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A Review of Hydro-Hegemonic Dynamics on the Transboundary Harirud River Basin: 2001–Present

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Abstract: In the absence of a transboundary water agreement between riparian states of Harirud River Basin, downstream states—Iran and Turkmenistan—have adopted a resource-capturing policy through the construction of Doosti Dam in the lower Harirud River Basin when the upstream state—Afghanistan—was engaged in social unrest during 1980s to the early 2000s. While Doosti Dam has a high potential of supplying water for major cities in Turkmenistan and Iran, its flow has declined due to climate changes and drought in the basin. The paper found that Iran accuses Afghanistan of blocking the flow of water through the construction of Salma Dam, whereas some Afghan and Iranian scholars critique Iran's water management approach for water shortages through construction of dams and employment of unsustainable irrigation approaches in the lower Harirud River Basin. Additionally, the hydro-hegemony theory was critiqued as the theory under-estimates the broader role of outside basin players in influencing and reshaping the hydro-politics of a shared watercourse. Finally, it was concluded that the rapid drawdown of the US forces from Afghanistan along with the establishment of a fragile, weak, and politically unrecognized government-Islamic Emirates of Afghanistan—under Taliban administration—helped Iran to reinforce its hydro-hegemonic potential in the basin.

Keywords: Harirud River Basin; hydro-hegemony; riparian; upstream/downstream state(s); Afghanistan; Iran; Turkmenistan

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1. Introduction

After the defeat of the Taliban Regime in 2001, the Afghan government has restructured its political presence in both regional and international arenas. Due to its unique geographical location, Afghanistan is a bridge between South and Central Asia [1]. According to Favre and Kamal [2], over ninety percent of the surface water flowing through Afghanistan is transboundary water. Four out of five major river basins in Afghanistan—the rivers Harirud, Helmand, Amu Darya, and Kabul—are shared watercourses; except for Kabul River Basin, in most cases, Afghanistan is the upstream riparian [3–9].

With a length of 1124 km and a catchment area of 112,000 square kilometers, Harirud River originates 250 km west of Kabul Province. Its biggest tributary, Kabgan River, joins Harirud River approximately seventy kilometers east of Herat Province [1]. The river, then, flows throughout Herat city [4] and turns northward, forming a 160 km Afghan–Iran political border [4]. Then, it extends toward the north, forming a 170 km Turkmen–Iran political border until it reaches the Karakum desert in Turkmenistan [2,10–12]. The total annual available water flow of Harirud River is 1.6 billion cubic meters (BCM). of which 1.07 BCM reaches Iran and Turkmenistan's Doosti Dam located at the Iran–Turkmenistan political border [6].

There is no formal signed agreement between all the riparians on utilization and allocation of water resources of Harirud River Basin. However, there is formal agreement

between downstream riparian states. While excluding the upstream riparian, the downstream states, Persia (Imperial Government of Iran) and Russia (Soviet Union) signed a treaty on equal utilization (50/50) of Harirud River in 1926 [6]. Both countries also agreed upon construction of a dam on the lower Harirud River Basin without consulting with upstream Afghanistan [1]. Right after the treaty between the downstream co-riparian states, the upstream riparian has experienced social chaos resulted in the fall of Amanullah Khan's government [7]. Failing to sign a trilateral water treaty between the co-riparian states of Harirud River Basin, the downstream states—Turkmenistan and Iran—have been on a hydraulic mission constructing irrigation canals and dams at the downstream of the Harirud River without consulting with the Afghan government [1]. As a result of political chaos in the upstream Afghanistan, the downstream riparian—Iran and Turkmenistan—jointly inaugurated Doosti Dam in 2004 [8]. With the storage capacity of 1.25 BCM, the dam supplies irrigation and drinking water for the downstream countries, e.g., the dam supplies 50% of Mashhad's domestic water supply [6]. Additionally, to divert a large volume of water of the basin, Iran built a number of dams on Kashafrud River, a tributary river of Harirud River Basin. As a countermeasure, after the fall of Taliban in 2001 [13], the US-backed Afghan government has also been on hydraulic mission. Hydraulic Mission: a hydraulic mission is a technique applied by some co-riparians for capturing as much water as possible through construction of canals, dams, etc. [14]. through construction of dams on the upper Harirud River Basin [9]. For example, Salma dam, which was inaugurated in June 2016, has a storage capacity of 650 million cubic meters (MCM). Further, the Ministry of Energy and Water of Afghanistan (MEW) started the construction of Pashdan Dam located at the upper Harirud River in 2011. With the storage capacity of 45 MCM, Pashdan dam, which was supposed to be completed by the end of 2022, was halted with the rise of the Taliban's regime in August 2021 [10]. Figure 1 illustrates the location of the dams.

