Pak-Afghan Water Issue
A Case for Benefit-Sharing

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Abstract

Despite being intertwined by geographical, linguistic, regional, religious and ethnic knots, Pakistan and Afghanistan have experienced upheavals in their bilateral relations. Changing regional and international political interests have further complicated their relations. Besides confronting traditional security challenges, Pakistan and Afghanistan are facing a severe non-traditional security threat, i.e., the issue of shared waters without any regulatory mechanism. Despite efforts of international organizations in the past, both countries have failed to reach an agreement over the shared waters. Currently, they are following a unilateral water strategy. Afghanistan-India joint water projects further complicate the situation as Pakistan is already facing issues with the latter due to the increasing number of Indian projects on western rivers. Though water may be critical for the recovery of Afghanistan's agriculture based economy, the projects on Kabul River may have serious implications on downstream irrigation and initiatives, the ecology and bilateral relations between the two riparian countries, Pakistan and Afghanistan. Linked closely to the conflicts among states and societies, water as an environmental security issue must be dealt with the same urgency as traditional security challenges. This paper analyzes the security perceptions in Pakistan and Afghanistan and contends that the probability of a future conflict over shared water has not been duly attended. There is a need to develop an integrated mechanism based on the fundamental principle of benefit-sharing instead of dividing waters or any unilateral decisions.

Keywords: Kabul River, Pak-Afghan Relations, Non Traditional Security Threats, Shared Waters, Benefit-Sharing, Water Treaties.

Introduction

Pakistan and Afghanistan are intertwined by multiple links including geographical contiguity, languages, culture, religion, regional and intra-tribal affiliations, and ethnic knots. Despite such diverse commonalities, they have experienced upheavals in their mutual relations. The regional and international dynamics of power politics have further increased hostilities between the two neighbors. Major irritants—Durand Line, blame game of proxies, refugees and Afghanistan's India policy—continue to affect their mutual relationship. In addition to their struggle with myriad of traditional security challenges, both countries face a

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severe non-traditional security threat, i.e. the issue of shared waters without any regulatory mechanism. Both countries are following unilateral Water Sector Strategy on shared rivers without consulting the co-riparian[1].

Pakistan and Afghanistan share waters of nine rivers but have signed no agreement on how to jointly govern and manage the shared water resources. This may become a major issue as ongoing power and irrigation projects upstream in Afghanistan, particularly on shared water of the Kabul River Basin (KRB) may impact water flow downstream in Pakistan. Similarly, any diversion on the Chitral River on Pakistan's side of the basin may have a negative impact on communities living on the Afghan side of the basin. The shared waters can thus become a serious irritant between the two riparian states in the absence of any regulatory framework.

There is an urgency to develop an integrated mechanism based on the fundamental principle of benefit sharing instead of dividing waters or any unilateral developments. In the concept of benefit sharing, there is a focus away from sharing volumes to sharing benefits derived from water resources. Likewise, is the shift in approach from 'my water' vs. 'your water' which results in a zero sum game to a positive sum game, treating water as a 'common pool'. It focuses on harnessing and sharing optimal potential of water resources for the maximum benefit of communities and economies.[2] A cooperative development of shared water resources will enable both the riparian states to exploit the full potential of the Kabul River and will provide a smooth road towards a carefully chalked out water sharing regime or treaty. Instead of rushing into an all-encompassing treaty dialogue, the two states can first explore promising avenues for cooperation in dam development, watershed management, improving efficiency, managing floods and droughts, design and infrastructure, information sharing and institutional arrangement.

With this background, this paper attempts at bringing water into the realm of security as a non-traditional security threat. It underscores that the issue of shared waters should be dealt with on an urgent basis to avoid escalation of the water conflict to the level that it threatens the

[1] Marketa Hulpachova and Alex Macbeth, eds., *Orphan River: Water Management of the Kabul River Basin in Afghanistan and Pakistan*, report (Berlin: Media in Cooperation and Transition, 2015), https://mict-international.org/wp-content/uploads/2016/01/MiCT_SIWI_Orphan-River_Final.pdf.

[2] Ashfaq Mahmood, "Prospects for Benefit Sharing in the Trans-Boundary Kabul River Basin: Investigating the Social, Economic and Political Opportunities and Constraints" (paper 36, Leadership for Environment and Development (LEAD) Pakistan, Islamabad, 2017), http://bit.ly/2M04TZI.

states, communities, ecology and peace in the region. It problematizes the security perceptions in both countries and contends that the probability of a future conflict over shared water has not been duly attended.

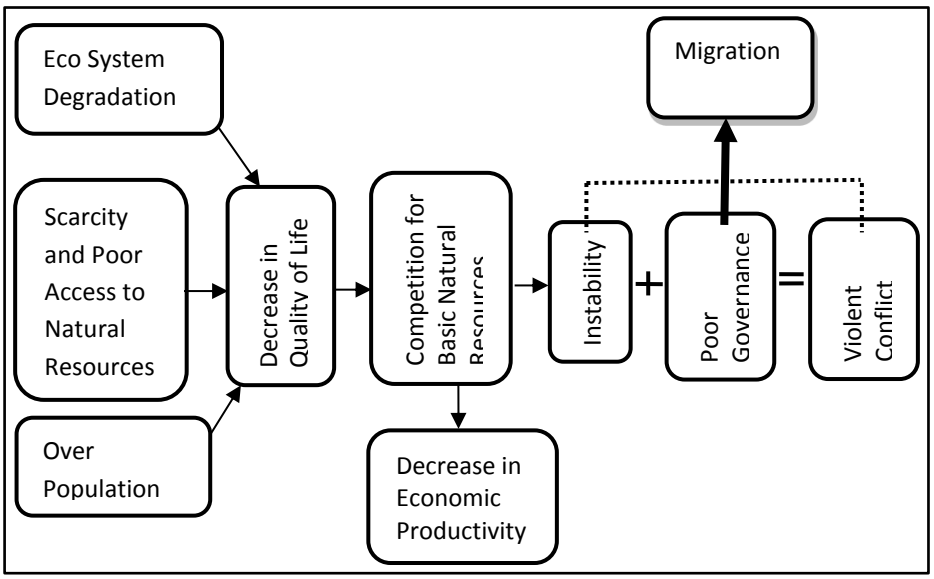
The paper is divided into five sections. The first section explains how water constitutes a non-traditional security threat and delves into the theoretical framework of security to show that water, as a scarce natural resource, can be a security entity and those who can control water will have an advantageous position in the future. The second section briefly touches upon the international treaty regimes on cross water bodies with the objective to highlight the principle of cooperation based on benefit sharing, which can serve as a model and be applied to the current situation between Pakistan and Afghanistan. The third section describes the cross-rivers between both countries and future water projects Afghanistan may start on its eastern side that may affect the flow of Pakistan's rivers. Fourth section briefly discusses the concerns in Afghanistan and Pakistan over shared water. Lastly the paper analyzes the use of benefit sharing principle by the two states and makes recommendations on how the issue can be resolved.

