THE HELMAND RIVER WATER DISPUTE BETWEEN IRAN AND AFGHANISTAN: HISTORICAL BACKGROUND, POTENTIAL RISKS AND PROPOSED SOLUTIONS [1]

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ABSTRACT | The dispute over the allocation of water in the Helmand River has been ongoing between Iran and Afghanistan for many years. Despite various steps taken and the agreement reached in 1973, the issue remains unresolved, causing tensions between the two countries, especially during drought periods. The prepared study aims to provide answers to why river water is so important and why the issue has not yet been resolved through historical and strategic analyses. However, beyond this, the main focus and therefore the purpose of this study is to identify the potential risks that may arise if the problem remains unresolved and to propose solutions. In this context, the study attempts to provide some concrete suggestions through the benefit-sharing theory categorized into four headings by Claudia W. Sadoff and David Grey, thereby offering an alternative perspective for a solution. This study argues that if the water issue persists, certain developments may emerge in both countries, but particularly in Iran, which could affect both internal and regional balances.

Keywords: *Helmand River, transboundary waters, Iran, Afghanistan, Sistan and Baluchistan*
JEL Code: *F5, F52, F53*

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[1] It has been declared that the relevant study complies with ethical rules.

İRAN İLE AFGANİSTAN ARASINDAKİ HİLMEND NEHRİ SU SORUNU: TARİHİ ARKA PLAN, POTANSİYEL RİSKLER VE ÇÖZÜM ÖNERİLERİ

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ÖZ | Hilmend Nehri'ndeki suyun tahsisine yönelik anlaşmazlık İran ile Afganistan arasında uzun yıllardan beri devam etmektedir. Atılan çeşitli adımlara ve 1973'te yapılan anlaşmaya rağmen henüz çözülemeyen sorun, özellikle kurak dönemlerde iki ülke arasında gerginlik yaratmaktadır. Hazırlanan çalışmada tarihsel ve stratejik analizler yapılarak nehir suyunun neden bu kadar önemli olduğu ve neden hala çözülemediği sorularına cevap aranmaktadır. Ancak bundan da öte sorunun çözümsüz kalması durumunda ortaya çıkabilecek potansiyel riskleri ortaya koymak ve çözüme yönelik öneriler sunmak bu çalışmanın esas odak noktasını ve dolayısıyla amacını oluşturmaktadır. Bu bağlamda çalışmada, Claudia W. Sadoff and David Grey tarafından dört başlık altında kategorize edilen fayda-paylaşım teorisi üzerinden birtakım somut öneriler sunularak çözüme yönelik alternatif bir bakış açısı oluşturulmaya çalışılmaktadır. Bu çalışma su sorununun devam etmesi durumunda her iki ülkede ancak özellikle İran'da hem iç hem de bölgesel dengeleri etkileyebilecek güvenlik eksenli birtakım gelişmelerin ortaya çıkabileceğini iddia etmektedir.

Anahtar Kelimeler: *Hilmend Nehri, sınıraşan sular, Iran, Afganistan, Sistan ve Belucistan*
JEL Kodları: *F5, F52, F53*

Alan: *Siyaset bilimi ve uluslararası ilişkiler*
Türü: *Araştırma*

1. INTRODUCTION

The water problem between Iran and Afghanistan, originating from the Helmand River, dates back to the 19th century. This issue has been a source of conflict for over a century, leading to radical discourse, particularly during times of drought. Despite the arrangements made for sharing and allocating water over the course of a century, and the agreement signed in 1973 on the subject, the theoretical steps taken did not find a practical response. This situation led to clashes on the border of the two countries in May 2023.

The Helmand River's waters, originating in Afghanistan and flowing into the Sistan basin, were shared between Afghanistan and Iran through a 1973 agreement. However, the agreement could not be fully implemented due to events such as the 1973 military coup in Afghanistan, the 1979 Islamic Revolution in Iran, and the Soviet Union's invasion of Afghanistan in 1979. The river, which brings the two countries face to face, is a constant source of controversy, particularly during dry periods. It is the only source of water for agricultural activities in the region and therefore for the people. Iran, located in the lower basin, accuses Afghanistan of not providing the amount of water specified in the 1973 agreement and reducing the water supply to the detriment of Iran with the dams it has built. Afghanistan claims that they are loyal to the agreement and that Iran receives more water than specified most of the time (Kamil, 2023). However, due to the recent drought in the region, the dams are not full, and therefore Iran cannot be supplied with water. Although tensions have temporarily eased between the two countries following the harsh statements and threats made by their leaders, it is indisputable that new tensions will arise in the medium and long term unless permanent steps are taken to resolve the problem.

Recognising that the river is a critical water resource for both countries, this study focuses on the potential risks that may arise if the problem remains unresolved. It also proposes alternative solutions in this context. The study argues that the two countries in conflict over the sharing of river waters are primarily concerned with avoiding potential humanitarian and security issues caused by water scarcity, rather than asserting regional sovereignty. Thus, to support the hypothesis, we analysed the drought problems faced by the people living in the region and the concerns of state administrators beyond drought, by bringing them together under the common denominator of water. In analysing the water problem, a security-oriented approach has been taken by using historical and strategic arguments. The potential risks that Iran may face due to its geopolitical and geostrategic position, as well as the ethnic and religious differences of the people living in the region, have been emphasised.

