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# WATER RIGHTS AND CLIMATE CHANGE: AN ANALYSIS OF TRANSBOUNDARY WATER CONFLICTS AMIDST ENVIRONMENTAL CHALLENGES IN THE INDUS REGION WITH SPECIFIC REFERENCE TO THE INDUS WATERS TREATY OF 1960

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## I. INTRODUCTION

### A. Brief Overview

In the delicate dance of geopolitics and international law, the Indo-Pak water conflict emerges as a poignant illustration of intricate complexities, where environmental, legal, and human rights dimensions interlace. Nestled in the heart of the Asian subcontinent, the storied waters of the Indus River, a life-source for millions, have become grounds of contention, weaving intricate patterns of cooperation and conflict. Amidst this multifaceted dynamic, the spectre of climate change casts an ominous shadow, exacerbating the existing fissures and heralding new, unprecedented challenges.

*The Indus Waters Treaty (IWT)*, hailed as a beacon of bilateral cooperation amidst turbulent relations, now faces trials by the insidious, yet pervasive impacts of a changing climate. The Treaty, concluded under the aegis of the World Bank in 1960, has withstood the test of times and tides, arbitrating the shared usage of the Indus and its tributaries.<sup>2</sup> However, as climate change alters the hydrological landscape, impacting both the quantum and temporal distribution of these vital waters, the prescience and adaptability of the Treaty is increasingly being called into question.

### B. Aims and Objectives

This article aims to embark upon a nuanced exploration of this confluence of water rights, international law, and climate change, scrutinizing the Treaty's capacity to navigate the uncharted waters of environmental upheaval. It seeks to illuminate the

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<sup>2</sup> The Indus Waters Treaty 1960, Sep. 19, 1960, 419 U.N.T.S. 126, available at <https://treaties.un.org/doc/Publication/UNT/Volume%20419/volume-419-I-6032-English.pdf>.

legal, ethical, and pragmatic implications of a world where water - a resource taken as inviolable and abundant - is rendered volatile and scarce.

A critical examination of the IWT in the crucible of climate change is intended to unveil its latent vulnerabilities and strengths. The legal mechanisms and principles inscribed within will be delved into, with their resilience and adaptability in confronting emerging environmental realities being interrogated. Moreover, the human rights dimension will be intricately woven into this discourse, for the intersectionality of environmental impacts and human rights, especially the right to water, is too profound to be relegated to the peripheries.

As we navigate this complex narrative, the article endeavours to contribute an original perspective, one that is informed yet not constrained by existing legal paradigms and environmental doctrines. A meticulous examination of legal texts will anchor our journey, which will be augmented by a contextual understanding of climate dynamics. In said convergence of law, the environment, and rights, a discourse that transcends both geographical and intellectual boundaries is aspired to be fostered, illuminating pathways to cooperative, equitable, and sustainable water resource management in the epoch of climate change.

## **II. BACKGROUND AND CONTEXT**

The Indus Waters Treaty (IWT) emanates from the geopolitical and hydrological complexities of the post-colonial subcontinent. It emerged as a remarkable anomaly, a testament to the enduring power of legal diplomacy amidst political discord. Enacted in 1960, it epitomizes an intricate balance between cooperative utilitarianism and state sovereignty. The Treaty carved the Indus basin, a cradle of civilizations and a reservoir of biodiverse ecosystems, into distinct jurisdictions, “bestowing control of the eastern rivers (the Beas, Ravi, and Sutlej) to India and the western rivers (the Indus, Jhelum, and Chenab) to Pakistan.”<sup>3</sup>

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<sup>3</sup> THE WORLD BANK, FACT SHEET: THE INDUS WATERS TREATY 1960 AND THE ROLE OF THE WORLD BANK (Jun. 11, 2018), <https://www.worldbank.org/en/region/sar/brief/fact-sheet-the-indus-waters-treaty-1960-and-the-world-bank>.