Water as a Non Traditional Security Threat

The global security environment is always in a state of flux with shifting discourses on security; from security as a mere military security to a more holistic security, encompassing a wider range of non-traditional threats states encounter such as environmental security, human security, food, health and societal security. Water security and water related environmental and societal security threats are well placed in this broader understanding of security. The rapid pace of globalization, urbanization, industrialization, population growth, and resultantly the fast depleting natural resources, are more real threats than the weapons and militaries. According to Peter Gleick,[3] the environmental problems can lead to conflict between national and sub-national actors. Ismael Seragildin, then Vice President of the World Bank, warned in 1995, 'If the wars of this century were fought over oil, the wars of the next century will be fought over water'.[4]

[3] Peter H. Gleick, "Water and Conflict: Fresh Water Resources and International Security," *International Security* 18, no. 1 (1993): 79-112, DOI: 10.2307/2539033.
[4] Quoted in, Bill Cosgrove, "Assessing the Future of Water," *Options*, June 25, 2013, http://www.iiasa.ac.at/web/home/resources/mediacenter/FeatureArticles/Water-Meeting-Report.en.html.

Fig 1: The Complexities of Water Security



Source: Florence Lozet and Kim Edou, "Water and Environment Security for Conflict Prevention in Times of Climate Change" (paper, Global Water Institute, Columbus, 2013), http://bit.ly/2GiVDMo.

The control of strategic watercourse can become a source of conflict and/or competition over water. The actors having control of key watercourses can find themselves in an advantageous position to manipulate the outcomes. It is especially relevant to the South Asian context. The region, housing 21% of world population, with only 8.3% share in world's fresh water, is water stressed. Growing population, increasing urbanization, shifting economies, changing crop patterns, global warming, rising sea level and mismanagement of water are the factors contributing to water stress in the South Asian region.[5]

Pakistan takes traditional security concerns more seriously as reflected in its narrative promulgated by statesmen, media, political leadership, and security experts, etc. However, the water issue between Pakistan and Afghanistan has not been identified as a major security threat as yet. Whatever is problematized is the 'Indian factor' in the

[5] Justin Chapman, "Conflict and Climate Exacerbate South Asia's Water Crisis" (Los Angeles: Pacific Council on International Policy, 2017), https://www.pacificcouncil.org/newsroom/conflict-and-climate-exacerbate-south-asia%E2%80%99s-water-crisis; and Iffat Pervaz and Sheharyar Khan, "Brewing Conflict over Kabul River: Policy Options for Legal Framework," *ISSRA Papers* 6, no. 2 (2014):17-38, https://ndu.edu.pk/issra/issra_pub/articles/issra-paper/ISSRA_Papers_Vol6_IssueII_2014/03-Brewing-Conflict-over-Kabul-River.pdf.

shared waters between Afghanistan and Pakistan. India, among other international actors, is also engaged in Afghanistan in the reconstruction process of its economy. In view of its historically stressed relations with India, any development project with Indian 'signature' in Afghanistan is perceived in Pakistan as a security threat and mobilization of the Indian sphere of strategic influence.

International Water Management Regimes and Best Practices

There are around 276 trans-boundary watersheds, crossing the borders of 145 countries in the world.[6] Wherever water crosses the borders, there arises a need to have a coordination or treaty between the nation states as any unilateral water management and hydrological project may lead to a situation of environmental insecurity, exacerbating other concerns of human security. Disputes on water, predate the nation state system and the development of international legal frameworks. However, the nature of such disputes has changed from the navigation and demarcation of boundary issues to water infrastructure development and conservation. Here, cases of mismanagement of shared waters can also be quoted.[7]

The international legal practices provide rules for the governance and management of trans-boundary waters and facilitate cooperation. In the absence of a treaty, the customary international law guides the bilateral or multilateral interactions over water. Customary international law imposes some general obligations on the co-riparians assuring mutual compliance and expects the upper riparian to let the flow to the lower riparian without affecting the quality and quantity of water.[8]

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[6] UN Water, "Water Security and the Global Water Agenda" (brief, United Nations University, Ontario, 2013), https://www.unwater.org/publications/water-security-global-water-agenda/.

[7] Shabir Ahmad Khan and Muhammad Nafees, "Construction of Dams on Kabul River and its Socio-Economic Implications for Khyber Pakhtunkhwa, Pakistan," *Central Asia Journal* 83, no. 1 (2018): 1:18, http://www.asc-centralasia.edu.pk/Issue_83/01%20Shabir%20&%20Nafees%20(1-18).pdf. h. The Amu and the Syr Darya are major common water sources in Central Asian states. These rivers feed the Aral Sea. The riparians are in a state of conflict over the shared waters of the Amu Darya and the Syr Darya, with no visible solution.[7] The records show a balance in favor of cooperation over conflict in water related dispute. These bilateral legal regimes in the form of treaties have endured wars in many cases.

[8] Shakeel Azam, "Kabul River Treaty: A Necessity for Peace-n-Security between Afghanistan and Pakistan, and Peace in South Asia," *Gomal University Journal of Research* 31, no. 2 (2015):134-145, http://www.gu.edu.pk/New/GUJR/December_2015_PDF/_13_%20Azam_%20KABUL%20RIVER%20TREATY%20A%20NECESSITY%20FOR%20PEACE-N-SECURITY%20BETWEEN%20AFGHANISTAN%20AND%20PAKISTAN,%20AND%20PEACE%20IN%20SOUTH%20ASIA.pdf.

The Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes, 1992[9] provides an intergovernmental platform to advance trans-boundary cooperation. The principles enshrined in this Convention are considered as international best practices. These principles include equality and reciprocity, information sharing, taking measures to prevent and reduce the trans-boundary hazards, and participation in 'environmental impact assessment'.

The 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses[10] which addresses the shared water resources is the customary law which can help the two states reach an agreement on water. Its key principles on watercourses i.e. 'equitable and reasonable use' (Article 5 and 6) and 'the obligation not to cause significant harm' (Article 7), the obligation to share data (Article 9), 'information concerning planned measures' (Article 11) and their possible adverse effects (Article 12), protection and preservation of ecosystems (Part 1V; Article 20 – 23) can guide the co-riparians.