The historical, cultural, linguistic, and religious similarities between Iran and Afghanistan have led to various conflict dynamics. The literature has extensively discussed the refugee problem (Christensen, 2016), Iran's political, ideological and economic influence on Afghanistan (Milani, 2006), drug trafficking (Samii, 2003), as well as the socio-cultural (Rosman & Rubel, 1976) and sectarian differences between the two countries (Nader, Scotten, Rahmani, Stewart & Mahnad, 2014). In addition, a literature review reveals numerous studies on various aspects of the Helmand River water issue. For instance, the general state of Helmand River water resources and the reasons behind their mismanagement (Goes, Howarth, Wardlaw, Hancock & Parajuli, 2016; Nabavi, 2024), the historical background of the Helmand River water issue (Abidi, 1977), the aspects of Helmand River water usage from the perspective of international law (Akbari, Mashhadi & Kazemi, 2020; Jalal, 2016), the national regulations of both countries regarding the usage of river waters (Shirani Bidabadi & Afshari, 2020), empirical studies on the flow of the river (Shirdeli, 2014), the general state of the Hamoon wetlands in the region and the environmental impacts of the river (Najafi & Vatanfada, 2011) are some of the studies conducted on the Helmand River. However, despite the existing knowledge, there is a lack of security-focused studies on the Helmand River water issue, which directly affects border conflicts between the two countries and has yet to reach a concrete solution. This study aims to provide a new perspective on the Helmand River water issue by addressing it as a regional border and security matter and to offer alternative solutions to the problem using the benefit-sharing method, a previously untried approach for this particular issue."

This study comprises four chapters, excluding the introduction and conclusion. The first chapter explains the conceptual and theoretical framework. The following chapters provide a historical background to the river problem by introducing the Sistan Basin and the Helmand River, respectively, and the potential risks associated with the water problem. The study concludes by listing some solutions to the problem based on the benefit- sharing method.

2. CONCEPTUAL AND THEORETICAL FRAMEWORK: TRANSBOUNDARY WATERS AND WATER SECURITY

Access to sufficient freshwater is crucial for sustaining life and industrial activities. However, a significant portion of freshwater resources is distributed across national borders through international rivers, making riparian states dependent on each other for water. In this context, approximately 800 million people across 39 countries rely on transboundary water resources for at least half of their water supply (Brochmann & Gleditsch, 2012, p. 520). At this point, it is

necessary to distinguish between the concepts of transboundary waters, national waters, and international waters. Waters that originate within the borders of a single country and flow into the sea within the same country are defined as national waters, and there is almost no dispute over this definition. However, there is a debate in international law regarding the distinction between international waters and transboundary waters. Some argue that the term "international water" is incorrect because water usage is exclusive to the basin states. Others believe that the term "transboundary water" is incorrect because many river channels form international borders without crossing them (Sadoff & Grey, 2002, p. 390). Many authors, however, consider this debate relatively new in international law and believe that the concept of transboundary water, water diplomacy and the term international water can be used interchangeably (Keskinen, Salminen & Haapala, 2021; Rojas & Iza, 2011). Thus, it is often difficult to make a clear distinction between international waters and transboundary waters, leading to disputes over the same river. For example, regarding the sharing of the Euphrates and Tigris rivers, Turkey uses the term "transboundary water," while Syria and Iraq prefer the term "international water" (Kibaroglu, 2015). Despite the ongoing debate, if a distinction is to be made, Charles Rousseau defines international rivers as "any large body of water that, in science and practice, is navigable and passes through the territories of multiple countries (successive rivers) or separates the territories of these countries"(Akbari et al., 2020, p. 300). According to Ramazan Erdağ, international rivers are defined as waters shared by multiple sovereign states or forming borders between those states. On the other hand, the term 'transboundary water' refers to bodies of water that originate in one country but form a border with or cross into another country before flowing into the sea or a lake. In the case of international rivers, the country where the river originates is known as the upper riparian state, while the country where the river flows into is known as the lower riparian state (Erdağ, 2015, pp. 29-30).

Transboundary waters present a complex issue, particularly due to the asymmetrical nature of river sharing relations. It is widely acknowledged that the upstream state holds a superior position, as they have uninterrupted access to the main waters of a basin. Therefore, any action taken by the upper riparian state regarding the river waters has direct consequences for the lower riparian state. For instance, Egypt, the lower riparian state in the sharing of the waters of the Nile River, is vulnerable to the actions taken by the upper riparian states. This situation has been interpreted by Egyptian politicians as "the only issue that will drag Egypt into war again is water" (Brochmann & Gleditsch, 2012, p. 520).

The lack of a comprehensive international framework governing the equitable distribution of transboundary waters gives rise to numerous tensions concerning the utilization of water resources, thereby imperiling the water security of diverse populations worldwide. The evolving and escalating demand for water within riparian states engenders recurrent political frictions pertaining to transboundary waters that remain unresolved intermittently. The principal catalysts for these tensions emanate from considerations of national sovereignty and security concerns among the states involved.

Water resources have undergone processes of securitization across various regions globally, giving rise to the prominence of the concept of water security, which has become integral to global water-related concerns. In this context, water security encompasses the consistent and sustainable availability of water in adequate quantity and quality for specific purposes. This places water at the heart of conflict and cooperation among people, as water is not only of paramount importance but also integral to everything from food and energy to war and disease, from racial and gender equality to migration and economic development (Larson, 2017, pp. 164,166). Water security also has a complex, multi-dimensional structure that encompasses a range of problems. In this context, competition for water sharing can arise at national, regional, and sometimes international levels, as well as within the jurisdictions of riparian states. This competition can manifest across a wide spectrum, from securing drinking water to industrial and hydroelectric uses, from constructing irrigation channels to infrastructure projects aimed at controlling floods (Wheater, 2015, p. 23).

