like South Asia's river systems, are particularly vulnerable, as changes in rainfall and glacier melt complicate water management across borders. The Ganges Delta, and Indus River systems, shared by countries like India, Bangladesh, and Pakistan, demonstrate how climate-induced shifts in rainfall patterns, glacier melt, and river flows complicate water management. Climate disruptions also lead to socioeconomic challenges, including forced migration and food insecurity, as people impacted by droughts or declining agricultural productivity seek better living conditions in neighboring countries (Prabhakar, Shivakoti, & Corral, 2018).



The consequences of climate change that occurs remotely from the location of their initial impact, where both impacts and also potentially adaptation responses to those impacts are transmitted across the borders.

Current adaptation strategies are inadequate for handling transboundary climate risks, as no single nation can effectively address impacts that extend beyond its borders. When a country reaches its adaptation limits, the risk of loss and damage increases, leading to economic, social, and environmental strains that can overwhelm response capacity. This cycle of vulnerability also creates competition for resources, limiting funds and effort needed for effective adaptation (Prabhakar, Shivakoti, & Corral, 2018).

A major concern is transboundary water resources, like those in the Bengal Delta, where countries share critical rivers. Competing demands and unpredictable water flows heighten tensions, as floods or infrastructure damage in one country impact neighboring economies, increasing potential conflicts over water use.

Despite the regional nature of these risks, adaptation strategies remain focused on national strategies. Most climate and vulnerability assessments target impacts within national borders, often overlooking cross-border effects and remote impacts of climate change. Current adaptation efforts often prioritize short-term responses and physical infrastructure, without fully accounting for residual or long-term climate impacts. This narrow approach reduces regional resilience and fails to account for long-term, transboundary risks, inadvertently redistributing vulnerability and creating blind spots in resilience-building efforts.

WHY ARE EXISTING TREATIES, CLIMATE FRAMEWORKS, AND FINANCES INADEQUATE FOR ADDRESSING TRANSBOUNDARY CLIMATE CHANGE RISKS?

Current treaties and agreements often fall short on transboundary climate risks, focusing more on political and economic interests than on climate change impacts. These treaties are often static, shaped by power imbalances, and prioritize bilateral rather than regional solutions, rendering many adaptation efforts ineffective amid rapid climate shifts.

While international frameworks like the IPCC and UNFCCC are valuable for consolidating climate knowledge, they rarely address cross-border impacts adequately. For example, the IPCC's country-focused approach overlooks interconnected issues like shared rivers, ecosystems, migration, and trade. Similarly, the UNFCCC's National Adaptation Plan process lacks structured approaches for addressing upstream actions that affect downstream regions.

Adaptation financing from bilateral and multilateral agencies is typically country-specific, reinforcing a national approach that overlooks shared regional risks. Effective climate adaptation requires regional cooperation, coordinated planning, and resource-sharing to enhance collective resilience.

To improve, international frameworks should

Outcomes from COP 28 UAE

COP28 in the UAE underscored the urgency of global collaboration to address shared climate vulnerabilities, especially in transboundary water management. Key outcomes include:

- COP28 gave significant attention to transboundary climate adaptation, especially in water resource management and regional cooperation (UNECE, 2023; Touza, Sarti, & Briones, 2024). The conference highlighted that climate impacts, like floods and droughts, often cross-national borders, necessitating coordinated international action (SEI, 2023b).
- The Global Goal on Adaptation (GGA) highlighted "climate-informed transboundary management" and ecosystem-based solutions to reduce climate impacts on shared water systems. (UNECE, 2023) (Touza, Sarti, & Briones, 2024). (SEI, 2023b).
- The global stocktake stressed collaboration on the water ecosystem, especially for vulnerable regions (SEI, 2023b).
- High-level panels discussed the role of shared water management in promoting peace, security, and resilience, highlighting its potential to mitigate climate-induced conflicts (SEI, 2023b).

In sum, COP28 emphasized transboundary water management as essential for climate resilience and peacebuilding, calling for effective collaborative frameworks. (UNECE, 2023; SEI, 2023b).

emphasize regional collaboration, joint governance, transparent data sharing, and shared resource management. Funding mechanisms like the Adaptation Fund could help bridge financial gaps by supporting cross-border projects and fostering regional cooperation, enabling more cohesive and effective climate adaptation (World Bank., 2019).