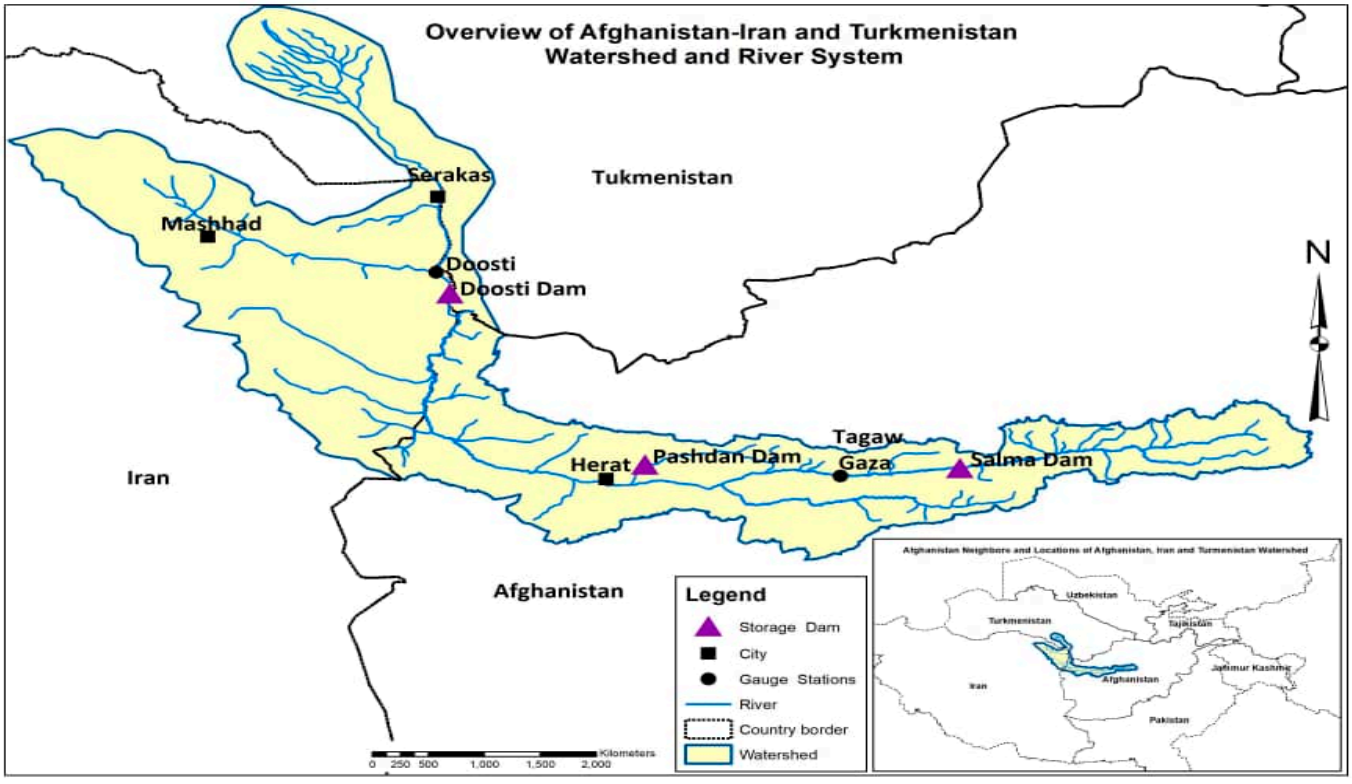

Figure 1. Location of dams in upstream and downstream of Harirud River Basin.

Contrary to the findings of Thomas and Warner [11], and Amini et al. [12] who argue that Afghanistan plays the role of dominative hydro-hegemon in the context of Harirud

River Basin—maintaining control over water in the upstream and depriving the downstream riparians of accessing to water resources—we argue that Afghanistan could have the potential to become the hydro-hegemon of the basin with the completion of Pashdan dam and the construction of related irrigation canals of Salma and Pashdan dams. However, the Taliban's take-over of Afghanistan on 15 August 2021 [13] has triggered downstream riparians especially Iran maintains its hydro-hegemonic potential in the basin.

Hence, the paper is sought to assess the hydro-hegemonic dynamic of each riparian state in the basin using the hydro-hegemony framework developed by Zeitoun and Warner [15]. The reason why we apply the hydro-hegemony framework is that it helps not only compare geographical power of the riparians in the basin but also evaluate and compare the ideational, bargaining, and military powers of the co-riparian states given the rise in water conflict due to climate changes and shortages of flow in the basin. The paper will first examine how the dam construction—both in the upstream and downstream—alters the balance of hydro-hegemonic configuration in the basin. It will, then, explore how basin-outsiders (countries who financially, technically, and logistically contribute to the construction and development of dams in upstream state) and helped strengthen Afghanistan's hydro-hegemonic potential in the Harirud River Basin and finally how the unexpected withdrawal of US forces from Afghanistan [16,17], alongside political instability and economic fragility in the upstream Afghanistan after August 2021 helped downstream riparians especially Iran enhance and sharpen its hydro-hegemonic dynamic in the basin.

1.1. Conceptual Framework: Hydro-Hegemony Framework

Transboundary hydro-politics, influenced by a variety of academic disciplines, is the study of interstate dispute and cooperation over transboundary water resources [18–21]. Developed by Zeitoun and Warner [15], Hydro-hegemony Framework is used to assess how various dimensions of power shape or co-shape the interaction of the flow of a shared watercourse [22–24]. In line with Daoudy's argument, Hayat et al. [21] argue that the hegemon state—the most powerful riparian—takes full advantage of the flow of the shared waterway using various dimensions of the power also see [23]. Naff and Matson [25] argue that basically (i) geographical location, (ii) political, economic and military power, and (iii) technological power characterize the power proportionality between two or more co-riparian states in a transboundary river basin. Additionally, Shroder and Ahmadzai [1] assert that the following four components determine whether a country is an aspirant hydro-hegemon in a shared river basin: (I) geographical location in a shared river basin; (II) material power (economic, political, literacy and military strength, population growth, and infrastructure); (III) bargaining power (we call it hydro-diplomatic negotiation power); and (IV) ideational power also see [26].

As stated by Zeitoun and Warner [15], upstream and downstream states of a shared river basin interact with each other in one of the following ways: water can be either [a] shared (through adopting cooperative mechanisms, [b] merged in the stronger state's favor (where cooperation is at its minimum level and competition is silenced), [c] contested (where competition is at its strongest level).

Power, as Zeitoun and Warner [15] argue, is the most fundamental aspect in controlling water in a transboundary river basin. In fact, after Warner [26], it could be maintained that Afghanistan as the upstream state uses its water to obtain more power while the downstream riparian, Iran mobilizes power—Iran reportedly uses Afghan refugees to pressure Afghan government and supports anti-government groups to disrupt dam's construction in Afghanistan—[27,28] to obtain more water. According to some scholars, e.g., Nader and Laha, Aman, Ramachandran, and Omar [27–30], Iran has equipped Taliban to disrupt the construction of the Pashdan dam; press reports suggest likewise for Salma dam [1]. The Atlantic Council argues, "*some in Afghanistan, where there is already a backlash against Iran over its treatment of Afghan refugees, roughly 4.5 million and forced repatriation of migrants, suggest that Iran is using the issue of Afghan refugees in Iran as a countermeasure to*

put pressure on Afghanistan), and Afghanistan could, in turn, use water as leverage to pressure Iran for improvements in its treatment of Afghan refugees" [28,31].