When examining the literature on water security, it becomes evident that it encompasses a wide range of perspectives, each with its own definitions and significance. For instance, from a legal perspective, water security involves securing water-related rights and establishing rules for water allocation. In contrast, from an agricultural standpoint, combating drought or flood conditions becomes the primary determinant of water security. In general, during the 1990s, water security was primarily associated with military security, food security, and, to a lesser extent, environmental security. However, since the 2000s, a more holistic approach has been adopted, one that includes human needs and ecological health (Cook & Bakker, 2012, pp. 96-97). In addition, there are several concepts often associated with and used interchangeably with water security. For example, water scarcity, water shortage, and water stress are some of these terms. The general criteria for these conditions are as follows: countries experiencing water stress are those where annual per capita water consumption falls below 1,700 cubic meters; water scarcity occurs in countries where it falls below 1,000 cubic

meters, significantly affecting general welfare; and absolute scarcity is experienced in countries where it falls below 500 cubic meters (Rogers, 2006, pp. 11-12). In this context, the report "A National Adaptation Plan for Water Scarcity in Iran," published by the Stanford Iran 2040 Project in 2018, estimates that the average annual water consumption in Iran is approximately 96 billion cubic meters. This figure is about 8% higher than Iran's total renewable water resources or about 80% higher than the scarcity threshold level (Mesgaran & Azadi, 2018, p. 3).

Peter H. Gleick states that water-related conflicts have a long history, ranging from access to adequate water resources to deliberate attacks on water resources during wars. He argues that in places where water is scarce, competition for limited resources will lead nations to view access to water as a matter of national security. In this context, Gleick explains the strategic competition over a water resource through four factors (Gleick, 1993, pp. 84-85):

1. The severity of water scarcity.
2. The extent to which water supply is shared among multiple regions or states.
3. The relative power of the basin states.
4. The ease of access to alternative freshwater sources.

When examining the world's water resources, it becomes evident that the Middle East is one of the regions where water security and access to freshwater resources hold strategic importance. The Helmand River dispute between Iran and Afghanistan is one of the unresolved issues that arise in this context. This dispute over the Helmand River highlights the strategic significance of water competition between Iran and Afghanistan in light of the factors emphasized by Gleick and underscores the various dimensions of water security.

3. SISTAN BASIN AND HELMAND RIVER

Situated in the southwestern region of Afghanistan and the southeastern part of Iran, the Sistan Basin holds strategic importance for both countries. This basin comprises a network of rivers originating from the mountainous areas of Afghanistan, flowing into freshwater lakes and marshes (Hosseini, Shakeri, Rezaei, Dashti Barmaki, Rastegari Mehr & Amjadian, 2021, p. 1). Referred to locally as Hamun,[2] the Sistan Basin wetlands are situated in the arid Balochistan

[2] Hamun (Hamoon) is an ancient Persian word meaning lake. However, it is most often used to refer to a wetland, marsh or pond that has a unique ecological system. See (Thomas & Varzi, 2015, p. 515):

region, near the Afghanistan-Iran border. This enclosed inland delta is nourished by the Helmand River, originating from the western Hindu Kush mountains in Afghanistan and spanning approximately 1300 km (UNEP, 2015, p. 77).

The Sistan Basin, situated in one of the world's most arid regions, consists of three distinct geographical sub-units. The first sub-unit encompasses the upper plain of the Helmand River, predominantly utilized for agricultural purposes. The second sub-unit comprises the wetlands (hamuns) that extend across the lower reaches of the river. The third sub-unit is the saline Gowd-e Zareh Lake, positioned at the basin's lowest point, collecting water overflow from the wetlands. The presence of a political border between Iran and Afghanistan introduces a challenge, as it divides the hamun system. Given that 90% of the basin, and consequently almost all of its water resources, are situated in Afghanistan, the Iranian section remains more arid and desert-like, rendering Iran more reliant on water resources (Vekerdy, Dost, Reinink & Partow, 2006, pp. 15-18).

Hamuns represent transboundary wetlands that were initially perceived as a unified entity but are now discerned as three distinct lakes. The first lake, Hamun-e Puzak, predominantly resides within Afghanistan (96%). It stands out as the most vegetated wetland, boasting an average depth of approximately 3 meters at its highest water level in Afghanistan and 2 meters in Iran. The second lake, Hamun-e Sabari, spans both sides of the border and primarily receives its main water supply from the Harut and Farah rivers, augmented by contributions from the Helmand River during periods of heightened flow. During such episodes, excess water from Hamun-e Puzak also flows into Sabari. Hamun-e Helmand, characterized by an average depth of 2 meters, is sustained by Hamun-e Sabari in the North (Banerjee, Banoth & Saraswat, 2023, p. 1). These interconnected lakes, with the largest being Hamun-e Helmand, are situated in Iran and receive water from The Helmand River (Vekerdy et al., 2006, pp. 15-18). In 2016, the Sabari and Helmand hamuns, covering approximately 50,000 hectares, gained recognition and protection under the Ramsar Convention[3] as wetlands. The overflow from the hamun system ultimately converges into Gowd-e Zareh Lake, which lacks any outlet, causing the water level to decrease solely through evaporation (UNEP, 2015, p. 76). According to local accounts in Sistan, the overflow into Gowd-e Zareh Lake occurs every 20-25 years (Najafi & Vatanfada, 2011, p. 19).

The Helmand River, the longest in Afghanistan, serves as the natural

[3] The international convention entered into force in 1975 for the protection and sustainability of international wetlands, For more information see:(RAMSAR, 1975).

boundary between Afghanistan and Iran and is the sole river on which Afghanistan has a bilateral agreement with a neighboring country. Recognized as the 'lifeblood' of the Sistan Basin, the river basin accommodates a population exceeding 9 million people. Originating approximately 40 kilometers west of Kabul, it traverses the western expanse of the Hindu Kush Mountains, coursing through the Dasht-i Mergo (Mergo Desert) to reach the Sistan Basin and the wetlands of Hamun (King & Sturtewagen, 2010, p. 7). Remarkably, about one-third of the population resides in the river delta on both sides of the border, constituting one of the economically challenged regions in these nations (Nagheeby, 2024, p. 1).