In addition to the above two conventions, the Madrid Declaration (1911), Helsinki Rules (1966) and Berlin Rules (2004) are other legal frameworks with the guiding principles of participatory water management, protection of existing uses, sustainable water development, minimizing the hazards, equitable utilization, protection of aquatic environment and discouraging the alterations and modifications in international basins.

There are many success stories of cooperation and management of trans-boundary waters in the world. The lessons are there to be learnt from these precedents. Columbia River Treaty (CRT) signed in 1964 between Canada and USA is an example. Canada is both upper and lower riparian on Colombia River. Under the CRT Canada agreed to have storage facilities and US was also allowed to construct the Libby dam. Although, the dam caused a back flooding into Canada. Both countries continue to share the power benefits of the dams allowed under the CRT and cooperate over flood prevention.[11] The case of Colombia River is similar to KRB in terms of riparian status, a case from which Pakistan and Afghanistan can learn. The storage facilities and hydro power

[9] United Nations Economic Commission for Europe, "Introduction: About the UNECE Water Convention," accessed July 12, 2017, http://www.unece.org/env/water/text/text.html.

[10] United Nations General Assembly, Resolution 51/229, "Convention on the Law of the Non-navigational Uses of International Watercourses," May 21, 1997, legal.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf.

[11] Mahmood, "Prospects for Benefit Sharing in the Trans-Boundary Kabul River Basin: Investigating the Social, Economic and Political Opportunities and Constraints."

projects on the Kabul River can be used for mutual benefit. The flooding of Nowshera and its surroundings can be managed. The power benefits can be shared and floods and droughts can be prevented.

Similarly, the case of the Mekong River reveals that despite diversity in the region, an institutional mechanism can advance cooperation. Mekong River Commission was formed by the lower riparians—Cambodia, Laos and Thailand—while the upper riparians, China and Myanmar, were the dialogue partners. All the stakeholders agreed upon an efficient use of the shared water resource for the benefit of all. This involved an integrated water management for irrigation, fisheries and agriculture.[12] An agreement was reached on data and information sharing.

Cooperation over the Rhine River among nine co-riparians[13] to coordinate actions on security issues such as water quality, ecology, the protection of fisheries, and flooding is another success story.[14] The 1929 treaty on Nile River Basin, one of the sensitive and vulnerable basins, signed between Egypt and Sudan is also an example.[15] Indus Waters Treaty (IWT)[16] between India and Pakistan is also regarded, by many scholars, as a success story of the South Asian region. There are lessons which can be learnt from this legal arrangement on shared waters between the otherwise arch rivals:

- An effective dispute resolution mechanism must be there between the co-riparian states to avert the undesirable circumstances.
- Power inequities between the parties to the treaty may cause damage to the spirit of the treaty and lead to hydro hegemony and delay in conflict resolution.
- Positive and active third party involvement is vital to reach a settlement, which in this case was managed by active World Bank support.
- Sensitivity of the parties towards hydrological concerns, i.e., securitizing the water issue can speed up an agreement.
- Water must be delinked from other irritants.
- Joint water institutions can play an effective role in conflict mitigation.

[12] Ibid.
[13] Switzerland, Germany, Netherland, France, Italy, Austria, Liechtenstein, Luxembourg, & Belgium.
[14] UN Water, "Water Security and the Global Water Agenda."
[15] Ibid.
[16] Indus Waters Treaty 1960, India-Pak.-IBRD, September 19, 1960, 6032, https://treaties.un.org/doc/Publication/UNTs/Volume%20419/volume-419-I-6032-English.pdf.

- The mentality to use water as a weapon may cause a damage to the communities linked with the basin.

Structural Aspects and Transboundary Waters

Pakistan and Afghanistan are part of the hydrological society of South Asia. Such societies have trans-boundary rivers as their defining features. Pakistan lies in the arid and semi-arid zone with annual rainfall under 375mm.[17] Its major water sources are ground and surface water. Unlike Afghanistan and India with whom Pakistan shares its waters, Pakistan depends upon the single river basin. Five major tributaries joining its eastern side are Jhelum, Chenab, Ravi, Beas and Sutlej besides other minor tributaries. On the western side Kabul River and its tributaries join the Indus River, which is a late riser, with a total length of 2900 Km and 966,000 sq. km drainage area. There are seasonal as well as annual variations in the river flow.

Table 1: Water Availability per Capita/year in Pakistan

Year	Population (million)	Water Availability (cubic meters)	Global criteria
1951	34	5260	$1000m^3$ per capita is the threshold value (Falkenmark & Wedstrand 1992)
2010	172	1038	
2020	204	877	
2025	221	809	

Source: Irshad Ahmad, Allah Bakhsh Sufi, Shahid Hamid and Wassay Gulrez, "Construction of Large and Medium Dams for Sustainable Irrigated Agriculture and Environmental Protection," in *World Environment Day: Green Economy-Does it Include You?* ed. Ghulam Hussain (Lahore: Pakistan Engineering Congress, 2012).

[17] M. H. Bukhari and Ejaz Ahmad Sayal, "Emerging Climate Changes and Water Resource Situation in Pakistan," *Pakistan Vision* 12, no. 2 (2011): 236-254, pu.edu.pk/images/journal/studies/PDF-FILES/Artical-8_V_12_No_2_Dec11.pdf.

Table 2: Water Availability for Irrigation in Pakistan (2002)

Average annual river flow	138 MAF
Water available at canal heads	104 MAF
Water reaches at the farm gate	58.3 MAF
System losses	45.7 MAF

Source: Irshad Ahmad, Allah Bakhsh Sufi and Imran Tariq, "Water Resources of Pakistan," in *Pakistan Engineering Congress in retrospect, 1912-2012: Centenary Celebrations (1912-2012)*, ed. Ghulam Hussain (Lahore: Pakistan Engineering Congress, 2012), https://pecongress.org.pk/images/upload/books/4Dr.%20Allah%20Bakhsh%20Sufi.pdf.

