

Trans-boundary water resources of Afghanistan and water sharing relations with its neighbours

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Abstract

Water can play a key role in internal as well as external risk of violence and the issue of Water-Sharing that contributes to a broad sense of unease relations among the states. Concerns over water are well connected with the other complex web of tensions including drugs, Islamist extremism, ethnic rivalries and border disputes. There is no war over water has recorded yet but problems among the states including affecting their economic development, fuelling extremism and occasionally resulting in violence. The interdependency and high reliance on water that flows across borders makes the situation more complicated. However war is a very expensive way of controlling resources so most countries prefer agreements. In case of Afghanistan the country uses only a small portion (about 30 per cent) of the water that originates in the country. Afghanistan is an innate landlocked country and virtually all major Afghanistan's rivers drain off into riparian neighbouring countries. Because Afghanistan lacks sufficient dams, reservoirs and flow control structures to adequately manage and control this runoff. As a result, the country is susceptible to both severe flooding and droughts, and has little control of water flow into neighbouring countries. This paper will discuss all water utilization related enigmas of Afghanistan and the disputes over water sharing with its neighbouring states of Central Asia, Pakistan and Iran.

Keywords: water resources, water sharing relations, Afghanistan

Introduction

Afghanistan is a landlocked country. Water is the major natural resource in Afghanistan. Rain and snow falls are the main source of river flows in Afghanistan. High altitudes of the Pamir and Hindukush are the original potential for several river basins in Afghanistan. Water flow in Afghanistan divided on five river basins: The Amu Darya river basin, The Helmand river basin, The Kabul (Indus) river basin, The Harirod - Morghab river basin and The Northern river basin (Blind river system).

River Basins of Afghanistan

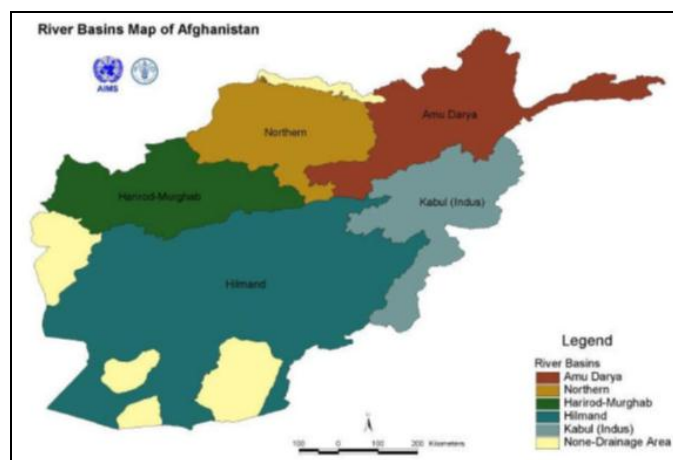


Fig 1: (Source: Habib, H., 2014)

Mostly all rivers of Afghanistan and entire water supply of the

country like water for drinking, irrigation, maintenance of wetland ecosystems are derived from within the Afghanistan's own borders. Unfortunately "the country is unable to utilise its water potential due to lack of comprehensive strategy plan related to water issues that Afghan Government necessary to attended them" [6].

According to a report on "Trans-boundary Water Policy of Afghanistan," the country uses only a small portion (about 30 per cent) of the water that originates in the country [6]. The primary source of water is snow melt in the Hindu Kush Mountains with runoff peaking in early summer. Before the Bonn conference Afghanistan faces many different problems like political unrest and civil war. So Afghanistan lacks sufficient dams, reservoirs and flow control structures to adequately manage and control this runoff. As a result, "the country is susceptible to both severe flooding and droughts, and has little control of water flow into neighbouring countries" [7]. Water is a serious problem nationwide mainly because of Afghanistan is an innate landlocked country.