TRANSBOUNDARY CLIMATE RISKS IN SHARED WATER RESOURCES: IMPLICATIONS FOR THE BENGAL DELTA?

"Bangladesh's water security is inextricably linked to the actions of upstream neighbors. With 90% of its rivers' flows originating outside its borders, Bangladesh faces severe droughts and floods driven by cross-border water management decisions—a pressing issue of climate justice and regional cooperation."

Bangladesh is a river-rich delta shaped by three major Himalayan rivers: the Ganges (called the Padma in Bangladesh), the Brahmaputra (known as the Jamuna in Bangladesh), and the Meghna, which originate in India, Tibet, and China. These river systems drain a vast catchment area into the Bay of Bengal, 93% of which lies outside Bangladesh. Of the 400 rivers in Bangladesh, most are tributaries or distributaries of the three major rivers. Of these, 57 are transboundary rivers, with 54 flowing in from India and 3 from Myanmar. Given this hydrological reality, the way upstream countries manage water through dams and reservoirs, significantly impacts downstream countries like Bangladesh, particularly in terms of drought and flood levels. This transboundary nature of rivers in Bangladesh thus imposes a risk to water security. Disputes over water allocation especially during dry seasons or monsoon complicate managing shared water resources, which is intensified due to global climate change.

One prominent example of these tensions is their ongoing water conflicts between India and Bangladesh. Around 90% of the water in Bangladesh originates from India, leaving Bangladesh with little control over the cross-boundary flows. India's upstream control, coupled with Bangladesh's flat topography, prevents lead to devastating floods during the wet season and acute water shortages during the dry season.

This imbalance is compounded by India's regulation of shared rivers through nearly 30 dams or barrages, most without formal agreements. The most significant is the Ganges Water Sharing Agreement, which covers only sharing the Ganges waters at Farakka—signed between Bangladesh and India on December 12, 1996, for a period of 30 years. However, many other rivers with significant dams or barrages, such as the Teesta and Barak, remain without formal agreements, intensifying water management disputes.

THE DAM DILEMMA: NAVIGATING THE TRADE-OFFS BETWEEN DEVELOPMENT, ENVIRONMENT, AND COMMUNITY IMPACTS.

Understanding the differences between dams and barrages is crucial for water management issues. Dams focus on water storage, creating large reservoirs for flood control, irrigation, and power generation. In contrast, barrages—also a type of dam—manage water flow using gates or sluices ensuring stable flow for irrigation or navigation without large-scale storage.

The Farakka Barrage in West Bengal, India controls the Ganges River, just before the river enters Bangladesh, with gates managed seasonally to regulate water distribution as per the 1996 Ganges Water treaty. Another major source of tension between the two countries is the Teesta Barrage in the Jalpaiguri district of West Bengal, India. The river is crucial for both West Bengal in India and Bangladesh, supporting large populations in both regions. But unfortunately, Bangladesh has been denied equity in water flow as upper-riparian India unilaterally controls its flow of Teesta through

the Gajoldoba barrage. This led to the scarcity of river water with only 100 cumecs available in the dry season, which is about one-eighth of the total water demand in both nations (Aktar & Khatun, 2022). West Bengal's reluctance to endorse a water-sharing deal further delays resolution. India's proposed Tipaimukh Dam on the Barak River also raised concerns about its impact on the Bangladeshi community reliant on agriculture.

The water structures built by India have significantly reduced sediment transport in various rivers in Bangladesh, including both the Brahmaputra and Ganges, curtailing the delta growth and increasing coastal erosion. Both Farakka and Teetsa barrages have increased salinity in the southwestern region, affecting agriculture and threatening the biodiversity of the Sundarbans. Both these barrages have contributed to silt build-up, drying up river during the dry season and worsening flooding.

Hydro-hegemony and Climate Justice rooted in such water control structures highlight the unequal distribution of environmental burdens and benefits between India and Bangladesh. While India gains from navigation, flood control, and development, Bangladesh faces ecological degradation, reduced water flow, and increased flood risks. India's ability

to build canals and barrages leaves downstream Bangladesh vulnerable, lacking the power to secure its fair share of water. This imbalance reflects climate justice issues, with downstream populations suffering from upstream decisions without input in transboundary water governance.