For roughly 5000 years, the Helmand River has played a pivotal role in irrigating approximately 90% of the land in southeastern Afghanistan and 80% of the land in Sistan and Baluchistan in Iran (Loodin, Eckstein, Singh & Sanchez, 2023). Its waters have been instrumental in fostering agriculture, preserving the cultural and natural heritage of the region (Shirani Bidabadi & Afshari, 2020, p. 152). Emphasizing the shared responsibility in managing this critical resource is essential, urging collaborative efforts for the mutual benefit of both nations. The water's significance extends beyond agricultural needs, playing a vital role in safeguarding wildlife, maintaining biological diversity, and supporting regional livelihoods such as fishing, cane harvesting, and bird hunting—activities particularly prevalent in Sistan and Baluchistan during periods of high river water (Thomas, Azizi & Behzad, 2016, p. 38). While an agreement on water allocation was reached in 1973, acknowledging the river's role as a border, tensions persist over water sharing, making it imperative to address this unresolved dispute for the sustainable management of this invaluable resource (Mojtahed-Zadeh, 2004, pp. 191-192).

3.1. Historical Background of the Helmand River Dispute

The history of the water problem between Iran and Afghanistan, which has recently led to conflicts, arises from the arrangements implemented in the second half of the 19th century regarding the Helmand River. It is important to acknowledge the historical context in which these arrangements were made and the impact they have had on the region. Iran, having suffered significant territorial losses in the northern and western regions after being defeated in its wars with Russia in the early 19th century, subsequently signed the Treaties of Gulistan and Turkmenchay. In an attempt to compensate for its losses, Iran sought to seize control of the eastern Sistan region, which had been under Afghanistan's control since 1747. Iran has made historical claims to the region since the early 1850s. In 1865, the Iranian Army occupied the region southwest of Helmand and advanced towards Sistan. The British government adopted a policy of non-

intervention towards this Iranian advance, allowing them to proceed. The construction of a telegraph line from Basra to Karachi and South Baluchistan was a crucial aim of the British at that time. To ensure the security of the line, it was necessary to reach agreements with all stakeholders involved (Kocatepe, 2021, p. 77). In 1870, the Afghanistan government threatened war against Iran over the Sistan region. To prevent any potential confusion in the area, Britain acted as a mediator and appointed Sir Friedrich Goldsmid as an arbitrator to determine the sovereignty and borders of Sistan. In 1872, Goldsmid presented his report on the Goldsmid Line and disputed Iran's claim of 'ancient rights' over Sistan. He also did not fully accept Afghanistan's 'present ownership' criterion due to the difficulty in making a precise geographical definition of Sistan based on ancient borders. Consequently, the region was divided into two parts by the Helmand River, with Iran receiving the lower part and Afghanistan receiving the upper part. With regards to the sharing of the river's water, it was agreed that no activity would take place on either side of the Helmand that could potentially disrupt the water supply required for irrigation (Abidi, 1977, p. 361). However, since Goldsmid's demarcation did not establish a mechanism for water allocation or provide any specific recommendations, it was unable to provide a long-term solution (Nagheeby & Warner, 2022, p. 559).

The decisions made and boundaries drawn did not effectively solve the problem, but rather divided the region's irrigation system and worsened the issue. Ongoing disputes were caused by the Helmand River's frequent changes in position. Between 1900 and 1902, the river shifted significantly westwards, resulting in issues with water supply and borders, which caused tension between the two countries. Following the appointment of a new arbitrator to the region, a commission was established to address the issue at hand. Colonel A.H. McMahon led the commission, which focused on the matter of water volume between the two countries, an aspect that had not been previously addressed during the Goldsmid negotiations. In 1903, the border between Iran and Afghanistan was redrawn in accordance with McMahon's decision, resulting in Iran being granted one third of the Helmand River. On 1 February 1905, statements regarding the decision were sent to the parties. While Afghanistan accepted the decision, Iran objected to it, despite the signature of its representative, claiming that it was contrary to Goldsmid. Consequently, the issue persisted (Jalal, 2016, p. 32).

During the first two decades of the 20th century, Iran was facing constitutional revolutions and internal unrest. Consequently, the water dispute with Afghanistan was considered of secondary importance. In 1925, Reza Khan, who was crowned Shah and established the Pahlavi regime that lasted until 1979, signed a Treaty of Friendship with Afghanistan on 22 June 1921. The treaty

aimed to establish good relations with neighbours and ensure regional cooperation. On 27 November 1927, two sides signed a treaty pledging non-aggression and agreeing to arbitrate on issues that could not be resolved through ordinary diplomatic negotiations (Robinson, 2020, pp. 61-65). In March 1934, Iran requested Turkey's assistance in resolving a border dispute with Afghanistan, in accordance with the provisions of the 1927 agreement. Additionally, Iran took measures to address the water issue they were facing (Ramazani, 1966, pp. 267-268).

On 26th January 1938, an agreement was signed as the first concrete step towards addressing the water problem (Ramazani, 1966, p. 268). The agreement ensured that both countries would share the waters of the Helmand River equitably and refrain from constructing new canals or projects that would harm the other's water resources. Furthermore, an additional protocol was acknowledged, which aimed to make the irrigation system in the Sistan basin sustainable. While Iran ratified the agreement and the protocol, the Afghan parliament only ratified the agreement (Abidi, 1977, p. 365).

