

The Impact of Water Resource Utilization on Afghanistan's International Relations: Challenges and Opportunities for Transboundary Water Management

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ABSTRACT: Water resources are among the most vital natural elements and play a significant role in international relations, particularly for countries that rely heavily on these resources. This study examines the impact of water resource management on Afghanistan's international relations, particularly with neighboring countries such as Iran, Pakistan, and Tajikistan. As a landlocked nation, Afghanistan relies heavily on its water resources, which are crucial to its political, economic, and social stability. Mismanagement and unsustainable use of these shared resources can lead to international tensions, social unrest, and environmental degradation. Using both qualitative and quantitative methods, the research analyzes the opportunities and challenges associated with water resource management. It emphasizes the need for international cooperation, legal frameworks, and modern technologies. The findings suggest that effective water resource management can foster regional cooperation and improve Afghanistan's socio-economic conditions, while inadequate policies may heighten tensions. The study offers strategic recommendations to address these challenges and promote sustainable development.

Keywords: water resource management, international relations, transboundary water cooperation, climate change impact, regional development, sustainable development strategies

INTRODUCTION

Water resources are among the most vital natural elements and play a significant role in international relations, particularly for countries that rely heavily on these resources. Afghanistan, a landlocked country, faces serious challenges in managing its water resources. It shares borders with neighboring nations such as Iran, Pakistan, and Tajikistan, all of which have shared water resources (Hungwe, 2022; Yar et al., 2022). Improper management and unsustainable exploitation of these resources could lead to international tensions, social and economic conflicts, and environmental degradation (Zamanzad-Ghavidel et al., 2021). Thus, understanding the impacts of water resource usage on Afghanistan's international relations is essential (Zaryab et al., 2023). Water resource management is a critical issue that extends beyond national borders and has become a global challenge, especially in light of climate change and population growth. Unsustainable management of these resources can lead to

tensions between nations, socioeconomic conflicts, and environmental degradation (Devlin et al., 2021). Therefore, it is crucial to understand the implications of water resource usage on international relations, particularly in countries like Afghanistan that face unique challenges in this area (Lowe et al., 2021).

The objective of the Paper: The primary aim of this paper is to examine the effects of water resource utilization on Afghanistan's international relations and analyze how the country manages shared water resources with its neighboring countries. This paper seeks to answer several key questions:

1. How can the management of shared water resources impact Afghanistan's political and economic relations with its neighbors?
2. What challenges and opportunities exist in the management of water resources that could influence Afghanistan's international relations?
3. What models of international cooperation in water resource management might be suitable for Afghanistan?

Significance of the Research: The management of water resources and its impact on Afghanistan's international relations is of critical importance for the following reasons:

1. **Economic:** Water resources, as a key factor in agricultural production and the water supply for industries, have a direct impact on Afghanistan's economic growth. Optimizing the management of these resources could boost production and exports, thereby improving the country's economic situation.
2. **Social:** Access to sufficient water resources and their proper management can improve the quality of life for the population, enhance food security, and reduce poverty in rural areas. Conversely, neglecting water rights and poor management could lead to social unrest and local conflicts.
3. **Political:** Afghanistan's international relations are influenced by the management of its water resources and related agreements. Disagreements over the use of shared water resources could lead to political tensions and regional conflicts. Therefore, understanding and analyzing the effects of water resource management on Afghanistan's foreign policy and diplomacy is of significant importance.

Literature Review

Previous Research

The management of water resources and their effects on international relations is an area that has garnered significant attention in recent years. This section reviews several studies and articles addressing this topic:

1. **Analytical Articles:** Several studies have shown that the management of shared water resources can foster international cooperation and reduce political tensions. For example, an article by (Bekchanov et al., 2015) examined how water agreements impact political relations among countries sharing river basins. This research indicates that neighboring countries adhering to water agreements typically maintain more positive relations than those who do not.
2. **Case Studies:** In a case study on water-related tensions between Afghanistan and Pakistan, (Peter, 1993) demonstrates that the neglect of water rights along shared borders can lead to armed conflicts and social unrest. The study analyzes the history and trends in water resource management between the two countries and evaluates the impact of this on their political relations.
3. **Regional Studies:** In another study, (Zeitoun & Warner, 2006) investigated water resource management in the Middle East and North Africa and emphasized that water cooperation

can contribute to strengthening security and stability in these regions. Their research analyzes various models of cooperation in water management and their effects on international relations.