Rooted in the twin pillars of equity and sovereignty, the Treaty has showcased remarkable resilience, weathering the tumultuous storms of several conflicts and confrontations between the two nuclear neighbours.<sup>4</sup> The element of equity is ennobled by the Treaty's inherent recognition of the shared stakes and mutual dependencies associated with the Indus Basin. Whereas, sovereignty, the second fulcrum upon which the IWT balances, is further nuanced, in that while the Treaty assigns exclusive rights over specific tributaries to each nation, it also encapsulates inherent checks and accommodations that prevent absolute monopolization.<sup>5</sup> Such crafting of legal provisions, even amidst the hardened silos of national interest, underscores the Treaty's unique character - a hybrid of shared destiny and distinct sovereignties. It, thus, arose as a manifestation of a mutual recognition that the waters of the Indus, surging from the Himalayas and meandering through varied terrains before converging into the Arabian Sea, represented more than geopolitical boundaries – they were sinews of life, commerce, and ecology.

Yet, it was conceived in a world relatively untouched by the spectre of climate change – a world where the waters flowed in predictable rhythms, and the vagaries of nature, though profound, were constrained within known parameters. The Treaty, a product of its time, encapsulated the wisdom and foresightedness of its drafters but remained inherently blind to the silent, incremental yet insidious impacts of a changing climate. Fast forward six decades, the IWT now confronts a drastically transformed hydrological and climatic landscape. The glaciers of the Himalayas, colloquially termed the “Water Towers of Asia”, are in retreat, instigating alterations in water volumes and flow patterns.<sup>6</sup> Monsoons, the annual harbingers of renewal, have become unpredictable, with intensified events leading to catastrophic floods, while prolonged dry spells exacerbate water scarcity.<sup>7</sup>

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<sup>4</sup> DAVID GILMARTIN, *BLOOD AND WATER: THE INDUS RIVER BASIN IN MODERN HISTORY* (University of California Press 2015).

<sup>5</sup> *Id.*

<sup>6</sup> Jayanta Bandyopadhyay, *Securing the Himalayas as the Water Tower of Asia: An Environmental Perspective*, 16 ASIA POLICY 45 (2013).

<sup>7</sup> Shakeel Asharaf & Bodo Ahrens, *Indian Summer Monsoon Rainfall Processes in Climate Change Scenarios*, 28 JCLI 5414 (2015).

In this backdrop, the structural and functional contours of the IWT are subjected to unprecedented stress. The Treaty's allocation mechanisms, predicated on historical flow patterns and usage, are ill-equipped to navigate the volatile hydrological shifts induced by climate change.<sup>8</sup> Moreover, the environmental safeguards, though incipiently recognized, lack the robustness and adaptability to mitigate the ecological impacts of altered water regimes. The ensuing ecological impacts transcend national boundaries. Biodiversity loss, altered ecosystems, and disruptions in agricultural and fishing communities along the Indus basin are harbingers of a multifaceted environmental crisis.<sup>9</sup> These ecological shifts, coupled with rising water needs resulting from population increase and urbanization, overlay a complex, dynamic, and uncertain scenario, underscoring the need for adaptive, resilient, and flexible legal and institutional frameworks.

### III. LEGAL CHALLENGES AND IMPLICATIONS

#### A. Treaty Analysis

The Indus Waters Treaty (IWT), although a paragon of diplomatic ingenuity and legal acumen of its time, now stands at the precipice of a complex, multi-dimensional challenge instigated by climate change. The innate architecture of the Treaty, while foundational in resolving historical conflicts and enabling cooperative water resource management, is now seen to harbour gaps and vulnerabilities that are being unsparingly exposed by the unpredictable patterns of a changing climate.

One of the quintessential challenges lies in the Treaty's primary allocation mechanism.<sup>10</sup> The partition of river systems between India and Pakistan was conceived in an era where the hydrological flows and ecological dynamics were relatively stable. However, the advent of climate change, with its capricious patterns of precipitation, glacial melt, and extreme weather events, lays bare the inadequacies of such static allocative mechanisms. Moreover, the Treaty's insufficiency becomes profoundly accentuated when seen through the prism of adaptive management. The

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<sup>8</sup> GILMARTIN, *supra* note 3.

<sup>9</sup> Andrew Orr et al., *Knowledge Priorities on Climate Change and Water in the Upper Indus Basin*, 10 EARTH'S FUTURE 1 (2022).

<sup>10</sup> The Indus Waters Treaty 1960, Arts. 2(1) & 3(1), *supra* note 1.

