

Figure: Indus River and its six tributaries

Source: <https://scroll.in/article/817910/in-the-din-over-the-indus-waters-treaty-the-climate-change-factor-has-been-overlooked>

Regulating Water Security in Border Regions: The Case of India and Pakistan

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Masters of Arts in Law and Diplomacy

Submitted to Professor Mihaela Papa

Summer 2017

In Complete fulfillment of the Masters of Arts in Law and Diplomacy Capstone Requirement

August 1st, 2017

Executive Summary

This policy report examines the growing water insecurity problem at the borders of India and Pakistan from negotiation and governance perspectives and offers possible solutions. Rapid economic development through the construction of irrigation infrastructure and population growth has hampered the distribution of water supply. Overexploitation of water resources coupled with climate change impacts such as melting of glaciers and irregular monsoons, has posed a serious environmental security challenge to both countries. As the Indus issue affects over a billion people, there is a fear that these recent developments can trigger a conflict between the two nations. The Indus basin is also seen as a key strategic interest as its headwaters originate from Kashmir which is a region of dispute. Lack of trust between the two nations due to historical and political reasons has proven to be a huge roadblock for successful water negotiations in recent times.

The report analyzes the current water insecurity problem by delving into historical and political reasons that has been a driving factor in harboring mistrust between the two nations. It finds that the growing mistrust is bolstered by the two nations' approach of a zero sum game in water negotiations and non-inclusion of all relevant stakeholders. The report further attempts to analyze the current transboundary water governance structure by exploring the existing platforms of governance and their interactions amongst each other. It finds that the existing governance mechanism is heavily focused robust dispute resolution mechanisms which have been successful in resolving disputes and differences. However, it finds that the disputes are growing over the years and the nature of top down water governance structure is not suitable in handling current problems related to climate change, overexploitation of water resources, pollution and increased demand. The report uses the Indus water treaty, newspaper articles and research papers as source of data to analyze the problem at hand. Based on the analysis, the report concludes that there is a mismatch in how the two countries frame the water issue and that the top down focus on transboundary water governance is limiting, does not promote cooperation and thus prevents effective addressing of the current problems.

Drawing on the conclusion from the analysis, the report recommends addressing the water security problem at the borders of India and Pakistan through the lens of the Water Diplomacy Framework. That is to recognize that a natural resource like water crosses various domains and scales. It intersects natural, political and social domains at spatial, temporal, judicial and institutional scales. A mere top down approach of transboundary water negotiations at the nation state level may not be a sustainable approach to address this issue. The main recommendations include - 1. A multilevel approach that balances the existing top down structure with a participatory governance structure at the local level. Thus encouraging different platforms of collaborations starting at a local level such as inclusion of indigenous voices, and at an academic levels in order to undertake a joint fact finding missions to provide expert level options. These discussions at lower and lateral levels are necessary to inform dialogues at the nation state level. 2. Using a multilateral forum such as SAARC (South Asian Association for Regional Cooperation) to address the common problem of water deficit, pollution, climate change impacts through collaborative programs in the form of information and technology exchange.

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Water Insecurity at the India-Pakistan Border

Water Security: Definition

The meaning of the term “water security” varies according to the context and discipline from which it is being viewed. Water security can be defined as the allocation rules that ensures adequate and desired quantities of water or it can be defined as nation's ability to protect its inhabitants from droughts and floods. In the context of transboundary waters, nations have historically defined water security on the basis on securely attaining specific quantities of water every year¹. According to this definition, water security is measured on the basis of water stress - ratio of water use to availability and water shortage - number of people that have to share each unit of blue water resource². This definition puts human needs at the center of water security. However, the contemporary definition of water security has been evolving in academic and policy literature³. Based on the contemporary understanding that water crosses various domains and scales. It intersects natural, political and social domains at spatial, temporal, judicial and institutional scales, it is important to define water security in a more integrated manner to include access, affordability of water, human needs that encompasses food, energy, sanitation, health and environmental security. The current governance structure at the border of India and Pakistan is based on dividing and allocating water resources and the dispute resolution mechanisms that are put in place are meant to resolve problems relating to water quantity. As the existing governance mechanism was developed in 1960s, it is understandable that the platforms put in place for governance was based on the definition of water security at that time.

Introduction: Indus

The Indus valley civilization, one of the world's oldest civilizations, flourished along the banks of the Indus River. The Indus River and its tributaries had been a source of contention amongst its inhabitants. Even though the erstwhile Indus valley inhabitants were an egalitarian society, there have been reports of locals fighting over water rights even 2000 years ago⁴. The Indus basin has again become a cause of serious concern for its current inhabitants - India and Pakistan, the biodiversity and the Indus ecosystem. This has been due to mistrust, population explosion, increased demand and impacts due to climate change. With the re-drawing of borders post partition in 1947 and historical mistrust between the two nations, tensions are now more complicated due to the transboundary nature of the problem.

India - Pakistan relations: Mistrust

In 1947, British India was dissolved to give birth to two sovereign nations - a Hindu majority India and a Muslim majority Pakistan. This period was characterized by intense sectarian violence - massacres, sexual violence, arson and forced conversions especially along the borders of the newly created countries⁵. The aftermath of partition saw millions of Muslims migrate from the newly created India to Pakistan and East Pakistan (now Bangladesh) and millions of Hindus and Sikhs migrated from Pakistan to India - one of the greatest mass migration recorded in human history. About 12 to 15 million people were displaced and between one to two million people were dead⁶. The partition is still considered to be central to the identity of the Indian subcontinent. Soon after the partition, both countries established diplomatic relations. However, the two countries have fought three major wars and the relationship over half a century has been hostile, sometimes violent and viewed with suspicion. The disputed area of Kashmir as the central point of most of the conflicts. There have been several attempts from both sides to improve the relationship through the Delhi - Lahore bus service and 2003 ceasefire agreement. However, these attempts were thwarted by numerous terrorist attacks such as the attack on the Indian Parliament by militants from across the border, the bombing of the Samjhauta express where 68 people were killed where the majority were Pakistanis and the 2008 Mumbai attacks perpetrated by militants from Pakistan.⁷⁸

In recent times, the Government of India and the Government of Pakistan have made attempts to improve bilateral relationship. A case in point is PM Modi's invitation to PM Sharif to attend his Prime Ministerial inauguration in 2013.⁹ These positive moves were again set back by terrorist attacks in Pathankot and Uri on the Indian side of the border.¹⁰ The issue of water is not looked at in isolation, atleast by India. Water is increasingly being used as a diplomatic weapon and as a bargaining chip to address other important foreign policy issues at hand. The sinusoidal nature of the India - Pakistan relationship has created an atmosphere of distrust which prevents them to engage in any collaborative endeavors. One such area is the management of transboundary waters of the Indus River that not only originates from the disputed area of Kashmir but is also the lifeline of Pakistan's economy

Current Governance Mechanism

The transboundary waters of the Indus and its tributaries are regulated and governed through the Indus Water Treaty (IWT). The IWT is hailed as one of the most successful water sharing agreement as it has not only survived three major wars but also prevented water from being used a weapon in the conflict.

The Indus Water Treaty (IWT)

During the partition of India in 1947, a border commission for partition had proceeded in good faith that the two newly formed governments would share water resources in the Indus basin¹¹.

However in 1948, India cut off water supplies to Pakistan, affecting millions of people. Subsequently, the two governments tried to negotiate to produce a water sharing agreement but to no avail. Finally, a third party, the World Bank had to step in to broker a water sharing treaty. This process of negotiations took well over twelve years. The initial attempt was to facilitate mutual cooperation between the two countries in order to share the Indus water as a common resource. Since there was no mutual trust between the two governments, the altered proposal was division of water resources¹². According to the terms of the treaty, India was given exclusive control of eastern rivers Ravi, Sutlej and Beas and whereas Pakistan was given control over the western rivers, Indus, Jhelum and Beas. Thus, the IWT was signed in 1960 by the two governments. The IWT has prevented water to be used as a tool for conflict even during the times of war. Over the years, India and Pakistan have engaged in legal battles over dams and irrigation power projects on the Indus. Along with impacts of climate change, dispute over Kashmir and population pressure has threatened the IWT and created an environment prime for a water conflict.