With an increasing population, Pakistan is fast heading towards a critical situation of water shortage and even the threat of famine. The per capita surface water availability has reduced from 5000 cubic meter per person in 1947 to 1032 in 2015 and may further drop to about 809 m^3 by 2025. As per Falkenmark Water Stress Index, these figures suggest that Pakistan is a water stressed country and by 2025, it will become water poor.[18] Under such circumstances, it has become all the more necessary to have water storage facilities. Agriculture sector accounts for 21% of GDP in Pakistan. Besides, 62% of the country's population is living in rural areas and directly or indirectly depends on agriculture for livelihood whereas Pakistan has only three large storage facilities at Mangla, Tarbela and Chashma, which have lost 28% of their original storage capacity. [19] A report by WAPDA indicated loss of '27 per cent of live water storage capacity.' It noted, 'the live water storage capacity of Tarbela, Mangla and Chashma dams has declined by 4.37 million acre feet (MAF) over the years' cautioning that it will decline further by the end of 2025.[20] Pakistan's live water storage capacity 'has decreased to 13.68 MAF, which equals to a meager 30 days carryover capacity, while India has carryover capacity of 170 days, Egypt 700 days and America 900 days.'[21]

[18] Azam, "Kabul River Treaty: A Necessity for Peace-n-Security Between Afghanistan and Pakistan, and Peace in South Asia," 134-145.
[19] Shaheen Akhtar, "Emerging Challenges to Indus Waters Treaty," *Regional Studies* XXVIII, no. 4 (2010): 3-66, https://www.academia.edu/8046599/Emerging_Challenges_to_Indus_Waters_Treaty.
[20] Kalbe Ali, "Dams have Lost 27pc of Storage Capacity: Wapda Report," *Dawn*, July 17, 2012, https://www.dawn.com/news/734986.
[21] Pakistan Water & Development Authority, Government of Pakistan, "WAPDA Chairman briefs NDU delegation on water challenges, development projects 'WAPDA plans to add 20 MAF in water storage, 21000 MW power generation by 2030'," press release, November 16, 2018, http://bit.ly/2JJ6WhK.

Table 3: Current and Future Demand of Pakistan (MAF)

S.no	Sector	Water Requirement MAF		
		2015	2020	2025
1	Agriculture	111	115	119
2	Industry	4.28	4.54	4.8
3	Municipal	8.10	9.3	10.5
4	Environment	1.54	1.62	1.70
5	Total	124.92	130.46	136

Source: Ahmad, Sufi, Hamid and Gulrez, "Construction of Large and Medium Dams for Sustainable Irrigated Agriculture and Environmental Protection."

Despite the availability of Water Apportionment Accord 1991, for distribution of water between Pakistani provinces[22] the lack of a comprehensive national water management strategy and mistrust between the provinces has caused interprovincial grievances regarding water shares and distribution. Adding to this critical situation are Pakistan's water woes with its neighbors. The issue over water with India started just after the independence, only to be settled by the Indus Water Treaty. Pakistan considers it in violation of its interests and rights and maintains that India has been disregarding the treaty by initiating water projects on western rivers. Still, many regard the treaty as a success arguing that it has kept Pakistan and India from fighting a war on water. India is not only controlling water and constructing dams on the Chenab River and the Jehlum River, it is actively expanding agriculture use and flood control mechanisms.[23]

Pakistan also shares some water with Afghanistan, which shares its water with Iran and CARs. Afghanistan has four major river systems: Amu Darya, Harirud–Murghab River, Helmand River and Kabul River.[24] An estimated 80% of its 28 million population depends upon agriculture and 95% of the available water is used for agriculture.[25] Out of 46.2 MAF surface water available, Afghanistan has utilized 13.78 MAF and is

[22] Apportionment of Waters of Indus River System Between the Provinces of Pakistan, Punjab-Sindh-NWFP-Balochistan, March 3, 1991, - http://pakirsa.gov.pk/WAA.aspx.
[23] See Akhtar, "Emerging Challenges to Indus Waters Treaty."
[24] "Surface Water Resources of North Afghanistan," *CAWater-Info*, accessed July 12, 2019, http://www.cawater-info.net/afghanistan/surface_water_e.htm.
[25] Ministry of Water Resources and Environment, Afghanistan, "A Strategic Policy Framework for the Water Sector" (brief, Transitional Islamic State of Afghanistan, Kabul, 2004), afghanwaters.net/wp-content/.../10/2004-Strategic-Policy-FW-for-Water-Sector.pdf.

planning to raise the capacity to utilize up to 24 MAF.[26] It is expected that by 2030 the demand of water in KRB may increase from the existing 1-1.5 MAF to 3.14 MAF.[27] The existing extremely weak water infrastructure is the result of frequent unrest, prolonged warlike situation and poor governance. Frequent natural disasters in the form of droughts have also caused food shortages and dislocations.

The Kabul River, a 700 km long river originates in Sanglakh Mountains, flows 560 km in eastern Afghanistan and passing through Kabul and Jalalabad, crosses the border and flows some 140 km into Pakistan before draining into the Indus River at Attock.[28] The KRB covers 12 % of the Afghan territory, and drains 26 % of the annual river flow in Afghanistan.[29] It amounts for 16.5 MAF of the total 18.3 MAF of water Pakistan shares with Afghanistan. Chitral River adds 8.5 MAF of water to the Kabul River.[30] Hence, Pakistan is both an upper and lower riparian at the same time. KRB is divided into three sub-basins: Panjshir, Logar-upper Kabul and lower Kabul basin.[31] In Afghanistan, Logar, Kunar, Panjshir, and Alingar are the main tributaries of the Kabul River, while in Pakistan, Swat and Bara River join the Kabul River. Besides, there are some seasonal rivers which flow from Afghanistan into the tribal areas of Khyber Pakhtunkhwa (KP) and Baluchistan Province of Pakistan: Kurram River, Pishin Lora/Bore Nullah, Gomal River, Kadanai River, Kundar River, and Abdul Wahab Stream.

The livelihood of 7 million people (mostly of Pashtun origin) in Afghanistan depends upon Kabul River.[32] Besides being a source of drinking water, its water is used for agriculture, sanitation, industry and power generation. Being a vital hydro electrical artery for the two states, Kabul River has a great hydro power potential which has not been developed. Dozens of hydropower projects are planned by Afghan government now. These projects will surely affect the water rights and historical usage by Pakistan.

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[26] Ibid.
[27] Mahmood, "Prospects for Benefit Sharing in the Trans-Boundary Kabul River Basin: Investigating the Social, Economic and Political Opportunities and Constraints."
[28] Shahid Ahmad, "Towards Kabul Water Treaty: Water Cooperation for Managing Shared Water Resources: Policy Issues and Options" (paper, International Union for Conservation of Nature and Natural Resources, Karachi, 2013), 7, http://www.cawater-info.net/afghanistan/pdf/towards_kabul_water_treaty.pdf.
[29] Mahmood, "Prospects for Benefit Sharing in the Trans-Boundary Kabul River Basin: Investigating the Social, Economic and Political Opportunities and Constraints."
[30] Ibid.
[31] Ibid.
[32] Hulpachova and Macbeth, *Orphan River: Water Management of the Kabul River Basin in Afghanistan and Pakistan*.