IWT is somewhat rigid, containing limited provisions for dynamic adaptation to significant changes in water availability or flow patterns.<sup>11</sup> Climate change, by its inherent nature, is a dynamic, evolving phenomenon, the impacts of which are as unpredictable as they are severe. The intrinsic rigidity of the Treaty to adapt to these unforeseen and rapidly evolving hydrological shifts highlights a critical vulnerability. The environmental provisions within the IWT also warrant a critical examination. The Treaty, drafted at a time when environmental consciousness and ecological legal frameworks were in their nascent stages, does not incorporate comprehensive clauses addressing ecological conservation or protection. In the era of the Anthropocene, where human-induced ecological changes are profound,<sup>12</sup> the absence of robust environmental safeguards within the IWT becomes a source of significant concern. Additionally, the ongoing and projected impacts of climate change are expected to exacerbate water scarcity in the region, which could lead to heightened tensions. The IWT, while having provisions for conflict resolution,<sup>13</sup> has not been tested against the backdrop of the intense pressures that climate-induced water scarcity is likely to impose.<sup>14</sup>

As the rivers comprising the Indus system weave their course through the diverse terrains and political boundaries of the subcontinent, they carry with them not just waters but a legacy of cooperation, conflict, and complex legal interplay. In the unfolding narrative of climate change, where each drop of water is as much about survival as it is about legal rights, a re-examination and adaptation of the Treaty is not merely necessary – it is imperative for regional peace, ecological preservation, and human survival.

## **B. Contextualization within International Law**

The dynamics of the IWT are not only influenced by the intrinsic elements of the Treaty but are also nested within the broader context of international legal norms

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<sup>11</sup> GILMARTIN, *supra* note 3.

<sup>12</sup> UNITED NATIONS DEVELOPMENT PROGRAMME, THE NEXT FRONTIER: HUMAN DEVELOPMENT AND THE ANTHROPOCENE (Dec. 21, 2020), <https://www.undp.org/serbia/publications/next-frontier-human-development-and-anthropocene>.

<sup>13</sup> The Indus Waters Treaty 1960, Arts. 8 & 9, *supra* note 1.

<sup>14</sup> UNITED NATIONS DEVELOPMENT PROGRAMME, *supra* note 11.

governing transboundary water and environmental management. As climate change transcends political boundaries, its mitigation and adaptation require an ensemble of international legal instruments and conventions.

A salient cornerstone is the *United Nations Convention on International Watercourses (UNWC)*, which introduces pivotal principles such as “equitable and reasonable utilization, the obligation not to cause significant harm, and the duty to cooperate.”<sup>15</sup> However, the geopolitical intricacies and distinct hydrological characteristics of the Indus Basin present complex challenges that interrogate the applicability and adaptability of these global norms. Moreover, the evolution of international law, particularly in the realm of environmental jurisprudence, is marked by the ascendancy of principles like the precautionary principle, prevention principle, intergenerational equity, and ecological sustainability.<sup>16</sup> The harmonic convergence between international environmental principles and the foundational tenets of the IWT, such as equitable utilization and prevention of significant harm, encapsulates a synchrony that naturally exists between responsible resource management and environmental preservation.

There exists, however, a dissonance as well that emerges from the Treaty’s innate limitations, rooted in its creation era, resulting in the foundational principles of environment law, failing to find a mention within the Treaty. Therefore, the said harmony and the dissonance between these evolving norms and the foundational premises of the IWT are in great need of a meticulous examination, especially in the context of climate change. Furthermore, climate justice, a concept that intertwines legal, ethical, and environmental dimensions, emerges as a prominent discourse that could potentially influence and reshape the norms governing transboundary water management. The asymmetrical impacts of climate change, especially on nations and communities with limited adaptive capacities, invoke considerations of justice, equity, and human rights.<sup>17</sup>

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<sup>15</sup> G.A. Res. 51/229, Convention on the Law of the Non-Navigational Uses of International Watercourses (May 21, 1997).

<sup>16</sup> 8 STUART BELL ET AL., ENVIRONMENTAL LAW (Oxford University Press 2013).

<sup>17</sup> *Id.*

Lastly, a pivotal aspect that necessitates scrutiny is the compatibility between the IWT and emerging international norms on climate adaptation and resilience. *The Paris Agreement*, for instance, underscores the imperatives of strengthening adaptive capacities, enhancing resilience, and reducing vulnerability to climate change.<sup>18</sup> The question that emerges, profound in its implications, is the degree to which the IWT can be harmonized with these international commitments, and the legal pathways available to address potential divergences.