Virtually all major Afghanistan's rivers drain off into riparian neighbouring countries. According to the UNEP post-conflict environment Assessment report on Afghanistan, "country uses less than one-third of its water potential due to damaged water infrastructure systems during long time civil war" [8]. Afghanistan's Environment is also under the great pressures because of "excessive extraction of water for agriculture proposes combined with long term drought has led to drastic declines in water resources" [8].

Afghanistan will not reach its energy, irrigation (agriculture) or urban and rural development goals, without substantial improvement in the development and management of

Afghanistan's water resources. But at the same time there are boiling trans-boundary water tensions throughout the region. Afghanistan's neighbours have historically laid claim to the waters that flow from the Hindu Kush Mountains and as "Afghanistan set to develop its water infrastructure substantially for the first time" [9]. Its neighbours worry for affecting their shares that may be diminished.

Trans Boundary Issues

The chaotic politics of water between Afghanistan and its neighbours has a long history due to the lack of water-sharing agreements between them. Pakistan and Iran have always had historical claims over the water resources of Afghanistan and these all claims have always been rejected by Afghanistan. Despite "sharing 90 percent of its water resources with neighbours, Afghanistan has only one bilateral water treaty, with Iran" [1]. Signed in 1973, according to the agreement, "Iran should receive 850 million cubic meters of water annually from the Helmand River basin" [1]. However, Afghan officials believe the treaty has been not fully implemented from the Iranian side. "Iran has been receiving 70 percent more than the amount of water initially agreed upon in 1973" [1]. Furthermore, without consulting Afghanistan, Iran has built infrastructure on the water flowing from Afghanistan.

As for Pakistan, several attempts at an agreement have come up short. In 2006, "the World Bank consulted with Afghanistan and Pakistan over a joint treaty on the Kabul River basin" [3]. But the intervention of the World Bank did not result in an optimal outcome for both sides, and conflict continued. In 2011, the Ministry of Water and Power of Pakistan once again asked for the intervention of the United States and World Bank in achieving a water treaty with Kabul to avoid disputes on water-sharing issues. Once again, the negotiations failed and water-sharing have become a potential troublemaker between the two neighbours. According to the World Bank, "Afghanistan has 57 billion cubic meters of surface water flowing from its three large river basins; the Amu Darya Basin in the north, the Kabul River Basin in the east, and the Helmand River Basin in the south" [2]. Of the existing resources, 17 BCM are currently used; that gives the sense of that Afghanistan's water resources are underused. But "it is estimated that Afghanistan's usage will increase to 30 BCM in the future" [9]. Afghanistan is currently beginning the second phase of the development on the Kajaki dam, the largest dam in Afghanistan, along with developing the Sorobi dam and accelerating the procurement processes of five major reservoirs and dams.

Pakistan and Iran are both dependent on water flowing out of Afghanistan to irrigate their territories and fuel their development. "A decrease in water availability in the future and increase in the capacity of water storage accompanied by the development of new hydropower projects inside Afghanistan would decrease the flow of water to Pakistan and Iran and may affect their interests" [9]. India also plans to assist Afghanistan in constructing multi-purpose water projects on the tributaries of the Kabul River. Afghanistan is planning for construction of dams and facilities on its rivers for flood control, electricity generation and irrigation expansion. "Once implemented, such projects would impact the amount of water

and timing of peak runoff for Iran, Pakistan, Uzbekistan and Turkmenistan" [4]. Both Pakistan and Iran have a history of sabotaging Afghan efforts to use its water resources, in addition to diplomatic meddling to hijack investment of donor countries in Afghanistan's hydro projects. Clearly, "these neighbours do not want Afghanistan to become a hydro-hegemony" [6].

