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Opportunities in Afghanistan Water resources

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ABSTRACT

Given the importance of water management for domestic use, industrial use, agricultural production, a productive society, national development, the environment, hydropower generation, economic growth, climate change, challenges related to human security, trade, political stability, social potential, success, poverty reduction, creation of jobs, and the avoidance of internal and external displacement, the government, private sector, and others should give this important natural resource their full attention in order to invest in water resources and meet the aforementioned goals. This article's goals are to examine the significance of water management, the reasons behind water mismanagement in the nation, Afghanistan's water resources, and to encourage both the public and private sectors to invest in this natural resource. This paper presents a descriptive analysis of the research methodology, using data gathered from relevant national and international publications, periodicals, journals, and websites. We gather data on the significance of water management, Afghanistan's water resources, the reasons behind water mismanagement in the country, and literature. A review of water management is provided at the end, along with suggestions for the government, businesspeople, and other national and international organizations looking to invest in the management of their country's water resources and turn a profit over the long term. Finally, we offer an example of how work should be done in this regard.

Keywords: Opportunities; Water resource; Causes of water mismanagement; Afghanistan

INTRODUCTION

Allah (SWT) mentions water's importance for life in numerous passages of the Holy Quran and emphasizes the usage of water for good. A number of scholars have examined the significance of water and studied water resources. Abdullah Aini (2007) said that water is a valuable resource that humans may use for a variety of purposes, including domestic, industrial, and agricultural purposes. One of the most crucial resources for both sustainable and economic development is water. While it is unquestionably a human right, how it is managed matters greatly globally (Rezaee, 1999). "Water is mankind's most valuable resource," according to Andelman (2010). All food production methods require water as a necessary component; without it, food cannot be produced. He went on to say that the three primary issues for sustainable development are environmental preservation, water quality control, and resource management. Water and its management have been identified by numerous scientists and politicians as critical components of the region's overall stability (Cerveny, 2006). It is your right to have access to water, but it is also your duty to conserve it (Allam, 2007). Every drop of water represents life and leaves a legacy for future generations. There can be no advancement in national development without a sufficient supply of water to meet the many requirements of a productive society and to maintain a diverse natural environment. A natural ecosystem must be preserved in order to replenish social and economic

demands for home water supplies, sanitation, agriculture, hydropower production, and industrial use with regenerable (fresh) water of adequate quality. The natural ecosystem is called upon to provide water for all of these purposes virtually nonstop every day. (National Development Strategy for Afghanistan, 2007).

According to Baidar Karimullah and his colleges, it is universal property that needs to be appropriately transmitted to next generations. One of the greatest problems of the twenty-first century is water management, which puts the lives of living things in jeopardy. Water is essential to human life, and without it, a nation cannot develop sustainably or realize its full potential on the political, social, and economic fronts. For this reason, water supplies are intrinsically tied to a nation's industrial expansion, economic strength, and wealth. Afghanistan is in the center of Asia and excels in a variety of agricultural and other commodities. For example, at the Belgian International Institute's Crocus competition in 2024, Afghan crocus won first place worldwide for the ninth time in a row. Eighty percent of the population of the nation lives in rural areas and is reliant on farming and animal husbandry for a living. Therefore, managing the waterways and using them as a national asset by building dams and other infrastructure to provide access to clean water and meet demand are essential for reducing poverty, creating jobs, preventing internal and external displacement, maintaining security, and maintaining political stability. A further challenge is increasing water efficiency and water saving to meet water demands. This can be addressed by minimizing water waste by creating water usage programs that employ water-saving techniques, as well as by managing and creating alternative strategies to lower water demands (Mahmoodi Sultan 2008).