Salient features of the IWT¹³:

1. The Indus water resource was divided, India was allocated exclusive right to the three eastern rivers Sutlej, Ravi, Beas and Pakistan has rights to three western rivers Indus, Jhelum and Chenab
2. India is allowed to construct Run-of-River (ROR) power plants with specific design constraints on western rivers for power generation and is allowed to use specific amounts of western river water for domestic non-consumptive purposes and also store specific amounts as mentioned in the treaty. The treaty also requires India to let the water flow into Pakistan without interference beyond certain limit as mentioned in the treaty
3. The treaty requires India and Pakistan to inform each other of about construction of any engineering work that can lead to interference of water flow in order to ensure impacts. India is required to inform Pakistan six months in advance and Pakistan three months in advance
4. A Permanent Indus Commission(PIC) having representatives of both countries maintain communication on all matters addressed in the treaty
5. Mechanism of resolving issues is first through the PIC. If PIC is unable to resolve the issue, the matter is to be resolved by a neutral experts for engineering issues or court of arbitration for legal issues
6. Article VII provides for 'Future Cooperation' between the two countries on matters related to exchange of data and collaboration on engineering projects

Why has it failed?

The governance of the transboundary waters of the Indus is based on a top down approach with a heavy emphasis on dispute resolution mechanisms. There are three platforms - Permanent Indus Commission (PIC), the Neutral Expert and the Court of Arbitration through which the Indus water basin is governed through the IWT¹⁴. Out of which only the PIC plays a role of facilitating cooperation through exchange of data. However, the PIC consists of two high level engineers from either side and they meet once a year. The remaining platforms focus on resolving differences and disputes. It had worked well in the last sixty years vis-à-vis resolution of disputes which were few and far between. However, it has failed to build transboundary water management institutions and mutual trust necessary for the long term sustainability of the Indus ecosystem especially in the current context of political mistrust between the two nations, increased demand for water due to population explosion, impacts due to climate change, overexploitation of the Indus basin, and pollution of watershed. Water crisis is an existential crisis, the current policy response through the IWT or the atleast the way it is being interpreted has facilitated zero sum thinking and appears to be inadequate in addressing current problems plaguing the two nations.

Purpose of this Report: Exploring Policy Options

The policy paper articulates that there is growing water insecurity in the Indus water basin which in turn is affecting the already complex relationship between the two countries. The report argues that major contributor to the growing water insecurity is the difference in how the water issue is framed by the two governments and the existing top – down approach of transboundary governance in the Indus water basin. The goal of the policy paper is threefold. Firstly, to analyze the conflict and understand how the two governments perceive and frame the water issue. Secondly, to analyze the constraints of the existing platforms of the current transboundary water governance mechanisms with regards to addressing current problems plaguing the two nations and how the top – down nature of the platforms has added to the growing mistrust. Finally, drawing from the analysis, the report provides a policy recommendation that helps in improving relationship between the two nations using a mutual gains negotiation approach. It also recommends establishing institutions that balances the top – down approach along with a multi-level bottom up approach with involvement of relevant stakeholders at all levels within the purview of the IWT.

Ongoing debate

In the research paper “Questioning the water wars rationale: case study of the Indus Water treaty”, the author questions the water wars rationale - countries will go to war to safeguard

their water interests. The author articulates through the case study of the Indus water treaty that cooperation is water rationale and helps to safeguard the long term water supply.¹⁵ In the Indus water Treaty: the negotiating process, the author analyzes the process that helped draft the treaty and what other contesting countries can learn from.¹⁶ The Indus Water Treaty has often been hailed as one of the most successful water sharing treaties in the world. Over the last sixty years, there have been several research papers produced that have developed a case study of the Indus water conflict and its negotiating process. However, the current narrative is questioning the sustainability of the IWT and the larger water security problem in South Asia. In the research paper, “Climate change will affect Asian water tower”, the authors discuss the impact of climate change on water and food security. Thus, impacting over 1.4 billion people who depend on the waters of Indus, Ganges, Brahmaputra, Yangtze and yellow rivers.¹⁷ In “Debating water security: emerging paradigm”, the authors discuss the evolution of different definitions of water security and state that the contemporary definition involve defining water security in a more integrated manner to include access, affordability of water, human needs that encompasses food, energy, sanitation, health and environmental security. In the context of the Indus water basin, recent articles such as “Indus Treaty: A different view”, the author calls for a constructive and cooperative approach through renegotiation of the treaty to address contemporary problems.¹⁸ In light of current political climate, recent discussions have questioned the survival of the water treaty. A UNDP report titles “Development advocates Pakistan”, has stated that the recent scarcity in the basin has put the agreement under strain and survival of the water treaty as weak¹⁹.

Recent research papers and articles have looked at the water issue in the Indus water basin in isolation and articulated about current challenges that need to be tackled. However, very few literatures have looked at the barriers to negotiations and how the two countries frame the water issue differently. Also, recent literature does not approach the water problem in the Indus from an institutional perspective. The following sections attempts to answer some of the missing elements in the current narrative of the conflict in Indus water basin through a mutual gains approach and the water diplomacy framework.

Data and Research Methodology

The report uses the Indus Water Treaty (IWT), newspaper articles and research papers written on the topic as data for the conflict and governance analysis.

The research methodology starts by analyzing the relationship between India and Pakistan to understand how the water problem is framed then proceeds to analyze the governance structure and finally provides policy recommendation using the water diplomacy framework to help with the negotiation strategy using the mutual gains approach and addressing the inadequacies in the current water governance mechanism.

Framework used

Water Diplomacy Framework (WDF)²⁰

The management of the Indus water basin is through the IWT where the governance infrastructure only caters to dispute resolution mechanisms. The IWT does not facilitate cooperation and thus seems to be unable to address problems related to climate change, population increase, increased demand of water, water quality, and lack of local representation and overexploitation of water resources. In addition, the dispute resolution mechanism includes engineers, high ranking secretaries and government officials. Over the years, several local communities have been affected either through displacement caused by climate change or by constructions of projects based on the guidelines of the IWT. Such a top down approach of transboundary water governance at the nation state level may not be a sustainable to address these issues. An integrated and an inclusive approach based on the tenets of the water diplomacy framework provides a way to create a sustainable transboundary governance structure.

According to the WDF, transboundary water governance is crippled by the assumption that water is a fixed resource and that it must be divided among bordering countries. Thus, an environment of variability due to impacts of climate change and increased demand due to population growth promotes a zero sum mindset²¹. The WDF states that if water can be thought about as a flexible resource where through cooperation and problem solving can engineer re-use of water to meet competing demands. Another crippling aspect that hinders successful transboundary water governance structures is based on the concept of uncertainty. A rigid treaty like that of the IWT does not account for adaptive management. Thus, the WDF states that the water networks are open and continuously changing. Water governance structures should take into account the uncertainty and nonlinearity nature to facilitate adaptive water management. The WDF states that water crosses and intersects different domains - societal, natural and political at different scales - institutional, space, time. Assuming that there are hard boundaries amongst these domains can hinder solving complex water management problems. The WDF calls for involvement of all stakeholders at every decision making step be it in framing of the problem, in monitoring or in implementation in a professionally facilitated environment. Finally, the WDF advocates for a mutual gains approach to create value that can not only help in solving problems but also help build trust²².

Organization of the report

This section has given readers a brief overview of the water insecurity problem at the borders of India and Pakistan by questioning the top – down transboundary water governance structure as a primary promoter of mistrust and inefficiency in dealing with current problems. The

section also delves into the current governance structure, ongoing debates and a proposed policy framework to address the above highlighted issues.

The remaining sections of the report is divided into four sections – conflict analysis, governance analysis, findings, policy recommendations and references. The conflict analysis section will begin by describing the complex relations between India and Pakistan through historical and political context acting as a driving factor in harboring mistrust between the two nations. The section further argues that the mistrust has percolated into transboundary water governance of the Indus water basin. It also presents the current positions and interests of the two major stakeholders – India and Pakistan thus helping better understand how the water insecurity is farmed. The governance analysis section analyzes the current water governance mechanisms by exploring different platforms of engagement and their interaction or lack there off between India and Pakistan as described by the IWT. The section explores how the current water governance structures is suited to handle disputes and differences by analyzing two major controversies related to construction of dams and problems related to pollution and climate change. The findings section reflects on the conflict and governance analysis and identifies barriers to developing an effective negotiation strategy and inadequacies of the existing water governance mechanism through the IWT. The policy recommendation section illustrates how water diplomacy framework can be applied to the current water governance structure to better address the problem. It also advocates for creation of a multilevel water governance structure that balances a top down approach with a participatory governance structure at the local and lateral level.

Conflict Analysis: India and Pakistan

This section provides an analytical foundation in understanding the water conflict from a neutral perspective. It analyzes conflict history by briefly describing the nature of the conflict, then proceeds to identify significant parties to the conflict and then proceeds to illustrate the perspectives of each parties by analyzing each parties' position and interests. The conflict analysis section establishes how the two countries – India and Pakistan view the water conflict and frame the issues during negotiations.