On the Pakistani side, this watercourse is the vital source of livelihood for the agrarian economy of KP. The Kabul River through distributive channels provides for 80% of irrigation in Peshawar, 85% in Charsadda and 47.5% in Nowshera[33] and is the main source of fresh water available for drinking to millions living on Pakistan's side of the border.[34]

Table 4: Irrigation Usage on Kabul River in Pakistan

Projects	Water Usage (MAF)	Land irrigated
Warsak Canal System	0.4	119,000 acres
Kabul River System	0.32	84, 270 acres
Joe Sheikh +Mian Gujjar canals	0.28	N/A
Keshki Lift Irrigation Scheme	0.03	N/A
Private Canals	0.08	N/A
Total	1.11	N/A

Source: Khalid Aziz, "Need for a Pak-Afghan Treaty on Management of Joint Watercourses," *Criterion Quarterly* 2, no. 4 (2013).

To harness the maximum potential of flows from the Kabul River and improve agriculture, Pakistan has constructed 6 dams, 5 small and one large, on Kabul River. Of these, only Warsak dam is on the main Kabul River and provides water to the farming communities from February to October.[35] On Pakistan's side, Kabul River provides for 243 MW hydropower in Warsak dam with the voltage generation of 11kv. On the right bank of irrigation tunnel, the two canals irrigate 108,000 acres of land while the left bank irrigation conduit irrigates 11,000 acres of land. Since its commissioning in 1960 the Warsak Dam Project has delivered 38629.512 million units to the power system until August 2011.[36] The upstream diversion and Kama project will adversely affect Warsak and Kabul river canal systems, reducing 8-11% of the flows,[37] and 11%

[33] Waleed Majidyar, "Afghanistan and Pakistan's Looming Water Conflict," *Diplomat*, December 15, 2018, https://thediplomat.com/2018/12/afghanistan-and-pakistans-looming-water-conflict/.
[34] Ibid.
[35] Khan and Nafees, "Construction of Dams on Kabul River and its Socio-Economic Implications for Khyber Pakhtunkhwa, Pakistan."
[36] Pakistan Water and Power Development Authority, GoP, "Warsak" (Government of Pakistan, n.d.), accessed December 20, 2018, http://wapda.gov.pk/index.php/projects/hydro-power/o-m/warsak.
[37] Majidyar, "Afghanistan and Pakistan's Looming Water Conflict."

reduction in power generation at Warsak. In the Year 2015-2016 during Rabi season, the cultivated land via Warsak Canal system was 49,154 acres which reduced to 46,050 acres in the same season during 2017-18. Irrigated area of Peshawar district by Kabul River Canal System reduced from 26,200 acres in Rabi season 2015-16 to 25,967 acres for the same season in 2017-18.[38] Although there may be other reasons for the reduced cultivated area, water shortage is the main reason.

Shamil River (known as Kaitu in Pakistan) meanders through Khost Province in Afghanistan, crosses border to enter the North Waziristan agency and converges with Kurram River at Spinwam. Kurram River originates in the Paktia province of Afghanistan and flowing south-eastward it crosses border and flows into Kurram agency and irrigates around 80,000 acres of land. Approximately 87% of the river flows in Parachinar area of Pakistan. Afghanistan has special interests in developing its hydrological potential of the Kurram River as Paktia is a fertile province with the immense agriculture potential for rice, potato and corn cultivation. Hence, Afghanistan perceives that there is an urgent need to build reservoirs.[39]

Afghanistan has planned to build the Machalgho dam with $32 million financed by Asian Development Bank (ADB), on Kurram River to meet the energy and irrigation needs of Paktia province. The contract for construction has been given to a Russian firm.[40] Militant attacks and unrest in the province have affected the materialization of the project. However, on Pakistan's side, the Kurram-Tangi project, 32 km North of Bannu district, with a gross capacity of 1.2 MAF and 83.4 MW power generation has been approved by the Government of Pakistan (GoP) and is being actively pursued. As per Pakistan Water and Power Development Authority's (WAPDA) official data the completion date for Stage I was April 2019.[41] The project will provide water to the existing Bannu canal system. It will also provide water to irrigate new land in Northern Waziristan. Besides, Kurram Garhi Hydel power project in Northwest of Bannu district in KP province with installed capacity of 5 MW is providing cheap hydel power and is vital to address the energy shortages in the area.

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[38] Abdur Razzak, "Policy: Water Scarcity May Disrupt Pak-Afghan Relations," *Dawn*, November 25, 2018, https://www.dawn.com/news/1447512.
[39] Hulpachova and Macbeth, *Orphan River: Water Management of the Kabul River Basin in Afghanistan and Pakistan*.
[40] "Accord of Machalgho Dam Construction Signed," *Frontier Post*, December 26, 2017, https://thefrontierpost.com/accord-machalgho-dam-construction-signed/.
[41] Pakistan Water and Power Development Authority, GoP, "Kurram Tangi Dam" (Government of Pakistan, n.d.), accessed December 20, 2018,

Gomal River is another important cross-border tributary; it originates in the Ghazni province of Afghanistan, traverses Paktia before entering the South Waziristan area of Pakistan. In Pakistan, the Gomal Zam project funded by the GoP, WAPDA, and United States Agency for International Development (USAID), is a multi-purpose dam with a gross storage capacity of 1.14 MAF and 17.4 MW hydro power generation. Together the Kurram-Tangi and Gomal-Zam projects are expected to provide for the year round irrigation needs of 500,000 acres of land in KP, besides their flood control advantage.[42]

Kunnar River originating in the glaciated Hindukush Mountains of Chitral in KP flows into the upper Kunnar valley in Afghanistan, and finally empties into the Kabul River at Jalalabad. Chitral River adds 8.5 MAF[43] of water to the Kabul river, while the flow of Kabul at Nowshera is 13.5 MAF (the figure is average of the last 10 years 2008-2018 on 10 – Daily basis).[44] It is proposed that 40% water of the Chitral River can be diverted to Panjkora for the four summer months. It will require Mirkhani dam to store about 0.6 MAF of water, which will be transferred through a tunnel at the Lowari top to Panjkora River and canal to Munda H/W. The project will also help dealing with the damages caused by flooding in Kabul River.[45] Besides that, Katzarah dam with 35 MAF storage capacity will tame the flooding of the Indus River and control the back water thrust in Kabul River. The diversion of the Chitral River may have negative impacts on communities living in Pakistan.

