

## Transboundary Water Governance in the Kabul River Basin: Implementing Environmental and Public Diplomacy Between Pakistan and Afghanistan

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This research highlights the outcomes of the environmental diplomacy workshop held between members of civil society from Afghanistan and Pakistan on water cooperation in the Kabul River Basin, one of the most heavily conflicted transboundary river basins in the world. Lack of trust among these upstream and downstream riparian partners, hydro hegemonic frameworks of governance, and persistent failures of Track 1 diplomacy initiatives has led to an absence of governance mechanisms for mitigating the water security concerns in the region. The immediate problems identified to transboundary water rights, allocation, and security included a lack of focus on benefits to the local and rural population in the region, lack of access to water in rural areas, degrading water quality from multiple activities, and lack of scientific knowledge on the transboundary river systems to build better transboundary water relations, cooperation, and treaties. We argue that a collaborative civic-scientific social learning and engagement network can be an effective framework for building transboundary adaptive governance systems. Such an effort on social learning is focused on building a bottom up process by strengthening local capacity, local knowledge systems, and transboundary engagement and exchange. Initializing localized transboundary civic-scientific social learning capacities and exchanges can be a powerful avenue to building a localized adaptive governance framework.

**Keywords:** transboundary water governance; water cooperation; environmental diplomacy; Kabul river basin; social learning

### Introduction

Water is never managed for a single purpose. It supports multiple needs and interests—ecological, domestic, agricultural, hydroelectric, industrial, and recreational, which can often turn contentious under conditions of scarcity of potable water (Wolf, Kramer, Carius, & Dabelko, 2005). Transboundary rivers make the issue of addressing multiple needs trickier. There are additional borders, actors, and networks to consider. Inadequate representation of multi-level actors and institutions in such cases can worsen transboundary disputes and create deadlocks to effective management of water resources.

At the heart of the transboundary water politics as the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (UNWC) puts it is the question of water cooperation and equity on matters of allocation and utilization. Established in 1997, UNWC prescribes “equitable and reasonable” use, considering the relevant factors: geography, hydrology, socio-economic needs, dependent populations, impacts of use, conservation, efficiency of use, and availability of other sources (UN General Assembly, 2014). Therefore, upstream and downstream states have to consider each other’s uses, both existing and potential reserves, when developing projects. While UNWC has set the course of expectations in water sharing and cooperation, the



implementation of these goals can be messy due to power differences between different user groups.

Riparian relations and transboundary water cooperation present complex dynamics, which are never static or easily classifiable as black and white situations; hence, cooperation and conflicts are deeply entangled as a process. This process may pose serious water allocation and utilization challenges and a linked social order of institutions, people, and processes may be required to manage it (Mirumachi, 2015). Yoffe, Wolf, and Giordano (2003) define trans-boundary water conflicts as: discordant actions between or among nations over shared water resources, expressed through verbal, economic, or military hostility, and with “violent conflict” as the subset of militarily hostile actions over shared water resources. Water conflicts are also implicated in graver threats, such as the Syrian Civil War, which was fueled in part by a long drought that forced the migration of over a million rural Syrians into urban areas (Petersen-Perlman, Watson, & Wolf, 2018). However, not all water-related conflicts are so visible. Zeitoun and Warner (2006) show that some conflicts lie somewhere between the much feared but nonexistent water wars and water cooperation.

### **Water Cooperation efforts in the Kabul River Basin**

Focusing on transboundary water conflicts and governance using traditional neo-realist/neo-institutionalist paradigms is an insufficient approach to understanding the complex dynamics of transboundary water cooperation. This research offers a unique approach in understanding transboundary water cooperation by examining the participatory social learning processes of the localized non-state actors –community and scientific stakeholders – and their efforts at adaptive management to enhance trust building, information sharing, collaboration, and capacity building across the Kabul River basin between Afghanistan and Pakistan (Lee, 1999). The Kabul River Basin is an international river basin and a critical source for water, food and energy for both Pakistan and Afghanistan.

The Kabul River Basin is one of the most conflict ridden areas in the world. As Pakistan faces a looming water crisis and as Afghanistan plans to increase its use of water resources to meet its increased demand for energy and agriculture, the tensions between these two countries are pronounced. Currently, there are no bilateral treaties or agreements in place to guide negotiations over the Kabul River Basin water supply. The lack of legitimate scientific data on the tributaries bordering the two countries further complicates the tensions across the borders. In the absence of these mechanisms, the relations between Afghanistan and Pakistan on water security is heavily based on assumptions and the transboundary water politics is characterized by mistrust and suspicion, impeding any progress on negotiations for a successful transboundary cooperation between these countries (Kakakhel, 2017). The need for engaging localized sub-state or non-state partners including local civic, scientific, community, environmental, and political actors to enhance information sharing, capacity building, and collaboration on interventions across the immediate borders has been recognized (Saeed et al., 2016).

The research presented is based on a week-long collaborative work-meeting among scientific and community leaders from both Afghanistan and Pakistan to explore the role and scope of scientific and public diplomacy (including community outreach, organizing, and engagement) in transboundary water cooperation, adaptive governance, and ecological preservation. We situate this study within the theoretical framework of hydro-hegemony and adaptive governance systems to develop a localized adaptive transboundary governance system based on social learning. The working sessions explored 1) the challenges to transboundary cooperation between Afghanistan

and Pakistan; 2) ways to increase transparency by addressing the knowledge gaps and uncertainties related to the Kabul River Basin; and 3) the ways scientific diplomacy and public diplomacy can aid water cooperation in the transboundary Kabul River Basin.

### **Theoretical Underpinnings: Building adaptive governance systems for water cooperation**

As conditions of water scarcity, environmental degradation, and resource scarcity become pronounced due to developmental needs and climatic shifts, the risks for conflict and political tensions between states that may already have fragile relationships are intensifying (Haddadin, 2001; Jansky, Pachova, & Murakami, 2004; Kliot, 1993; Lowi, 1993; Sosland, 2007). Conventional governance models are inadequate in addressing these evolving transboundary tensions. Instead proactive adaptive governance strategies are required to minimize risks and increase cooperation (Haddadin, 2001; Jansky, Pachova, & Murakami, 2004; Kliot, 1993; Lowi, 1993; Sosland, 2007).