Despite the existence of the 1938 agreement and the Sadabad Pact, a regional friendship agreement that preceded it, persistent disagreements and suspicions between Iran and Afghanistan persisted regarding water-related matters. The national interests and economic imperatives of the states prompted them to undertake measures concerning irrigation, ultimately leading to the cessation of the brief period of harmony and friendship in the region. The construction of the Kemal Khan Dam in 1936 marked one of Afghanistan's most significant water management projects, situated in Nimruz province along the Helmand River (Aman, 2016a, p. 6). In 1938, Iran and Afghanistan reached an agreement to equitably share the waters of the Helmand below the Kemal Khan Dam. The Afghan government initiated the ' Valley Multi-Purpose Development Project' in the late 1930s for diverse objectives, including electricity, irrigation, and agricultural modernization. However, due to the disruptions caused by the Second World War, the project could not be completed as initially planned, despite the initial agreement. In 1946, the project resumed after an agreement was reached with the American Morrison-Knudsen Company, as the Japanese, who had initially supported the project, were unable to provide financial backing due to their defeat in the war. The project progressed intermittently until the Soviet invasion of Afghanistan in 1979 (Clapp-Wincek & Baldwin, 1983, pp. 1-2). In 1952 and 1953, Afghanistan successfully completed two dams: the Arghandab (Dahla) Dam, standing at 44.2 meters, located 18 miles northeast of Kandahar, and the Kajeki Dam, positioned seventy-two miles above Leskergah, the capital of Helmand province. These dams were designed to serve multiple purposes,

including electricity generation, irrigation, water supply, and flood control (Aman, 2016b, pp. 1-3).

The implementation of irrigation systems and canal projects without requisite feasibility studies had adverse repercussions on the region's water resources. In 1948, exacerbated by drought-related challenges, the United States intervened as a mediator. It played a key role in persuading the involved parties to establish a tripartite commission to address the water-related issues. In response, the Helmand Delta Commission was formed for this purpose and commenced its operations in the region in 1950. The commission submitted its report on February 28, 1951. The report stipulated that Afghanistan would release 22 cubic meters of water per second to Iran in normal years (Aman, 2016b, pp. 1-2). Afghanistan accepted this decision and committed to providing Iran with a total of 26 cubic meters of water per second, including 4 cubic meters as a "token of goodwill." Despite Afghanistan's acceptance of the Commission's decision, the water problem persisted, as Iran contested the decision, asserting its entitlement to a greater volume of water. The ensuing disagreement prevented the resolution of the water-related issues between the two countries (Abidi, 1977, p. 368).

Following an extended period of negotiations, Iran and Afghanistan resumed talks in 1972 to address their water-related issues. The negotiations culminated in the signing of an agreement in 1973 between Iranian Prime Minister Emir Abbas Hüveyda and Afghan Prime Minister Muhammad Musa Shafiq (The Afghan-Iranian Helmand River Water Treaty, 1973). This accord, heavily influenced by the recommendations of the 1951 Impartial Commission, marked a significant diplomatic effort. According to the terms of the agreement, Afghanistan committed to supplying Iran with 26 cubic meters of water per second, totaling 820 million cubic meters annually, of which 4 cubic meters were designated as "goodwill and neighborly rights." The third and fourth articles of the agreement stipulated the provision of 26 cubic meters of water in normal years, with the possibility of reduction during periods of drought. Both the Afghan and Iranian parliaments approved the 1973 agreement in the same year, and the exchange of signed documents between the parties formalized its entry into force in 1977. However, the full implementation of the agreement faced obstacles due to various geopolitical events, including the 1973 coup in Afghanistan, subsequent civil unrest, the 1979 Islamic revolution in Iran, the Soviet invasion of Afghanistan, and the rise of the Taliban. These factors collectively prevented the comprehensive execution of the 1973 agreement, perpetuating the dispute over its articles (King & Sturtewagen, 2010, p. 7).

Disputes over water have arisen particularly during periods of drought, and tensions have increased. For example, the drought in the Helmand basin

between 1999 and 2009 increased the vulnerability of people in the region to water and brought the two countries back into conflict. It was during this drought that the Taliban closed the Kajeki Dam from 1999 to 2001, cutting off the flow of water from the Helmand River to Iran. During this period, most of the resources in the Sistan region dried up, causing sandstorms, damage to agricultural land and a major public health crisis in Iran (Dehgan, Palmer-Moloney & Mirzaee, 2014, p. 312). In addition, the drought has had serious negative effects not only in Iran but also in Afghanistan, causing the migration of thousands of people. According to the Kabul office of the United Nations High Commissioner for Refugees (UNHCR), two main factors played an important role in the migrations of 1999-2009: The first was the Taliban administration and its practices, and the second, and perhaps more important, was the drought in the region. As an illustration, the demographic decline observed in Zaranj, the capital of Nimruz Province situated along the Helmand River on the Afghan-Iranian border, from a populace of 100,000 in 1997 to 60,000 in 2002, can be attributed to the prolonged drought. Within this framework, it is noteworthy that approximately 5,000 individuals migrated from Nimruz Province to other regions solely in the year 2002 (Ghashtalai, 2003). As mentioned above, the worsening economic situation, unemployment and loss of agricultural income in both countries have led thousands of villagers to migrate to the cities in search of better living conditions. For example, the drought in 2001 caused the drying up of the Hamun lakes in the region, resulting in the evacuation of 124 villages (Nader et al., 2014, p. 18). This situation led to a deterioration in the regional economy, and attempts were made to compensate for the loss of income from agriculture in arid regions through drug smuggling (Aman, 2016a).

The construction of dams and irrigation canals has reduced the amount of water flowing into Iran over time, and the Hamuns have largely dried up over the last twenty years. In response, Iran has tried to meet its water needs by developing various irrigation systems and by extracting surface and groundwater. For example, in 2006 it began construction of the 4th Chahnimeh Reservoir to actively develop the Chahnimeh facilities built in the 1980s and increase the total storage capacity, which largely meets the drinking water needs of the local population in Sistan and Baluchistan (Thomas et al., 2016, p. 43). Iran is also said to have built three dams on the Helmand River, called Zahak, Kahak and Sistan, to manage its natural flow (Loodin et al., 2023, p. 6). However, improper and inefficient irrigation systems have caused water resources in the region to diminish and even dry up over time, contributing to the current natural drought. In 2001, Iran sent an official complaint letter to the UN titled “Blocking of Water Flow to Iran’s Helmand River,” stating that the water flow had decreased since

December 2000 and that by March 2001, the river's water had completely ceased. This situation caused significant harm to the agriculture and livestock of the local population, leading to difficulties even in obtaining drinking water. Iran largely blamed Afghanistan's non-compliance with the agreement for the drying up of wetlands (Letter dated 20 September 2001 from the permanent representative of the islamic republic of iran to the united nations addressed to the secretary-general, 2001).