Swat River is another important contributor to the Kabul River. It passes through Mohmand Agency, collecting the water of small rivers to join the Kabul with 3.5 MAF water near Khairabad and increases its flow up to 22 MAF. There are several trans-boundary tributaries of Kabul River that flows into the Baluchistan province of Pakistan and join other tributaries from the eastern Helmand Basin. These transboundary waters supply seasonal water and sustain large population in Baluchistan Province. There are community led efforts to construct small dams for storage of river and rainwater.

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http://www.wapda.gov.pk/index.php/projects/hydro-power/under-construction/kurram-tangi-dam.

[42] Hulpachova and Macbeth, *Orphan River: Water Management of the Kabul River Basin in Afghanistan and Pakistan*.

[43] Mahmood, "Prospects for Benefit Sharing in the Trans-Boundary Kabul River Basin: Investigating the Social, Economic and Political Opportunities and Constraints."

[44] Daily Hydrological data obtained from Pakistan Water and Power Development Authority, GoP, "Daily Hydrological Data" (Government of Pakistan, April 8, 2015).

[45] Khan and Nafees, "Construction of Dams on Kabul River and its Socio-Economic Implications for Khyber Pakhtunkhwa, Pakistan."

Afghanistan's Concerns and Development Strategy

The fact cannot be denied that any concerns regarding its shared waters in Afghanistan are serious. In the past, water shortages have led to dislocations in the form of environmental damage, Internally Displaced Persons (IDPs) and loss of livelihoods of millions. The environmental hypothesis on the political upheaval in Afghanistan since 70s, would explain that the severe droughts in Afghanistan caused the marginalization of Ghilzai and Durrani tribes.[46] It threatened their primary economy of livestock and thus their livelihood eventually leading to their mounting a coup against Sardar Daud in 1978 and later on their support to the Taliban.[47] Afghanistan still suffers from serious dislocation caused by the decline in rainfall and drought conditions and consequently decreased karez water, resulting in a 60% reduction in cultivable land.

Agriculture sector accounts for almost 50% of Afghanistan's GDP.[48] It has immense potential in agriculture. Before the Soviet invasion, Afghanistan was self-sufficient in agricultural production and was exporting its agricultural products. Out of its 19 million acre land, 12.7 million acres of land is arable. The total cultivable land was 10.8 million acres, which reduced to 7.7 million acres after the Soviet invasion as most of the irrigation infrastructure got damaged in the war. The figure reduced further to 4.6 million acres in 2002 due to drought and the inability of the Taliban government to rebuild the irrigation infrastructure.[49] Water infrastructure did not witness any significant improvement during US occupation and subsequent political governments.

There is paranoia in Afghanistan regarding its shared water with neighbors. The governments in Afghanistan have iterated that the neighbors are damaging its water development projects and are using more of its waters.[50] Afghanistan has a treaty with Iran on Helmand River Basin, and claims that Iran is using far more than the allocated water. The issues with Helmand treaty have made the Afghan officials wary of concluding a new treaty on the Kabul River.

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[46] Khalid Aziz, "Need for a Pak-Afghan Treaty on Management of Joint Watercourses," *Criterion Quarterly* 2, no. 4 (2013).
[47] Ibid.
[48] Ahmad, "Towards Kabul Water Treaty: Water Cooperation for Managing Shared Water Resources: Policy Issues and Options."
[49] Aziz, "Need for a Pak-Afghan Treaty on Management of Joint Watercourses."
[50] Mujib Mashal, "What Iran and Pakistan Want from the Afghans: Water," *Time*, December 2, 2012, http://world.time.com/2012/12/02/what-iran-and-pakistan-want-from-the-afghans-water.

Now, as the political situation is getting normalized in the post-conflict Afghanistan and refugees and IDPs expected to return home, there is an increased pressure and demand for more supply of water. As most of the irrigation infrastructure is war stricken, the government in Afghanistan has decided to rebuild the infrastructure and utilize its water potential.[51] All these projects in the upstream Afghanistan are believed to be critical for it as the country lacks reservoirs, dams and water infrastructure to manage its run-off and control water flows to its neighboring countries. Afghanistan, financed by international donors, plans to construct 12 major multi-purpose dams on Kabul and several other projects on other rivers. The storage capacity of the dams on Kabul River will be 4.7 MAF, approximately equal to Mangla Dam in Pakistan. It is estimated that the 16-17% reduced flow downstream may threaten Pakistan's water needs.[52]

Table 5: Hydel Projects on the Kabul River in Afghanistan

River Basin	Projects	Cost ($US)	Power Generation (MW)	Gross Storage Capacity (million cubic meters)	Live Storage Capacity	
					in MAF	in million cubic meters
On Panjsir River Basin	Totumdara	332 million	200	410	0.33	340
	Barak	1.174 billion	100	530	0.3	390
	Panjshir 1	1.078 billion	100	1300	0.9	1130
	Baghdara	607million	210	400	0.32	330
Logar Upper Kabul Basin	Haijan	607 million	72	220	0.2	200
	Tangi Wardaq	356 million	56	350	0.28	300
	Kajab	207 million	15	400	0.32	365
	Gat	51million	86	500	0.4	440

[51] Jon Campbell, "Dry and Ravaged Land: Investigating Water Resources in Afghanistan," *Earth*, January 4, 2015, https://www.earthmagazine.org/article/dry-and-ravaged-land-investigating-water-resources-afghanistan.
[52] Raza Ullah and Farhad Zulfiqar, "Transboundary Water Issues between Pakistan and Afghanistan" (paper presented at XVI Biennial IASC Conference, Utrecht, July 10-14, 2017), https://www.iasc2017.org/wp-content/uploads/2017/07/13I_Raza-Ullah.pdf.

Lower Kabul Basin	Kama Hydel	-	11.5	-	0.44	-
	Konar (A)	1.094 billion	94.8	1212	0.8	1010
	Laghman	1.434billion	1251	405	0.23	288
	Sarobi	442 million	200	-	0.32	-
Total		-	2406	5727	4.25	4793

Source: Ashfaq Mahmood, "Prospects for Benefit Sharing in the Trans-Boundary Kabul River Basin: Investigating the Social, Economic and Political Opportunities and Constraints" (paper 36, Leadership for Environment and Development (LEAD) Pakistan, Islamabad, 2017), http://bit.ly/2M04TZI.