Because of the power asymmetry, India influences the negotiation process often in its favor. Similar riparian power dynamics have hampered India's equation with China over water sharing on the Brahmaputra- shared by China, India, and Bangladesh. This imbalance in power and resources raises significant questions of equity and fairness, key components of climate justice. As sea levels rise, the negative impacts of dams and barrages are expected to intensify, potentially leading to a hydro-ecological disaster if water flow to the region is not properly managed. With the Farakka Water Treaty up for renewal in 2026, preparation for re-negotiation is crucial. A key challenge is that water distribution depends on availability at Farakka Point, which is heavily influenced by upstream usage, complicating equitable distribution. A lack of meaningful consultation further complicates regional water-sharing, highlighting the need for transboundary resource justice and fair climate risk distribution.

CASE STUDY

Recent Floods, Climate Justice, and Transboundary Water Diplomacy: The Complex Interplay Between Bangladesh and India

In August 2024, a flash flood devastated much of eastern Bangladesh, sparking intense debate over the science and politics of shared water resources and transboundary water diplomacy between India and Bangladesh. The flood impacted regions from Sylhet in the north to Comilla, Feni, Noakhali, and Khagrachari in the south. While various groups may present differing perspectives, it is clear from the facts that a combination of global, regional, and national factors has converged to cause the unprecedented flood in Bangladesh's history.

Globally, experts identified the convergence of four climatic factors—El Niño, the Madden-Julian Oscillation, the jet stream, and low pressure over the region caused a record-breaking rainfall of about 450mm in 24 hours in both upstream and downstream areas of India's Tripura state and Bangladesh. The massive rainfall caused the rivers in Tripura and Bangladesh to swell heavily. Water from the upstream mountainous terrain in Tripura reached Feni, Noakhali, and Chattogram within 5-8 hours on its way through the Gumti, Khowai, Feni, Muhuri, and other tributaries. With the unprecedented rainfall, the Dumbur Dam in Tripura, located on the Gumti River, a tributary of the Teesta, filled up quickly, reaching its capacity. On 20 August 2024, following unprecedented rainfall, the Dumbur Dam in Tripura, located on the Gumti River, rapidly reached its capacity. Late at night, the excess flood water was released for the first time in 31 years. The sudden release of a large volume of retained water quickly overwhelmed the rivers downstream, causing severe flooding in Bangladesh.

For many Bangladeshis, the final debate centers on the existing regional tension between Bangladesh and India. With the highly unusual heavy rain, opening the gates was inevitable. However, whether it was done intentionally without critical information exchange or the dam gates opened on their own,

triggered by an automatic process, remains unclear. Historically, India has not been friendly in terms of water sharing, which has caused people to speculate that the decision to open the dam gates was politically motivated.

As per the study conducted by think tank Centre for Policy Dialogue (CPD), the 2024 eastern Bangladesh floods, have caused an estimated loss of Tk 14,421 crore (approximately \$1.20 billion). This damage accounts for 1.81% of the national budget for FY2024-25 and represents 0.29% of the FY2023-24 GDP. The study highlights that the agricultural sector was the most severely affected, suffering losses of Tk 5,169.71 crore, especially due to the destruction of Aman rice crops. The infrastructure sector followed with damages of Tk 4,653.92 crore, and the housing sector incurred Tk 2,407.31 crore in losses. Noakhali, Cumilla, and Feni districts were among the worst hit, with Noakhali alone accounting for nearly 30% of the total damage.

However, the chain of events that lead to such climate disasters can be partially controlled or mitigated through steps like improved weather forecasting, early warning systems for storms and floods as well as dry spells, and cross-border coordination with respect to the flow of water in transnational rivers and the operations of upstream hydro-structures.

The heavy rainfall that caused the flood was unprecedented, but not unpredictable. Despite weather models predicting heavy rainfall 10-15 days in advance, there was a failure in communication and coordination between the two countries. India's Flood Forecasting and Warning Center (FFWC) provided only minor warnings, which were insufficient to prepare Bangladesh for the flood's severity. This highlighted a need for stronger transboundary collaboration, particularly in sharing timely and accurate data.

Bangladesh has a solid disaster management framework, with the Standing Order on Disasters (SOD) clearly outlining responsibilities for disaster risk reduction. But it was inadequate for flash floods, which have received less focus than cyclones. The lack of early warning systems and inadequate public understanding of technical flood signals amplifies the situation. Moreover, only a few NGOs or groups are involved in flood management, which resulted in inadequate preparation for this severe downpour.