### C. Human Rights Concerns

In today's context, recognizing the interwoven narrative of the IWT, climate change, and evolving international legal norms is both vital and relevant. The discourse concerning the same has reactively transcended the boundaries of traditional legal frameworks and ventured into the deeply human, profoundly intimate realm of human rights. Central to this discourse is the right to water and sanitation, a fundamental human right that underpins the edifice of life, dignity, and well-being.<sup>19</sup> Climate-induced water scarcity, a looming spectre borne from a symphony of glacial retreats, erratic precipitation patterns, and extreme climatic events, unveils complex, multifaceted challenges to realizing this fundamental right. The Indus basin, a source of life and livelihood for millions, is no longer just a physical entity; it embodies a legal, ethical, and human rights landscape, where every drop of water reverberates with the echoes of rights, equity, and justice.

The right to water, as recognized under international law, encompasses availability, quality, and accessibility.<sup>20</sup> Each of these facets is profoundly impacted by climate change. The availability of water in the Indus Basin is threatened by the dual challenges of glacial retreats<sup>21</sup> and erratic monsoons,<sup>22</sup> phenomena that are

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<sup>18</sup> Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104.

<sup>19</sup> G.A. Res. 2200A (XXI), International Covenant on Economic, Social and Cultural Rights, Art. 11(1) (Dec. 16, 1966).

<sup>20</sup> UN-WATER, ELIMINATING DISCRIMINATION AND INEQUALITIES IN ACCESS TO WATER AND SANITATION (May 8, 2015), <https://www.unwater.org/publications/eliminating-discrimination-and-inequalities-access-water-and-sanitation>.

<sup>21</sup> Bandyopadhyay, *supra* note 5.

<sup>22</sup> Asharaf & Bodo Ahrens, *supra* note 6.



intensifying with unprecedented rapidity. The quality of water is confronted by the insidious impacts of increased pollution and contamination events, exacerbated by extreme climatic occurrences.<sup>23</sup> Accessibility, though often perceived as a logistical and infrastructural issue, is intimately tied to the legal frameworks that govern the allocation, utilization, and conservation of water resources.

In this context, “the equitable and reasonable utilization” of the waters of the Indus, a fundamental tenet of the IWT, is no longer merely a legal obligation but is transformed into a human rights imperative. “The obligation not to cause significant harm,” another cardinal principle intrinsic to the Treaty, presently requires urgent expansion, to include the preservation and promotion of “the right to water and sanitation” under its mandate.<sup>24</sup> Yet, the complexities are significant as the IWT faces scrutiny from emerging, substantial questions. The notion of a treaty historically grounded in geopolitical and hydrological paradigms, evolving to embody human rights imperatives is contentious.<sup>25</sup> Furthermore, ensuring that the complex clauses of the Treaty align with the right to water and sanitation amidst the multifarious challenges of climate change is a herculean task of its own.

Therefore, as nations strive to navigate the tumultuous waters of climate change, human rights, and legal obligations, new paradigms are required. Paradigms that transcend the traditional corridors of law and venture into the holistic, integrated landscapes where law, environment, ethics, and human rights converge in a harmonious, symbiotic existence. It is within this intricate, multidimensional space that the future of the IWT, the Indus basin, and the millions dependent on its waters, needs to be forged.

## IV. CASE STUDIES

### A. Case Studies in The Indo-Pak Region

The pulsating rivers of the Indo-Pak region, echoing with the narrative of shared histories and divergent paths have witnessed multiple confrontations surrounding

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<sup>23</sup> UNITED NATIONS DEVELOPMENT PROGRAMME, *supra* note 11.

<sup>24</sup> GILMARTIN, *supra* note 3.

<sup>25</sup> *Id.*

water use and river flows occurring between the two countries since the inception of the IWT. In this regard, some of the specific instances of water conflicts, as hereunder described, illuminate the existing and emerging challenges intrinsic to the region.