Two conventional models in governance in transboundary conflict resolution are the neo-realist and neo-institutionalist (or neoliberal) paradigms (Mirumachi, 2015). Power is seen as the main factor shaping the outcome of discussions on bilateral issues in a neo-realist paradigm. Neo-realists expect states to maximize their relative power rather than choose cooperation, especially if the upstream states attempt to reduce their dependence (e.g. trade or power) on downstream countries. Neo-realists may also challenge their neighbors' sovereignty, territorial integrity and security. Neo-institutionalists and neo-liberalists, in comparison, reject the notion that power is the only factor that determines relationships between states. Neo-institutionalist focus on cooperation by mitigating the compliance problems and mistrust—with the help of institutions that provide information, lowered transaction costs, increased transparency, and reduced uncertainty. Such cooperation is accomplished often by utilitarian compliance or by incentivizing cooperation and normative compliance by the use of norms, regimes, treaties, policies, and political will and international law, often to the advantage of the hegemonic state (Zeitoun and Warner, 2006; Julien, 2012; Slaughter, 2011). Neo-institutionalists also believe that scarcity and degradation may also justify technological innovations and infrastructural fixes to manage the crisis, with also a certain control of the society (Mirumachi, 2015; Zeitoun and Warner, 2006). According to the neoliberal paradigm, water management holds key to development, economic progress and social benefits. Both these models still do not address inequities, and democratic and adaptive ways of addressing transboundary tensions and cooperation. Zeitoun and Warner (2006) identifies this paradigm as the hydro-hegemony framework developed by the use of state-centric hegemonic approaches to guarantee cooperation which may include exertion of supremacy in water management to determine “who gets how much water, how and why” (p.436), where resources are not equally endowed.

The identification of these hydro-hegemony frameworks have helped differentiate asymmetries in power relations that make it difficult to change the status quo of water allocations and cooperative mechanisms by the implementation of political persuasion and consent within civil society (Fontana, 1993). These studies show that the existing socio-political processes that attempt to determine the solutions and means to address water scarcity and environmental stewardship itself may be the process that brings about conflict and cooperation (Sneddon, 2013; Trottier, 2003; Zeitoun and Warner, 2006). Water peace and cooperation therefore can be a manipulated concept through which politics occur, and can mediate state/self-interests, allowing it to become a hegemonic concept (Mirumachi, 2015). Folke et al. (2005) note that adaptive self organizations or governing systems are more creative at adaptive co-management efforts and it “lowers the costs of collaboration, conflict resolution, enable legislation, and governmental policies” (p. 41).

Pahl-Wostl (2007) defines adaptive management as “a systematic process for continually improving management policies and practices by learning from the outcomes of implemented management strategies” (p. 51). Adaptive governance systems are multilevel, integrated governance modes that include social networks that represents multiple interests, actors, and community-based initiatives. Such systems may utilize integrative science that draws from various knowledge systems, experiences, and organizations through an open decision making process for the development of a common understanding and policies, in particular during periods of abrupt change or crisis in social-ecological systems (Folke et al., 2005). Adaptive systems hence highlight broader shifts from government to governance and the evolving, complex and dynamic nature of governance networks (Koliba, Meek, & Zia, 2010; Zia et al., 2014). Such systems also emphasize social learning as an integral component of governance. Strong institutions and social learning are essential for managing water scarcity and allocation issues (Pahl-Wostl, 2009). Social learning in river basin management is catered to building the capacity of different authorities, experts, interest groups, and the public to manage their river basins in a sustainable way while balancing multiple and competing interests for the benefit of the social-ecological system as a whole (Pahl-Wostl, 2007; 2009). This model of social learning was utilized by the European project HarmoniCOP to increase participatory river basin management in Europe in order to generate practical and useful information to improve the scientific base of social learning in river basin management. Within adaptive systems, it is not the lack of water that leads to conflict, but the inadequate way the resources are governed and managed that leads to conflict. Carrius et al. (2004) state that “the likelihood of conflict rises as the rate of change within the basin exceeds the institutional capacity to absorb that change” (p. 61).

There is a growing body of evidence that both Afghanistan and Pakistan have struggled with hydro hegemonic frameworks of cooperation with transboundary water management (Nagheeb & Warner, 2018). Oftentimes, access to water has been used as a geopolitical tool in the region to control territory for security and geopolitical interests. Thus, water resource development has had profound implications in shaping the geopolitical dynamics in Afghanistan (Nagheeb & Warner, 2018), and Pakistan to a lesser extent. Additionally, regional hydro-hegemonic tensions have flared between Pakistan, Afghanistan, and India with India supporting Afghanistan’s efforts to develop dams along the Kabul River and China supporting huge infrastructural projects in Pakistan (Kugelman et al., 2011; Shroder, 2016). Understanding the existing complex power dynamics and paradigms are helpful in redesigning cooperative civic-social strategies to shape adaptive transboundary water governance. In this research we examine the existing hegemonic frameworks that impede transboundary cooperation and identify avenues for building localized civic-scientific social learning efforts to enhance local adaptive transboundary governance systems. We argue that collaborative civic-scientific social learning processes can be an effective framework for building transboundary adaptive governance systems. Such an effort on social learning is focused on building a bottom up process, by strengthening local capacity to understand and estimate the local challenges to transboundary water management and to build localized and contextual solutions for the adaptive management of transboundary water resources across borders. Initiating localized transboundary social learning capacities can be a powerful avenue to lay the groundwork for peaceful cooperation and building a localized adaptive governance framework.

## Methodology

Utilizing the concept of collaborative civic-scientific social learning, researchers from the University of Vermont and Bennington College hosted a week-long workshop in March 2018 for 11 participants (six from Afghanistan and five from Pakistan) to initiate dialogue and in-depth discussions on water cooperation between Afghanistan and Pakistan on the Kabul River basin. Over



20 participants were invited to attend the workshop at the Peace Centre at Dawson College in Montreal, a neutral place for people from both countries to gather, but only 11 were able to obtain visas to attend the workshop. Holding such a workshop on building localized water cooperation strategies in either Afghanistan or Pakistan would not have been feasible. The participants included community leaders and professionals from both countries as well as representatives of international funding agencies working in the region on water issues. The network partners have been inspired and informed by successful environmental cooperation projects in Palestine, Israel, and Jordan, as well as in Peru, Ecuador, and Cyprus.