Conflict Definition

Indus water basin comprises of six rivers Indus, Jhelum, Chenab, Sutlej, Beas and Ravi. The Indus River originates from Tibet, flowing through India, Pakistan and Afghanistan carrying glacial waters and eventually emptying into the Arabian Sea. Pakistan accounts for 60 percent of the catchment area of the Indus basin, India about 20 percent, Tibet about 15 percent and Afghanistan about 5 percent²³. These rivers flow through the Indian Territory and then into Pakistan, thus making India the upper riparian country and Pakistan, the lower riparian country. The transboundary waters of the Indus and its tributaries are shared by India and Pakistan regulated by the Indus water treaty (IWT) that was signed in 1960. According to the treaty India has exclusive rights to Ravi, Beas, Sutlej, and Pakistan has rights to Indus, Jhelum, and Chenab²⁴.

Since the 1960s India and Pakistan have fought three wars and the Indus water treaty has prevented water to be used as a tool in the conflict. Thus, the IWT is usually cited as one of the world's most successful water sharing undertaking²⁵. Currently, rapid economic development through the construction of irrigation infrastructure, population growth and pollution of watershed has hampered distribution of water supply. Thus, escalating tensions between the two nations. Overexploitation of water resources coupled with climate change impacts such as melting of glaciers and irregular monsoons, has posed a serious environmental security challenge. Any sort of water stress is an existential crisis and as the Indus water basin affects over a billion people, there is a fear that these recent developments can trigger a conflict between the two nations. The Indus basin is also seen as a key strategic interest as its headwaters originate from Kashmir which is a region of dispute between the two countries. In light of current events of terrorist activities that has affected India and allegedly perpetrated from across the border, Indian Prime Minister Narendra Modi said "Blood and water cannot flow at the same time"²⁶. It appears from his statements that water could be used as a diplomatic weapon in the future. Lack of trust between the two nations due to historical and political reasons, inefficient institutional mechanisms and a rigid nature of the IWT has proven to be a huge roadblock for successful transboundary water governance.

Significant parties to the conflict and current context

Indian Government:

On 18th September 2016, four gunmen ambushed an Indian military base in Uri, a small town located in Kashmir near the line of control. Seventeen Indian soldiers were killed in an attack in what was reported as the deadliest attack on the security forces in the valley in two decades²⁷. India blamed terrorist groups based in Pakistan for the attacks²⁸. Post Uri attacks, the current government led by Prime Minister Modi has made public announcements about setting up an inter-ministerial commission to review the IWT²⁹. The government has also suspended the Indus water commissioners' meetings indefinitely³⁰. The commissioners on either side of the border met regularly in the last 69 years to discuss potential disputes.

Pakistani Government:

The Pakistani Government initially reacted with a degree of restraint upon learning about India's stance on the water issue. There was no official response from the government, but Sartaj Aziz, the Advisor on Foreign Affairs to the Pakistani Prime Minister said if India were to pull out of the treaty, Pakistan will proceed to the International Court of Justice³¹. As of today, Pakistan has stated that the abrogation of treaty will be considered as an act of war³². The water conflict is being used to entice tensions by groups on both sides of the border. Hafiz Saeed leader of Jama'at-ud-Da'wah, a terrorist organization has vowed water jihad against India, blaming India for the flood crisis in Pakistan³³. The Pakistani Government recognizes that being a lower riparian country, the leverage lies with India. Pakistani Government understands that the water from Indus forms the lifeline of their economy and is far more important to Pakistan than to India. They have requested the World Bank who were the arbitrators of the original treaty to mediate in the dispute.

Mediator:

The World Bank acted as a mediator between India and Pakistan post partition to develop the Indus Water Treaty³⁴. Amid reports of India considering to review the IWT, Pakistan has approached the bank to help settle the dispute. The bank has agreed to fulfill its obligations in a timely fashion under the purview of the treaty while remaining neutral³⁵. They play an important role specified in the treaty vis-a-vis establishment of court of arbitration to settle disputes and facilitation of appointment of three judges. There are also reports of Pakistan having approached the International Court of Justice to help settle the matter but no details were available regarding these claims.³⁶

Perspectives of the Parties and Framing of the issue

Indian Government:

India's framing of the issue is illustrated in Prime Minister Modi's recent statement after the Uri attack "Blood and Water cannot flow at the same time."³⁷ As the treaty is based on mutual trust and cooperation, India believes that the treaty should be revisited in the light of current events of terrorism allegedly perpetrated by forces originating from the Pakistani side³⁸. From the Indian perspective, the areas of interest are twofold.

First, IWT treaty acts as a bargaining chip for India to use against Pakistan in other matters such as border disputes in Kashmir and terrorist activities. As Indus River originates in the Kashmir region and the fact that 90 percent of Pakistan's agricultural economy depends on the Indus basin,³⁹ India expects to use its upper riparian status to control the flow of water and use it as leverage during negotiations on important matters related to Kashmir.

Second, India feels it has underutilized its requirement as entitled in the treaty.⁴⁰ Even though the rivers flow from India to Pakistan, the IWT grants Pakistan control to 80 percent water in the entire basin. This reason justifies India's need to review the terms of the treaty⁴¹. India can utilize about 20 percent water on the western rivers (allocated to Pakistan). India is allowed to construct Run-of-River (ROR) power plants with specific design constraints on western rivers for power generation and is allowed to use specific amounts of western river water for domestic non-consumptive purposes as mentioned in the treaty⁴². Some of the proposed projects along western rivers have been shelved due to Pakistan's objection. The Indus water basin constitutes a major source of water to the Northwest regions namely Punjab, Rajasthan and Haryana. Punjab produces about 20 percent of India's wheat making the basin a significant contributor to India's agricultural needs⁴³. During current times of droughts, there have been talks to completely maximize the opportunity afforded by the treaty even if it impacts Pakistan gravely.

Pakistani Government:

Pakistan has framed the issue of conflict on the context of International Law. The bone of contention has been India's construction of dams and hydro projects on the rivers allocated to Pakistan. Pakistan has constantly accused India of constructing projects that violate the terms of the treaty that affect the water supply in Pakistan. In recent times amid reports of India reviewing the Indus water treaty, Pakistan has approached The World Bank to mediate the issue. Pakistan's position has been to exercise the terms of the signed treaty and prevent India from building dams and hydro projects on the western rivers that would reduce the quantity of water flowing into Pakistan.

Pakistan's interest has been to ensure continued access to water originating from the western rivers of the Indus. If Pakistan's access to the western rivers were cut off or even reduced, the impact on agriculture, water security and human consumption would be catastrophic. To illustrate the point further, about 90 percent of Pakistan's food and 65 percent of its population depend on agriculture along the banks of the Indus basin⁴⁴. Recent reports from the

International Monetary Fund states that the per capita water availability is at the scarcity threshold whereas the water intensity rate is one of the world's highest⁴⁵. Thus making Pakistan one of the world's most water stressed countries in the world.

In conclusion, the critical take away from this section is that India and Pakistan frame the water issues differently. India associates the water problem at the Indus water basin with other foreign policy issues where as Pakistan views the water problem in isolation, independent of other burgeoning issues with India. From the perspective of humanitarian security and economy, Indus water basin is more crucial to Pakistan than to India. According to a negotiation theory, an agreement can be achieved when there is an overlap between both parties range of acceptable outcomes - Zone of Possible Agreement (ZOPA). If the range of outcomes from both parties is large, it is easier to come to an agreement. In the current context of India and Pakistan, a major barrier to negotiations is the lack of range of possible outcomes acceptable to both parties. An effective negotiation strategy is to develop a larger range of possible outcomes by focusing on each party's interests and not positions, and identifying an overlap in each party's ZOPA to advance negotiations. Successful negotiations will assist in laying a strong bedrock in establishing a sustainable transboundary water management institution.

Governance Analysis: Indus Water Treaty

The previous section focused on the mismatch of interests' of India and Pakistan vis-à-vis framing of the water conflict issue. Thus resulting in an impasse on negotiations and further adding to the growing mistrust. This section focuses on the limiting effect of the current water governance structure and its inability to address current problems. The transboundary waters of the Indus and its tributaries are regulated and governed through the IWT. Especially in light of growing mistrust between the two governments, IWT has emerged as a point of contention. This section explores the existing platforms for water management as part of the IWT. It further explores the interactions of the existing platforms by looking at how the current institutions handled the two major dam disputes and analyzes the inadequacies of the existing platform to prevent such disputes in the future.