As an upstream riparian country, India has been criticized for not sharing timely rainfall data, and for opening the gates of the Dumbur Dam without prior notification or warning. While India claims to have shared the data as per bilateral protocols, some Bangladeshi experts argue that the data was inadequate and delayed.

Bangladesh's flood forecasting models, developed by the Water Development Board's Flood Forecasting and Warning Center (FFWC), cover large river basins leaving smaller, unpredictable catchments such as the Gomti, and Muhuri, leaving them vulnerable to sudden flash floods. More localized catchment-based flood alert system could provide crucial lead time for preparation and evacuation. Improved real-time data from India, especially for smaller catchments, is essential for better flood management. Experts from both countries emphasize the need for enhanced data sharing to establish an integrated flood forecasting system for the 54 shared transboundary rivers.

LEGITIMACY OF WATER CONTROL STRUCTURES: CLIMATE JUSTICE, DOWNSTREAM IMPACTS, AND THE NEED FOR EQUITABLE WATER GOVERNANCE

The legitimacy of water control structures like dams and barrages is being increasingly questioned from both climate and social justice perspectives due to their adverse impacts on downstream communities, particularly in regions like Bangladesh. India has constructed numerous water infrastructures often disregarding their effects on Bangladesh. Despite being a riverine country, the policymakers of Bangladesh

also did not adequately address issues related to navigability, water flow, and discharge into the sea during the construction of these infrastructures. The sudden and unannounced release of floodwaters during the unprecedented rainfall, as seen in the August 2024 incident, further highlights a critical issue of injustice regarding current water management.

From a climate justice perspective, these infrastructures, originally designed to handle predictable weather patterns, are becoming increasingly obsolete in the face of intensifying climate change, raising questions about their long-term effectiveness and fairness. These structures often prioritize upstream interests, which become problematic during extreme climatic events. This was evident when the extreme climatic events led to potential dam overtopping, and floodwater had to be released to preserve the integrity of the upstream dam, even if it worsened the flood conditions for the downstream countries.

From a social justice lens, vulnerable downstream nations bear the burden of these decisions made upstream with little say in transboundary water governance. They face the losses and damage driven by both climatic changes and human decisions due to control of natural water underscoring the need for compensation and more equitable water governance. Moreover, the degradation of natural drainage channels due to unplanned development and the encroachment of rivers aggravates flooding by preventing water from receding quickly. This highlights the need for better management of waterways. Addressing these issues requires a multidisciplinary approach, considering climate change impacts, regional power dynamics, and the rights of vulnerable communities.

ADDRESSING TRANSBOUNDARY CLIMATE RISKS THROUGH UNFCCC

The impacts of climate change are increasingly felt across regions, especially in countries sharing common natural resources. Recent floods in Bangladesh exemplify the urgency of addressing cross-border climate risks, as climate-induced disasters can have far-reaching consequences on neighboring nations. In particular, the management of transboundary rivers is a critical issue that requires cooperative approaches between countries, such as Bangladesh and India, to ensure sustainable water distribution and climate resilience.

Bangladesh and India share numerous rivers, and their management has often been a contentious issue. For years, past efforts to resolve water disputes through agreements and treaties have failed to ensure equitable access to shared water resources. The construction of dams, barrages, and other infrastructure along transboundary rivers has exacerbated these challenges, particularly during climate emergencies. To address this, both countries must prioritize fairness and mutual agreements in river basin management, particularly in the context of climate change, which exacerbates water scarcity, floods, and other climate risks. A just, cooperative approach is needed to address the impacts of such infrastructure on downstream regions, and both nations must commit to ensuring fair and sustainable water distribution, especially during times of climate-induced stress.

The recent floods in eastern Bangladesh have underscored the direct economic and humanitarian

impact of climate change, particularly on vulnerable populations in flood-prone areas. This catastrophe highlights the urgent need for operationalizing the Loss and Damage Fund, which was agreed upon at COP 27. Developed countries must fulfill their financial obligations to help vulnerable nations like Bangladesh cope with the impacts of climate change. The upcoming COP 29 offers an important opportunity for Bangladesh to advocate for increased contributions to the Loss and Damage Fund and for more substantial global funding for adaptation initiatives, particularly in the context of transboundary risks.