The week-long work group was facilitated by trained peace and conflict resolution studies experts. The week-long workshop in a neutral setting among partners from Afghanistan and Pakistan, countries which have stressed relationship with each other, helped to maintain an open minded and impartial stance towards conversations on building transboundary water cooperation strategies. The in-depth discussions between civic and scientific community from Afghanistan and Pakistan included 1) the political, environmental, social, technical, scientific, and regulatory challenges to water cooperation; 2) sub-state needs and expectations for different uses of water in the region such as urban development, food and irrigation, hydroelectric development, and mining; and 3) hopes for the future of the region and strategies to improve border relations, trust, sharing of benefits, and building water cooperation between Afghanistan and Pakistan. The workshop was an attempt at creating a localized and grassroots-based or civic and scientific-based adaptive framework for transboundary water cooperation in the Kabul Basin. This vision aligns with all international conventions and treaties on equitable sharing of resources and the Sustainable Development Goals of clean, accessible water, affordable and sustainable energy for all.

The week-long discussions and mediations that transpired between the civic and scientific community was recorded, transcribed, and coded. We conducted a discursive analysis of the coded the interviews. Our primary codes of analysis included 1) the hydro-hegemonic governance challenges to water cooperation, 2) knowledge gaps that generate animosity between transboundary partners to inform building social learning strategies, and 3) identified opportunities for localized social learning, and situated knowledge construction that could influence local transboundary water cooperation. We used Zeitoun and Warner's (2006) hydro-hegemony framework which included examination of 1) coercive compliance producing mechanism which include military force, covert actions and threats; 2) hegemonic compliance producing mechanism which includes securitization of resources, coercive water sharing conditionalities, sanctioned discourses, and construction of popular knowledge and the mobilization of both international support and financial clout and the abuse of riparian position; 3) utilitarian compliance mechanism such as incentivizing cooperation; and 4) normative compliance mechanism such as use of norms, treaties, international law often to the advantage.

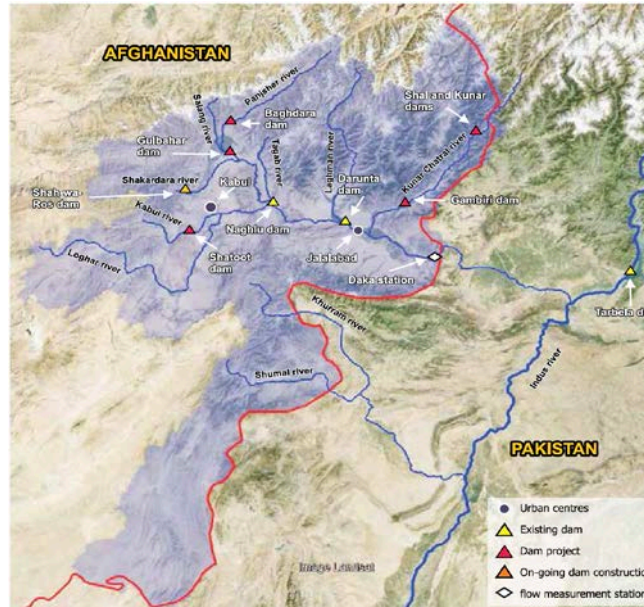
We incorporated social learning concepts from Folke et al. (2005) and Pahl-Wostl (2009), and identified social learning as opportunities for local capacity building, localized knowledge construction in partnership with the community-scientific collaboratives, and initiating transboundary exchange of social learning information gathered to further adaptive governance. In addition to the narrative analysis of discussions among the civic scientific partners from Afghanistan and Pakistan, we have substantiated their reports with valid sources from key journal articles, media reports, and policy briefs. Below we provide a brief overview of the Kabul River Basin followed by the results of the workshop.

## Brief overview of the study site—Kabul River

The Kabul River lies between Afghanistan and Pakistan, creating a unique transboundary position and tension over water sharing, as both countries are upstream and downstream riparian partners. The Kabul River originates from the Sanglakh Range in the northwestern Hindu Kush Mountains of Afghanistan about 72 km west of Kabul. The Kabul River and its tributaries – Loghar, Panjshir, Ghorband, Laghman-Alingar, and Kunar rivers – irrigate 72,000 km<sup>2</sup> or 11 percent of Afghanistan's land area (IUCN, 2010; Thomas, Azizi, & Behzad, 2016). Its largest tributary is the Kunar River located in the northeast part of Afghanistan, and is also a transboundary river bordering Pakistan.

Figure 1. Kabul river basin and links to the Indus River.

Source: Thomas et al., 2016.



The Kunar River originates from glacial fields in the Hindu Kush Mountains in the Chitral region in Pakistan. As the Kunar River flows down from the Hindu Kush Mountains, the river is known by several names – Mastuj River, Latkoh River, and the Chitral River in Pakistan – before finally flowing into the Kunar Province in Afghanistan with an annual flow of 10km<sup>3</sup> (IUCN, 2010). The Kunar River runs downstream about 180km before joining the Kabul River near Jalalabad. The combined rivers then flows 80 km eastward along the Khyber Pass back into Pakistan with renewable water potential of 55 km<sup>3</sup>/year, about half of which is used for agriculture in Afghanistan (IUCN, 2010). The Kabul River is the only river system in Afghanistan with an outlet to the sea as it joins the Indus River in the city of Attock in Pakistan (IUCN, 2010). The Kabul River thus is also part of the Upper Indus Basin. Though Pakistan's dependency on Kabul River is limited, tensions over water, especially in the transboundary Kunar River, where both countries are upstream and downstream riparian partners is more pronounced as Afghanistan looks to rebuild their country from being in war since the Soviet invasion in the 1980s.

## RESULTS

Below we detail the hydro-hegemonic frameworks that challenge water cooperation, knowledge gaps that generate animosity between transboundary partners, and identify opportunities for building localized civic-scientific social learning, and situated knowledge construction practices to enhance transboundary adaptive governance systems and water cooperation.

## Hydro-Hegemonic Challenges to Water Cooperation in the Kabul River Basin

Hydro-hegemons expect states to maximize their relative power between their riparian partners. Zeitoun and Warner (2006) define hegemonic power systems as coercive compliance producing mechanisms, hegemonic compliance producing mechanism, utilitarian compliance producing mechanism, and normative compliance producing mechanism. We also find that these variations in hegemonic power structures may be influenced by historical aspects, geographical constraints, concerns about future water scarcity due to climate change in the Kabul River Basin contributing to the implementation of different hegemonic compliance mechanisms.