Pakistan is one of the most water-stressed country and situation likely to worsen into severe water scarcity owing to high population growth. Pakistan's is dependent on a single river system and lacks the having a multiplicity of river basins and diversity of water resources. Even, "under the Indus Water Treaty, Pakistan is supposed to receive 55,000 cusecs of water, but authorities complain that its share was drastically reduced, causing damage to crops and now it only received around 13,000 cusecs during the winter and a maximum of 29,000 cusecs during the summer" [3]. Afghanistan's initiative for construction multi-purpose water projects on the tributaries of Kabul River with a total water storage capacity of 4.7 million acre feet (MAF), "25 per cent more than that of Mangla Dam, would adversely impact Pakistan" [3]. It is estimated to suffer "16 to 17 per cent drop in water supply from Afghanistan after construction of 13 dams on the Kabul River" [3]. Pakistan has already established Pakistan Trans-border Water Organisation (PTWO) to tackle issues arising from construction of dams and water sector projects by upper riparian countries. Now, to highlight the issue and concerns pertaining to Kabul river projects, experts are trying to estimate the expected loss to the irrigation system in case the Afghan government builds dams on the Kabul River.

Unfortunately, there is no water sharing agreement between Afghanistan and Pakistan. Except for an agreement on the Helmand River, no treaties exist between Afghanistan and its neighbours on water sharing. In the past, Pakistan did try to bring Afghanistan to the negotiating table to work out some mechanism to ensure a win-win situation for both sides. The World Bank agreed to facilitate a bilateral water treaty but refused to become the guarantor as it is the guarantor of the Indus Waters Treaty. "The two states can establish a joint, multi-disciplinary, scientific fact-finding working group to build a mutually agreed hydrological knowledge base on the Kabul River basin; or set up bilateral Afghanistan-Pakistan water resources commission to negotiate hydro-power and agricultural development plans" [7]. Both the countries can negotiate a bilateral treaty on the use and management of the Kabul River's water resources for their mutual benefit.

Thus, Kabul needs to assure Pakistan and Iran that recent development and infrastructure-building on the Helmand and Kabul Rivers is both a legitimate right and immediate domestic need of Afghanistan. "Afghanistan must convince its neighbours that these projects will not threaten their downstream communities, but will rather lead to peace-building in the region" [6]. To do that Kabul needs to build its capacity in water diplomacy. These issues could be solved properly if "all actors would commit themselves to regional cooperation and collective action" [7]. Any further dispute and disagreement over water sharing between Kabul and the neighbouring countries will lead to further tangled ties in the region. And future socioeconomic, environmental, and hydrologic challenges will threaten all. "Any potential water

treaty between Afghanistan and neighbours in the future should generate gains for all the stakeholders”^[9]. It is time for the leaders of all countries to agree on the common cause of development in the region and build their relationships. They must act like statesmen and work for the next generation. “The only option the region has for survival is consensus and agreement on pressing issues such as security, economic progress, and water sharing”^[4].

The Amu Darya River Basin

In the past the Amu Darya marked the border between the Soviet Union and Afghanistan. Now the independent countries in the region have to deal with several rivers and canals which are “now trans-boundary water courses, and conduct complex annual negotiations over water and energy in a context to water and energy as issues of national security importance”^[6]. The Amu Darya Basin is shared by Afghanistan, Tajikistan, Turkmenistan, and Uzbekistan. The Amu Darya, which flows from Afghanistan to Tajikistan through Uzbekistan and Turkmenistan finally to the Aral Sea. The Amu Darya makes up the Tajik-Afghan and then the Uzbek-Afghan borders. The river is likely to become a locus of disputes as states started to compete for water share properly like Afghanistan starts to take its share in future.

The Amu Darya is an equally important asset for Afghanistan. Half of its length, it flows either inside Afghanistan or along its border. “Between 13-40% of Afghanistan’s area and more than 25% of its population are within the Amu Darya basin

and it is most agriculturally productive in Afghanistan, containing 1.16 million ha of irrigated land”^[5]. Afghanistan plays a major role as an upstream country of the Amu Darya River basin and deserves special attention. There is a need for serious cooperation between Afghanistan and central Asian countries because “Afghanistan’s major infrastructure plans will create significant effects on water supplies in central Asia in the future”^[9].