Existing platforms for management of transboundary waters of the Indus

Permanent Indus Commission (PIC) ⁴⁶

Within the confines of the IWT, PIC was created as a permanent bilateral commission consisting of officials from India and Pakistan. It was created to define, manage and implement the goals and objectives of the IWT. The PIC consists of two commissioners from each country. They are usually a high ranking engineer in field of hydrology and water use and meet atleast once a year. The IWT instructs the commission to perform the following functions:

- To furnish and exchange information provided for in the treaty
- To analyze and report any issues related to the development of the Indus water basin
- To act as a first stage of the dispute settlement mechanism within the provisions of the treaty
- To undertake a general tour inspection of the Indus water basin every five years, to ascertain the facts connected with the development projects on the rivers
- To undertake a prompt inspection of the Indus water basin at the request of either of the commissioners to ascertain the facts connected with the development projects on the rivers
- To submit a report every year to both the governments on the work that has been done related to the Indus water basin

*Neutral Experts*⁴⁷

The IWT describes distinct procedures to address different types of issues. If there are any questions related to interpretation, application or breach of the treaty, the PIC is authorized to

attempt to answer it. If the PIC is unable to answer the questions or if there is no agreement between the two commissioners regarding the question, depending on the type of the difference illustrated in the IWT a neutral expert can be appointed upon the request of either or both commissioners. According to the provisions of the treaty, a neutral expert, usually a high ranking engineer, can be appointed to address differences related to engineering such as determination of components of water available or issues related to construction, management and remodeling of drainages.

However, if the differences that arise in the PIC is not under specific provision (usually related technical aspects as specified above) of the IWT or if the neutral expert believes the matter should be considered as a dispute, at the request of either or both commissioners can submit a report of the dispute to the respective governments. The governments can then choose to address the dispute by appointing their negotiators. To assist in these negotiations, they can choose to enlist mediators acceptable to them.

Court of Arbitration⁴⁸

There is a provision in the IWT to establish a seven member court of arbitration to address and settle disputes that may arise. The court can be instituted upon agreement between the two parties, at the request of either of the parties if the disputes are not seen be resolved through mediation or negotiations and at the request of either of the party if one party is seen to be unduly delaying the negotiations. The role of the World Bank is limited to appointing individuals in certain roles requested by either or both parties.

Track two dialogue

The governments of India and Pakistan have not officially organized or set up a meeting of experts gathering to inform the management of transboundary management of Indus waters. However, there was a track two water dialogue amongst key experts, policymakers and other stakeholders from both side which was held by the South Asia Center of the Atlantic Council. The committee produced a report titled "The Way Forward" and submitted it to the governments of India and Pakistan⁴⁹. The report discussed current challenges affecting management of transboundary water resources such as global warming, energy shortage and increased demand of water. They identified gaps in the Indus Water Treaty and called for increased cooperation on water resource management⁵⁰. They also recognized that long term water, food and energy security for both states should be based on cooperation on water resources. The suggestions made by the unofficial track two dialogues does not seem to have made its way into the political discourse.

Interaction amongst platforms for management of transboundary waters of the Indus

The Permanent Indus Commission (PIC), Neutral experts, appointment of officials through governments on ad-hoc basis, court of arbitration and the track two dialogue are the various platforms through which the Indus water basin is managed. However, the PIC is the only platform where commissioners are authorized to collaborate on the management of the Indus water basin. However, the collaboration of data is limited to exchange of information, producing annual reports and act as a preliminary dispute resolution system. In addition, the PIC consists of only two people who meet only once a year. The track two dialogue was an unofficial attempt to get together relevant stakeholders such as diplomats, officials, experts, civil societies, academics from both sides of the borders got together to discuss all aspects of the Indus water. They identified gaps in the Indus Water Treaty and called for increased cooperation on water resource management. They also recognized that the long term water, food and energy security for both states should be based on cooperation on water resources. Even though the “way forward” report was submitted to the two governments, it did not find its way to the PIC. There was no interaction between the only governing body of the transboundary water management committee and the track two dialogue report. The remaining platforms are strictly related to dispute and difference settlement.

The interaction amongst various platforms can be analyzed by exploring its effectiveness during disputes. Having a critical dispute resolution system is important for a sustainable transboundary water management system. The IWT historically has provided a proven mechanism through which India and Pakistan have been able to resolve differences even amidst three major wars. The interaction between the PIC and the dispute resolution mechanisms can be explored through two cases - the Baglihar dam and the Kishenganga project.

The Baglihar Dam Controversy



Figure: Baglihar Dam

Source: <https://www.thethirdpole.net/2016/01/16/environmental-assessment-for-jammu-and-kashmir-dam-breaks-all-rules/>; Image by: ICIMOD

As illustrated in the IWT, even though Pakistan has been allotted the western rivers of the Indus Water Basin - Indus, Jhelum, Chenab, India is authorized to construct run of the river projects along these rivers as they originate from the India. However the projects along these western rivers have a certain design restrictions to ensure limited reservoir capacity and flow control so that it does not affect the amount of water that flows into Pakistan. The Baglihar Dam is a hydropower project along the river Chenab (allotted to Pakistan). The project plan was developed in 1992, was approved in 1996 and construction began in 1999.⁵¹ As part of the IWT, India is instructed to inform Pakistan six months in advance about the construction of any engineering work that can lead to interference of water flow. India provided an advance notice to Pakistan in 1992 when the project plan was being developed about constructing a hydropower plant in Baglihar. The Pakistan government raised objections regarding the design parameters of the projects and claimed that it violated the treaty. Pakistan claimed that the design of the project was such that it provided India with excessive ability to control the flow (accelerate, decelerate and block) of the Chenab river and thus providing India with a strategic leverage at times of political tension. Following the concerns raised by Pakistan, next seven years saw the two countries exchange data regarding the project through the PIC as instructed by the IWT. As exchange of information did not yield any compromise, in May 2000, first

structured discussion of the PIC took place regarding the project. However, series of discussions between the commissioners raised several questions that remained unanswered.

As part of the next steps in line with the IWT, Pakistan gave a notice to India regarding moving to the World Bank for appointing the Neutral experts. India responded by proposing a bilateral negotiations at the secretary level between the two countries to solve the matter. Pakistan agreed to it with three conditions - a. Stoppage on construction at Balighar b. Authorization to inspect the site c. Time bound resolution. These conditions were discussed at several round of meetings at technical and official levels. Due to lack of progress in the negotiations, Pakistan put in an official request with the World Bank to appoint a neutral expert. After making sure both the governments had taken all the necessary preliminary steps to resolve the issue, the World Bank decided to appoint Professor Raymond Lafitte, a Swiss Civil Engineer, as the Neutral expert to decide upon the matter.

Professor Lafitte conducted series of meetings and site visits along with the delegation from the Pakistan's ministry of water and power. After two years of appointing the neutral expert, Professor Lafitte submitted his final decision in February 2007.⁵² The decision was in favor of building the Baglihar dam with some minor technical changes that addressed some of the concerns of Pakistan such as reducing the height of the dam by 1.5 meters and increasing the power intake tunnels by 3 meters, thereby reducing the flow control capabilities of the previous design. The final decision rejected several of Pakistan's objection by stating that the design conformed to the engineering norm of the day. Pakistan expressed disappointment but agreed to accept the verdict. In June 2010, India and Pakistan resolved the final issue relating to initial filling of the Baglihar dam at the meeting of the two commissioners of the PIC. The matter was considered resolved and Pakistan agreed to not raise the issue further⁵³.

Even though the matter took over a decade to be completely resolved, the IWT enabled the two countries to work through it amidst the Kargil war in 1999, attack on the Indian Parliament in 2004 and Mumbai terrorist attacks in 2008. The IWT has enabled both nations to work through even during the toughest periods. However, it is important to identify the core reason of constant suspicion. Former secretary of Pakistan's Ministry of Water and Power articulated in the South Asian Journal in light of the Baglihar dam controversy that the core reason for dispute arises from the mistrust by the Pakistan's government on India's intention.⁵⁴ Pakistan is worried if India builds projects along the Indus water basin with ability to store water, it can have the leverage to control its flow as and when the political situation changes. The IWT's detailed and relatively unambiguous text has enabled different dispute resolution platforms to interact efficiently to help resolves disputes even during the most difficult periods. Perhaps the difficult periods that the two countries faced in the past did not require trust which is the bedrock on which cooperation is based to play a big role to resolve disputes. However, cooperation and trust has become imperative to tackle and resolve matters such as impacts due to climate change that the countries are facing currently and will face in the future.