### Historical aspects that fuel coercive and hegemonic compliance regimes:

The historical relationship between Pakistan and Afghanistan is complicated. Political animosity between Afghanistan and Pakistan date back five centuries since the founding of Pakistan in 1947 and Afghanistan's continued refusal to accept the Durand Line as the formal border between Afghanistan and Pakistan as the ethnic, linguistic, and religious faiths of the communities settled on either side of the Durand Line are the same (Micallef, 2015a; 2015b). As one participant remarked, "it was like the British drew the border line through the heart of the Pashtun communities." Historically, the participant noted, "there were no borders between the largely Pashtun and Kutch communities in Afghanistan and Pakistan. Kuchi tribes used to go to lowland Pakistan in the winter and moved to the higher mountains in Afghanistan in the summer time. They did not belong to any country, they had no citizenship." Though the coercive and enforced boundaries drawn by the hegemonic power divided tribes and communities, the perceived desire for Pashtuns on both sides of the border to form "Pashtunistan" was seen a worrisome movement to Pakistan as well as Afghanistan's support of Pashtun separatists in Pakistan (Micallef, 2015a; 2015b). In turn, Pakistan military supported Taliban terrorist camps in Afghanistan (Micallef, 2015b; Saeed, Hassani, & Malyar, 2016; Thomas et al., 2016). Workshop participants from Afghanistan felt that: "Pakistan has been waging war against Afghanistan for the last 40 years. You cannot deny that. But I try to be diplomatic and not call it a war." The adjacent areas along the border between Afghanistan and Pakistan, and the Kunar River have been the most vulnerable to violent conflict, terrorism, and explosive land mines since the US-NATO invasion of Afghanistan in 2001. Between the Soviet invasion (1980s), Taliban uprising (1990s), the drought of 2000, and current conflicts, one in four Afghans have been a refugee, mostly in Pakistan and Iran (Ruiz, 2002).

The participants noted that these long standing tensions over land disputes and borderlines have been quietly spilling over into disputes over water and Kabul River, and the hegemonic control of water resources especially by Iran and Pakistan, and recently India (Mashal, 2012; Thomas et al., 2016, Kugelman et al., 2011). By some estimates, one-third of Afghanistan's irrigation systems were directly affected by war (IUCN, 2010). Participants noted that as Afghan refugees return home, there is a growing demand for water in the agriculture and energy sectors. Diminished supplies of water flowing down from Kabul River to Pakistan has been a source of strain and conflict in severely water stressed Pakistan, leading to subtle coercive acts towards Afghanistan. Lack of water treaties between Afghanistan and Pakistan further aggravate issues of abusive threats and riparian control. The only water-sharing treaty that exists between these countries is the 1921 treaty signed between Afghanistan and Great Britain, which agrees to water withdrawal for residents in Torkham, Afghanistan, and for using the Kabul River for navigation and irrigation rights in Pakistan (Hearns, 2015).

Between 2003 and 2011, Pakistan and the World Bank incentivized cooperation by initiating discussions on a water treaty similar to the Indus Basin Treaty in order to build utilitarian and



normative compliance and institutional capacity to promote greater cooperation to avoid dispute over water issues. These initiatives have not been fruitful. Acute power asymmetries curtail dialogue and promote the view of unilateral resource capture and control within transboundary water resources development (Thomas et al., 2016), leading to absence of mechanisms for relieving water security concerns within the Kabul Basin.

### Geographic capacity and covert coercive actions:

The Kabul River Basin is highly under-developed and its water resources are under-utilized. The participants discussion on water use in both countries concurred with the available metrics on water use. Afghanistan utilizes less than 25% of its surface water resources. Its groundwater use is less than a third of its total availability and shares 90% of its water resources with its neighbors (Mudabber, 2016). The storage capacity of water in Afghanistan is very poor and represents less than three percent of the average surface water availability (Thomas et al., 2016). Conflict and conflict-related deforestation further exhausts Afghanistan's capability to store water (Price et al., 2014). Due to geography, remoteness of the region, and conflict such as the persistence of landmines, many areas are unsafe to access, which was one of the major concerns noted by the participants.

In contrast, the overall level of water use in Pakistan is very high, compared to available resources. Pakistan uses 70 percent of the available surface water and extracts more groundwater than the average annual recharge (Thomas et al., 2016). Pakistan also has lower water storage capacity (10%) and can barely store 30 days of water in the Indus basin, constraining irrigation development (Thomas et al., 2016). The total renewable water available in Pakistan (1378-1000 m<sup>3</sup>) is far lower than the world average (Kakakhel, 2017). Pakistan gets 13 percent of its water supply to the Indus basin from Afghanistan's portions of the Kabul and Kunar rivers (Thomas et al., 2016). However, participants from Pakistan claimed that the Kabul river contributes 16 to 17 percent of Pakistan's water supply, as stated in some unsubstantiated media sources (Kiani, 2013).

Any increase in water use in Afghanistan (a projected 17 billion cubic meters (BCM) to 30 BCM) threaten the dimensions of water use in Pakistan and its corresponding water security (Mudabber, 2016). Afghanistan also suffers from severe shortage of electricity, where only 28% of Afghan households have electricity (Kakakhel, 2017). Water scarcity is already acutely felt in Pakistan with increase in droughts and low storage capacity, according to the participants, an observation that has been noted by Thomas et al. (2016) and Saeed et al. (2016). Declining flows in the Kabul River has been previously observed in Attock, Pakistan (IUCN, 2010), potentially due to climatic variability and upstream uses in both Afghanistan and in the Peshawar region in Pakistan. The government of Afghanistan's attempt at water infrastructure plans for irrigation and power generation in the Kunar River (IUCN, 2010; Thomas et al., 2016) have been cautiously monitored by Pakistan, who have also been accused of savage executions (Mashal, 2012) to deter the plans of Afghanistan to build hydroelectric dams on Kunar River. These speculations over water, created momentary deadlocks within our Afghan-Pakistani participants as well:

*If Afghanistan implements all the dams on the Kabul River, it would only have a 3% of effect on Pakistan. Building of dams is perfectly legitimate for our utilization. In Asmar district (Suritoq location) in Kunar province, Afghanistan has been trying to build a dam, it has been sabotaged a number of times.*

*This is the reason the people in the Kunar province are in the dark. Because we do not have electricity from Kunar River. Dams in Kunar is an important issue. We have terrorism, water issue, poverty, refugees, climate is another issue of conflict. Much of this can be addressed by putting those dams on. I do not think we can come up with a treaty. We cannot have the community die while we come to a consensus.*





However, participants from Pakistan highlighted the country's severe water shortage, sharing that any construction of dams without consultation a threat with the possibility of 17-20% reduction in available water flowing to Pakistan from such development. A study funded by the World Bank under the AWARD project found that the overall reduction in water flow towards Pakistan would only be three percent, especially between April to June, based on the construction of six dams (World Bank, 2013). However, the Pakistani government-funded Islamabad Institute of Policy Studies claims a 15-20 percent reduction in the available water from the foreseeable construction of 13 dams on Kabul River (Rizvi, 2003). Afghanistan believes that Pakistan has been sabotaging Afghan initiatives to increase hydropower development on the Kunar River and considers the presence of Pakistani militia on the border as a serious threat to any development in the region (Mashal, 2012).