Afghanistan has not been an active partner in managing the water in the Basin. During the 1940s to 1970s, several agreements were reached between the Soviet Union and Afghanistan regarding the waters of the Amu Darya. Though Afghanistan cannot be ignored but it has generally been ignored although “country is the second largest contributor to the river after Tajikistan, contributing nearly a quarter of the river’s 79 km. flow”^[2]. Northern Afghanistan accounts for 15% of Amu Darya basin area and 17 % of its population. According to the 1946 agreement between the Soviet Union and Afghanistan, Afghanistan is entitled to use up to 9 km. a year from the River Pyanj Afghanistan currently uses about 2 km. yearly. “Full use of Afghanistan’s quota for water use from the Pyanj (9 km./a), fixed by the 1946 agreement, could radically change the water flow along the Pyanj and would have a significant impact on the downstream flow regime of the Amu Darya”^[2]. There are estimates that “Afghanistan may divert as much as 10 billion cubic meters (bcm) from the Amu Darya in the future (compared to about 2 bcm today) if development plans are realized”^[2].

Table 1: Average water generation and use in Amu darya basin

Country	Contribution of Amu darya km/year	Percent of total	Irrigated land (Million ha.)	Water allocation	Percent of total used
Afghanistan	24	30%	1.2	-	-
Tajikistan	49.0	61%	0.5	9.5	15.4
Uzbekistan	4.8	6%	2.3	29.6	48.2
Turkmenistan	0.82	1%	1.7	22	35.8
Kyrgyzstan	1.6	2%	0.1	0.4	0.6
Total	80.22	100%	5.8	61.5	100

Source: Ahmad and Wasique, 2004. Fuchinouce et al., 2002

Over the past decade Afghanistan has cautiously expressed its interest in becoming an observer or member of the existing natural resource management mechanisms in Central Asia and is increasingly engaging in bilateral environmental cooperation. “Due to the insecurity in Afghanistan, neighbouring countries maintain a military presence along borders to prevent incursions by armed groups and drug traffickers”^[4]. Access to border areas are still problematic and in some places dangerous, difficult for making cross-border water monitoring and other environmentally-related activities. About 30 percent of the Amu Darya basin’s water flow originates in Afghanistan. “The existing water and agricultural infrastructure of Afghanistan is capable of utilizing only 7 to 10 percent of its water resources”^[2]. Afghanistan plans to undertake large scale irrigation and energy development projects. According to some estimates, Afghanistan’s irrigated land capacity can reach 1.5 million ha. “Twenty-five percent of the Afghan population depends on the Amu Darya for their livelihoods and for other economic activity so country requires sound political, economic and institutional choices”^[5]. It is imperative to implement policies that will be

acceptable to all countries in the region. “Afghanistan’s development plans (a late developer) will pose a new set of demands over the Amu Darya river flow”^[9].

The Helmand River Basin and Iran

The Helmand River rises in the Hindu Kush Mountains close to Kabul and flows 700 miles south before pouring into the Hamoun wetlands on the Iranian-Afghan border. On the way, it passes Chahar Burjak and Kamal Khan dam. The Helmand River Basin is home to more than seven million people^[4]. The Helmand River originates in the Paghman Mountains northwest of Kabul and flows 1,150km to Iran. “The Helmand River Basin constitutes some 45 per cent of Afghanistan’s surface area but the river contributes only around 10 per cent of the country’s total water resources”^[8]. Some 97 per cent is used in the agricultural sector on the Afghan side of the border and around 80 per cent on the Iranian side^[4]. Yet the amount of irrigated land in the Helmand River Basin is limited by a lack of sufficient dams and reservoirs to control the water flow during dry and wet years.