Kishenganga Hydroelectric power plant

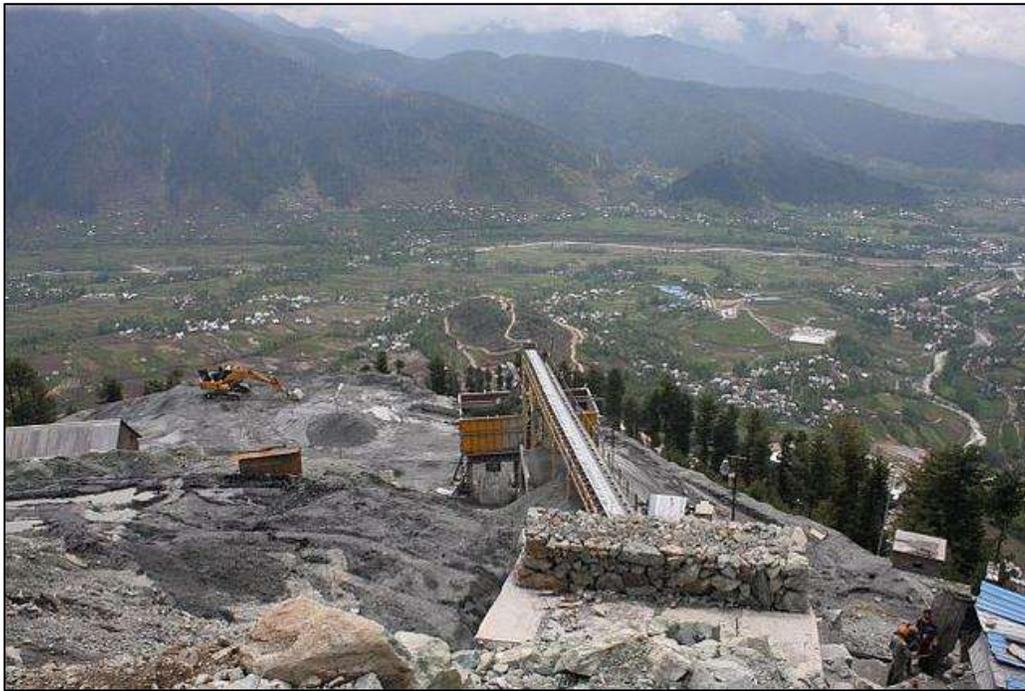


Figure: Kishenganga Hydroelectric Power Plant

Source: <https://ejatlas.org/conflict/kishanganga-hydro-electric-power-project-khep-india>

The second major dispute that is currently being debated is the hydroelectric run of the river power plant that is being constructed along the banks of the river Jhelum (One of the tributaries of the Indus allotted to Pakistan according to the IWT). Pakistan is constructing a hydroelectric power plant (Neelum - Jhelum) of its own at the downstream of the tributary Jhelum.⁵⁵ It is worried that India's hydroelectric power project in the upstream part of Jhelum can impact the flow of the river which in turn can impact the Neelum - Jhelum power plant.

The Kishenganga project is expected to divert water from the Neelum river to the power station which in turn will be fed back into Jhelum river. The estimates of diversion is expected to be in the range of 10 percent to 33 percent. In any case, diversion can result in reduction of power generation vis-a-vis Neelum - Jhelum hydropower plant. As both the Indian and the Pakistani power plants intend to divert water to supply water, there is an ecological danger to the Neelum valley⁵⁶. In light of the reduced potential of the Pakistani power plant, the Pakistani government in 2010 decided that there are differences and disputes regarding the validity of the Kishenganga hydro project which could not be resolved through the PIC and bilateral negotiations and thus appealed to the Permanent Court of Arbitration (CoA) at Hague to resolve the matter. The CoA initially had stayed the construction of the dam that would inhibit the restoration of the river, but allowed India to continue with the tunnel and power plant in case the CoA would rule in their favor. In 2013, CoA reached a verdict where in it allowed for the construction of the Kishenganga dam. Thereby allowing India to divert water from the

western rivers contingent to maintaining a 9 m³/s natural flow of water⁵⁷. Thus, through its verdict the CoA upheld India's main contention of diverting waters of the western rivers (allotted to Pakistan) in a non - consumptive way for optimal power generation⁵⁸.

It would seem that all the provisions in the IWT was followed and the dispute was resolved, however in 2016, Pakistan decided to approach the CoA again regarding Kishanganga and Rattle rivers projects specifically on the design aspect by bypassing the existing platforms of PIC, bilateral negotiations and neutral experts. India challenged this move by calling it violation of the IWT as required platforms were not followed⁵⁹. Initially the World Bank accepted the appeal made by the Pakistani authorities to set up a CoA. India, in reaction, questioned the neutrality of the World Bank in the matter as India's request of having a neutral expert was not accepted. As appointing the neutral expert is part of the IWT provision, India claimed that appointing arbitrators instead is a violation of the treaty. The World Bank in reaction then decided to proceed with both provisions of appointing a neutral expert and CoA, which India again shot down saying it violates the IWT. The strain on the sustainability of the IWT in 2016 was intensified further with the attack on Uri army camp from militants from the Pakistani side of the border. The Modi government claimed to maximize the permissible limit of water that can be used from the western rivers as specified by the IWT which can result in more such disputes in the future⁶⁰. As it stands currently, the World Bank decided to pause the two separate processes and urged the two nations to work together to uphold the tenets of the IWT. In January 2017, the Pakistan government asked India to suspend the two projects at Kishenganga and Rattle rivers. The Prime Minister's office in India has directed the power ministry and the Jammu and Kashmir Government to expedite the constructions of the two projects. The former foreign minister of Pakistan Shah Mehmood Qureshi has said the water dispute with India has reached alarming proportion that it could even dwarf the Kashmir issue^{61,62}.

India and Pakistan are locked in a water conflict. The two major disputes of Baligar and Kishenganga show that disputes between India and Pakistan is taking longer and harder to be resolved. Bilateral negotiations have not yielded results due to lack of trust and the matter is becoming increasingly internationalized. As more and more dams and projects come up due to increased demand on the Indian side, the tension between the two nations will escalate. Also, there is a case of projects affecting the region's economy with issue of land clearance and ecological impacts. Civil society and environmental organizations are asking for the review of the IWT. The IWT or the way in which it is being interpreted seems to have run its course. The top down approach of water management with only focus on dispute resolution and not cooperation has challenged the water security of the region^{63,64}. It has failed to build efficient transboundary water management institutions and mutual trust necessary for its long term sustainability.

Reflection from the conflict and governance analysis

Drawing from the conflict and governance analysis, the following section reflects on the barriers to developing an effective negotiation strategy and the limitations of the IWT to address current problems.

Barriers to Negotiations

Strained Relationship

India and Pakistan share historical, linguistic and cultural connection. However, the relationship between the two countries over half a century has been hostile, sometimes violent and viewed with suspicion. The relationship has been marked by partition in 1947, the Kashmir dispute and three military conflicts. At the turn of the millennium, there were attempts from both sides to improve the relationship. However, these attempts were thwarted by numerous terrorist attacks. In recent times, the Government of India and the Government of Pakistan have made attempts to improve bilateral talks. These positive moves were again set back by terrorist attacks in Pathankot and Uri on the Indian side of the border.⁶⁵⁶⁶The current relationship of distrust is spilling into the water dispute. A strong working relationship amongst parties is one of key elements for successful negotiations.⁶⁷

On 18th September 2016, four gunmen ambushed an Indian military base in Uri, a small town located in Kashmir near the line of control. Seventeen Indian soldiers were killed in an attack in what was reported as the deadliest attack on the security forces in the valley in two decades.⁶⁸ India blamed terrorist groups based in Pakistan for the attacks.⁶⁹ This was second such attack in the year 2016 after the incident at Pathankot where armed groups attacked an Air force base killing three security personnel. Post Uri attack of September 2016, India has refused to engage in bilateral or multilateral discussions with Pakistan till they take actions towards tackling the threat of cross border terrorism. India has taken a number of steps that demonstrate its intent to ban all Pakistani actors, artists, technicians, athletes from working within the country and also threatened to review the Indus Water Treaty.⁷⁰⁷¹In response Pakistan has sought to ban all Indian television, radio programs and approached the World Bank (Official Arbitrators consigned by the treaty) in light of possibility of India breaking the International law.⁷² India has also tried to isolate Pakistan internationally by refusing to participate in the 19th SAARC summit (South Asia Association for Regional Cooperation) in Islamabad that was going to take place on 9th and 10th of November 2016 in light of incidents of cross border terrorism perpetrated from Pakistan.⁷³ Though this hard stance taken by the Indian government has carried favor with the constituents, the actual drive of isolating Pakistan internationally has not yielded tangible results. Historically this stance of no talks till Pakistan takes unilateral actions against terrorists operating from within Pakistan has not resulted in any tangible outcome as seen after the Mumbai attacks of 2008.⁷⁴

This “No Talk” policy illustrates India’s inability to recognize the importance of improving relationship in advancing negotiations. Coupled with continuous national rhetoric against Pakistan has not allowed India to develop sustained strong relationship that is essential for any negotiation process.