The primary issue that Pakistani participants objected to is Afghanistan building its water storage capacity: "If we can show with data that this is not going to impact Pakistan, given the climate variability, and access, then there can be a consensus." Hydroelectric dams are often large, internationally funded projects, and are often the result of state-building. If the source is a transboundary river, the potential for contentions between the two countries are far greater. While hydro hegemonic projects are under state jurisdiction, they are still dependent on the mobilization of international support and financial clout and donor conditionalities which may also enforce a set of coercive compliance producing mechanisms.

#### **Neoliberal governance approaches and challenges to local water security:**

Both Afghanistan and Pakistan have a lot to gain from compromises and implementing cooperative strategies. Neoliberal paradigms are cooperative and focused on reducing conflicts by mitigating the compliance problems and mistrust, while seeing water management as the key to development, economic progress, and social benefits. Big infrastructural projects for development are governance projects of great state importance and projects of nation-building and modernization.

Water is a key enabler for economic progress and social, and public good (Mirumachi, 2015). In a growing country, there are many water demands, not only to serve the growing urban population, but also for irrigation, agriculture, energy production, and other industrial applications. This paired with similar needs of a neighboring state that shares river systems, the calculations of water use and sharing can get easily tricky. Irrigation is the world's largest use of water (70%), and this overall trend is reflected in both Pakistan and Afghanistan (UN, 2014). In Afghanistan over 85% of the irrigated area is river-fed and only 15% is groundwater-fed. In the absence of more water storage capacity, most of the country's surface water runs to neighboring states, including the Kabul River from Afghanistan to Pakistan. In Pakistan water demand has been steadily increasing. From the 1970s to the 1990s, water demand increased by 39 percent, largely due to intensifying irrigation and the increase in cropped agricultural area. The water from the Kabul River is indispensable to major cities such as Peshawar City, where over two million residents depend on the river for drinking water, sanitation, and irrigation (IUCN, 2010; Thomas et al., 2016). Hence any development in Afghanistan raises grave concerns across the border.

Deforestation was highlighted as another huge challenge in both countries, and the lack of watershed management contributes to erosion downstream where the Kunar and Kabul Rivers intersect, as well as after the Kabul River crosses the Afghan-Pakistan border and joins the Indus River. Considerable potential exists for implementing soil conservation measures. Participants also

shared the observation that many water-related problems were connected to a larger set of environmental and social problems such as development and climate change. Baig & Al-Subaiee (2009) note that factors like deforestation, overgrazing, soil erosion, salinity, and waterlogging are posing major threats to biodiversity in the region, and any attempts to reverse losses are ineffective without local participation.

Mining was also considered as an issue of concern among the participants to water security and cooperation. Both Pakistani and Afghan governments have been touting mining development; they have invited the mining industry to come in. In many places, Chinese companies are one example starting to develop mining operations as part of the new “Silk Road” project (Awan, 2018). One participant describes the threats that mining poses to water security and water quality: “So they want to put in a lot of these mining technologies to mine metals like iron and copper and other kinds of ores, but the mining can have a huge effect on the water pollution, it can also destroy the habitat. Mining it is an emergent threat.” New research articles show that there have been conflicts between insurgents over mineral resources. Taliban and Islamic State Khorasan Province (ISKP) militants are making millions from exporting minerals like talc, marble, and lapis lazuli in Afghanistan, generating revenue for insurgent groups and fueling a deadly cycle of violence in the country (Zia & Hameed, 2014; Hussain, 2018). Such illegal mining costs the Afghan government massive losses in revenue from precious metal deposits, which U.S. officials’ estimate contains up to \$1 trillion in value (2010 USD) (Hussain, 2018). Additionally, Pakistan is the single biggest source of talc sold in the America. The effluents from these industries, marble and stone work, and pharmaceutical companies on Pakistan’s side, said the participants, are heavily polluting the river.

A major concern among the participants, and an impact of the neoliberalizing efforts previous identified, are surrounding water quality. The Kabul River’s upper upstream rivers and tributaries are fast moving and filled with sediment and pollutants. In some provinces, especially Sindh and Punjab, the participants stated that the water quality is so bad the government has banned some companies from bottling the water (Asian News International (ANI), 2018). One of the participants remarked that “the trout is almost extinct – can you imagine the quality of water?” Water pollution from human and agricultural waste and other pollutants can spread pathogens and diseases, which can also be transported from one country to another. Waterborne diseases are high in both Afghanistan and Pakistan (Gulab, 2016; Gupta, 2017).

Neoliberalization of water and nature assign economic than social value where natural resources are seen as instrumental to economic growth, progress, and techno-scientific development, which are essential projects of nation building, statehood, and modernization. Hence such activities of building hydroelectric dams, mining, and agriculture are also often subsidized activities for the cooperation and social benefit it provides. Such appropriation of resources to support causes of social progress and economic profit do impact upstream and downstream communities, but there are no effective ways to address these differences and cooperation across the borders are strained due to lack of coordination and treaties among national actors.

### **Rural access to water and challenges to water security:**

Among conversations on transboundary water conflicts and cooperation, the participants felt that there was little focus on rural issues of concern related to water and assessing realities on the ground regarding local access to water. Afghanistan is among the poorest underdeveloped countries in the world (IUCN, 2010). People in the border areas in both countries are largely illiterate, have not attended school, and have low levels of education. The participants commented that women are especially affected by water security. Women often have to walk long distances (up to 5 kilometers)

to get water from the tributaries, carrying buckets of water, and at times with an infant on their back. And the water fetched is often untreated, with possible contaminants in it. The re-use of water is often not possible because these regions do not have the appropriate facilities for water treatment. The participants felt that “if women are educated and integrated into the economic streamline of the country, it is the cheapest investment in any foreign policy” regarding water resource management.

Participants noted that access to water is especially poor in rural Afghanistan. Access to water for irrigation and agriculture in rural areas still remain a major problem as much of the infrastructure in the border areas in Afghanistan were destroyed and need to be rebuilt. Over 80% of the population do not have access to safe water in the rural areas (Gulab, 2016; Gupta, 2017). Communities directly on the river benefit, while those living far have to dig channels to gain access to water in some rural areas where possible. However, these rural social practices have been practiced for centuries. The participants noted that the water for subsistence irrigation is drawn from the small tributaries more so than the main branch of the Kabul River in rural Pakistan and Afghanistan.