Over the years, the discourse of transboundary hydro-politics has been developed by a large number of scholars [32–39]. However, their analysis lacks two substantial analytical themes, the intensity of conflict and the degree of power interaction between the riparian states of a shared river basin [15]. In fact, Hydro-hegemony theory highlights how a riparian (hydro-hegemon) state maintains control over water rather other than through mere repression [21,24]. However, the main issue is whether a country's geographic location—e.g., upstream Afghanistan—has the power of subordinating the downstream state(s), e.g., Iran or/and Turkmenistan, to accept and internalize upstream state position in transboundary water management in a shared river basin, e.g., Harirud River Basin, or not.

Hydro-hegemony can be classified into positive and negative/dominative based on the hegemonic behaviors of the co-riparian states in a shared river basin. It is worth noting that the "hydro-hegemony" framework for hydro-political analysis first developed in Zeitoun and Warner [15] has significant Realist influences. Hence, the term "positive/ negative hydro-hegemonic role" has specific meaning in terms of a relatively stable, productive outcome, and is indifferent about the desirability of its components. A dominative/negative form of hydro-hegemony resulted in unequal water distribution whereas positive leadership will lead to water sharing between all co-riparian states [11,15].

Amini et al. [12] notice that the relationship between Afghanistan and its neighboring states over controlling water resources in Harirud River Basin has been sensitive ever since the reassuming of Salma Dam project in 2004. In fact, water is considered as national security interest of Afghanistan and Iran [1,40], respectively; hence, no one can discuss transboundary water resources without the approval of the National Security Council chaired by the President of the country. The discourse of water especially the transboundary water is currently administered by the Taliban's Prime Minister and his cabinet. We, thus, applied hydro-hegemony Framework to assess how hydro-politics, as a significant political process, has been evolving especially in the context of Harirud River Basin—a basin suffering from climate changes, water misallocation and lack of water treaty [1]. In fact, hydro-hegemony framework will allow us to explore the nature of the hegemonic dynamics of the upstream and downstream co-riparians who have been in hydraulic mission for over two decades especially the downstream riparians [1,6]. Additionally, Hydro-hegemony Framework is used to examine the role of out-side basin players or actors who contributed to development of hydraulic mission in the basin [12].

Despite the wide applicability and popularity of hydro-hegemony Framework in hydro-politics especially in transboundary hydro-politics, some scholars such as Farnum [41], Zinzani and Menga [42], Furlong [43], and Menga [44] have critiqued the hydro-hegemony theory. For instance, Farnum [41] highlights that hydro-hegemony is the greatest poison for research and researchers. According to Farnum, researchers' thoughts are constraints with dominant discourse reproduced by self-referencing or jargon. Additionally, Farnum [41] claims that the London Water Research Group (LWRG)—pioneers of hydro-hegemony framework—are biased in conducting research related to hydro-politics. In fact, she believes that social justice researchers' team of LWRG are over-emphasizing on data that help sharpen their theoretical assumption (the hydro-hegemony theory or framework). Additionally, Hydro-hegemony Framework has been recently critiqued by Hayat et al. [21]. They argue that hydro-hegemony framework, which was developed by LWRG, fails to identify the current and "future research gap" in transboundary water governance ([21] p. 1).

Moreover, Menga [44] contends that while hydro-hegemony framework is crucial in understanding the relationship of the co-riparian states of a shared watercourse, it fails to show that 'hegemony' not the power is the core or the crucial element of the hydro-hegemony framework. Menga defines hydro-hegemony framework, as "the success of a basin riparian in imposing a discourse, preserving its interests and impeding changes to a

convenient status quo—and not that of power should be central if we are to understand the struggle for hegemony in an international river basin" ([44] p. 411). Furthermore, hydro-hegemony framework is unsuccessful in integrating social and cultural aspects or sensitivity of riparian states this includes race, language, emotions, and traditions that influence the discourse of water politics in a shared waterway [1,44].

Although a wide range of scholarships has critiqued the Hydro-hegemony Framework, we apply this framework to evaluate how the riparians' position—in terms of material, bargaining and ideational powers—evolved since fall of Taliban regime in 2001 until present (the re-establishment of Taliban's administration in Afghanistan) [13]. It is very crucial to utilize this framework as it allows us to explore the potential and the dynamic of each riparian state in influencing and re-shaping the decision making process with regard to water use and water abstraction in the basin given the rapid decline in the flow of water due to climate changes, the expansion of agricultural lands specifically in the downstream Iran due to the high demand for water use, and the use of outdated and unsustainable irrigation approaches in the basin. Given the complexity of the basin due to water contestation between the riparian states, the impacts of climate changes and the recent political chaos in the upstream, we believe that the paper will help the pioneers and the theoreticians of hydro-hegemony to revisit and reframe the hydro-hegemony framework by integrating other inter-related factors, e.g., role of external players in hydro-politics of a shared river basin, etc. into the framework of hydro-hegemony. This is because these factors are important as they shape and influence the flow of water and the sustainable and reasonable allocation of water between the riparian nations of a shared river, e.g., Harirud River, one of the water insecure basins in the region.

1.2. Construction of Dams on Upper Harirud River Basin

After the defeat of the Taliban by US-led coalition forces in 2001, international funding agencies and international partners focused on humanitarian and infrastructure development in Afghanistan. One of the key infrastructure development projects was accessing clean and safe water resources for domestic and agricultural use through construction of dams [1]. This section will briefly discuss dam construction projects on the upper Harirud River Basin.