To address the growing concerns related to transboundary climate risks, there is a clear need for regional cooperation. The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report acknowledged the impacts of climate change on international trade and transboundary ecosystems. However, the measures suggested were often limited to national-level interventions, overlooking the importance of regional or cross-border adaptation strategies. The Global Goal on Adaptation (GGA) also recognizes the need for regional cooperation but lacks a comprehensive mechanism to assess and manage transboundary climate risks effectively (Anisimov et al., 2023). There is also concern about establishing a regional-scale institution to mobilize finances and coordinate project implementation. Unfortunately, existing funding mechanisms, such as the Green Climate Fund (GCF) and Global Environment Facility (GEF), place little emphasis on regional or cross-border initiatives.

Key Global Discussions and Mechanisms for Transboundary Cooperation

The GGA has stressed the importance of transboundary cooperation, particularly in managing shared water resources, ecosystems, and infrastructure. It advocates for collaborative efforts to prevent maladaptation, promote resilience, and enhance water management, including through early warning systems and climate information networks (Touza et al., 2024). Similarly, the Global Stocktake process has highlighted the need for transboundary collaboration in managing water ecosystems, especially for vulnerable regions (SEI, 2023a). The Glasgow–Sharm el-Sheikh Work Programme (GlaSS) also incorporated discussions on transboundary risks, setting a precedent for future COPs by emphasizing the need for adaptation frameworks that explicitly address these risks.

At COP 28, discussions around transboundary water cooperation gained significant attention, particularly in the context of promoting peace, security, and resilience in climate-vulnerable regions. High-level panels explored how shared water management could mitigate climate-induced conflicts and foster regional stability. In addition, the SBSTA's sixty-first session emphasized the importance of region-wide adaptation, calling for coordinated approaches across borders to address the cascading risks of climate change. These discussions set the stage for further progress at COP 29, where further emphasis should be placed on integrating transboundary risks into adaptation frameworks.

Key Policy Recommendations

To ensure the effective management of transboundary climate risks, the following key policy recommendations should be prioritized:

- **Develop a Collaborative Framework for Transboundary Climate Risks:** A collaborative framework should be established to assess and address the cascading risks of climate change that extend across



national borders. This framework should prioritize regional cooperation in adaptation planning and policy development, focusing on joint governance of shared resources, data transparency, and recognizing the interdependence of nations confronting common climate risks. Such a framework will help ensure that adaptation efforts are coordinated, efficient, and equitable across borders, fostering collective resilience in the face of climate change.

- **Establish Global Adaptation Governance Mechanisms:** A global governance structure should be created to guide and regulate transboundary adaptation actions under the Global Goal on Adaptation (GGA). This structure should ensure that vulnerable regions receive adequate financial and technical support to address cross-border climate risks. It should also provide clear guidance on the means of implementation, promoting consistency and cooperation across nations while ensuring that adaptation strategies are effective, inclusive, and responsive to the needs of affected communities.
- **Incorporate Transboundary Issues in National Adaptation Plans (NAPs):** Transboundary issues, particularly related to shared ecosystems and water resources, should be integrated into National Adaptation Plans (NAPs). This integration will recognize the interconnected nature of climate change impacts, helping countries that share these resources collaborate more effectively. By considering the transboundary dimensions of climate change, adaptation strategies can be more comprehensive, ensuring that actions in one country do not undermine the resilience of neighboring nations, and fostering better regional cooperation and sustainable resource management.

ADDRESSING TRANSBOUNDARY CLIMATE RISKS THROUGH INTERNATIONAL MODELS AND GUIDELINES

The growing impacts of climate change, water scarcity, and geopolitical tensions underscore the urgent need for cooperative frameworks in managing shared water resources. Bangladesh can strengthen its transboundary water governance with India by drawing lessons from various international models like the Indus Waters Treaty, Mekong River Commission, Nile Basin Initiative, and the EU Water Framework Directive.