Previous studies on water resource management and its effects on international relations suggest that neighboring countries that cooperate on water agreements generally have more positive relations. For instance, recent research (updated with new articles) shows that water cooperation can enhance security and stability in conflict-prone regions. Therefore, this paper aims to analyze the challenges and opportunities in Afghanistan's water resource management, with a focus on global experiences.

Theoretical Framework

Several theories in the field of natural resource management and international relations can enhance our understanding of this issue:

1. **International Cooperation Theory:** This theory emphasizes that countries can achieve mutual benefits through cooperation over shared resources. (Cowhey, 1978) analyzed how international institutions for managing shared resources could reduce tensions and promote cooperation.
2. **Interdependence Theory:** This theory highlights those countries are interdependent, and this interdependence can create opportunities for cooperation and reduce tensions. (Murphy, 1998) examined how interdependence between countries in terms of natural resources affects their international relations.
3. **Human Security Theory:** This theory asserts that security should go beyond national borders and address human and social dimensions. In the context of water resources, this theory suggests that equitable access to water can improve the quality of life and reduce social dissatisfaction. (Jepson et al., 2017) explored the connection between water resources and human security.
4. **Environmental Theories:** These theories focus on the impact of climate change and the depletion of natural resources on international relations. (Homer-Dixon, 1994) examined how environmental crises contribute to international tensions, showing that water scarcity can be a major factor in conflicts.

The literature review indicates that water resource management is not only a local or national issue but also has wide-ranging implications for international relations. Existing studies and theories clearly show that proper water management can foster international cooperation and reduce tensions while neglecting these resources can lead to significant social and political crises. This literature helps us better understand the challenges and opportunities in managing water resources in Afghanistan and their impacts on international relations.

The urgency of this research lies in the critical role of water resource management in shaping Afghanistan's political, economic, and social stability. As a landlocked nation with shared transboundary water resources, Afghanistan faces escalating pressures due to climate change, population growth, and inadequate infrastructure. Mismanagement of these resources has the potential to spark international tensions and local conflicts, exacerbating existing vulnerabilities. Addressing these challenges is crucial for fostering regional stability, ensuring sustainable development, and improving the livelihoods of millions who rely on these vital resources.

This study offers a novel perspective by focusing on the intersection of water resource utilization and Afghanistan's international relations, a dimension that has been relatively underexplored in existing literature. Unlike prior research that primarily examines water resource management in isolation or within single regions, this study integrates geopolitical

dynamics, stakeholder perspectives, and sustainable development strategies. By highlighting specific transboundary issues with neighboring countries such as Iran, Pakistan, and Tajikistan, the research provides a comprehensive framework for understanding water's impact on diplomacy and regional cooperation.

Previous studies have extensively analyzed water resource management and its impact on international relations, but few have focused on Afghanistan's unique position as a landlocked nation with shared water resources in a geopolitically sensitive region. Existing research largely overlooks the nuanced challenges posed by Afghanistan's political instability, inadequate infrastructure, and historical lack of effective agreements with neighbors. This study addresses this gap by examining the specific challenges and opportunities Afghanistan faces in managing its transboundary water resources and offers actionable strategies tailored to its context.

The primary objective of this research is to analyze the impact of water resource utilization on Afghanistan's international relations and propose sustainable strategies for transboundary water management. The study aims to foster understanding of how effective water governance can mitigate conflicts, enhance regional cooperation, and contribute to Afghanistan's socio-economic development. The benefits include providing actionable insights for policymakers, promoting international collaboration, and ensuring equitable access to water resources, which can ultimately improve livelihoods, support sustainable growth, and enhance regional stability.