In 1973 agreement was signed between Iran and Afghanistan

on Helmand river basin regard to allocation of the river's water resources. It was bilateral treaty agreement on the Helmand River that established Delta commission between two Iran and Afghan States. Twenty-Six cubic meters per second delimitate for Iran side according to this agreement. "It was the only river that on which Afghanistan has interred into formal agreement with its western neighbour" [1]. Meanwhile Afghanistan and Iran recently have made constructive affords to cooperate on rehabilitation of Hamun lake. Both side tried for close cooperation since 2003 with the UNEP. The United Nations Environmental Program and the Global Environmental Facility (GEF) a trilateral sessions between, UNEP, Iran and Afghanistan. "Certainly it was an integral part of a coordinated set of large, medium and small initiative addressing water management in the basins of the rivers that flowing into Sistan Swamp" [8].

The problem is further complicated by the ecologically sensitive Sistan wetlands or "Hamoons." The Sistan region is one of the most arid on Earth. The Hamoon wetlands, which are protected under the Ramsar Convention, depend on water from the Helmand and its tributaries for their existence. "Without adequate flow, the Sistan region could see higher temperatures and waterfowl would lose a critical stop during seasonal migrations" [8].

Water allocations from the Helmand River, which crosses into Iran, have been controversial since at least the 1800s. The 1973 Helmand River Treaty was supposed to solve that. "It specifies Iran is to receive 22 square meters per second of flow from the Helmand Basin, with an additional 4 square meters per second thrown in for "goodwill and brotherly relations" [1]. But Afghan officials have stated that Iran is receiving far more than that allocation and announced plans to construct or renovate several dams in the basin. "Afghanistan needs the power from the Helmand, while Iran needs drinking water" [1].

Sistan Wetlands and Helmand Basin

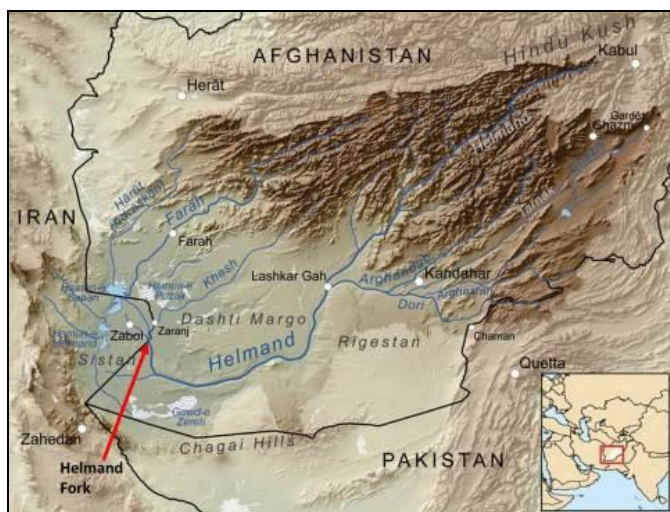


Fig 2: (Source: Wikipedia Maps)

The major issue today in the Helmand Basin is Afghanistan's pursuit of water resource development projects. "Perhaps due to the difficulties of the Helmand treaty, Afghan officials have

been wary of signing new water agreements elsewhere" [6]. It is renovating Kajaki Dam, and is constructing Kamal Khan on the Lower Helmand River. It is also considering constructing Bakshabad Dam on the Farah River. "These developments are unlikely to go over well with neighbouring Iran, which may well be taking more than its "guaranteed" share of water under the Helmand Treaty" [7]. A 2006 study conducted, in part, by Iran's Water Research Institute of the Ministry of Energy, indicated that Iran had developed storage and irrigation infrastructure from the Helmand and Shele Charak rivers with a delivery capacity in excess of what is permitted under the Treaty. The report goes on to indicate that "the 1973 Treaty has very limited value for Iran and mainly guarantees drinking water supply" [6]. While Afghanistan badly needs development, how it will balance that objective with the needs of Iranian water users, as well as the environmental needs of the Sistan wetlands. It will be a very subtle act for Afghanistan to fix these issues with its neighbours.