1.2.1. Salma Dam

With its height of 107.5 m, the earth-rockfill Salma Dam is used for irrigation and hydro-power generation. The dam has the storage capacity of 650 million cubic meters which is located in Chisht-e Sharif District, Herat Province, upstream of Harirud River. The dam has a 42-megawatt energy generation capacity and has the capacity of releasing 63 cubic meters/s water for irrigation purposes [45]. Located 150 km east of Herat city, it is the largest dam built on the upper Harirud in Afghanistan. Initially the construction of the dam started in 1976 with the support of the Indian and British governments [12] but was halted due to civil unrest. The construction phase resumed in 1988 with the technical assistance of Indian Government, but was, once again, brought to a complete stop for almost 20 years due to prolonged internal conflict. During the first presidency term of Hamid Karzai in 2004, India has pledged USD 79 million aid for the construction of Salma dam [1]. The dam was finally completed and inaugurated in 2016. Thomas and Warner [11] argue that the Afghan Government placed high emphasis on the construction of Salma Dam to have a better position in future negotiation over shared flow of Harirud River.

1.2.2. Pashdan Dam

The construction of Pashdan Irrigation and Hydro-power Dam project started early 2011. It was expected that the project would be completed in 2013, however, insecurity and the presence of Taliban's in the region led to the sudden halt of Pashdan dam in 2016.

The construction phase was resumed in 2019 [46]. With the catchment area of 1847 square kilometers, the earth-rock fill Pashdan Dam has a 42 m height and 1100 m length. The Pashdan Dam has a storage capacity of 54 MCM, irrigating 13,000 hectares of lands, and with the installment of two turbines, it will have the capacity of 2-megawatts of power generation [47]. The dam aims at controlling flooding, generating hydroelectricity, becoming self-sufficient in agriculture production in the upper Harirud [11] and controlling seasonal flow of Karukh River, one of the main tributaries of Harirud River [6]. Omar [47] claims that despite repeated attempts of the Iranian Regime to disrupt the Pashdan dam project, 85% of the dam construction has been completed. While the dam was expected to be completed by mid-2022, the project was stopped after the Taliban's taking over [46] giving more power to downstream riparian states to utilize the flow of Harirud River.

1.3. Construction of Dam on lower Harirud River Basin

Doosti Dam

Mozafari et al. [48] argue that Doosti Dam which was jointly funded and constructed by Ministry of Water and Land Reclamation of the Republic of Turkmenistan and the Khorasan Regional Water Board of the Islamic Republic of Iran has a height of 78 m. The dam is located 180 km north-east of Mashhad city [12]. The length of the dam is 655 m and has the storage capacity of 1.25 billion cubic meters [6]. Doosti dam supplies the water needs of Iran and Turkmenistan—both irrigation and drinking water [49]. Due to the increase in population in Mashhad city, Iran unilaterally transferred the flow of the downstream Harirud River through construction of 150 km pipeline [6].

1.4. Hydro-Hegemonic Dynamics in the Harirud River Basin

In the absence of a transboundary water agreement, resource-capturing policy is a potential course of action adopted by riparian(s) in a shared river basin. The resource-capturing policy not only affects the quality but also the quantity of water resources in a shared watercourse [1,15]. This policy can be carried out through construction of large-scale irrigation canals, dam project, and over-abstraction of water by constructing deep wells and pumping [1]. Shroder and Ahmadzai [1] argue that the downstream states' (Iran and Turkmenistan) geographical location allows Afghanistan to appear as a stronger locational hydro-hegemon by managing water through construction of Salma and Pashdan Dam in the upper Harirud River Basin. However, we contend that despite the geographic location of Afghanistan, the upstream state does not have the potential of becoming a strong hydro-hegemon given its economic, and socio-political status especially after the Taliban gained power in the country [13,50].

Based on its geographic location, it was projected that upstream Afghanistan becomes the locational hydro-hegemon in the basin, after the construction of Salma and Pashdan dams, and the presence of US-led NATO forces [1,12]. In addition to sanctions, to maintain its security interest in the basin, the USA—the rival of Iran—has supported the dam construction in the upstream, helping Afghanistan boost economy through agriculture productivity [49]. The construction of Salma Dam in upstream of Harirud River Basin adversely impacted the water flow in the downstream Iran and Turkmenistan [4]. Ramachandran [51] states that Afghanistan was receiving 40% of the Harirud River's flow, while each downstream riparian (Iran and Turkmenistan) was receiving 30% of the flow before the construction of the Salma dam. After the inauguration of Salma dam, Afghanistan's share reportedly increased to 74% while the lower riparian's share (Iran's and Turkmenistan) decreased to 13% each [51].

Researchers such as Nagheeby and Warner [6], Thomas and Varzi [9], and Hessami [52] accuse Afghanistan of blacking Harirud River flow through channelizing the flow of Salma dam within districts of Herat province depriving downstream riparian states. In contrast, Salehi [53], and Mohammadi [54] argue that the construction of Salma Dam has not deprived downstream riparians. They further contend that over sixty percent of

Salma's dam canals have not been constructed yet. While the dam was supposed to irrigate tens of thousands of farming lands along the course of the flow of Salma Dam in Herat province, water is naturally flowing downstream Iran and Turkmenistan without blockage in the upstream.

Contrary to the claims of Iranian officials regarding the blockage of water in the upstream due to Salma Dam construction, Iranian water professionals and scholars also contend that Iran mishandled its water resources through construction of several dams and outdated and unsustainable water irrigation practices—90% of water in Iran is used for irrigation purposes—resulting in the reduction in water flow in Iranian territory [55–59]. Considering the drastic climate changes in the basin [60], some Afghan scholars [61] also blame Iran for the mismanagement of water resources in the downstream of basin.

Although Afghanistan has superiority in terms of geographic location, it still has the lowest water use and control in the basin-the Afghan government failed to construct over sixty percent of irrigation canals of Salma Dam in Herat province [53,54]—compared to its downstream riparian countries, Iran, and Turkmenistan [12]. Prior to the Taliban's taking over, the Afghan government was committed to the construction of Pashdan Dam and the irrigation canals of Salma Dam along the course of Harirud River [1,53]. With the technical and financial support of India and US [6], it was projected that Pashdan dam would be inaugurated in 2022 [29,30]. However, the establishment of an unrecognized, fragile, and financially unstable government under Taliban's administration has paved the way for downstream riparians to maintain their hydro-hegemonic dynamic in the basin [62].