Afghanistan is 652,000 square kilometers and a landlocked nation. Less than 2% of Afghanistan's total land area is covered by forests, while roughly 10% of the country is arable. The remaining terrain is mostly rangeland and bare land. Approximately 25% of Afghanistan's land area is higher than 2500 meters above sea level. The primary sources of river flows in Afghanistan are precipitation and snowfall. The agriculture sector accounts for 50% of the country's GDP, and crop production and animal husbandry form the backbone of the country's economy (Habib Habibullah 2014). Afghanistan is a country with abundant water resources, but sadly, due to the presence of water along its borders, which complicates water management, the country is experiencing a crisis in water management. Other contributing factors include a lack of funding, a shortage of skilled labor, and a lack of agreements with neighboring countries regarding water. (Baidar Karimullah et all.) Briefly, water is important for domestic use, industrial use, agricultural use or production, productive society, national development, national environment, hydropower generation, economic growth, climate, human security challenges, trade, political stability, social potential, success, poverty reduction, employment generation, and prevention of internal and external displacements. Water is the major natural resource in Afghanistan, but unfortunately, we can't use it for the above purposes as there is less or no filtration, sedimentation, and disinfection usage from river water. Regarding gardening purposes, the country uses less river water for gardens and lawns and less use for industrial, agricultural, and horticultural uses. We field in productive society, national development, national environment, hydropower generation, economic growth, good climate, human security, trade, social potential, success, poverty reduction, employment generation, and so on. Achieving ambitious and radical water management practices in Afghanistan is challenging due to the significant financial investment necessary. However, it is important to include water management issues in the strategic plan.

Problem statement

Since there has been very little research on the country's water resources, it is imperative that relevant agencies and individuals conduct specialized research on various water issues so that all aspects of it become clear. This means that because of the country's crisis of water management, they are not benefiting properly and the majority of them cross

international borders. Water is so important that different researchers have conducted research in different countries regarding its management. Although Afghanistan has an abundance of water resources, it is sadly one of the countries in the world with inadequate water management (Karimullah Baidar, October 2022). Furthermore, according to (Hvidt, 2000), there is almost no trustworthy information available on the different water quality aspects.

Research questions

1. What is the importance of water management for the country?
2. What are the opportunities of water resources management in Afghanistan based on the current status of water resources management?
3. What are the recommendations for overcoming water challenges and optimizing water resource management in Afghanistan?

LITERATURE REVIEW

From a sociological standpoint, "Sustainability, the Rights and Beauty of the Nature and Environmental Justice," which addresses not only human rights but also those of non-human entities such as animals, plants, and even the land and rivers, is linked to the significance of water resources management. The management of Egypt's water resources affects many areas of the country's economy and social stability directly, as well as the health and way of life for a large number of its residents (Luzi, 2010). Bell (1998) contended that the consumption and production patterns of an increasing population, as well as the methods by which they engage in these activities, determine the environmental impact. There is no denying the unquestionable link between poverty, rapid population increase, and a host of environmental issues. According to Raza Ullah and Farhad Zulfiqar, water security is the thread that ties together the problems with food, energy, economic expansion, climate change, and human security. A scarcity of water will result in higher food costs, restricted trade, unstable energy supplies, a rise in the number of refugees, and the undermining of authority. Egypt uses minor amounts of rainfall, floodwater, groundwater, agricultural drainage water, and treated municipal water to augment its nearly total reliance on the waters of the Nile (Swain, 2008). Egypt's water resources are managed by three major government organizations: the Ministry of Water Resources and Irrigation (MWRI), the Ministry of Agriculture and Land Reclamation, and the Ministry of Housing(Wagdy 2008).

Since the nation's water supply is derived from a single, major source, central government institutions have a significant influence in the formulation of water policy. This influence is a result of both the political background and structure of the state. The MWRI is ultimately in charge of allocating water. The inner circle of water policy actors also includes the ministries of agriculture, environment, health, industry, and local development in addition to the Ministry of Housing, Utilities, and New Communities. Donor agencies are important non-governmental actors. The Dutch Embassy, the World Bank, and USAID were once the most active donors in the field of institutional reform and water resources policy. Additionally, business actors primarily maintain indirect or informal connections to the water sector through personal relationships or through the relevant governmental authorities (Alnaggar, 2003).