The Indus Waters Treaty demonstrates how third-party mediation can facilitate long-term cooperation despite geopolitical tensions allowing neutral experts or an international court of arbitration to settle disputes, while the Mekong River Commission highlights the value of transparent data sharing and joint decision-making. The Nile Basin Initiative emphasizes regional integration and sustainable development, which Bangladesh could adopt for broader climate adaptation strategies. Lastly, the EU's Water Framework Directive provides a framework for prioritizing water quality and ecosystem health. These models offer insights for Bangladesh to advocate for legally binding, cooperative water-sharing agreements that promote fair resource distribution and long-term sustainability. Besides, Bangladesh can also benefit from international guidelines such as the Helsinki Rules, Berlin Rules, and the 1997 UN Watercourses Convention which emphasize equitable management, stakeholder consultation and the obligation to notify other states of planned projects that could affect them, which are essential for addressing cross-border water challenges. Adopting such would allow for fairer resource-sharing agreements and more inclusive development of infrastructure like dams and barrages, protecting downstream communities.

Furthermore, SAARC (South Asian Association for Regional Cooperation), as a regional organization, offers a critical platform for fostering collaboration on transboundary water governance. While political tensions in South Asia can often hinder direct bilateral negotiations, SAARC can serve as a neutral forum where member states, including Bangladesh and India, can engage in dialogue, share hydrological data, and jointly discuss water resource management. SAARC's focus on regional cooperation can help create a unified approach to managing shared rivers and mitigating the impacts of climate change on water availability. Through SAARC, Bangladesh can advocate for the establishment of shared water management policies, dispute resolution mechanisms, and environmental protection initiatives that consider the interests of all affected countries in the region.

Strengthening transboundary governance, hydrological data-sharing, and disaster preparedness will improve Bangladesh's cooperation with India and reduce water-related conflicts. Without addressing water, the challenges of water security and resolving transboundary water disputes, it is unlikely that resilience to climate change in the Bangladesh Delta will be enhanced, at a time when it is desperately needed.

CASE STUDY

The Indus Waters Treaty – A Resilient Framework for Transboundary Water Sharing and Adaptation

The Indus Waters Treaty (IWT), signed in 1960 between India and Pakistan with the World Bank's facilitation, is often highlighted as a successful transboundary water-sharing agreement that has endured despite decades of political conflict (Wolf & Newton, 2008). The treaty's structured division of river resources and robust dispute resolution mechanisms make it a valuable model for transboundary adaptation.

Background and Framework

The IWT divides the six rivers of the Indus Basin between India and Pakistan, with the western rivers (Indus, Jhelum, Chenab) allocated to Pakistan and the eastern rivers (Ravi, Beas, Sutlej) to India. This allocation structure aimed to provide clarity, reducing ambiguity and potential disputes (Salman & Uprety, 2002). To support implementation, the treaty established the Permanent Indus Commission (PIC), a bilateral body that meets regularly to exchange data, discuss water use issues, and address any concerns related to river flows or infrastructure (Heimsath, 1974). The treaty also includes a hierarchy for dispute resolution, involving bilateral talks, the World Bank, and, if necessary, international arbitration.

Endurance in a Politically Volatile Region

The IWT has remained effective through periods of significant political tension, including wars between India and Pakistan. Despite occasional disputes—often over India's dam construction projects on rivers flowing into Pakistan—the treaty's mechanisms have allowed these disagreements to be addressed within a framework of dialogue and mediation, maintaining stability in water-sharing even during crises (Zawahri, 2008). This endurance underscores the value of clear water allocation frameworks in regions with high conflict potential.

Climate Change and Adaptation Challenges

However, climate change is introducing new challenges to the IWT. The Indus Basin's water supply is highly vulnerable to climate-induced glacier melt, unpredictable monsoon patterns, and increased flooding and droughts (Immerzeel, van Beek, & Bierkens, 2010). These shifts are straining the treaty, which was not designed to address environmental variability and extreme weather events. For instance, Pakistan has raised concerns about India's upstream infrastructure, fearing it could exacerbate downstream water scarcity during drought periods (Swain, 2002). To adapt, both countries have recognized the need to integrate climate considerations into water management. Improved data sharing on glacial melt rates, water flows, and climate impacts is a start, but greater cooperation on adaptive strategies will be essential.

Lessons and Implications

The Indus Waters Treaty offers several key lessons for other transboundary adaptation frameworks:

- **Clear Allocations Reduce Conflict Potential:** The IWT's structured division of rivers has minimized ambiguities, making water sharing predictable and manageable.
- **Institutionalized Dispute Resolution:** The PIC and other dispute mechanisms have ensured controlled, non-escalatory resolution of conflicts, vital in high-stakes regions.
- **Integrating Climate Adaptation:** The treaty's limitations in addressing climate variability underscore the importance of incorporating adaptation measures into transboundary agreements.