The right of water is also attached to right of land. Land tenure rights blocks access, as sections of land are often owned by few feudal lords. So the users have to get the consent of other tributaries' users to dig such channels. Localized norms and practices thus still hold strong sway in building water security and cooperation. The participants recognized that the strains of water security were felt by all, even though there were differences in the emphasis of certain problems (e.g. scarcity vs. access) within and among the two countries. Participants recognized that addressing these issues require that people and the states work together to reallocate power by focusing on the needs of those who live along the rural border areas who are underrepresented within these transboundary water negotiations: “The way to get people involved is through water. If we talk about water, we are reframing the political tensions and collaborating around water.” This lays in contrast to the current reality in which conversations focus on nation building and economic progress, rather than catering to the needs of those living along the river corridors that are most disadvantaged and underprivileged.

### **Knowledge gaps to water cooperation**

There is a poor understanding of the available water resources in the Kabul River basin to support good governance. The knowledge deficits in the water sector in the Kabul Basin have also been reflected in the report by IUCN (2010), which notes that the most reliable data for irrigated areas in Afghanistan dates back to 1967. The information deficit is greater in Afghanistan, but region-specific information in Northeast Pakistan in the Chitral region is also limited (IUCN, 2010; Saleem & Zia, 2016). The existing lack of reliable data also promotes political apathy, weak governance, lack of democratic institutions, red tapism, corruption, and a trust deficit. The participants strongly felt that data is essential for any discussion and negotiation to address water security concerns and conflicts, and for community mobilization. One participant explained the fundamental importance of good data:

*If the data is not available, how can we say that Afghanistan and Pakistan need this much water annually? Why do Afghanistan/Pakistan claim these resources which do not belong to them? We don't know where the glaciers are, how fast they are melting, or the flow in different months of the year, the increase in temperature, change in relative humidity. The changes in the frequency and intensity of extreme events. Would glacier lake outbursts be an extreme event?*

Another participant commented that there is no accurate count of the demographic variables in this region as well. Lack of data on water access in the region due to terrorism and land mines prevents portraying precise estimation of the burdens that the women and families in this region bear. The participants identified a need for proper research, which includes monitoring systems and a complete needs assessment on both sides of the border.

Gathering data in the region is not a straightforward process due to mutual mistrust. The participants reiterated the importance of doing these studies in mutual agreement and collaboration—water use in both Pakistan and Afghanistan need to be cooperatively monitored and regulated to address water allocation issues and to generate trust and avoid conflicts. Another participant reiterated that state consent might be necessary so the data is not questioned. This, the participants suggested, might provide access to certain inaccessible areas due to conflict and government prohibition. Conducting a thorough study in the region will eventually require Track 1 diplomacy involvement to gain access to appropriate regions, especially vulnerable regions. Government approval of the data is integral as it has authority over river discharge and management. Independent research, the participants noted, conducted by international consultants are seen as more credible. Other concerns they had were *where* the data should be gathered in the transboundary river. Participants suggested utilizing models such as community-based monitoring and citizen science may also help in gaining trust with data collection as well as mobilizing communities through local control of evidence based research data. The participants found that a lack of a treaty on the Kabul River is an opportunity to support a future treaty that results from both public consultation and scientific assessments, taking into consideration the local developmental needs in the region as well as the impacts of a changing climate.

### **Building localized civic-scientific social learning and engagement networks for water cooperation and adaptive governance**

While state relations are fraught with complexity, the participants felt that the current water security issues Pakistan and Afghanistan face cannot be solved without transboundary cooperation—without the acknowledgement that Pakistan as well as Afghanistan has rights to its share of the water from the Kabul River and the right to develop its resources. The immediate problems identified from the workshop on transboundary water rights, allocation, and security were a lack of focus on benefits to the local and rural population in the region, lack of access to water in rural areas (80% in rural areas have no access to safe water), degrading water quality from multiple activities, and lack of scientific knowledge on the transboundary river systems to build better transboundary water relations, cooperation, and treaties. The participants agreed that the first step to building border relations is to bridge the gap between people and communities across borders. Solutions discussed to improve transboundary water rights and cooperation include improving 1) community building and engagement, 2) local capacity and civic-scientific social learning and local knowledge construction, and 3) transboundary engagement, exchange and advocacy with a specific focus on improving bilateral communication and trust across borders on managing water resources.

### **Community building and engagement for trust building:**

Trust deficit is one of the biggest problems between Afghanistan and Pakistan, and without addressing and building trust, the participants felt it would be difficult to build transboundary water cooperation. While the political animosity runs deep, the Pashtuns share historical, religious, and

cultural ethnolinguistic links that runs back thousands of years and the countries still share strong trade relations. The workshop participants agreed: “There is no conflict at the tribal level. They are brothers. The conflict is at the state level. We have to mobilize the civil society on both sides to compel our governments to sit and negotiate.” The working group agreed that starting with community building could be better in increasing trust: “there is a perception of conflict and insecurity... when you bring the community together, it is to create empathy, understanding, and trust. How can we find a way to influence and increase awareness?”

Participants felt that the best way to engage and build the community in the region is by working with the existing community groups on the ground in Afghanistan and Pakistan. Already in participation at the workshop were Community Motivation and Development and Organization (CMDO), a network of 1000 communities in Pakistan, and Coordination of Afghan Relief (COAR), a network that works with 33 communities in Afghanistan on water and sanitation issues. One of the participants remarked on the power of community groups:

*The community themselves can take charge. In my opinion when we are talking about public diplomacy, it has to be coming from ordinary people living on both sides of the border. It should reflect their concerns, needs, demands and their hopes for the future of the society and transboundary relationships.*

The suggestions by the community leaders included doing a public awareness campaign to build river-watching communities to clean, improve access, demine, demilitarize, and to increase cooperation across borders on the Kabul River. River basin organizations are commonly used management structures internationally to reduce conflicts (Molle & Hoanh, 2011; Mukhtarov & Gerlak, 2013; Petersen-Perlman et al., 2017; Yoffe et al., 2003). The structure for building regional cooperative river basin organizations already exists through the medium of COAR in Afghanistan and CMDO in Pakistan, rather than through national diplomatic means which alone may not foster cooperation and trust-building locally on the ground. Other avenues for community building discussed include targeting women, tribal leaders, religious leaders, setting up traditional community councils called *jirgas*, and engaging youth activists, all of whom can also be part of the river based organization in creating multi-level governance systems.