- **CASE STUDY: THE BAGLIHAR DAM CONFLICT**

In 2005, Pakistan raised concerns that the Baglihar hydroelectric plant being built since 1999 in the erstwhile Indian state of Jammu and Kashmir was designed in a manner that violated the IWT. The Treaty outlines India's restricted use "of the three western rivers of the Indus River system, including the Chenab River." It permits India to implement "run-of-the-river power projects with limited reservoir capacities and minimal control over water flows essential for viable power generation."<sup>26</sup> India, utilizing this clause began construction of the Balighar plant to satiate the electricity demands imposed as a result of a burgeoning population. This was objected to by Pakistan.<sup>27</sup>

The principal objections were centred on the design parameters of the dam, particularly the spillway gates and pondage capacity, which Pakistan argued could potentially be used to alter the flow of water to downstream areas in Pakistan thereby granting India a strategic advantage during periods of political tension or war between the two states, especially in light of the increased droughts and Famines occurring across Pakistan due to enhanced climate variability.<sup>28</sup> The issue was finally resolved in June 2010, when India and Pakistan convened a meeting of the Permanent Indus Commission.<sup>29</sup>

- **CASE STUDY: THE KISHANGANGA DAM CONFLICT**

Work on the project commenced in 2007, with completion anticipated in 2016. However, construction was suspended in 2011 due to a conflict with Pakistan arising

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<sup>26</sup> The Indus Waters Treaty 1960, Arts. 3(2) & Annexure D, *supra* note 1.

<sup>27</sup> I.M. Sahai, *The Baglihar dispute*, INTERNATIONAL WATER POWER & DAM CONSTRUCTION (Aug. 16, 2006), <https://www.waterpowermagazine.com/news/newsthe-baglihar-dispute>.

<sup>28</sup> Robert G. Wirsing & Christopher Jasparro, *Spotlight on Indus River Diplomacy: India, Pakistan, and The Baglihar Dam Dispute*, ASIA-PACIFIC CENTER FOR SECURITY STUDIES (May 2006), <https://apps.dtic.mil/sti/pdfs/ADA454220.pdf>.

<sup>29</sup> Gargi Parsai, *India, Pakistan resolve Baglihar dam issue*, THE HINDU (Jun. 1, 2010), <https://www.thehindu.com/news/India-Pakistan-resolve-Baglihar-dam-issue/article16240199.ece>.

from the stipulations of the Indus Water Treaty, leading to an international arbitration. Pakistan raised concerns akin to those raised in the Balighar Conflict, about the project's impact on the flow of the Kishanganga River, a tributary of the Jhelum, into areas of Pakistan-administered Kashmir and the potential water scarcity in the region.<sup>30</sup> It again maintained that “the diversion of the water was prohibited as per the Treaty.” In a 2013 verdict, the International Court of Arbitration permitted India to proceed with water diversion for power generation, in line with “paragraph 15 of Annexure D of the Treaty,”<sup>31</sup> provided it maintained a minimum downstream flow of nine cubic meters per second to Pakistan.<sup>32</sup>

- **CASE STUDY: TULBUL NAVIGATION PROJECT/WULAR LAKE BARRAGE PROJECT**

In the early 1980s, India initiated the Tulbul Navigation Project to build a barrage at the mouth of Wular Lake in Jammu and Kashmir. The main objectives were to make the Jhelum River navigable during the winter months and to stabilize the water supply to the Uri hydropower plant. However, Pakistan opposed the project, contending that it would violate the IWT by allowing India to control the river's flow.<sup>33</sup> Pakistan contends that India is prohibited from building any storage structures on the primary course of the Jhelum River. However, Indian authorities have maintained that the contested structure is not for storage but serves as a navigation facility, aligning with the definitions and provisions outlined in the IWT.<sup>34</sup> Construction on the project has been halted since April 2012, after militant attacks in the nearby area. Despite multiple rounds of Secretary-level talks between the two states, no solution has currently been agreed upon.<sup>35</sup>

## **B. Environmental Concerns and Climate Change Implications**

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<sup>30</sup> The Indus Waters Treaty 1960, Annexure D, *supra* note 1.

<sup>31</sup> Omair Ahmad, *Current Events Surrounding the Indus Waters Treaty Have Consequences Beyond India and Pakistan*, THE WIRE (Jan. 31, 2023), <https://thewire.in/south-asia/india-pakistan-indus-waters-treaty>.

<sup>32</sup> Shahram Haq & Zafar Bhutta, *Kishanganga project: Victory claims cloud final arbitration award*, THE EXPRESS TRIBUNE (Dec. 22, 2013), <https://tribune.com.pk/story/648986/kishanganga-project-victory-claims-cloud-final-arbitration-award/>.

<sup>33</sup> Sameer Yasir, *Indus Waters Treaty, the Tulbul project and its implications on India-Pakistan relations*, FIRSTPOST (Sep. 27, 2016), <https://www.firstpost.com/india/indus-waters-treaty-the-tulbul-project-and-its-implications-on-india-pakistan-relations-3022076.html>.