Positional Bargaining resulting in stubborn stance

India’s decision to not engage with Pakistan and refusing to participate in negotiations illustrates India’s position of “NO TALKS” on any issue be it about water or of Kashmir. India seeks to combine multiple issues that plague the two nations and use water as a bargaining chip to gain leverage. On the contrary, Pakistan’s position is that India should respect the Indus water treaty that was signed in 1960 and not seek to combine different issues together. The two nations have continuously engaged in positional bargaining even before the negotiations have begun where both parties bargain from their opening positions. Positional bargaining usually produces inefficient outcome as the process can fail to take into account both parties’ interests. It has also encouraged stubbornness and further harmed the relationship. According to negotiation theory a good outcome can be reached if the negotiations focuses on both parties’ interests rather than positions. Focusing on interests can not only help understand the driving position of the parties but can also help generate value creating options.⁷⁵

Domestic Constraints and Projection of Power

The previous government was criticized by the public, media and the current ruling political party for being too soft with Pakistan in light of series of cross border violations, terrorist attacks and interference in Kashmir. The current government was elected in 2013 with a mandate of providing strong leadership that was lacking in the previous regime. Prime Minister Modi’s standing amongst the Indian citizens has been enhanced after the Indian Government authorized the Indian army to carry out an unprecedented surgical strike on the other side of Line of Control in response to the Uri attack. The anti-Pakistan rhetoric and hard stance such as no talk policy has been widely accepted by the public and some sections of the media. The ability to develop range of possible outcomes or even take a step towards agreeing to negotiate is constrained due to politicization of the water issue. This has been further exacerbated when PM Modi gave a press statement post Uri attack saying “Blood and Water cannot flow at the same time”.⁷⁶ The hard stance has constrained the Indian Government from moving away from the original position in the fear that they would face negative criticism from the public as well as the opposition parties. Any steps that they take towards negotiations can weaken PM Modi’s position of power at the domestic level.

Pakistan has historically denied harboring terrorists, promoting and showing tolerance towards cross border terrorist activities that affect India. Therefore, any inclination towards wanting to discuss terrorism would be seen as succumbing to pressures of India which might affect their standing amongst their domestic constituents. Hafiz Saeed leader of Jama'at-ud-Da'wah, a terrorist organization has vowed water jihad against India, blaming India for the flood crisis in Pakistan.⁷⁷ Currently these non-states actors have been focused on India. Any discussion of

terrorism with India will result in backlash where these actors might rally the public as well as carry out acts of violence against the Government of Pakistan. Secondly, Pakistan military has always sought to play a political role in running the country which has resulted in four military coup. Any discussion about terrorism might further distort the military-civilian nexus that exists in Pakistan. Finally, Pakistan has always sought to tackle different issues with India in isolation. If Pakistan decides to merge issues of water with terrorism, there is a fear that it might set a precedent which might spill over to the all-important issue of Kashmir. From the Pakistani perspective, engaging with India on matters related to terrorism through official channels will weaken the already fragile control it has over its domestic matters. An effective negotiation strategy would be to evaluate domestic constraints on both sides and consider in negotiating through unofficial channels.

Power Asymmetry

Pakistan inherited a mature military, civil services, judiciary and an inexperienced democratic government post-independence from the British and partition from India in 1947. These mature institutions have had a massive impact on the governance of the state. Specifically, the military forged alliances with political elites and industrialists and played a major role in managing the affairs of the country. Subsequently this has resulted in four military dictators governing the country post-independence.⁷⁸ In current context, the Pakistani military is believed to be heavily involved in shaping the foreign policy. This hypothesis is given further credence to by the fact that there is currently no appointed foreign minister of Pakistan.⁷⁹

Since May 2015, Prime Minister Nawaz Sharif and the Government of Pakistan responded positively to PM Modi's initial show of friendship by attending his swearing in ceremony and showing intention to improve relations. This positive intent was simultaneously met with cancellation of National Security advisor level talks and rise in violations across the line of control. It is widely believed that the army chief shapes the policy towards India no matter the positive intentions shown by the Government of Pakistan.⁸⁰ Historically whenever there is a positive development between the civilian governments there are instances of ceasefire violations and cross border terrorism against India orchestrated by the Pakistan military and the intelligence agencies. If these claims are to hold true it implies that the Pakistani military will not allow its civilian counterpart to go to the negotiation table on India's term. An efficient negotiation strategy would be to recognize the power asymmetry that exists within Pakistan. Thus it would be prudent to engage the Pakistani military on matters of terrorism along with government especially at the time when Raheel Sharif, who took a hard stance against India and considered India to be the number one security threat to the nation, has recently retired as the Pakistan Army Chief.⁸¹ The new Army chief Qamar Bajwa is known to keep a low profile unlike his predecessor and is believed to have moderate views towards India. This is illustrated by his statement where he said "Militants and not India pose number one threat to Pakistan".⁸² This recent development provides further impetus to notion of productively engage with an institution that has historically been non cooperative on matters of terrorism.

Role of China as a Spoiler

India and China have shared a checkered history that goes back 2000 years. In current times, China and India are two of the fastest growing and populous countries in the world. Even though post 2000s both countries have seen a rapid growth in economic and diplomatic ties, their relationship is also characterized by three military conflicts, trade wars and several border and water disputes.⁸³ Both nations view each other with suspicion. On the contrary, Pakistan and China relationship has soared over the years. Their relationship is characterized by economic, defense and nuclear cooperation.⁸⁴ Over the years projects such as 150 billion dollar China - Pakistan Economic corridor (CPEC), joint construction of deep sea port at Gwadar to harness energy and collaboration in setting up of commercial nuclear power in Punjab has bolstered the relationship between the two nations.⁸⁵ Both China and Pakistan have fought military wars with India and squabbled over disputed territories in the Himalayas. Thus the two nations see their relationship go from of that friendship to a more of a strategic partnership vis-à-vis India.

India's newly formulated aggressive policy towards Pakistan post Uri attack such as surgical attacks across line of control and talk of reviewing the Indus Water treaty unilaterally was met by a subtle but an aggressive response from the Chinese. Within days of India announcing the need to review the Indus Water treaty, China announced that it would build an expensive hydroelectric project along the banks of the river Brahmaputra also known as Yarlung Tsangpo in Tibet.⁸⁶ The river Brahmaputra originates from China and flows into India, Bhutan and Bangladesh. As there are no bilateral or multilateral water sharing treaties amongst the four nations, any projects such as building of dams or hydroelectric projects can serve as a severe security problem to India and other lower riparian nations. There is also a discussion in China about rerouting the Brahmaputra River which can cause a devastating effect on the India's northern plains either through floods or reduced water flows.

China has constantly reiterated that in case of any foreign aggression, China will extend its full support towards Pakistan.⁸⁷ The timing of the announcement of building dam along the Brahmaputra river show that China has subtly hinted that the Indo-Pak relationship is mired in a complex geopolitical nexus. Thus if India is seen taking advantage of a downstream country, China can follow India's example and develop projects along the Brahmaputra river which might have disastrous effect on eastern part of India. An effective negotiation strategy would be to evaluate the effects of potential spoilers that might impede negotiations.

Inadequacies of the current water governance mechanisms

Zero Sum thinking:

The management of the transboundary waters of the Indus is limited to dispute resolution mechanisms. The main problem with the management of the Indus is that it is not based on governance, institutions and cooperation. The IWT states that the waters of the Indus and its tributaries are to be shared. However, the word 'Sharing' is a misnomer. While mediating between India and Pakistan, the World Bank had initially pushed for a treaty where the rivers

would be shared between the two countries. However, due to lack of trust, the proposed treaty draft was shot down. The only acceptable solution to both parties was splitting of rivers - three apiece where both nations are not required to cooperate to harness the waters of the Indus. Thus the IWT is a treaty of Division rather than Cooperation. Both the countries have had many disputes related to the Indus since 1960. The disputes invariably have been about 'WHO' gets 'HOW MUCH' water. Even though there are mechanisms to resolve disputes, the trust factor is absent. Over the years, the two countries have not been able to resolve the disputes bilaterally and the issue seems to be increasingly internationalized. The latest dispute of Kishenganga and Rattle projects are yet to be resolved and threatens the water security of the region. This zero sum mindset brought about by the very design of the IWT has not facilitated cooperation and thus not helped in building trust between the two countries. The current system of management has rendered the IWT unsustainable.