2. Method

Applying the desk research approach, we used peer-reviewed articles, technical reports, and documents in English. Moreover, opinion-based articles in Persian and Pashto (Persian is the official language of Iran while Pashto and Persian are the two official languages of Afghanistan) were used to support our analysis. Additionally, to better analyze the power dynamic in each pillar of hydro-hegemony between the co-riparian nations of Harirud River Basin, we scaled and scored each pillar from 1 to 2 for each riparian nation where 1 represents the lowest position in terms of any pillar of hydro-hegemony framework, 1.5 and 2 represent the middle to highest positions in power dynamic in each pillar of hydro-hegemony (respectively) in the basin (for more information see Tables 1 and 2). Furthermore, this scaling highlights the changes in the hydro-hegemony of each country before and after August 2021, in other word, before and after the Taliban's taking over. Additionally, we used stacked bar chart to better illustrate the position of each riparian nation from power dynamic perspective and to compare each riparian nation in the basin before and after the withdrawal of US forces from the upstream Afghanistan.

Table 1. The fluctuation of power in each pillar of hydro-hegemony before Taliban's taking over.

Pre-August 2021				
		Riparian States of Harirud River Basin		
Number	Pillars of Hydro-Hegemony	Upstream Riparian	Downstream Riparians	
		Afghanistan	Iran	Turkmenistan
1	Geographical Power	2	1.8	1
2	Material Power	1.5	2	1.2
3	Ideational Power	1.2	1.5	1
4	Bargaining Power	2	1.5	1

Table 2. The fluctuation of power in each pillar of hydro-hegemony after Taliban's taking over.

Post-August 2021				
		Riparian States of Harirud River Basin		
Number	Pillars of Hydro-Hegemony	Upstream Riparian	Downstream Riparians	
		Afghanistan	Iran	Turkmenistan
1	Geographical Power	2	1.8	1
2	Material Power	1	2	1.5
3	Ideational Power	0.5	2	1.5
4	Bargaining Power	1	2	1.5

2.1. Geographical Power

Geographical power refers to the position or location of riparian state in a shared river basin, e.g., Harirud River Basin. As the upstream state, Afghanistan covers most parts of Harirud River Basin [1]. Of the Harirud River catchment, 42% of the basin is located in Afghanistan; 38% of the basin is located in Iran and 20% of the catchment is located in Turkmenistan [63,64]. In terms of Geographical power, Afghanistan is the strongest hydro-hegemon in the basin whereas Iran's geographical power, according to Shroder and Ahmadzai [1], is half of Afghanistan's and Turkmenistan's geographical power is less than Iran's geographical power. The downstream' vulnerable geographical positions have been exacerbated by severe drought in the lower Harirud coupled with dramatic climate changes and lack of transboundary water cooperation among the riparian of the basin [60,61].

2.2. Material Power

Material Power is associated with educational background, socio-economic, military, and technological powers [15]. The material power of Iran, Afghanistan and Turkmenistan is significantly asymmetrical. Iran's economy is based on fuel and hydrocarbon production enabling Iran to have better roads, higher population growth rate, modern infrastructures, a high literacy rate (86%), more than one million strong army, and high political stability in the region [1]. Afghanistan, on the other hand, has a low literacy rate—37%, low economic growth, low population compared to Iran, a high poverty rate, destroyed industry due to conflict and war, poor infrastructure, a high dependency on international aid, and less professionals and experts in developmental fields, especially after the establishment of internationally unrecognized and economically fragile Taliban government and the drawback of US forces from Afghanistan [12,16,65,66]. On the other hand, while having the highest literacy record in the basin (100%), its "diminutive troop strengths" and its lowest population growth rate place Turkmenistan at the lowest level in terms of material power in the basin [1]. However, the political change in Afghanistan in August 2021 increased the material power of Turkmenistan ranking it the second player after Iran in terms of material power in the basin.

2.3. Bargaining Power

Bargaining power is the possession of the knowledge of ruling and playing the diplomatic game including shaping and influencing the agenda, initiating negotiation and treaties and the potential of providing financial support to the weaker party to comply with the demands of the stronger party [23,67–69]. Despite the ongoing covert activities of downstream Iran for the disruption of dam projects in Afghanistan [29–31], the Afghan government has continued the construction of Salma and Pashdan dams prior to Taliban's taking over [30,70,71]. In order to have a higher bargaining power in negotiation in the future, Shroder [72] recommends accelerating dam construction in the upstream of the basin. However, the Afghan government has fallen due to high corruption, lack of international and regional support, etc. Similar to Afghanistan's position in the Harirud River

Basin, the recent political changes in Syria have also affected Syria's hydro-hegemonic dynamic in the Orontes River Basin. Prior to the 2011 political turmoil, Syria has maintained its hydro-hegemonic position in the Orontes River Basin. However, the political unrest in Syria due to climate changes and human security [67,68], largely contributed to the decline of Syria's hyro-hegemonic dynamic in the basin allowing Lebanon to appear as a powerful hegemon in the basin [23].

Hence, we argue that if Pashdan Dam were built prior to fall of the Afghan government in August 2021, downstream neighbors would not have higher bargaining strength compared to Afghanistan in Harirud River Basin. However, the current government under Taliban's administration has halted the construction of Pashdan dam and the irrigation canals of Salma Dam [53,54] due to financial and technical constraints. As a result of Taliban's take-over, many professionals and technical staff/employees have fled the country and sought asylum in North America and European countries [70]. Moreover, the fragile, and weak administration of Taliban is in severe need of financial support from international community as US has frozen almost USD 9.5 billion in asset of Central Bank of Afghanistan [71,73]. Thus, given the establishment of a weak, aid-dependent, and fragile administration in Afghanistan under the Taliban [74–76], Iran and Turkmenistan have a stronger bargaining power in the Harirud River Basin—similar to Orontes River Basin after the uprising of Syria in 2011 [23]—after the quick withdrawal of US forces from Afghanistan.