<sup>34</sup> The Indus Waters Treaty 1960, Arts. 1(11) & 3(2), *supra* note 1.

<sup>35</sup> Yasir, *supra* note 32.

The aforementioned studies, embedded within the overarching narrative of the IWT, unveil the intricate, multidimensional challenges associated with transboundary water management. Similarly, the communities in the vicinity of said projects face tangible, multifaceted challenges. In the wake of climate change, the hardships already being borne by the local communities have been exacerbated and compounded. For instance, following the dam construction in Baglihar, the altered flow of the Chenab River has directly impacted agricultural productivity. Farmers report increased soil erosion, changes in siltation patterns, and an unpredictable water supply, which complicate the planting and harvesting cycles. Rising temperatures, erratic rainfall with pronounced and frequent cloudbursts and landslides have significantly added to their woes.<sup>36</sup>

Similarly, the Kishanganga project has raised similar concerns. Communities downstream in South-West Kashmir have experienced a reduction in water flow, impacting not just agriculture but also freshwater availability. The decreased flow has led to a decline in fish populations, impacting the livelihoods of local fisherfolk reliant on these waters. This when combined with the increased acidification of water bodies as a result of enhanced and warmer temperatures has decimated the aquatic life in the region. Additionally, locals are finding it difficult to procure water in times of droughts, which have increased in both number and severity.<sup>37</sup> These challenges underscore the need for comprehensive impact assessments and community-centric adaptive strategies to mitigate the multifaceted consequences of such large-scale hydroelectric projects in the region, in the era of climate volatility.

### C. Global Insights

Internationally, similar spectres of climate-induced water conflicts cast their shadows, offering insights and reflections that could potentially illuminate pathways for the Indo-Pak scenario:

- **THE COLORADO RIVER BASIN (USA-MEXICO)**

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<sup>36</sup> Usman Ahmad, *ICE Case Studies: Balighar Dam, THE ICE PROJECT* (May 2006).

<sup>37</sup> Wahid Bhat, *Climate Change: Kishanganga Dam causes water concerns*, GROUND REPORT (July 29, 2022), <https://groundreport.in/climate-change-kishanganga-dam-causes-water-concerns/>.

The Colorado River Basin in the United States, shared among seven states and Mexico, exemplifies a scenario where legal, institutional, and environmental complexities converge.<sup>38</sup> The basin is confronting exacerbated water scarcity due to prolonged droughts intensified by climate change. The legal responses and mechanisms employed in the Colorado River Basin offer a kaleidoscope of strategies. “*The Law of the River*,” a compendium of treaties, compacts, and decrees, underscores the pivotal role of law in navigating the complex terrains of transboundary water management.<sup>39</sup>

- **THE MEKONG RIVER BASIN (CHINA, MYANMAR, THAILAND, LAOS, CAMBODIA AND VIETNAM)**

The Mekong River Basin is shared among six countries in Southeast Asia. The basin is confronting multifaceted challenges, including intensified floods, prolonged droughts, and environmental degradation induced by climate change. *The Mekong River Commission*, a regional intergovernmental body, embodies a legal and institutional mechanism that strives to promote regional cooperation, integrated water resources management, and sustainable development.<sup>40</sup>

## V. POLICY AND LEGAL REFORMS

### A. Building Adaptive Legal Frameworks

The IWT, though resilient, must metamorphose to align with the contemporary ecological and climatic challenges. One pragmatic modification involves the integration of a dynamic climate adaptation mechanism within the Treaty's structure. Specific clauses need to be crafted to address the unpredictability and volatility of water flows due to climate change. For instance, delineating procedural and substantive guidelines to manage water allocation during extreme weather events, ensuring that both nations can swiftly and collaboratively respond to floods and

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<sup>38</sup> *Colorado River Basin*, COLORADO WATER CONSERVATION BOARD, <https://cwcb.colorado.gov/colorado-river> (last visited Sep. 25, 2023).

<sup>39</sup> *The Law of the River*, BUREAU OF RECLAMATION: U.S. DEPARTMENT OF THE INTERIOR, <https://www.usbr.gov/lc/region/g1000/lawofrvr.html> (last visited Sep. 26, 2023).