CONCLUSION

The escalating cross-border climate impacts in South Asia, particularly concerning shared water resources like the Ganges, Indus, and Brahmaputra River systems, highlight the need for regional cooperation beyond nation-centric strategies. Current frameworks, often focused on local or national responses, fail to address the interconnected nature of cross-border climate risks. To mitigate these challenges, Bangladesh and India must prioritize regional collaboration, transparent data-sharing, and equitable water-sharing agreements. Additionally, improving global cooperation on disaster response mechanisms and early warning systems can be key discussion points for ensuring better preparedness and recovery from future climate shocks. A shift towards regional adaptation strategies, supported by effective early warning systems and stronger diplomatic ties, is essential for building resilience against the unpredictable effects of climate change. By adopting a cooperative, transboundary approach, nations can safeguard shared resources, promote regional stability, and ensure fair distribution of environmental risks and benefits. This cooperative spirit should also be reflected globally, especially at forums like COP 29, where Bangladesh can champion stronger commitments to the Loss and Damage Fund and advocate for climate justice on behalf of vulnerable nations.

REFERENCES

- Aktar, F., & Khatun, A. (2022). Teesta Barrage Effects and Water Sharing with India: A Bangladeshi Riparian Area Study. *International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)*, 9(1), 61. Retrieved from <https://www.ijims.com/uploads/ef7c1bbc9d1bbfc263f57.pdf>
- Anisimov, A., K. Magnan, A., Vallejo, L., Benzie, M., Klein, R., Cilk, M., Harris, K., Wester, P., Muccione, V., Shrestha, A. B., S.V.R.K., P., Opitz-Stapleton, S., Lager, F., Steiner, J., Lim, J., Monasterolo, I., Belesova, K., Gattuso, J.-P., & Duranovic, A. (2023). The Global Transboundary Climate Risk Report - Adaptation Without Borders. In *Adaptation Without Borders. The Sustainable Development and International Relations & Adaptation*. <https://adaptationwithoutborders.org/knowledge-base/adaptation-without-borders/the-global-transboundary-climate-risk-report/>
- Heimsath, C. H. (1974). Indus Waters Treaty: An Exercise in International Mediation. By N. D. Gulhati. Bombay: Allied Publishers, 1973. Rs. 96.00. *The Journal of Asian Studies*, 34(1), 255–256. <https://doi.org/10.2307/2052449>
- Immerzeel, W. W., van Beek, L. P. H., & Bierkens, M. F. P. (2010). Climate Change Will Affect the Asian Water Towers. *Science*, 328(5984), 1382–1385. <https://doi.org/10.1126/science.1183188>
- Kabir, F. (2024, September 15). Loss and damage and the recent floods of Bangladesh. *Dhaka Tribune*. Retrieved from <https://www.dhakatribune.com/opinion/longform/358493/loss-and-damage-and-the-recent-floods-of>
- Jacobs, J. W. (2002). The Mekong River Commission: transboundary water resources planning and regional security. *The Geographical Journal*, 168(4), 354–364. <https://doi.org/10.1111/j.0016-7398.2002.00061.x>
- Prabhakar, S., Shivakoti, B., & Corral, A. (2018). Transboundary Impacts of Climate Change in Asia: Making a Case for Regional Adaptation Planning and Cooperation IGES-GDN Discussion Pape. Discussion Paper, Institute for Global Environmental Strategies and Global Development Network, Hayama, Japan.
- Salman, S. M. A., & Uprety, K. (2002). Conflict and Cooperation on South Asia's International Rivers: A Legal Perspective. Kluwer Law International. <https://documents1.worldbank.org/curated/en/249581468325224527/pdf/multi0page.pdf>
- SEI. (2023). Commitment to impact: Annual Report 2023. Stockholm Environment Institute. <https://www.sei.org/wp-content/uploads/2024/04/seip10720-annual-report-240426b-web.pdf>
- SEI. (2023b). COP 28 delivers a first-ever decision on fossil fuels, but loopholes may hinder progress [Press Release]. Retrieved from https://www.sei.org/about-sei/press-room/cop28-delivers-a-decision-on-fossil-fuels-but-loopholes-may-hinder-progress/?fbclid=IwY2xjawFhxdtleHRuA2FlbQIxMAABHTTGw-u4YzH-n_PBeoxI0-nJD-d6P4CHgcg_XEEQTu8RnCr31-A551ZfCQ_aem_WxajFjxOaFE50PCgSGP0g
- Swain, A. (2002). *Managing Water Conflict: Asia, Africa, and the Middle East*. Routledge. <https://www.routledge.com/Managing-Water-Conflict-Asia-Africa-and-the-Middle-East/Swain/p/book/9780415861786>
- Teshome B., W. (2008). Transboundary Water Cooperation in Africa: The Case of the Nile Basin Initiative (NBI). *Alternatives: Turkish Journal of*