2.4. Ideational Power

Ideational power is the potential of imposing and normalizing special narratives and ideology on other riparian(s) on a shared river basin [15]. In another word, it is the skill of shaping and influencing other players' perception, e.g., riparian nations, regarding the flow of water of a shared watercourse [68]. Similar to the Yarmouk River where Jordon—the downstream riparian—accuses Syria—the upstream riparian—of not abiding by the bilateral treaty signed between the two nations in 1987 [68], Iran and Turkmenistan accuse Afghanistan of blocking the natural flow of Harirud River through the construction of Salma Dam in the upstream. However, Afghan scholars argue that the expansion of agricultural lands in the downstream due population increase along with the climate changes and frequent drought, have negatively impacted the flow of lower Harirud River [60,61]. As duck-passers, downstream riparians, especially Iran tries to inflame its nations' emotion through blaming Afghanistan for the mismanagement of water allocation between the downstream riparians in the basin [69].

Anyway, this accusation scenario has been continued till recently as the Afghan government under the Taliban's administration lacks hydro-cognizant capability. In fact, after the Taliban's taking over of Kabul in August 2021, many Afghan water experts, policy analysts and academicians left Afghanistan [70]. We, thus, argue that lack of hydro-diplomats (hydro-experts), and fragile, illegitimate, and weak state under the Taliban administration have triggered Afghanistan to have less ideational power compared to Iran and Turkmenistan in the basin. Therefore, Iran and Turkmenistan have increased their ideational power in the basin after the establishment of Islamic Emirate of Afghanistan under Taliban.

For better comparison of the ideational, material, bargaining and geographical positions of each riparian state from power perspective before and after August 2021, see stacked bar Figures 2 and 3.

The stacked bar charts (Figures 2 and 3) illustrate how the Ideational, bargaining, and geographical powers of the riparian states fluctuated especially after the establishment of Taliban regime in Afghanistan, given the rapid withdrawal of the US forces from Afghanistan alongside massive immigration of Afghan water professionals, academicians, and experts [70,75,76]. As explained in the method, we have scaled and scored each pillar of hydro-hegemony from 1 to 2 where 1 represents the lowest position and 2 represents the highest position in each pillar of hydro-hegemony. For instance, before the Taliban's

taking over, while Afghanistan had the potential of having the highest bargaining power in the basin after the completion of Pashdan dam and its inter-related canals, Iran, and Turkmenistan, as the downstream countries, had middle and lowest positions, respectively from bargaining power perspective. However, the bargaining power of these co-riparian nations rapidly changed with the swift withdrawal of US forces from Afghanistan and the re-establishment of Taliban's regime in the upstream [13,76]. For instance, the permanent halt of Pashdan dam due to lack of financial and technical expertise under Taliban's administration alongside the establishment of a fragile, weak, and unrecognized government under Taliban's leadership led to the decline of Afghanistan's bargaining power in the Harirud River Basin [46,47]. In contrast, the bargaining power of the downstream nations have increased with the rapid withdrawal of international forces from Afghanistan in August 2021.

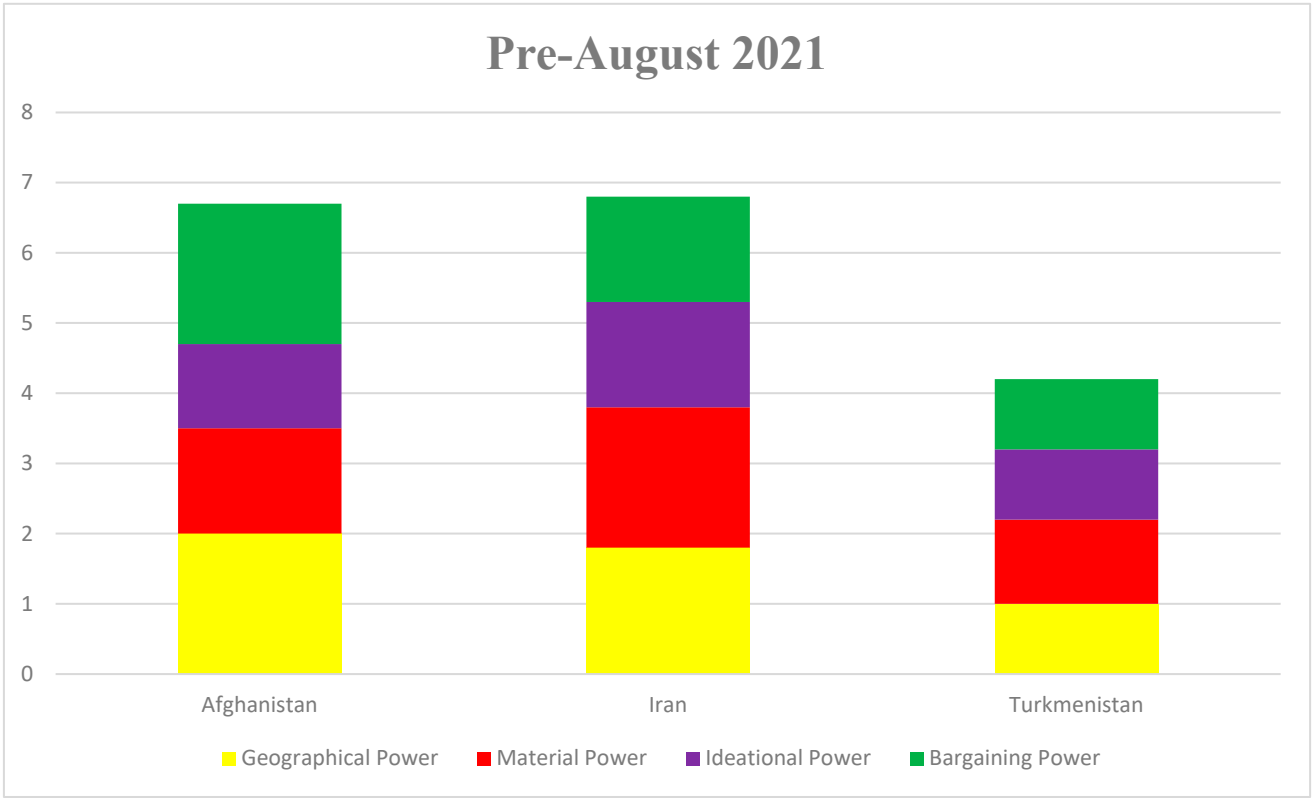

Figure 2. The illustration of power dynamic in four pillars of the Hydro-hegemony Framework in the Harirud River Basin before August 2021.