In March 2003, the Iranian religious leader Ayatollah Ali Khamenei gave a speech in Zabul in which he stated that the Afghan government should respect the water rights of the people of Iran's Sistan and Baluchistan. Similar statements were repeated in 2005, and in 2013 the Iranian Ministry of Energy presented a letter to Hamid Karzai during an official visit, stating that Afghanistan should fulfil its obligations under the 1973 agreement in order to avoid problems between the two countries in the future. In 2011, in response to Iran's claims, the Afghan Ministry of Energy insisted that non-compliance with the 1973 agreement was 'baseless' and continued with the dam projects, which Iran has persistently opposed (Thomas et al., 2016, p. 15).

The water issue between Iran and Afghanistan also came to the fore during the administration of former Afghan President Ashraf Ghani. During the inauguration of the Kamal Khan Dam in March 2021, Ashraf Ghani made a statement referring to Iran, saying that they would no longer give free water to anyone and that if they gave oil, they could ask for more water in return (Zahid, 05 July 2017). Former Iranian President Hasan Rouhani also commented on Ghani's statements and dam projects. He criticised them and said that they had the right to get their share of water from the Helmand River (Zahid, 2017).

The water dispute between Iran and Afghanistan has escalated amid claims and counterclaims regarding water resources and adherence to agreements. Iran, facing intermittent water shortages and droughts, asserts that its water resources have decreased since the Taliban assumed power in 2021. Iran contends that even during periods of flooding in Afghanistan, water delivery to Iran was not fulfilled, alleging non-compliance with the terms of the existing agreement. Afghan officials, in response, maintain their commitment to the agreement but cite a significant drought in Afghanistan. They argue that the agreement pertains to "normal water year" conditions and that, due to the ongoing drought, there is insufficient water to meet Iran's requirements, even if dam gates are opened. Afghan authorities pledge to provide the allocated water to Iran once the drought subsides (Kamil, 2023). Addressing the water crisis during his visit to the drought-stricken region of Sistan and Baluchistan in May 2023, Iranian President Ibrahim Reisi emphasized the importance of respecting the water rights

of the people of Sistan. His warning and the statement, "I am warning you, or you will suffer the consequences," added tension to the situation. Subsequently, the rhetoric from both sides heightened tensions, leading to clashes at the border on May 27, 2023 (Iran International, 2023). The confrontations resulted in three fatalities and numerous injuries, underscoring the severity of the water-related dispute and its potential ramifications for the region (Goldbaum, 2023).

Although Iran has said that it has satellite images showing that there is enough water in the dams, (IRNA, 2023) the research carried out by Iranian technical experts at the Deh Ravud station in August 2023 reported that the river water was at the minimum flow level and that it was very difficult to reach the Hamun region in Iran (Asharq Al Awsat, 2023). Although Iranian officials in their previous statements said that they would accept the situation if the technical team's investigations concluded that there was no water, it is an "undeniable" fact that the water crisis at this point has turned into a conflict.

4. POTENTIAL RISKS OF WATER CONFLICT

The water dispute between Iran and Afghanistan over the Helmand River is complex, with many underlying issues. Although the apparent cause and the recent conflict are water-related, the potential risks closely linked to both countries make the issue even more important.

The main risk for Iran is the emergence of the problem in the province of Sistan and Baluchistan. Sistan and Baluchistan is the poorest and most underdeveloped province in Iran, but it is also remarkable for the people who live there. The majority of the people living there claim that they have been marginalised and deliberately left behind in socio-economic terms by the Iranian central government because of their Baloch ethnic identity and Sunni faith. Iran, on the other hand, believes that the Baloch have separatist intentions and are likely to rebel against the government at every opportunity. Therefore, in an environment where both sides are already prejudiced against each other, the emergence, or rather re-emergence, of the water issue makes the situation even more tense. This is because the separatist Baluchis, who could secede from Iran by merging with the large Baluchi population in Pakistan, pose a threat to Iran's territorial integrity. Iran is therefore approaching the water issue cautiously and constantly pressuring the Afghan government to resolve the problem.

In the context of Iran's territorial integrity and security, the city of Zabul in Sistan and Baluchistan deserves its own bracket. Zabul is one of the driest provinces in Sistan and Baluchestan and receives its water directly from the Helmand River. The city is affected by the famous 120-day wind ("Bad-e Sad o Bist Ruz"), which turns it into a sandy desert during dry periods. The city also

acts as a buffer between Afghanistan and Iran, making it the first point of attack from Afghanistan (Toğa, 2023). Therefore, an environment of instability and insecurity in Zabul would not only jeopardise Iran's security, but also provide legitimacy to already disaffected Baloch groups seeking secession.

The province of Sistan and Baluchistan is characterised by its socio-economic and demographic structure, as well as its geo-strategic location. Chabahar Port, Iran's gateway to the Persian Gulf, is located in this region. The port is very important for trade with India and for the direct transfer of Indian goods to Central Asia and Eurasia, especially at a time when China is investing heavily in the Gwadar port in Pakistan as part of the Belt and Road project. In addition, the oil and gas pipelines to be built can also bring energy resources from Central Asia and Russia to India. Since any unrest or insurgency in the region could affect the security of the port, Iran directly links the security of the water with the security of the province and attaches importance to this region. In addition, Afghanistan, the other partner in the Chabahar Port Project[4], has to act cautiously due to the possibility of disruption of the port project in case of a deterioration in its relations with Iran.