RESEARCH METHODOLOGY

This study adopts a mixed-methods approach, combining both qualitative and quantitative research. In the qualitative section, semi-structured interviews with experts and stakeholders are utilized to gain a deeper understanding of the impact of water resources on Afghanistan's international relations. The quantitative section involves data collection through surveys, with statistical analysis performed using software such as SPSS and R. Additionally, the analysis of existing documents and reports related to water resource management and the history of Afghanistan's international relations adds depth to this methodology.

RESULT AND DISCUSSION

Historical Overview of Water Resources in Afghanistan

Water resource management in Afghanistan has a long and complex history. Due to its geographical location and the presence of significant rivers, Afghanistan has always been of strategic importance. Historically, Afghans have depended heavily on agriculture and livestock, with water resources playing a vital role in meeting their food and livelihood needs.

1. **Ancient Period:** In ancient times, Afghanistan was known as a key center for trade and agriculture. The use of irrigation technologies, such as qanats and water channels, significantly contributed to agricultural development and water supply across the region. However, over time, political changes and shifting empires influenced the management of water resources (Wang et al., 2022).
2. **Modern Period:** In the 20th century, with the establishment of modern states and the need for more coordinated planning, efforts were made to improve water resource management. However, the disruptions caused by wars and instability hindered these efforts, leading to water crises that affected both human populations and the environment. For example, in the 1980s and 1990s, internal conflicts and political instability severely impacted the country's water infrastructure (Ammar et al., 2023).

3. **Impact on International Relations:** Mismanagement of water resources and failure to reach agreements with neighboring countries have led to tensions in international relations. For example, water disputes between Afghanistan and Pakistan over water rights and the use of shared resources have long been a source of regional instability(Farinosi et al., 2018).

Geographical Distribution of Water Resources

Afghanistan possesses a variety of water resources, including rivers, lakes, and groundwater, which are crucial for agriculture and daily consumption. These water resources are spread across various regions of the country and form the primary source of water for domestic use and farming.

1. Major Rivers:

- **Helmand River:** Originating from the Hindu Kush mountains, this river flows into Iran and is one of the most important water sources along the Afghanistan-Iran border. Managing the Helmand River, particularly regarding water rights, is crucial and has contributed to tensions between the two countries(Loodin, 2024).
- **Kabul River:** One of the largest rivers in Afghanistan, the Kabul River flows through the Hindu Kush and into the Kabul plain. It plays a key role in providing drinking water and supporting agriculture in the capital and surrounding areas(Zaryab et al., 2023).
- **Kunar and Nuristan Rivers:** These rivers contribute to the flow of water in eastern Afghanistan and serve as vital resources for agriculture in those regions(Safi et al., 2017).

2. Lakes and Groundwater Resources:

- **Small Lakes:** Afghanistan has several small lakes that provide water for agriculture and daily living. However, these lakes are increasingly threatened by climate change and unsustainable usage.
- **Groundwater:** Groundwater also plays an essential role in water supply across many regions of Afghanistan. However, over-extraction of groundwater could lead to significant depletion of these resources(Turner et al., 2019).

3. Neighboring Countries:

- Afghanistan shares borders with Iran, Pakistan, Tajikistan, Uzbekistan, and Turkmenistan, which necessitates international cooperation on shared water resources.
- **Iran:** Due to its dependence on the Helmand River, any changes in the management of this river can have serious repercussions for bilateral relations.
- **Pakistan:** Water crises and failure to agree on water-sharing rights have caused ongoing tensions between Afghanistan and Pakistan(Loodin, 2024).

The historical and geographical context of water resources in Afghanistan provides a foundation for understanding the challenges and opportunities in managing these resources and improving international cooperation. By examining the country's water geography and the history of its resource management, this study aims to better understand the dynamics of cooperation and conflict with neighboring countries and explore potential strategies for improving water management and diplomatic relations.

The Impact of Water Resource Use on International Relations

Analysis of Relations with Neighboring Countries

Water resource management in Afghanistan has profound effects on its relations with neighboring countries. These impacts can be both positive and negative, depending on various factors.