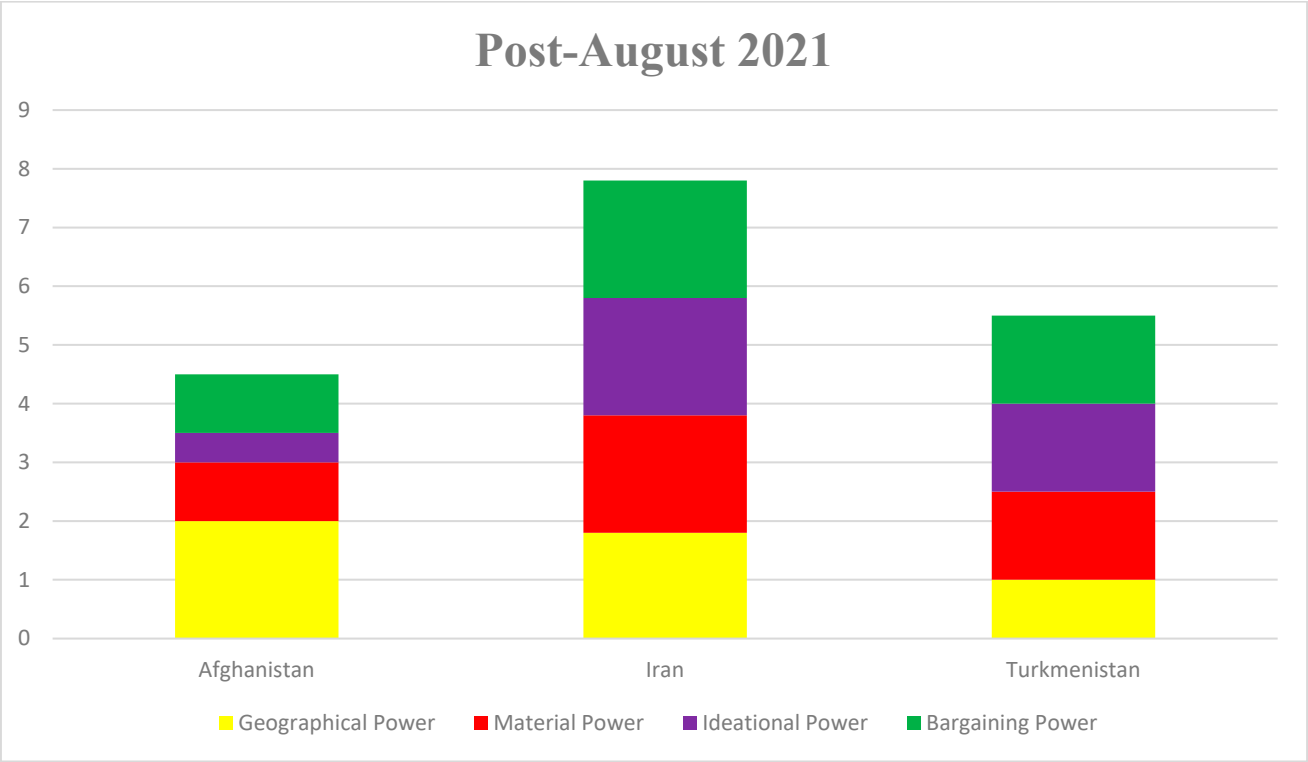

Figure 3. The illustration of power dynamic in four pillars of the Hydro-hegemony Framework in the Harirud River Basin after August 2021.

2.5. The Role of Basin-Outsiders in the Harirud River Basin

The construction of dams, land reform and city planning could be signs of modernity and development in the post-colonial era. The construction of dams in newly independent states was often used for political purposes. This idea is supported by Molle et al. [77], who argue that dams are built for a state's geo-political rather than economic development interests.

In the nineteenth century, Afghanistan was already a battleground between two empires, Britain, and Russia. The country was the battle ground for the strategic rivalry between the two empires, resulting in the 'Great Game' as each empire was seeking its geo-political interests in Afghanistan [78]. This rivalry (Great Game) disrupted when the competition for political clout got fierce between western superpowers, China and Russia in Central Asia including Afghanistan in twentieth century, giving birth to the "New Great Game" [6].

Basically, the New Great Game implies the competition for controlling natural resources (e.g., gas, minerals, water, etc.). Hence, Afghanistan became the competition arena between Russia and the United States of America. In order to secure and maintain their geo-political interest in Afghanistan, Russia proposed a communist system whilst its rival, the USA, applied a capitalist approach for the economic development in Afghanistan. Dam development was the US alternative for economic reform to the Communist land reform [79]. As the geo-political interest of the US, for instance, the US government has financially contributed to refurbishing the Kajaki Dam along with its hydro-power plant and transmission substations. This dam is projected to supply hydroelectricity for over 330,00 people in southern Afghanistan. In addition, the dam will help boost Afghan economy through agriculture and crop yields. While the dam was envisaged to be completed in 2005, is now projected to complete in 2015. The dam will be a symbol of Afghan and US governments' friendship [50].

The New Great Game also attracted other external players such as Turkey, India, Saudi Arabia, and Pakistan to seek political influence in Afghanistan. The competition for

political influence in Afghanistan between India and Pakistan was more prominent through investment. For instance, the Indian government pledged a donation of USD 750 million whilst Pakistan promised USD 150 million in aid for the reconstruction of Afghanistan in 2002 [6]. In addition to financial support, India—the rival of Pakistan—has offered technical support for the construction of dams in Afghanistan. The Salma Dam is a clear example of how India got involved in the reconstruction of Afghanistan [80].