One of the risks behind the water issue between Iran and Afghanistan is that Afghan refugees in Iran have become a political bargaining chip for both sides, with negative repercussions for the refugees. Afghan refugees fleeing the political and economic environment in Afghanistan and taking refuge in Iran, mostly living in camps, are not only a socio-economic burden for Iran, but are also involved in many illegal activities such as smuggling and drugs. At a time of severe water crisis, Iran wants to deport these migrants and can use them as a trump card against water (Salaam Times, 2023). Iran claims to have taken in millions of Afghan refugees during times of economic hardship, but in a zero-sum game, Iran has received nothing in terms of water in return for all the incentives and investment Afghanistan has received (Nagheeby & Warner, 2022, p. 565). Indeed, in times of heightened tension and social anger, Afghan refugees are seen as the main culprits for water scarcity. For example, a member of parliament from Khorasan said: "We have almost 4 million Afghans in Iran. At 100 litres of water per person per day, Afghans living in Iran consume 400 million litres of water (Aman, 2016b, pp. 8-9). The fact that the Afghan government does not have the resources to reintegrate these migrants in the short term is seen as a serious source of Iranian influence on the Afghan government (Thomas et al., 2016, p. 24). Therefore, Iran wants to get the water it demands by resorting to

[4] The Chabahar port project was signed between Iran, Afghanistan and India in Tehran on 23 May 2016.

certain actions, such as deporting Afghan migrants or exposing them to poor living conditions. In addition, not only Iran but also Afghanistan wants to use Afghan refugees as an element of political pressure. Afghanistan can also use water as a bargaining chip to force Iran to improve its treatment of Afghan refugees (Thomas et al., 2016, pp. 8-9). However, it should not be forgotten that the 'Afghan refugees for water' formula used by both sides could lead to a migrant crisis in the medium and long term.

The possibility that the water crisis between Afghanistan and Iran could spill over into a regional crisis in the Middle East is also a factor to be considered in the context of potential risks. If the conflict between these two states, which belong to two different sects of Islam, continues, it increases the potential for the involvement of many regional states, especially Saudi Arabia, which already has tensions with Iran, and global powers such as China and the United States. An increase in the scope and parties to the conflict would further deepen instability in the Middle East and pose a threat to peace and security. Moreover, failure to resolve the bilateral conflict through dialogue and negotiation will hamper the regional integration process, with negative implications for economic diversity, social stability and living conditions (He, Luo & Luo, 2023).

5. DISPUTE RESOLUTION PROPOSALS: BENEFIT-SHARING METHOD

The water tension between Afghanistan and Iran, even if temporarily resolved in the short term, possesses the potential to reignite due to various factors such as population growth, climate change, and the construction of dams and water controls on the Helmand River. Particularly, climate changes occurring in the region elevate the significance of water to a more critical level, necessitating durable and sustainable solutions over short-term crisis management measures. Addressing the challenge goes beyond immediate concerns, as factors like population growth and climate change are expected to persist. A study conducted by the United Nations Development Programme (UNDP) reveals a 50% to 70% reduction in glaciers in Afghanistan, indicating that while this may temporarily increase surface water, it is likely to diminish the overall river flow in the long term (UNEP, 2015, p. 315). Consequently, given the climate-induced alterations, the tension between the two parties becomes a matter of vital importance that cannot be left solely to the mercy of nature. Achieving a sustainable resolution requires robust and enduring measures to navigate the complex interplay of environmental, demographic, and geopolitical factors shaping the water dynamics in the region.

The longstanding and unresolved water issue pertaining to the Helmand

River between Iran and Afghanistan prompts the recommendation of a benefit-sharing approach (Hossen, Connor & Ahammed, 2023, pp. 6-7) in this study. This method, increasingly employed in the management of transboundary waters, signifies a win-win strategy wherein basin states not only share the water but also mutually optimize various benefits derived from the river. The benefit-sharing approach departs from a zero-sum game of simple water allocation, aiming instead to optimize benefits for all parties involved, encompassing social, political, and environmental advantages alongside water-related benefits. By treating water as a tradable commodity, conflicts among parties can be alleviated.

This method, categorised by Claudia W. Sadoff and David Grey under four different benefit headings as 'Benefits to the river', 'Benefits from the river', 'Benefits arising from the river' and 'Benefits beyond the river', can also be used as a solution method in the dispute over the sharing of Helmand River waters (Sadoff & Grey, 2002, pp. 389-403).

Benefits to the river are those that do not provide direct consumption benefits but lead to the development of outcomes that increase people's happiness. For instance, activities that improve water quality and increase fish biodiversity and productivity can be listed among the benefits to the river. In this context, ecological contributions to the Helmand River and the hamuns fed by the river will create an important source of consumption and income for both sides in terms of fisheries. Additionally, these contributions will result in lower water treatment costs. Although there are many factors preventing the resolution of the crisis between the parties, diplomatic negotiation, which the benefit sharing approach also emphasises, is the first step to be taken. It is important to establish diplomatic communication and cooperation between parties to allocate water and develop equitable solution mechanisms. Investing in water infrastructure will contribute to effective and sustainable water management in the future. International mediators can play an impartial and facilitative role in solving the problem and filling gaps, which can help reduce tensions. To achieve a permanent solution, mediators and international organisations should collaborate with technical subject matter experts from both sides to develop a solution mechanism that aligns with common interests. If necessary, legal regulations should be revised in the presence of academic, scientific, and non-governmental organisations to propose a new structure (Shirani Bidabadi & Afshari, 2020, pp. 160-161). The 1973 agreement does not include any special provisions for adapting to changing climate conditions in the region, making it difficult to respond to current realities.

Benefits obtained from the river involve the direct extraction and consumption of water for agricultural production or urban water supply. The management of the Helmand River waters, the largest water source for

Afghanistan and the sole water source for Sistan and Baluchistan, holds significant importance within this category. When not directly related to water consumption, this category aims to control changes in river water, such as hydroelectric energy production and flood and drought management. This approach seeks to find optimal solutions, such as identifying proper storage methods during flood situations and sharing the associated costs, providing a win-win example.