Afghanistan has perceived water as a non-traditional security threat, linking food shortages, floods, droughts, dislocations, and resettlement with water management. The government feels the urgency to build water infrastructure with foreign assistance to meet its water requirements for irrigation, food, energy and building its capacity to control floods and flows of its own rivers. These excessive demands are the result of returning population. These projects on Kabul River with a hydro power generation potential of about 2406 MW will reduce the gap between the current supply of 670 MW against a demand of 3570 MW. These projects will increase the storage capacity of annual surface water availability from 3-24 % and bring under cultivation, an additional 16400 hectare of land.[53] Additionally, these will reduce the stress on ground water resources. The 2007 Water Sector Strategy (WSS) is committed to improve, rehabilitate and reestablish the previously irrigated areas.[54] However, the WSS fails to fully address the issue of Transboundary Rivers and impact of upstream projects on the downstream communities.

Perceiving water as a non-traditional security threat, Afghanistan may use water as a 'silver bullet.' With years of turmoil and the entire water infrastructure damaged, Afghanistan maintains the urgency of water development and management as a catalyst to growth and peace. Afghanistan is mindful of its privileged position as upper riparian and will use it for disturbing power asymmetries between Pakistan and Afghanistan. Linking water to the political and security issues, Afghanistan can use its upstream position for bargaining with Pakistan

[53] Ibid.
[54] GIRoA, "Water Resource Management: 1387-1391 (2007/8-2012/13)," in *Afghanistan National Development Strategy*, vol. 2 (Government of Islamic Republic of Afghanistan, 2008), http://www.cawater-info.net/afghanistan/pdf/wss08.pdf.

on issues like trade, access to seaports, refugees, Taliban and the border security.

Pakistan's Concerns and Water Strategy

Being in a water stressed situation and with growing internal water woes, Pakistan is not ready for any disaster. Its irrigation system is not efficient with below Kotri escapage being 32 MAF annually.[55] It suggests that a large amount of water available in the system gets wasted. Pakistan could not build any storage facility after 1973 and that too became possible under replacement arrangements funded by the World Bank. The country has completely lost its share of the eastern rivers under IWT and non-exclusive water rights on western rivers are also threatened by Indian hydro power projects. Any project by Afghanistan will add to a reduced flow in the western rivers which may further the interprovincial rift over water along with a multitude of other issues.

Pakistan has serious concerns with the proposed Afghan hydro projects, as these may threaten Pakistan's water rights and thereof water security. The concern is that these projects will place Afghanistan in a position to control water flows in Pakistan, reducing flows in the lean period and releasing during wet times. The control and release of water from Afghanistan may change the crop pattern and affect the sowing and cultivation times. Ecological effects of these projects not only on fishermen communities, but also fish populations, wildlife and migratory birds on both sides of border are matters of regional concern.[56] KP province has suffered due to terrorism and anti-terror drive resulting in dislocations and displacements. Since 1940s, there have been clashes between Shia and Sunni communities of Parachinar over the usage of community built water channels.[57] Any shortage in water supply may be manipulated to ignite a sectarian crisis in the province, which is likely to spread across the country.

Indian involvement in building new reservoirs in Afghanistan is further complicating the issue. Since 2001, New Delhi has pledged to

[55] Pakistan Water and Power Development Authority, GoP, *Hydro Potential in Pakistan*, report (Government of Pakistan, 2012), http://climateinfo.pk/frontend/web/attachments/datatype/WAPDA%20(2012)%20Hydro%20Potential%20in%20Pakistan.pdf.
[56] Khan and Nafees, "Construction of Dams on Kabul River and its Socio-Economic Implications for Khyber Pakhtunkhwa, Pakistan."
[57] Noreen Naseer, "Federally Administered Tribal Areas (FATA): Impacts of Militarization and War Crimes on Tribal Women and Children," *Pakistan Journal of Criminology* 7, no. 4 (2015): 129.

contribute $2 billion on development projects in Afghanistan.[58] India has already helped Afghanistan in the construction of Salma dam in Herat Province, which has been termed as the Afghan–India Friendship Dam. The dam has evoked resentment in downstream Iran. India has also proposed Shahtoot dam in Chahar Asiab district on the Kabul River.[59] All in all it has assisted Afghanistan in preparing feasibility studies and reports on 12 hydel projects on Kabul River mentioned in Table 7.[60]

With India's growing role in projects on KRB, a regional water war is a huge concern. The water related issues with Afghanistan are being securitized only when seen in the context of India's involvement. Such vision may hamper the delinking of water security from politico-military concerns. India may have real intentions to weaken Pakistan by posing a two-pronged environmental security threat[61] by controlling the flow on its side of the border and helping Afghanistan in building water conservation structure. Yet it may not be ideal to follow Kautilya's line of realist thinking.

Negotiation Challenges

In the past both Pakistan and Afghanistan made efforts to negotiate in order to work out a mechanism. In 2006, the World Bank consulted both countries over joint water treaty on Kabul River and offered its services as facilitator and mediator. However, it refused to become the guarantor. These efforts by the World Bank could not bring the two parties on negotiating terms. Afghanistan gave the excuse that it was working on its National Water policy and cannot initiate talks until the policy is framed.[62] In order to understand and formulate country's water strategy, and reach an agreement on Kabul River with Afghanistan, the Pakistani Government constituted technical committees on water resources in

[58] Elizabeth Hessami, "Afghanistan's Rivers could be India's Next Weapon Against Pakistan," *Foreign Policy*, November 13, 2018, https://foreignpolicy.com/2018/11/13/afghanistans-rivers-could-be-indias-next-weapon-against-pakistan-water-wars-hydropower-hydrodiplomacy/.

[59] Sudha Ramachandran, "India's Controversial Afghanistan Dams," *Diplomat*, August 20, 2018, https://thediplomat.com/2018/08/indias-controversial-afghanistan-dams/.

[60] Ibid.

[61] "Modi Threatens to Use Water as Weapon against Pakistan," *Dawn*, November 26, 2016 https://www.dawn.com/news/1298707/. Indian PM, Narendra Modi has threatened to use water as a weapon against Pakistan in Nov, 2016 he said, "Now every drop of this water [of the Ravi, Beas and Sutlej] will be stopped and I will give that to the farmers of Punjab and Jammu and Kashmir. I am committed to this," he added. "The water is India's right [but it's] flowing into Pakistan and going [to] waste into the sea".

[62] Ullah and Zulfiqar, "Transboundary Water Issues between Pakistan and Afghanistan."