Under the new great game, the downstream states especially Iran, was worried about presence of US troops and its support for the construction of dams in upstream Afghanistan. Iran perceived the US presence in Afghanistan as a menace to the national security and regional integration [6]. In fact, Iran and Turkmenistan were concerned about the use of dam projects as geo-political tool of outside-basin players, e.g., US. However, the rapid withdrawal of the US-led foreign forces from Afghanistan has sharply declined the geo-political interests of the basin outsider, US and India in Afghanistan paving the way for downstream riparians to reinforce their hydro-hegemonic configuration in the Harirud River Basin, a basin vulnerable to climate changes [60,61]. Despite the wide applicability of the theory of hydro-hegemony, this theory does lack some specifics such as the role of outside basin players in reshaping and influencing the natural flow of water in a transboundary shared river basin. Thus, we argue that hydro-hegemony framework can be broadly applied to a wide range of hydro-politic topics if some underlying factors, e.g., external players' interference and role in a basin, the rise and fall of a government under special circumstances, etc. are included into the framework of hydro-hegemony.

2.6. A Change in Hydro-Hegemonic Dynamic of Upstream State under Taliban Administration

With the sudden withdrawal of US forces from Afghanistan, the Taliban officially captured the capital of Afghanistan, Kabul city, on 15 August 2021, declaring the establishment of Islamic Emirate of Afghanistan [81]. Once establishing the government, according to the Taliban, Afghanistan will be ruled based on Sharia–Islamic Law [82–84]. Sharia law (Islamic Law) applies to all spheres of Muslim affairs, including the transboundary water governance and management.

The term sharia, itself, refers to irrigation. According to Sharia, there are two basic concepts associated with water rights, Shafa and Shirb. While shafa means the right to quench our thirst, Shirb is the right to irrigate lands in Islamic-dominated states. Loodin and Wolf argue, water is, first, prioritized for human being purposes, then, animals, agriculture, and industrial purposes, respectively. Sharia law also emphasizes that water is possessed by Allah (God) who entrusted to human beings to use it equally and sustainably for their various purposes at the inter-basin level, e.g., Berbers and Bedouin communities [83–85]. However, the implementation of Sharia law is gradual, as the Taliban regime is seeking international legitimacy around the world. Once the Islamic Emirate of Afghanistan is recognized by UN member states [84], Taliban will expedite the implementation of Sharia law in Afghanistan.

Additionally, prior to Afghanistan's taking over, a senior delegate of the Taliban has regularly travelled to Iran, meeting with Iranian official behind closed doors [85,86]. The Taliban have reportedly claimed that the aims of their various meetings are solely peace dialogues with engaging parties in Afghanistan; however, some Afghan scholars [87–89] argue that both Harirud River and Helmand River Basins have been discussed by both groups. These Afghan scholars further discuss that Iran agreed to recognize the Taliban regime and financially support the establishment of Islamic Emirate of Afghanistan under the Taliban. In a recent attempt, Taliban appointed their political diplomats to Afghanistan Embassy in Tehran [90]. In return, Taliban are committed to initiate dialogue on reaching possible agreement on Harirud River Basin which will further reinforce the hydro-hegemonic dynamic of Iran in the basin [89]. As a result of this agreement, the flow of Harirud River will drastically decreased in the upstream Afghanistan considering the dramatic decline in precipitation due to climate changes in the basin [60]. Even former

acting Minister of Energy and Water of Afghanistan has critiqued the transboundary water management approach of Taliban's administration with downstream Iran [91].

Hence, lack of political and diplomatic relations in the region and the world, fragile economy, lack of financial support, and the rapid drawdown of US forces from Afghanistan along with the escape of water professional and academicians from Afghanistan—under the Taliban administration—have helped downstream states, especially Iran reinforced its hydro-hegemonic dynamics in Harirud River Basin—flowing through Herat province, western Afghanistan [92].

3. Conclusions

Due to lack of transboundary water agreement between Afghanistan and its neighboring countries, downstream riparians, Iran, and Turkmenistan bilaterally adopted resource capturing strategy in the basin through construction of Doosti dam while its upstream riparian was engaged in social unrest. After the fall of Taliban regime in 2001, on the other hand, it was envisaged that Afghanistan is going to appear as the hydro-hegemon of the basin with the completion of Salma and Pashdan dams in the upper Harirud River Basin. The paper, however, found that Afghanistan was unsuccessful in maintaining its hydro-hegemonic dynamic in the basin due to incompletion of Pashdan dam and lack of construction development of irrigation canals of Salma dam because of the rapid withdrawal of US forces from Afghanistan and the re-establishment of economically fragile Taliban regime in Afghanistan in August 2021. The paper also highlighted that the dam construction in upstream Afghanistan served the geo-political interests of outside-basin players, specifically the US—the rival of Iran in the region—and India—the rival of Pakistan in the region—who financially and technically contributed to the dam construction in Harirud River Basin.

Additionally, the paper has untangled the role of out-side basin players, e.g., US, India, etc. who re-shaped the flow of the basin in the last two decades. In fact, it was argued that hydro-hegemony framework could be revisited and reframed through the inclusion of other inter-related factors, e.g., the role of external players in the hegemonic dynamic of a riparian in a shared river and how these players can reverse the equation of the power given the scarcity of water due to climate changes and over-abstraction of water in the basin.

It was also contended that the establishment of a fragile, weak, and unrecognized government under the Taliban has worsened the political and socio-economic conditions of the country leading to a huge wave of migration of Afghan specialists and professionals including water policy experts and analysts to the US, Canada, and Western Europe. In order to gain international recognition, the Taliban started negotiations with their neighboring countries including Iran and Turkmenistan. Iran reportedly agreed to recognize and support the establishment of Islamic Emirate of Afghanistan in return of transboundary Harirud River Basin negotiation with the Taliban. The paper concluded that as a result of such negotiations and commitment for signing an international water treaty on Harirud River Basin—considering the negative impacts of climate changes—the amount of water resources will be declined in the upstream, leading to severe water shortages in Herat province. Thus, the unstable, weak, and fragile government under Taliban will not have the potential to appear as the hegemon of the basin whereas the downstream riparian, Iran, with the most powerful economy and military and Turkmenistan—the oil-rich countries in the region—will reinforce and maintain its hydro-hegemonic dynamic in the basin.

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