Governance in these regions is primarily mediated through traditional councils. The constitution of *jirgas* are prominent in the tribal areas on both sides of the border. Matters related to conflicts and community decisions are often settled through convening *jirgas* (e.g. see Zia & Hameed, 2014). “It is a well-established and lubricated machine, a mechanism that works,” said one of the participants. Another participant suggested holding trans-border *jirgas* to talk about water issues. The authority of a *jirga* is so strong that no one questions them; furthermore, they do not need funding, and they do not have many of the pitfalls of bureaucracy (e.g., corruption, power differentials). It is not a bureaucratic but democratic system, as anyone can call a *jirga*. People also respect the elder of the village and the information they give.

Dissemination of information in mosques and masjid through religious points of view can also be an effective way to convey messages by connecting water practices to religious beliefs. Youth activism is growing in these countries as well and was observed as a powerful tool to educate people and families: “Once you start mobilizing the young people, children can be real ambassadors of change.” The awareness campaign can also be done through mediums including, but not limited to, radio messages, television, mobile messages, and door-to-door awareness program. Once communities are mobilized, specific projects and issues of local concern can be discussed and debated. However it was noted that, equitable, open, and flexible cooperation on water allocation might be difficult by focusing only on stakeholder interests without the necessary data to back the interests for decision-making.

### Local capacity and civic-scientific social learning and local knowledge construction:

The need for data was obvious among participants to settle any misconceptions, distrust, differences, and conflict across borders as well as to promote peace: “Data can bring accountability and transparency.” It was realized that both sides need multiple levels of data to make informed decisions and to negotiate collaborative water management plans (also see Ali & Zia, 2016). The participants pointed out that there has not been systematic data collection on the region; even the existing demographic information in the region is not reliable as it is politically volatile. Additionally, the existing technical data is not collected in one place.

The science diplomacy goals that the participants agreed to were 1) Build local capacity by setting up local social learning and knowledge construction initiatives that would also include citizen science or community-based monitoring stations that can be administered by farmers, fishermen, students, and community members with scientific partners; 2) synthesize existing baseline data, including satellite data on both countries as well as other relevant social, environmental, technical, health, and policy data into a central repository; 3) produce localized knowledge that can inform projects on the ground, conduct studies to understand the risks and benefits to both countries, as well as upstream and downstream communities under specific scenarios of development of hydroelectric dams, impacts of climate change, deforestation, urbanization, and mining or other local scenarios of concern; produce database that could help with early warning systems (EWS)—as both countries are facing extreme threats of flash flooding, landslides, drought. Presently there is no mechanism of sharing data between Pakistan and Afghanistan, however, both countries realize that there should be a mechanism of sharing data that can save lives, infrastructure, and farmlands at both sides; 4) establish a knowledge sharing network, promote data exchange, transparency, and sharing to mitigate risks to reduce adverse outcomes and promote transboundary water sharing and basin management practices. Ways to address uncertainty, unexpected events, and emergencies emerged as a key challenges to address as well. This is where clearly defined obligations, procedures for cooperation and consensus are needed to make decisions under uncertainty and emergency situations (WWAP, 2012). Directing the focus on dispute prevention, resolution mechanisms, and adopting preventive measures and mutually beneficial negotiations might be essential in these cases to maintain peace and enhance cooperation. Additionally project participants suggested conducting evaluations of power relations between the tribal areas and countries, as well as conducting stakeholder and actor analyses. The goal is to build effective water cooperative strategies even without a Track 1 treaty.

However, ministry level cooperation might be necessary to collect the data in the region, as the data must be acceptable and legitimate to both the country officials to initiate peaceful negotiations. Reliable data about the transboundary watershed is essential for stakeholders to buy into cooperative frameworks, and cooperative transboundary problem solving (Petersen-Perlman et al., 2017). As a community member remarked:

*Then they are in a better position to talk about what is the demand and what is the use [of water resources]. Then the goods and bads can be shared, the floods and droughts are shared based on the allocation formula. We can understand the baselines versus the variability. This will be negotiated by the critical parties as opposed to fighting with each other.*

The participants emphasized continual learning as one of the key features of adaptive management in building transboundary water cooperation and peace between Afghanistan and Pakistan.

### **Transboundary engagement, exchange and advocacy on managing water resources:**

Social learning, knowledge construction, and advocacy go hand in hand. Stakeholder engagement, public participation, and opportunities for local social learning at the local and river basin level is essential in jointly managing, protecting, and developing water effectively and sustainably. Research demonstrates that where institutional capacity for dialogue and the management of disputes is present, conflict is less likely (Jägerskog, 2012; Subramanian et al., 2012; UNEP, 2008). Stakeholder platforms, river basin organizations (RBOs), and *jirgas* can be spaces where different stakeholders can articulate their concerns, manage differences, and come to settlements between countries, cities or sectors as well as play a crucial role in local water management. These steps of public diplomacy and science diplomacy are essential for Pakistan and Afghanistan to address transboundary water issues and development issues in the Kabul River Basin.

A growing number of treaties, protocols, conventions, and institutional frameworks increasingly help crystallize mechanisms on the use, development and protection of shared freshwaters and peaceful resolution of disputes over water resources (Bigas, 2012; Gerlak, 2007; Subramanian, Brown, & Wolf, 2012; UN, 2013). Around 40% of the world's transboundary basins are covered by some form of cooperative institutional arrangement (Gerlak, 2007). Studies also show that international water relations among riparian states with treaties are generally more cooperative than basins without treaties or other cooperative management mechanisms (Oregon State University Department of Geosciences, 2011). Treaties and cooperative institutional agreements though often suffer setbacks from lack of political will, inadequate water management structures, and lack of enforcement at national levels (Salman, 2007).

Formal networks with regional and international third party involvement are also essential for the resiliency and success of transboundary water cooperation, in order to lessen the animosity and improve negotiations between the two countries. Third party involvement traditionally includes stakeholders who do not live in a shared basin but have interests in or influence on how shared waters are managed and allocated, such as development banks, experts, and environmental non-profits. Third party groups could also be resident and/or refugee groups, such as Afghans residing abroad, who have the best interests in mind of their countries and have influence over its development (Petersen-Perlman, Veilleux, & Wolf, 2017). International multilateral engagements are increasingly employed in sustainable basin management. For example, the EU-funded SWITCH (Sustainable Water Management Improves Tomorrow's Cities' Health) research program brought stakeholders from a consortium of 33 partners from 15 countries, who jointly discussed problems and developed and tested ideas for sustainable integrated urban water management (Butterworth, McIntyre, & da Silva Wells, 2011).