Considering the measures taken separately by both parties regarding the waters of the Helmand River and the reactions of the parties at the current stage, it is imperative to experiment with new solution methods that consider benefit optimization without further delay. The future status of the water crisis between Iran and Afghanistan and the steps to resolve the crisis are generally discussed in two dimensions. The first dimension involves each state outlining its own water management policy within the context of various measures, such as strengthening infrastructure and controlling water usage. The second dimension is the external aspect, involving environmental diplomacy that addresses climate change and diminishing water resources, requiring coordination among multiple states. Environmental diplomacy necessitates the reflection of increasing environmental concerns in the foreign policy goals of nations (Shokri, 2023) and the respect of upper basin nations for the water rights of downstream nations, emphasizing transparency and informative communication in initiated projects (Ramachandran, 2017). Integrating environmental dimensions into the foreign policy goals of nations will contribute to a more resilient response to potential crises, such as water scarcity, agricultural difficulties, and the associated challenges of unemployment and migration in the future (Shokri, 2023).

Benefits arising from the river refer to the cost savings achieved by neighboring countries through the utilization of the river. For instance, if there is a good relationship between neighboring states, ensuring border security may require fewer investments both in terms of resources and personnel (Sadoff & Grey, 2002, p. 398). Considering the Helmand River specifically, conflicts at the border result not only in financial losses but also in human casualties, prompting states to think more security-oriented and allocate additional resources to military expenditures. In the context of a cooperative relationship among riparian states, the costs associated with ensuring border security can be significantly reduced, fostering a mutually beneficial environment and minimizing the need for substantial investments in military infrastructure.

The benefits beyond the river represent the indirect advantages that would result from the collaboration developed in the context of joint river management. Enhancing the benefits derived from the river and reducing the

costs associated with the river can contribute to broader economic growth and regional integration processes that may generate benefits even in seemingly unrelated sectors. For example, a well-managed international river can act as a catalyst among parties, fostering increased collaboration in various areas such as trade and technology transfer (Sadoff & Grey, 2002, pp. 399-400). When examining the water issue between Iran and Afghanistan, tense relations and non-constructive statements from politicians negatively affect potential relationships between the parties. Therefore, an agreement that puts both sides in a win-win position regarding water sharing could open new advantageous doors beyond water for both parties.

6. CONCLUSION

The dispute between Iran and Afghanistan over the Helmand River, where their borders were drawn in the 19th century and where their fates have been shaped by the agreements put into practice, is still unresolved. Fueled by climate change, both sides blame each other, and tensions are exacerbated by the reckless statements of those in power. Despite the step taken and the agreement signed in 1973 to resolve the tension, both cyclical developments and natural phenomena such as global warming and drought have prevented the agreement from coming into full effect. At the current stage, according to Iran's official news agency IRNA the clashes that resulted in the deaths of two border guards and the injury of two civilians (IRNA, 2022) demonstrate the determination of both countries regarding the water issue and indicate a hardening stance that is likely to persist.

The instinct of curiosity about the risks underlying the dispute that started over "water" was the main reason for preparing this study. Starting from the assumption that water is indispensable for both countries, the study concluded that there are many factors that could be affected if the water crisis is not resolved. In this context, the main issue for Afghanistan, which is upstream, is the use of Afghan migrants as a tool in this struggle. While Iran threatens to deport the Afghan migrants it hosts or expose those who remain to poor living conditions in order to obtain more water from Afghanistan, Afghanistan uses water as a bargaining chip in exchange for a decent life for its citizens in Iran. From the Iranian point of view, the situation in the drought-affected region of Sistan and Baluchistan is critical. The Baluchis, whose Sunni and Baluchi identity opposes Iran's Shia and Persian national identity and who feel 'marginalised', are struggling under much more difficult conditions because of the water crisis they are experiencing and are therefore putting pressure on the Iranian central government on this issue. The idea of separatism in their historical code, and

especially the idea of uniting with the Baloch population in Pakistan to form a Greater Baluchistan, is a situation that makes Iran uneasy. In addition, the security of the Chabahar port in Sistan and Baluchistan, whose geostrategic location attracts the attention of regional and global powers, requires Iran to respect the delicate balances in the region. Any unrest in the region, starting with a water crisis, has the potential to directly affect the security of the port and the infrastructure works. For this reason, Iran has defended the region's need for water at the level of both the president and the religious leader, and has made tough statements from time to time.

In the study, the issue has been approached from a perspective of water security, considering its historical dimensions and the dangers that are significant to both sides, as summarized above (such as the Baloch issue, migrants, border security, etc.). Both parties, especially Iran, perceive water security as a national security issue, providing a concrete example of how water scarcity can lead to conflicts between states. At this juncture, it has been argued that the 1973 agreement has not adequately responded to the current international context, and therefore, it could be revised, considering the common interests of both nations if necessary. Additionally, it has been emphasized that without long-term and sustainable measures, the issue could escalate into a regional conflict. It has been underscored that despite the steps taken and measures implemented so far, the problem remains unresolved, and some recommendations have been listed based on the benefit-sharing method, which focuses on optimizing benefits. The study claims that approaching the issue based on the benefits derived from the river, rather than merely focusing on water sharing, could result in a win-win situation for both sides. In this regard, a benefit-sharing method categorized by Claudia W. Sadoff and David Grey as "Benefits provided by the river," "Benefits obtained from the river," "Benefits derived from the river," and "Benefits beyond the river" has been applied to the Helmand River, offering a different perspective.

7. CONFLICT OF INTEREST STATEMENT

There is no conflict of interest between the authors.

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9. AUTHOR CONTRIBUTIONS

This study is written by single author.

10. ETHICS COMMITTEE STATEMENT AND INTELLECTUAL PROPERTY COPYRIGHTS

Ethics committee principles were complied with during the study process. The methods and data used in the study do not require ethics committee approval.

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