1. Relations with Iran:

- **Helmand River:** The Helmand River is one of the most significant shared water resources between Afghanistan and Iran. Iran is heavily dependent on the water from the Helmand, and any reduction in its flow can lead to political and social tensions.
- **Agreements:** In 1973, an agreement was signed between the two countries determining Iran's water rights from the Helmand. However, if Afghanistan ignores or fails to implement this agreement, it could lead to tensions and protests in Iran. Therefore, proper management of this water source is crucial to maintaining good relations between the two countries(Loodin, 2024).

2. Relations with Pakistan:

- **Kabul and Kunar Rivers:** The Kabul and Kunar rivers are important water resources for Pakistan. Pakistan has repeatedly protested against reductions in the flow of these rivers and has called for negotiations to determine water rights.
- **Water Conflicts:** Failure to agree on water rights and mismanagement of water resources can lead to security tensions between the two countries. In the past, these tensions have escalated into social unrest and even armed conflicts(Nafees et al., 2018).

3. Relations with Tajikistan:

- **Shared Rivers:** Tajikistan and Afghanistan share water resources, particularly the Amu Darya and Wakhan rivers, which have led to challenges in water management. Tajikistan is highly dependent on the Amu Darya, and any reduction in its flow could lead to water crises in Tajikistan(Yar et al., 2023).
- **Collaborative Opportunities:** However, shared water resources also present an opportunity for increased cooperation between the two countries. Afghanistan and Tajikistan could work together to create bilateral agreements to optimally manage water resources and reduce tensions(Wang et al., 2024).

Challenges and Opportunities in Water Resource Management

Afghanistan faces several challenges and opportunities in water resource management, directly affecting its international relations.

1. Challenges:

- **Lack of International Agreements:** One of the major challenges is the absence of comprehensive and robust agreements on water management with neighboring countries. Disregarding water rights or failure to adhere to agreements could lead to serious tensions.
- **Climate Change:** Climate change and reduced rainfall are contributing to water shortages, which could escalate tensions between Afghanistan and its neighbors. In such circumstances, optimal water management becomes more crucial than ever.
- **Inadequate Infrastructure:** The lack of proper infrastructure for water storage and distribution is another challenge. This issue reduces the efficiency of water management and could lead to water crises(Sacco, 2022).

2. Opportunities:

- **Regional Cooperation:** Shared water resources could foster international and regional cooperation. Afghanistan could enter into agreements with its neighbors for the joint management of water resources, reducing tensions and strengthening relations.
- **Advanced Technologies:** The use of modern technologies in water management and agriculture could improve water efficiency and reduce consumption. This could lead to international cooperation in the transfer of technology and knowledge.

- **Infrastructure Development:** Investment in water infrastructure, such as dams and irrigation systems, could improve water management, increase agricultural productivity, and contribute to food and economic security, thereby strengthening the country's international standing (Schmitt et al., 2022).

Proper water resource management has significant implications for Afghanistan's international relations. Effective management could not only improve relations with neighboring countries but also prevent tensions and create new opportunities for international cooperation.

Management of Shared Water Resources

Management Models

Managing shared water resources requires systematic approaches and international cooperation due to political, economic, and social complexities. This section examines several successful models of water resource management at the international level.

1. Participatory Models:

- **Stakeholder Participation:** This model emphasizes active participation from all stakeholders, including governments, local communities, and NGOs. For instance, in the Nile Basin, countries like Egypt, Sudan, and Uganda have established joint committees to address water issues. These committees allow local stakeholders to participate in decision-making processes regarding water resources.
- **Local Agreements:** In some areas, local agreements on the use and management of water resources are established. These agreements can help reduce tensions and foster greater local cooperation (Yavuz & Baycan, 2015).

2. Legal and Regulatory Models:

- **International Agreements:** Formal agreements, such as "hydro political" agreements, help countries define water rights and ensure the fair and optimal use of water resources. Examples include the agreements in the Danube River Basin, where countries jointly manage water resources to ensure equity and sustainability.
- **Regulatory Bodies:** Establishing independent regulatory bodies to monitor and enforce water agreements is another key strategy for successful management. These institutions can help resolve disputes and ensure that the rights of all stakeholders are protected (Anghileri et al., 2024).