The Kabul River Basin and Pakistan

Kabul River basin is one of the important available water resources in Afghanistan. Large number of population is using its water supply for agriculture, drinking, sanitation, industries and for power generation purpose. Kabul river basin water resources essentially shared between Pakistan and Afghanistan. "Efforts in 2006 to provide new impetus to drafting process for a bilateral treaty under the World Bank consultation between two countries, but mediating role of World Bank did not gave optimal results" [7]. Meeting of the leaders of Afghan, Tajik and Iran in March 2009 in economic cooperation organization they agreed to speed up implementation of projects related to Water-Energy nexus. However "joint commitments of a similar nature were not made between Pakistan and Afghanistan" [7].

Afghanistan has disputes with Pakistan over the Kabul River since partition. Thirteen dams planned on the Afghan side are estimated to reduce the river's 17 million-acre feet of flow across the border by up to 17 percent [3]. Afghanistan has raised concerns about the Dasu Dam, a World Bank-funded project under construction on the Indus River. "Afghan officials say that there have been no cross-border consultations or a proper environmental assessment, while Pakistan has dismissed objections pointing out that as Afghanistan is neither an "upper or lower riparian country on the river" it should not be concerned with the project" [6]. In response to recent news that Pakistan may be drawing up a new treaty for the Kabul River, "the Afghan deputy minister of energy and water flatly denied it and said they would not sign "any agreement on sharing of water" if it harmed the country's national interests" [3].

Further complicating the relationship is the involvement of India. India has pledged to help Afghanistan build a new reservoir on the Kabul River as a sign of friendship. And last year, Prime Minister Narendra Modi inaugurated what is known as the "Afghan-India Friendship Dam," or Salma Dam, in Herat Province on the Hari River. "The new dam, reportedly capable of generating 42 megawatts of power and irrigating 75,000 hectares of land, has created tension on several fronts" [3]. Turkmenistan and Iran have expressed concerns about their shares of water being reduced,

and Pakistan has opposed it due to its rivalry with India. In 2013, “Afghan officials said they stopped a Taliban plan to blow up the dam with 2,860 pounds of explosives and that the attackers had received help from Pakistani intelligence”.

About 17 million acre-feet water enters Pakistan through the Kabul River every year. Afghanistan irrigates 12,000 acres with water from the Kabul River. “If Afghan government goes ahead with its hydroelectric project on the river and the Kama irrigation project, it would be able to irrigate another 14,000 acres, using another 0.5 MAF of water” [9]. The basin covers 53,000 km² within Afghanistan and 14,000 km² within Pakistan before the confluence with the Indus River [3]. The river basin supports over 300,000 ha of intensively irrigated areas and high valued agricultural crops, including over 50,000 ha within Pakistan. Pakistan has significantly increased its water use of the Indus River for power, municipal and agriculture over the last 30 years. The Afghans argue that water demand for Kabul City and within the river basin is expected to increase in the future.

The hari-rud murghab river basin

The Harirod River originates in the western slopes of the Koh-e Baba mountains of Afghanistan and flows to Iran and then onto Turkmenistan. The Harirod originates in the central highlands of Afghanistan and after flowing westward almost in a straight line to Herat. “It turns northwest and north to form the border between Iran and Afghanistan and then Iran and Turkmenistan, before disappearing in the sandy wastes of Turkmenistan’s Qaraqum desert” [7]. The Murghab River flows from Afghanistan directly to the Karakum desert of Turkmenistan. “Due to topographical conditions, Afghanistan’s use of Murghab flow is very limited and provides little scope for trans-boundary dispute” [6]. The Harirod is a valuable resource in the region. Around 1.3 million Afghans population live in the Harirod basin. Many Iranians (3.4 million), including the residents of Mashhad, Iran’s second largest city also depend on water of this river. Tensions between Iran and Afghanistan over sharing the waters of the Harirod have intensified in recent years. Indeed, Iranian border guards have on several occasions fired at Afghans drawing water from this river, resulting in the death of around a dozen Afghan villagers. “Anticipating the implications of Afghanistan’s damming of the Harirod for its water security, Iran opposed the construction of the Afghanistan-India Friendship dam and has reportedly used Taliban fighters as proxies to carry out attacks at the dam site to prevent the project’s completion” [4]. Sustainable flow and future demand on the Harirod have not been determined but “water demand in Herat province and on the Iranian side of the border is expected to increase”. Needless to say this will put further tension on already somewhat strained water-relations between Iran and Afghanistan.