International Relations, 7(4), 34–43. Retrieved from <https://dergipark.org.tr/en/pub/alternatives/issue/1704/21084>

Touza, L. L., Sarti, S. T., & Briones, A. (2024, March 19). COP28: the long road to transitioning away from fossil fuels - Elcano Royal Institute. Elcano Royal Institute. Retrieved from: https://www.realinstitutoelcano.org/en/analyses/cop28-the-long-road-to-transitioning-away-from-fossil-fuels/?fbclid=IwY2xjawFhzhFleHRuA2FlbQIxMAABHcGApLo7LPSO-ujEIEKncATw3FKDQxtAbOup7xQ-QOzE-4yS818WJqfPVA_aem_KOjGZnA9g72GdYFg2u5m9Q

UNECE. (2023a). Transboundary water cooperation as a means to address climate change: A policy brief of the Transboundary Water Cooperation Coalition to inform climate discussions and negotiations at COP28 and beyond. The United Nations Economic Commission for Europe. Retrieved from The United Nations Economic Commission for Europe website:

https://unece.org/sites/default/files/2023-11/Policy%20brief_TWCC%20at%20COP28_FINAL.pdf

Wolf, A. T., & Newton, J. T. (2008). Case study of transboundary dispute resolution: The Indus Waters Treaty. In A. T. Wolf (Ed.), *International Waters of the Middle East: From Euphrates-Tigris to Nile* (pp. 200-214). United Nations University Press. <https://transboundarywaters.ceoas.oregonstate.edu/sites/transboundarywaters.ceoas.oregonstate.edu/files/Database/ResearchProjects/casestudies/indus.pdf>

World Bank. (2019). *Financing Climate Change Adaptation in Transboundary Basins: Preparing Bankable Projects*. Washington, DC: World Bank.

Zawahri, N. A. (2008). Designing river commissions to implement treaties and manage water disputes: The story of the Joint Water Committee and Permanent Indus Commission. *Water International*, 33(4), 464-474. <https://www.tandfonline.com/doi/abs/10.1080/02508060802474566>





A knowledge product of the
cooperation partnership between:

**Brot
für die Welt**



Center for Participatory
Research & Development
CPRD

Diakonia
People
Change
the World

COLLABORATE TO ADAPT

REGIONAL COOPERATION IS KEY TO TACKLING SOUTH ASIA'S CLIMATE CRISIS

EDITOR'S PICK

The escalating cross-border climate impacts in South Asia, particularly concerning shared water resources like the Ganges, Indus, and Brahmaputra River systems, demand urgent attention. CPRD's policy brief, *Addressing the Cascading Impacts of Climate Change: Scope of Transboundary Adaptation in the South Asian Delta*, calls for a bold shift from isolated national efforts to unified, regional adaptation strategies. As climate risks become more interconnected and severe, the countries of the South Asian subcontinent, from the foothills of the Himalayan Range to the coastal plains, must prioritize cooperation to protect the shared river systems that sustain millions. This begins with transparent data-sharing, equitable water-sharing agreements, and collaborative disaster response mechanisms.

Current frameworks, often focused on local or national responses, fail to address the full scope of these transboundary challenges. A regional approach, underpinned by stronger diplomatic ties, early warning systems, and collective disaster preparedness, is essential to build resilience against climate shocks. By adopting a cooperative strategy, South Asia can safeguard shared resources, stabilize the region, and ensure fair distribution of environmental risks and benefits. The time for fragmented solutions is over—regional collaboration is the key to addressing the climate crisis effectively.



DOWNLOAD PDF