Increased water demand and reduced water availability:

India has been facing the worst water crisis in the last four decades. Two successive years of drought has pushed about 330 million people in India into a sustained period of acute water shortage.⁸⁸ The World Bank estimates that India's per capita water availability is on a decline and is predicted to be half of what it is today by the year 2050.⁸⁹ If the prediction comes true, India will move into the water scarce category from the existing water stress category. Further, the World Bank report called the High and Dry: Climate Change, Water and the Economy in 2016 warned the Indian government that countries that lack a sufficient amount of water are likely to see a fall in GDP by as much as 6 percent by the year 2050.⁹⁰ According to the Central Water Commission (CWC), the water resource potential of the country is at about 1869 billion cubic meters a year as compared to the average annual usable water which is at 1123 billion cubic meters a year. The per capita availability of water has reduced from 5000 cubic meters in 1951 to 1600 cubic meters in 2011, a decline of threefold over the last 60 years. It is expected to further reduce by the year 2050 due to population growth, agriculture and energy industries).⁹¹ Similarly, Pakistan has the fourth highest water use in the world. No country in the world is as water intense than Pakistan. In other words, water intensity rate, the amount of water consumed per GDP, is the highest for Pakistan. Pakistan has been classified as a water stressed country since the 1990s. The water availability is at 1000 cubic meters per person per year. A fivefold drop from 1947. The current water availability metric is close to some drought stricken countries in the world⁹². The Pakistan Council of Research in Water Resources (PCRWR) which is affiliated with Ministry of Science and Technology has classified Pakistan to have crossed the water scarce category in 2005 and have warned that by 2025, the country may run dry⁹³. Increased urbanization and lack of coherent water policies has increased the demand for water in both nations. The IWT is a rigid document with very little adaptive management of water resources built into it. It does not provide a roadmap for both countries regarding actions that need to be taken during the time of increased water demand. As there is no trust between the two countries, there is a tendency to blame the other country for its own lack of coherent water policies especially in the case of Pakistan. There is a desperate need to incorporate adaptive water management in the management of the transboundary waters of the Indus.

Overexploitation of water resources and cumulative impacts of irrigation projects

Due to the division of water resources and rapid population growth along the Indus catchment area, both the countries are acting according to their own self-interest by maximizing the water resource available at hand. Both nations have been building dams and irrigation projects. This mass over-exploitation of water in the river is seen to have severe damage to the environment. The management of the Indus through the IWT does not offer a provision to assess the environmental impacts of irrigation projects such as building canal systems or hydropower generation through run of the river projects. This is because the treaty was based on the knowledge of the 1960s where such projects were considered benign. The impacts of these projects are usually seen in the long run. These projects can affect natural water flow thus affecting biodiversity, availability of drinking water and fishing opportunities. These projects have also resulted in increased water logging in the Indus plains for instance about 38 percent of irrigated area is waterlogged, increased soil salinity where about 14 percent of land is too saline to use and also reduced groundwater quality.⁹⁴ Due to transboundary nature of the Indus, coordination and cooperation is necessary to address these problems.

A case study by NASA shows that over extraction of groundwater in the Indus - Indian region can impact aquifers in Pakistan.⁹⁵ One of the limitations of the IWT is that it does not talk about the maintenance of groundwater and severe environmental impacts of over abstraction. It can result in sinking of water tables, reduction of groundwater supplies and intrusion of seawater into the groundwater thus affecting water quality. The current mechanism through the IWT addresses problems only through a dispute resolution mechanism. An inclusive institutional structure with an emphasis on long term forecasting models of projects and adaptive management is necessary to address these problems.

Climate Change

The IWT was negotiated and drafted in the 1960s. Thus there was no mention of tackling the impacts of climate change. The Indus water basin is very sensitive to climate change impacts as large part of the water flow is derived from melting of glaciers. About 70 % to 80 % of the water in the Indus is provided by the Himalayan glaciers.⁹⁶ When the temperatures are high, glaciers melt and provide more water to the Indus catchment areas and when the temperatures are cold, it provides less water. Thus temperature controls the flow of water in the basin. With the warming of the climate, the glaciers will irregularly moderate the flow of the rivers thus the communities that live in the Indus catchment area will have to adjust to water variability, severe flooding and severe droughts⁹⁷. For instance 2010 and 2011 floods in the Sindh and Punjab region of Pakistan due to rise in the levels of the Indus river resulted in destruction of crops, thousands of deaths and displacement of people.⁹⁸ Rise in temperature due to global warming has resulted in evaporation of water leading to increased salt deposits which in turn, renders the land infertile. Climate Change is expected to change the monsoon patterns in South Asia thus resulting in less rainfall for India and Pakistan. Both sides of the Indus water basin's watershed has suffered from deforestation and environmental degradation. There is a rapid decrease in yearly water yield⁹⁹. Lack of institutional frameworks in place to address these

issues coupled with lack of trust between the two nations has resulted in a blame game and further escalated the tension.

Pollution of water:

Population explosion in both countries has resulted in increased agricultural and industrial programs along the Indus catchment area. The agricultural and industrial runoffs and increased deforestation has deteriorated the quality of water. The treaty does not provided for an effective watershed management programs that is needed to address the problem of storm water runoffs due to activities of people living within the watershed and urbanization projects. This is a very important aspect that needs to be addressed as the runoffs from the watersheds eventually drains into other water bodies. The water pollution has affected millions of people who live downstream and also been cited as one of the major causes for the deaths of the Indus river dolphins.¹⁰⁰

Noninvolvement of Indigenous knowledge

The management of the Indus has been top - down. The two identified stakeholders are the governments of India and Pakistan and all decisions and projects are made by the two governments. Even in the dispute resolution mechanism, the participants in the conversations include appointed commissioners who are high ranking engineers or negotiators who are high level secretaries from the two governments. There is no involvement of local voices or civil societies in the discussions. The local voices are not only important because the projects and plans affect them directly but also because local knowledge is crucial to long term sustainability of projects. The Chief Minister of Jammu and Kashmir, India Mehabooba Mufti recently remarked that because of the IWT's restriction on building dams and power plants, the state has suffered losses and has demanded the center to provide compensation¹⁰¹. India has announced that they would maximize the utilization of allotted water resource of the Indus as specified by the IWT. This would imply constructing more dams and irrigation projects. Constructing dams and irrigation project involve clearing the land area around the catchment area of the basin. This would result in displacement of thousands of people as seen in the Kishenganga project¹⁰². Similarly in Pakistan, there are discussions to build dams in the Norther part of the Indus river which can result in stoppage of flow of silt. This can seriously impact agriculture and thus farmers downstream. There is no provision in the IWT to develop a stakeholder assessment report on a regular basis to see who all will get affected and who should get the seat at the table¹⁰³.

In light of the findings, it can be concluded that the water insecurity problem is not just a result of inadequate distribution of quantity of water between the two countries but it revolves around the relationship between the two countries, framing of the issues, negotiation barriers and inadequate governance mechanisms.

Policy Recommendations

Based on the water diplomacy framework and mutual gains approach, the following recommendations will help enable the two nations to work together to develop an effective negotiation strategy and an appropriate water management strategy that involve trust building measures to generate value creating options through joint-fact finding, technology sharing and multiple stakeholder involvement.

Resumption of talks

India should consider to depart from its “NO TALK” policy and look to advance negotiations in order to achieve tangible results at the risk of upsetting the national mood. The Government of Pakistan understands that as a lower riparian country the leverage in water negotiations lies with India. It is in Government of Pakistan’s interest to jointly address the problem of water. The Indian Government can use water negotiations as bargaining chip to push the Government of Pakistan to open a back channel of communication with the Pakistan Military. This shows the Pakistani Government that the Indian Government is willing to widen their zone of possible agreement by wanting to discuss water and terrorism issue simultaneously in contrast to the previous policy of no talk till Pakistan cracks down on cross border terrorism.

The Government of Pakistan is further incentivized to open a back channel of communication as firstly its unofficial nature implies any communication between the Government of India and the Pakistan Military will not be made public and undermine Government of Pakistan’s authority and secondly army chief Qamar Bajwa who considers threat of terrorists as the number one threat facing Pakistan might agree to cooperate with India on matters of counter terrorism operations. Further creating a back channel of communication that is without the glare of the media or scrutiny of the public can provide an ideal foil to tackle the issue of cross border terrorism, enhance mutual trust, help understand each other's constraints, perceptions and interests, and eventually help create value in negotiations.

Article VII as focal point

Despite the criticism of the IWT, it has to be argued that the treaty is very detailed and has several checks and balances that has allowed for disputes to be resolved. The treaty has been very successful in preventing water to be used as a tool for conflict and rightly considered as one of most successful water sharing agreement in the world. The negotiations of the IWT took well over twelve years and was brokered by a third party. At this moment in time it is unrealistic to expect India and Pakistan to utilize all six rivers in collaboration as this will involve a complete re-negotiation of the treaty. Even though the treaty has several shortcomings. It provides for an opportunity to reinterpret it according to current and future requirements. The Article VII of the treaty allows for a provision for ‘Future Co-operation’. In current context, this

article has been pushed to the background. It is of critical importance that the treaty is re-interpreted with this article as the primary focus in developing a transboundary governance structure.

India must not treat the water problem as a secondary issue to terrorism. The problems due to climate change can get catastrophic in the near future and cannot be tackled unilaterally.