Afghanistan’s damming of the Harirod River could boost agriculture and industry in the country. However, the resulting reduction in water flow to Iran could contribute to a deterioration of relations with Tehran. “Afghanistan and Iran can no longer delay a dialogue on how to share the waters of the Harirod. Afghanistan has previously blamed its reluctance to engage in such a dialogue on a lack of requisite data and expertise, but can ill afford a conflict with Iran on this issue”

[7]. The Afghanistan-India Friendship Dam in Afghanistan’s Herat province has generated optimism in the country. “It is expected to produce around 42 MW of power that will light up Afghan homes and boost the country’s nascent industry, while reducing Afghanistan’s dependence on its neighbours for electricity”.



Fig 3: Preparation to inaugurate the Salma Dam (the Afghanistan India Friendship Dam) by both countries, and is built with \$300 million of Indian money, June, 2016. (Courtesy photo by bjp.org)

Additionally earlier known as the Salma Dam, “the Afghanistan-India Friendship dam is built across the 1,100 kilometer-long on Harirod River”. Hitherto, Afghanistan has received 40 percent of the Harirod’s waters, while Iran and Turkmenistan have received 30 percent each. “Afghanistan’s damming of this river could result in Afghanistan’s share increasing to 74 percent and reducing Iran’s and Turkmenistan’s shares to 13 percent each” [6]. Iran and Turkmenistan have dammed the lower reaches of the Harirod. But prior to the construction of the Doosti Dam in 2005, they agreed to share the waters of this river equally. In contrast, Afghanistan went ahead to dam the river without discussing water sharing with Iran or Turkmenistan. “Iran certainly perceives the construction of the Salma dam as a direct security threat” [4]. Yet it is unclear to what extent latent suspicions and distrust of motives will be stirred up by the commencement of bilateral talks between Afghanistan and Iran but “it is clear that this could cause serious limitations to further rapprochement and potential lead to political tension and regional instability” [1].

Conclusion

While Afghanistan has adequate water flow due to the many headwaters in its high mountains but it lacks the capacity to store, use, and manage those flows. Today, as Afghanistan continues its development with hopes of a brighter future, issues of water management and governance are once again rising to the fore. The current government, with the help of international partners such as the Asian Development Bank hopes to improve water infrastructure to head off these problems. Industries that are crucial to Afghanistan’s economic growth, such as agriculture and mining, depend on effective water supplies, while a number of factors are

increasing stress, including climate change, mismanagement, and population surges as refugees return home.

Afghanistan has the right to develop its water resources, which have for so long been neglected. But without treaties in place to assure its neighbours their supplies are secure, each step of the way will be met with resistance and fear. Much like in other conflictive and stressed basins in the world, preventative hydro diplomacy is necessary to avoid future conflict and pave the way for sustainable and peaceful development. Afghanistan can be expected to construct more dams in the coming years. However, it needs to enter into dialogue on water sharing with its neighbours, who also have the right to a pre-determined volume of the waters of rivers that originate in Afghanistan. It is also in Afghanistan's interest to resolve conflicts with its neighbours because poor relations with Pakistan as well as Iran certainly not in Kabul's interest as these two countries that provide landlocked Afghanistan with access to the sea.

Indeed, Afghanistan does not have water sharing agreements with any of its neighbours despite the fact that its trans-boundary rivers sustain large populations there. The only exception is the 1973 Treaty with Iran over the sharing of the waters of the Helmand River. The mounting tensions between Afghanistan and its neighbours over the management of shared water resources arise out of several issues. Afghanistan's construction of hydro-electric dams will continue to aggravate downstream neighbours. It is unlikely these points of friction will be resolved without concerted and proactive collaboration between all countries.

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