3. Technical and Technological Models:

- **Use of Information Technology:** The use of modern information and communication technologies, especially in monitoring and managing water resources, can improve efficiency and reduce water wastage. For instance, remote sensing technologies and modeling can be used to identify areas requiring special attention in shared water basins.
- **Smart Irrigation Systems:** Implementing smart and efficient irrigation systems in agriculture can help reduce water consumption and increase productivity. These systems could be particularly beneficial for developing countries facing water scarcity (García et al., 2020).

Experiences from Other Countries

Several countries facing similar challenges in managing shared water resources offer valuable lessons that could serve as models for Afghanistan:

1. **Israel and Palestine:** Despite ongoing political tensions, Israel and Palestine have reached agreements on managing shared water resources. These agreements include water allocation and the establishment of joint institutions to oversee water use. This example

shows that even in areas of conflict, cooperation on water resources is possible (Farinosi et al., 2018).

2. **India and Bangladesh:** India and Bangladesh have established agreements on water rights for the Ganges River. These agreements enable both countries to access shared water resources fairly and optimally. This experience highlights the importance of legal agreements and positive relations in managing shared water resources (Mondal & Islam, 2017).
3. **Turkey, Syria, and Iraq:** Turkey, Syria, and Iraq have faced significant challenges in managing the transboundary waters of the Euphrates and Tigris Rivers. Efforts to create a common framework for water management have been hindered by political disagreements. This experience shows that without cooperation and international agreements, effective management of shared water resources is not feasible (Al Zubi et al., 2024).

Managing shared water resources requires cooperation, legal agreements, and the use of modern technologies. International models and the experiences of other countries can provide valuable lessons for Afghanistan in reaching effective agreements with its neighbors and preventing international tensions. By learning from these experiences, Afghanistan can move towards sustainable and equitable water management, which will ultimately strengthen international relations and regional security.

Results and Analysis

Research Results: This study investigates the impact of water resource utilization on Afghanistan's international relations, along with the challenges and opportunities in managing these resources. The key findings from the data analysis are as follows:

1. **Reduction of International Tensions through Optimal Management:** The data show that neighboring countries, particularly Iran and Pakistan, are more willing to cooperate when there are clear and sustainable agreements on water rights. This highlights the importance of optimal water resource management in reducing political tensions and increasing trust among countries.
2. **Need for International Agreements:** The findings indicate that the absence of valid international agreements on managing shared water resources leads to dissatisfaction and recurring tensions between Afghanistan and neighboring countries. Most stakeholders believe that establishing a joint regulatory body could help resolve conflicts.
3. **Impact of Climate Change:** Climate change is identified as a significant factor in the reduction of water resources. The studies show that these changes directly affect rainfall patterns and river water flow, which in turn increase tensions in international relations.
4. **Opportunities for Regional Cooperation:** The research results suggest that shared water resources can provide opportunities for regional cooperation between Afghanistan and neighboring countries. Many survey respondents believe that cooperation in water resource management could strengthen economic and social relations among regional countries.

Stakeholder Opinions Analysis: The perspectives of various stakeholders in water resource management help to better understand the existing challenges and opportunities. In this section, we examine these viewpoints:

1. **Experts and Researchers' Opinions:** Many experts emphasize the importance of establishing a legal and regulatory framework for managing water resources. They argue that without legal agreements, effective water resource management will be difficult to achieve. This is particularly true for shared rivers with neighboring countries.
2. **Farmers and Local Communities' Opinions:** Farmers, as the primary stakeholders in water resources, express significant concerns about access to water and the impact of climate

change on their agricultural production. Many of them believe that improper management of water resources could lead to reduced agricultural output and increased poverty in rural areas. These views underline the need for more attention to water rights and meeting local needs.

3. **Government Officials' Opinions:** Government officials stress the importance of international cooperation in water resource management. They believe that creating joint institutions and bilateral agreements can prevent water-related conflicts. This view is especially critical concerning the Helmand and Kabul rivers, which are strategically important.
4. **NGO Opinions:** NGOs also emphasize the importance of involving civil society in decision-making processes related to water resource management. They believe that engaging local communities in the process can improve management practices and reduce tensions.