2003 and 2005. Due to lack of data on the Afghan side and reluctance shown by Afghanistan to share the information on flows, these committees could not make any headway. In 2009, the joint statement by the two governments after the third Regional Economic Cooperation Conference on Afghanistan, water and energy were taken as important concerns as other traditional issues. This joint statement 'the Islamabad Declaration,' however, could not facilitate cooperation.[63] In 2011, 'Pakistan Trans-border Water Organization' was established to tackle the issues regarding water sector projects initiated by the upper riparian India and Afghanistan. In 2013, the two governments showed a resolve to reach a bilateral agreement on the Kabul River, however still the treaty is not materialized.[64] In 2014, representatives from the foreign ministries of Pakistan and Afghanistan were invited by the World Bank in Dubai to discuss the issue of shared waters. Afghanistan submitted its proposal in the meeting, however, the follow up meeting could not be convened. The issues discussed between the representatives of two states were construction of Saggay Dam and Shaal Dam on Kabul River, including its data exchange procedures and initial allocation of water.[65]

In Afghanistan, the legal structure for water management is the water law of 2011 which has declared adherence to the spirit of all international principles of trans-boundary water sharing.[66] The government, however, has designed a very complicated structure for managing Trans-boundary Rivers requiring cooperation between four ministries. Ministry of Energy and Water (MEW), deals with transboundary water related disputes, but is assisted by the Ministry of Interior Affairs (MOIA), Ministry of Foreign Affairs (MOFA); and the Ministry of Borders, Nations and Tribal Affairs. These ministries assist the MEW in drafting Memorandums of Understanding (MOUs) and treaties. The involvement of so many stakeholders may impede the process of reaching a treaty on water. However, the 2015 amendment in the water law aiming towards a unanimous water strategy is a positive step towards handling the issue. Both countries are already cooperating on prevention and management of floods. At a conference hosted by the Pakistan Ministry of Climate Change and United Nations Development Program (UNDP) in October 2015, the representative of Afghan MEW

[63] Hulpachova and Macbeth, *Orphan River: Water Management of the Kabul River Basin in Afghanistan and Pakistan*.
[64] Pervaz and Khan, "Brewing Conflict over Kabul River: Policy Options for Legal Framework."
[65] Ullah and Zulfiqar, "Transboundary Water Issues between Pakistan and Afghanistan."
[66] Hulpachova and Macbeth, *Orphan River: Water Management of the Kabul River Basin in Afghanistan and Pakistan*.

discussed the strategies on Glacial Lake Outburst Flood.[67] To explore the avenues of cooperation on KRB, in February 2018, a Pak– Afghan stakeholder consultation was organized by LEAD Pakistan under the partnership of USAID. After the 3 days of exercise in Almaty, the main recommendations which came forward were regarding the information and data sharing, learning from past experience, particularly on the economic externalities of diversion projects, developing a systematic and structured capacity building and a regional cooperation approach including the Central Asian Republics (CARs) in the process.[68]

Conclusion

After discussing the security perceptions in Pakistan and Afghanistan, the possibility of a future conflict between Pakistan and Afghanistan over shared water cannot be overlooked. This calls for an integrated mechanism based on the fundamental principle of benefit-sharing instead of dividing waters or any unilateral decisions.

It is recommended that the two riparians should pursue a benefit sharing approach. Such an approach will lead to a positive sum game between the two neighbors. The analysis of cost and benefit sharing approach includes tangible and intangible costs and benefits. The quantifiable cost includes the overall financial cost for construction and operation of infrastructures, cost of land acquisition, and rehabilitation of affected populations.[69] The intangible costs involve the social and psychological cost of displaced populations, loss of productive land inundated by the reservoirs, and the ecological costs. The tangible benefits will come in the form of more predictable hydrological flows, hydro power generation, increased yield and drought and flood prevention. The intangible benefits will appear in the form of peace dividends, reduced military spending, domino effects on the ecology and welfare of the communities connected with water and other societal sectors.[70] To achieve the best from the principle of benefit sharing, equitable distribution of benefits based on transparent assessments of benefits and costs is required along with the political will on both sides.

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[67] Ibid.
[68] Bilal Khalid, *Benefit of Sharing on Kabul River Basin: Afghanistan-Pakistan Stakeholders Consultations*, report (Islamabad: Leadership for Environment and Development (LEAD) Pakistan, , 2018), http://www.lead.org.pk/attachments/Pak-Afghan-Stakeholders-Consultation.pdf.
[69] Mahmood, "Prospects for Benefit Sharing in the Trans-Boundary Kabul River Basin: Investigating the Social, Economic and Political Opportunities and Constraints."
[70] Ibid.

In the emerging hydro politics of Pakistan and Afghanistan, a bilateral water treaty will be the right step forward and a confidence building measure towards improvement of relations. Some policy recommendations for reaching a bilateral water treaty on River Kabul and other tributaries are as follows:

- Consulting the international best legal practices[71] for effective water management and conflict prevention;
- Trust-based political resolve and preventive hydro diplomacy;
- The sensitization of issue among the leadership and publics regarding the gravity of the subject;
- Establishment of consultative committees, both ministerial and technical, including national experts on both sides and comprising of international experts and donors;
- The dispute resolution mechanism under IWT provides a good foundation. The situation of 'no treaty' on shared waters is not going to help;
- The water commissioners appointed may be tasked to make cooperative arrangement for the treaty, promoting cooperation, environmental impact assessment, and 'optimum development of the rivers
- Putting in place regulatory, reporting and monitoring mechanisms, and annual/periodic reviews;
- Delinking of water from other political and security issues to avoid a deadlock;
- Given the less cordial bilateral ties between the two parties, other interlocutors like ADB, World Bank, and common neighbor like China can help reaching towards the treaty;
- Tapping the funds from International agencies like World Band, ADB;
- Prior to the drafting of a treaty between Pakistan and Afghanistan, initiating the timely and transparent exchange of data on river Kabul and the additional water needed for the proposed new projects. Data sharing on fortnightly basis and installation of Telemetry Systems will ensure transparency and will be confidence building measures leading towards the next step forward, i.e. a treaty regime;
- Cooperation and joint water monitoring on ensuring the quality to prevent the water bodies from getting polluted;
- Afghanistan needs to assure Pakistan that all the projects it plans to initiate are purely development intended and for its legitimate right to meet domestic needs. It must ensure to regulate these infrastructures keeping in view the principle of benefit sharing.

[71] Such as 1992 Convention, 1997 UN Convention, Madrid Declaration, Helsinki Rules, Berlin Rules.