The participants in the workshop felt that a global network was essential to address transboundary challenges, to be taken seriously by the ministry, and to later build the base for goal three – the advocacy and lobbying campaign. The global network would also build bridges with Track 1 governmental diplomacy for broader transboundary cooperation and treaty building. This led to the conception and establishment of the Transboundary Water In-cooperation Network (TWIN), a network of networks that connects transboundary water groups globally.

TWIN's mission is to strengthen and mobilize organizational networks that work locally, nationally, and globally towards equitable and reasonable sharing of water resources across borders for food, energy, livelihood, and ecosystem services. TWIN's vision is to build peaceful resolutions for water cooperation among stakeholders and nations, to improve border relations, water use practices, water quality, ecosystem services, and public health on both sides of the border, and build

resilience to climate change. TWIN abides by the UN Law of International Watercourses and Transboundary Aquifers and the UN Sustainable Development Goal 6 framework which includes 1) the principle of equitable and reasonable utilization, 2) obligation to not cause significant harm, 3) obligation of cooperation in jointly managing, protecting and developing water resources, 4) mechanism of prior notification of and consultations on planned measures, 5) reduce and control pollution of shared aquifers and 6) peaceful settlement of disputes (UN General Assembly, 2014).

In particular, TWIN focuses on facilitating negotiations between civic and scientific diplomacy by 1) enhancing community engagement and capacity building to promote water cooperation by helping to build localized social learning and knowledge construction practices to improve access to water and protect the quality of the water along transboundary rivers 2) identify the necessary information such as data collection, research, reports and mutually beneficial technical solutions to improve the quality of water resources, 3) convening meetings and negotiations to promote bilateral/multilateral communication across borders on managing water resources. Building multilateral relationships with network of organizations, professionals, and individuals are not easy when there is animosity between the countries. TWIN is committed to mediate cooperative discussions and negotiations in neutral grounds to build relationships and cooperative solutions to transboundary issues.

Successful water negotiation, or reciprocal levels of communication frameworks, is essential to address interests, risks, and identity. As one program participant observed: “we have plans for the future, but it will only be possible by initiating transboundary water cooperation. We have to work together.” The participants identified that any governance and environmental diplomacy frameworks will have to address public interests foremost, and addressing risks that threatens identity, respect, and shared humanity. Put in the words of a participant: “we are concerned about the people. That's the first step. And the second step is trust-building. And the third step is to mobilize the communities from both sides to force their governments as a civil society to come to an agreement.” Conflict and cooperation are two sides of a coin. Lack of cooperation inevitably leads to conflict: civic participation and local-scientific knowledge construction are essential to build effective protocols for cooperation and evidence-based decision-making for lasting trust and peaceful relations among these neighbors in the Kabul Basins.

## Conclusion

The management of water resources is essential to reduce poverty, increase sustainable economic and social development, improve quality of life for all, as well as to ensure an adequate supply of water for future generations of Afghans and Pakistanis. This research summarized the outcomes of the environmental diplomacy workshop held between Afghanistan and Pakistan on water cooperation in the Kabul River Basin, one of the most heavily conflicted transboundary river basins in the world. As Afghanistan and Pakistan are looking to modernize and build the nation, dependent upon neoliberal ideologies that increase the need for techno-scientific developments to increase productions and economic growth in agriculture, mining, energy production, and other manufacturing and social enterprises, the demand for water is increasing. Water scarcity is already beginning to be felt in Pakistan and its future further made indeterminate due to the uncertainties that climate change brings with its unpredictable shifts in glacial melts, flash floods, heat waves, and droughts with severe consequences to water security. Strategies for dealing with water security are still dealt with state-centric coercive, hegemonic compliance producing mechanism where relative power determines the outcomes of discussions on bilateral water issues. The immediate problems identified to transboundary water rights, allocation, and security within this workshop included lack of focus on benefits to the local and rural population in the region, lack of access to



water in rural areas, degrading water quality from multiple activities, and lack of scientific knowledge on the transboundary river systems to build better transboundary water relations, cooperation, and treaties. New adaptive governance strategies are needed to identify local concerns with water rights, allocation, and bilateral water cooperation among riparian partners to generate effective solutions for both sustainable use and conservation of water resources.

The workshop also highlighted that transboundary water cooperation can be a powerful avenue for peace-building, to ease the strained border relationships and political tensions. The workshop stressed that one does not have to wait decades to formulate an official Kabul River Basin treaty to enforce water cooperation. Rather, cooperation starts with people on the ground and across the borders, who are of the same tribe and culture, who were separated by colonial drawing of boundaries. We show that Track 2 and Track 3 science and public diplomacy, or collaborative civic-scientific social learning and engagement network can be an effective framework for building transboundary adaptive governance systems. Such an effort on social learning and adaptive governance is focused on building a bottom-up process, by strengthening 1) community building and engagement, 2) local capacity and civic-scientific social learning and local knowledge construction capacity, and 3) transboundary engagement, exchange and advocacy with a specific focus on improving bilateral communication and trust across borders on managing water resources. The workshop also laid the foundation to the conception and establishment of the Transboundary Water In-cooperation Network (TWIN), a network of networks that connects transboundary water groups globally.

TWIN's mission is to strengthen and mobilize both local, national, and global organizational networks that work towards equitable and reasonable sharing of water resources across borders for food, energy, livelihood, and ecosystem services. TWIN's vision is to build peaceful resolutions for water cooperation among stakeholders and nations, to improve border relations, water use practices, water quality, ecosystem services, resilience to climate change, and public health on both sides of the border. TWIN has also incorporated the solutions identified by the workshop participants on facilitating negotiations between civic and scientific diplomacy by 1) enhancing community engagement and capacity building to promote water cooperation by helping to build localized social learning and knowledge construction practices to improve access to water and protect the quality of the water along transboundary rivers 2) identify the necessary information such as data collection, research, reports and mutually beneficial technical solutions to improve the quality of water resources, 3) convening meetings and negotiations to promote bilateral/multilateral communication across borders on managing water resources. Democratic participation, and social learning can be solutions to clear local misconceptions, improve transboundary water governance and ecological stewardship in the Kabul River Basin and to build more trusting and peaceful relations among these neighboring countries. Initializing localized transboundary civic-scientific social learning capacities and exchanges can be a powerful avenue to building a localized adaptive governance framework.

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