Involvement of relevant stakeholders

Stakeholder assessment which identifies primary and secondary stakeholders is necessary to achieve project goals¹⁰⁴. A stakeholder is any individual, group or institution who has an interest in utilization of the natural resource or will be affected - positively or negatively by the activities around the project area. All relevant stakeholders' participation and support is necessary for the long term sustainability of the project. The IWT identifies the Indian government and the Pakistani government as major stakeholders. The governance structure does not include non-state actors such as scientists, students, NGOs, civil society, private entities and the local people of the Indus catchment area in the water discourse. They should be encouraged to participate in the planning, design, monitoring and evaluation phase of the projects. Expanding stakeholder networks is a very important tool in building confidence as they can not only push governments to seek mutual gains but also add a new dimension to the trust building measures between the two nations.

Joint fact finding to acquire data and monitor natural processes

According to the IWT, there are institutions such as Permanent Indus Commission (PIC) which comprises of one commissioner from each country who meet annually to answer questions related to the interpretation of the IWT and promote cooperative implementation of the treaty. One of the ways to build trust is to either form a new committee or expand the existing PIC to include representatives from scientific institutions and relevant people from civil society to acquire meteorological and hydrological data, monitor river flows and gauge environmental impacts of existing engineering projects and over-abstraction of groundwater. As the scientific and technological data will be collected collaboratively, it not only ensures trust in the data but also the process of joint field work can act as confidence building measures eventually building mutual trust during the negotiations. The joint fact finding missions should be undertaken regularly to inform decision making at every level. The mutual trust developed can help generate options during negotiations.

Multi-Level water governance

The problems associated with water management are complex as they intersect different domains of natural, social and political at different levels. Having a state centric centralized governance structure can lead to isolation, policy paralysis and inefficiency. Water governance in many parts of the world is moving towards a more diffused form of participatory governance.¹⁰⁵ This form of governance can help address and manage problems efficiently at different levels. This form of participatory governance can be complemented with institutional structures operating at a more top down level. This balance of bottom up and top down systems can help achieve an inclusive sustainable water management system. In the context of transboundary management of the Indus, a top down structures already exists. This top down structures with different levels have interacted successfully to help resolve disputes over the course of fifty years. However, the bottom up approach is practically nonexistent. The only lateral platform was that of the track two dialogue amongst former administrators and scientific experts whose recommendation report did not find itself in the official water discourse. An inclusive local level governance structures involving relevant stakeholders using local and expert knowledge in conjunction with a successful top down approach can be an ideal recipe to develop a sustainable water management governance mechanism.

Water as a flexible resource

In any transboundary water negotiations, water is seen as a fixed resource that is, as a limited supply to be divided amongst nations that share a boundary. With this approach (Zero sum mindset) each participating nation's gain comes at the cost of the other nations. This results in tensions and in some cases eventually a conflict between the participating nations. In the current context of India and Pakistan, rapid population growth, urbanization programs and agricultural projects in both the countries has resulted in increased demand of water along the Indus basin. This demand cannot be met with the existing mindset. Climate change impacts such as irregular rainfalls and increased demand has put enormous pressure on the supply line of the Indus basin. Currently as it stands, water management system, especially in Pakistan is highly inefficient. There have been water losses due to leakages of pipe, collection of sediments and holes made by rodents. This is due to lack of maintenance of the canal system, and use of old technology. To illustrate the point further, Pakistan loses about 35 percent of water due to leakages.¹⁰⁶ Hence, both countries should focus on developing processes to increase 'virtual' water by improving the overall efficiency of the water management system. Improvement in the efficiency of the system can be attained through collaboration in terms of technology transfer or joint R&D research projects at a local level such as working towards irrigation sector reforms that focus towards training water administrative staff on maintenance of existing canal systems, reducing the knowledge gap between state water policy and national water policy, and discussion of water rates that can significantly affect the market forces of supply and demand, using computer based information system that can respond to sudden changes in water supply, developing collaboration between universities and research centers such as

irrigation water institute in Lahore, Pakistan council of research on water resources in Islamabad, Indian Agricultural Research Institute, Indian institute of technology in the Research and Development in the area such as development of membrane technology for treatment of water, economic use of drip irrigation and auto irrigation systems, water pricing, developing crops resistant to high saline content and that requires less water, aspects related to waterlogging and desalination technology, creating necessary goals regarding cutting down on water loss, develop quantifiable indicators to ensure smooth monitoring program which in turn can inform the managers regarding the progress of the project ,and finally development of a market based structure to facilitate buying and selling electricity across the border.

Improve Watershed Management

Agricultural and Industrial runoffs have contributed to the pollution of the watershed and water resources in the Indus basin. It is extremely important to protect the watershed as food, agriculture, tourism depends on a clean watershed as pollution in the watershed eventually drains into other waterbodies. For instance pollution generating from the Indian side of the watershed can flow downstream to water bodies that eventually flow into Pakistan. As the Indus water resource is used for drinking purposes and agricultural purposes, the two nations have to jointly discuss and address this issue as it can cause massive health hazard and destruction of wildlife. One of the most important measures that needs to be taken by both countries is to educate the people living in the watershed. Local population contributes heavily to water pollution and wastage thus adding to the inefficiency of the water management system. A local level joint committee can be instituted to collect and analyze data of the activities on watershed that cause pollution. The committee should also focus on creating best practices workshops for the local population in order to ensure a behavioral change. An informed community forms a key component of an efficient water management system. The committee should also focus on several engineering and agronomic means such as construction of embankment dam, strip cropping or pasture cropping to ensure a clean and a healthy watershed

Multilateral approach

A multilateral forum such SAARC summits can provide an invaluable platform to resolve bilateral tensions especially in the area of water management. South Asia is plagued with water scarcity, water pollution and flooding. Tensions have increased amongst India, Pakistan, Nepal, and Bangladesh. In previous SAARC summits, nations have gotten together to discuss the issue of climate change and green renewable technologies and have established centers to ensure multilateral cooperation. As the issue of water management is prevalent in all of South Asia and as water networks are interconnected, representing nations can get together to set up a center of water management to come up with mutually beneficial sustainable solutions. SAARC does provide a collaborative platforms for all nations to work together on the issue of water

management and eventually lead to stability in the South Asia region. Further, as threat of Chinese activities along the Brahmaputra River not only affects India but also Bhutan and Bangladesh, this forum can also be used to formulate a regional policy to address the threat of China.

Conclusion

Water crisis is an existential crisis. It not only threatens the relationship between India and Pakistan but it also affects the stability of the entire region of South Asia. The IWT is the only mechanism through which India and Pakistan manage the transboundary waters of the Indus. The current top down approach with only focus on dispute resolution mechanism has proven to be successful historically. However, the current issues related to climate change, population explosion, exploitation of water resources are threatening the sustainability of the IWT. The ever changing relationship between India and Pakistan, the variability of water flow and socio-political nature of a water problem requires a framework that provides sustainable solutions that embraces uncertainty amidst changing and competing demands. The water diplomacy framework is one such framework that allows us to approach the problem of the Indus water basin by carrying out multiple forms of contextual inquiry while incorporating diverse viewpoints.¹⁰⁷ The policy paper has carried out contextual inquiry in the form of conflict and governance analysis. Mismatch in framing of the water issues and limitations of the existing top down governance structure are two major conclusions of the analysis.

The policy paper attempts to address the current challenges through the water diplomacy framework with the mutual gains approach as the center for diagnosis and intervention in addressing the water problem. The mismatch in how the water issues are framed is one of the core reasons as to why there is an impasse in the negotiations. As part of the negotiation strategy, the report calls for India and Pakistan to move away from positional bargaining by focusing on each party's interests and not positions. Thus, facilitating in identification of some of the common interests, exploring opportunities to generate value creating options and working towards its implementation for mutual benefit. The report also proposes development of a multilevel governance structure which balances a top down approach with a more participatory governance methods at local levels thereby ensuring inclusivity. Such a structure based on the water diplomacy framework can help reduce the tension between the two countries and set a benchmark for other foreign policy issues.

The future policy debate will probably be focused on the inability of IWT to promote cooperation in light of rising disputes. India appears set to develop more projects along the western waters of the Indus while still staying within the purview of the IWT to maximize its economic potential.¹⁰⁸ This is based on the fact that couple of projects along the western rivers of the Indus were fast tracked despite protests from the Pakistani government. Several disputes might come to the fore, further escalating tensions between the two nations. As suggested in the report, India can make sharing of water resources conditional on Pakistan clamping down on terrorists. The policy paper attempted to address the issue from an institutional perspective with a heavy emphasis on stakeholder involvement at multiple level. Several dimensions of water security such as primary and secondary users of waters were not captured. As part of the future work, it is important to identify different kinds of users of water – at individual level as well as other secondary users such as agriculture and industries and thus helping in balance a broad integrative approach as described in the report with other complex dimension of water security.

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