<sup>40</sup> *MRC Functions*, MEKONG RIVER COMMISSION, <https://www.mrcmekong.org/our-work/functions/> (last visited Sep. 26, 2023).

droughts, is essential. Moreover, the ambit of the IWT could be further expanded to encapsulate protocols for sharing data on climatic variables and hydrological changes in real-time. Building a repository of such data, accessible to both nations, would facilitate informed, timely decisions during climatic extremities. Furthermore, the inclusion of a joint scientific and technical committee dedicated to assessing and advising on climate change impacts on water resources could provide an evidence-based foundation for adaptive decision-making.

### **B. Human Rights Integration**

Transitioning towards a human rights-centric paradigm necessitates embedding the principles of water equity and accessibility within the IWT. Given the multifaceted impacts on communities around the Indus Basin, explicit clauses addressing the right to water and sanitation within the Treaty's structure, drawing inspiration from "*General Comment No. 15 of the Committee on Economic, Social and Cultural Rights*," could ensure that water management decisions are anchored in human rights norms.<sup>41</sup> To materialize this, conducting community impact assessments before initiating hydroelectric projects is vital. Such assessments should evaluate not only environmental but also social, economic, and cultural impacts, ensuring that community voices, particularly marginalized groups, are integral to decision-making processes. Consequently, a clause requiring these comprehensive assessments and integrating their insights into project planning and implementation should be infused into the Treaty.

### **C. Regional Cooperation**

Enhanced regional cooperation, inspired by international best practices, is instrumental in navigating the complex waterscapes of the Indo-Pak region. The Mekong River Commission's framework, emphasizing data sharing, joint environmental monitoring, and inclusive decision-making, offers valuable insights.<sup>42</sup> Transposing such elements to the Indo-Pak context, the IWT could incorporate

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<sup>41</sup> Twenty-ninth Session of the Committee on Economic, Social and Cultural Rights, *General Comment No. 15: The Right to Water* (Jan. 20, 2003), Doc. E/C.12/2002/11.

<sup>42</sup> MEKONG RIVER COMMISSION, *supra* note 39.

specific clauses to institutionalize joint environmental monitoring mechanisms. These should focus on assessing climate impacts on water quality, quantity, and ecosystem health. Additionally, a platform facilitating continuous dialogue, not just during conflicts but as a normative practice, could foster a culture of collaboration and mutual understanding.

## VI. CONCRETE STEPS FORWARD: RECOMMENDATIONS

The aforementioned legal and policy discussions warrant actionable materialisation practices to escape the white page and make a positive change in the lives of real people. Thus, a concise, *recommendatory action-plan* incorporating key insights from the said discussions, is presented hereunder, as a suggestive means to achieve the goals and objectives put forth in the discussions:

1. **Incorporate Climate Adaptation Clauses:** Embed explicit provisions to address water management during extreme climatic events, supported by real-time data sharing and joint action protocols
2. **Establish a Joint Scientific Committee:** Inaugurate a bilateral body of experts to continuously assess and advise on climate-induced hydrological changes, ensuring decisions are evidence-based
3. **Integrate Human Rights Norms:** Infuse the IWT with clauses ensuring water management decisions prioritize equitable water distribution and access, anchored in internationally recognized human rights norms
4. **Institute Comprehensive Community Impact Assessments:** Mandate these assessments before project initiations, ensuring decisions are informed by multi-dimensional community impacts
5. **Institutionalize Joint Environmental Monitoring:** Establish mechanisms for continuous assessment of climate impacts on water resources, informed by international best practices
6. **Facilitate Continuous Dialogue:** Foster an institutionalized platform for ongoing bilateral engagements, transforming conflict resolution from episodic interventions to a continuous, normative practice.

## **VII. CONCLUSION AND FUTURE TRAJECTORIES**

As climate change amplifies, the IWT is poised to face unprecedented challenges. Water, a medium of life, will increasingly become a source of contention, as fluctuating patterns of precipitation and escalating environmental stressors exacerbate the region's hydropolitical dynamics. Every droplet of the Indus and its tributaries will encapsulate the mounting pressures of environmental, geopolitical, and humanitarian imperatives. The exigency for meticulously crafted legal reforms, fortified by robust regional cooperation, is no longer a deliberative option but an unequivocal necessity. The aeon of reimagined, adaptive, and humane water treaties is not simply impending but imperative today. The tides of time beckon India and Pakistan to move beyond mere legal adjustments towards a profound reimagining of their shared waters, to build and maintain peace, prosperity, and a sustainable coexistence.