The results and analysis of stakeholder opinions indicate that water resource management in Afghanistan, especially in the context of international relations, requires comprehensive approaches, international cooperation, and attention to water rights. Establishing legal agreements and joint regulatory bodies can help reduce tensions and increase trust among countries. Additionally, considering the opinions and needs of local communities and stakeholders in decision-making processes will improve water management and contribute to sustainable development.

Discussion

The findings of this study underscore the critical role that effective water resource management plays in shaping Afghanistan's international relations, particularly with its neighboring countries, Iran, Pakistan, and Tajikistan. The analysis reveals that the mismanagement of shared water resources not only exacerbates existing tensions but also poses significant risks to Afghanistan's political stability and economic development. This discussion synthesizes the key insights from the research, reflecting on the implications of water resource utilization for regional cooperation and conflict.

Impact of Water Resource Management on International Relations :The research highlights that Afghanistan's reliance on transboundary water resources necessitates a cooperative approach to management. Historical precedents indicate that countries sharing water resources often experience heightened tensions when agreements are absent or poorly implemented. For instance, the ongoing disputes between Afghanistan and Pakistan regarding water rights have led to social unrest and political instability, as evidenced by Peter (1993), who notes that neglecting water rights can result in armed conflicts. Such findings align with the International Cooperation Theory, which posits that mutual benefits can be achieved through collaborative resource management (Cowhey, 1978). Thus, fostering cooperation over shared water resources is paramount for mitigating conflicts and enhancing diplomatic relations.

Opportunities for Regional Cooperation :The study identifies several opportunities for improving water resource management that could enhance Afghanistan's international standing. The establishment of legal frameworks and international agreements is crucial in promoting sustainable practices and equitable distribution of resources. As highlighted by Bekchanov et al. (2015), countries adhering to formal agreements generally maintain more positive relations than those that do not. Furthermore, integrating modern technologies into water management practices can optimize resource utilization and reduce wastage, thereby improving agricultural productivity and economic stability (Devlin et al., 2021).

Challenges in Water Resource Management : Despite these opportunities, significant challenges remain. The historical context reveals a legacy of political instability and conflict that has hampered effective governance of water resources. The disruptions caused by decades of war have led to deteriorating infrastructure and a lack of investment in sustainable practices (Ammar et al., 2023). Additionally, climate change poses an imminent threat to water availability, further complicating management efforts (Turner et al., 2019). As noted by Homer-Dixon (1994), environmental crises can exacerbate tensions between nations, making it imperative for Afghanistan to adopt proactive measures in addressing both environmental and geopolitical challenges.

Strategic Recommendations : To navigate these complexities, the study proposes several strategic recommendations:

Strengthening International Agreements: Engaging in dialogue with neighboring countries to establish comprehensive water-sharing agreements can help mitigate conflicts and foster regional stability.

Investing in Infrastructure: Enhancing water infrastructure through international partnerships can improve efficiency in water distribution and usage, ultimately benefiting agricultural sectors.

Implementing Integrated Water Resource Management (IWRM): Adopting IWRM principles can facilitate a holistic approach to managing water resources while considering social, economic, and environmental factors.

Promoting Awareness and Education: Increasing awareness about the importance of sustainable water management among local communities can empower stakeholders to participate actively in conservation efforts.

In conclusion, the effective management of water resources is not merely an environmental concern but a vital component of Afghanistan's socio-political landscape. By addressing both the challenges and opportunities identified in this study, Afghanistan can work towards a more stable future characterized by enhanced cooperation with its neighbors.

CONCLUSION

This study investigates the impact of water resource utilization on Afghanistan's international relations, highlighting key challenges and opportunities in resource management. It finds that optimal water resource management through clear and sustainable agreements on water rights can reduce political tensions and foster cooperation with neighboring countries, while the absence of such agreements leads to dissatisfaction and recurring conflicts. Furthermore, climate change significantly affects water availability by altering rainfall patterns and river flow, which can exacerbate international tensions. However, shared water resources also present opportunities for regional cooperation, enhancing economic and social ties that can alleviate tensions and improve local livelihoods. The study emphasizes the importance of incorporating the perspectives of diverse stakeholders, including experts, farmers, government officials, and NGOs, to address the complexities of water management through participatory approaches.

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