Actually, the development of five primary socio-economic sectors—agricultural, industrial, municipal, navigation, and power generation—depends on the availability of limited water resources. The need for water will only increase in the next years as a result of rising food prices, population growth, industrial base modernization and development, and rising living standards (Wagdy, 2008). To boost fishing in Lake Nasser, enhance navigation conditions below the dam, and convert the place into a tourist destination (Kliot, 1994).

In conclusion, negotiations over stakeholder interests greatly influence choices about controlling water quality, both inside the government and between the government and water consumers (Luzi, 2010).

In terms of the institutional framework, in order to effectively address the pressing issues of water scarcity and rising water demands, it is imperative that the institutions involved in water resources management be developed. Decentralization of the decision-making processes and coordination between the relevant institutions are becoming imperative. These institutional issues, such as the inadequate coordination between MWRI and other ministries involved in water management and the highly centralized manner in which MWRI makes decisions, appear to be essential to addressing the shortcomings of the current institutional framework. Several ministries, including the Ministry of Water Resources and Irrigation, Ministry of Agriculture, Ministry of Interior, Ministry of Foreign Affairs, Ministry of Environment, and Ministry of Health, oversee water resources.

Other stakeholders that are also important include the Ministry of Electricity and Energy and the Ministry of Industry and Foreign Trade because water is used to generate electricity, and is also a necessary component of sectors like textiles, ceramics, and cement; as a result, in a centralized system, coordination between the many ministries in charge would be anticipated (Bell, 1998; El Feki, 2013). It is critical to draw attention to the economic impacts of water shortages on Egyptian society as a whole since they will reduce the amount of land used for agriculture and result in gross farm losses, which will lower both individual and public income (Kliot, 1994).

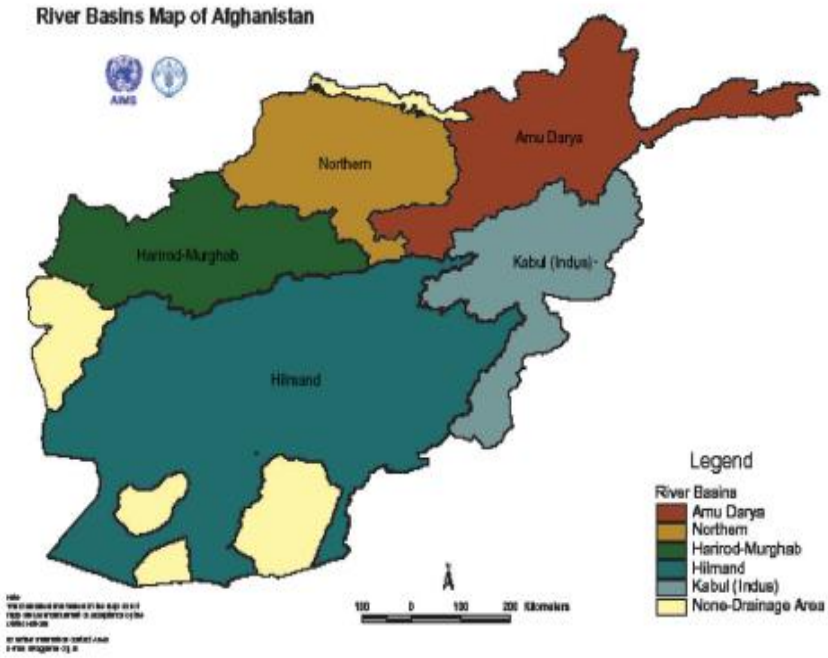
Water Resources in Afghanistan

The Hydrology Department of the Ministry of Water and Power classifies Afghanistan's river systems into five basins. Afghanistan's rivers are mostly fed by precipitation and snowfall.

- The Amu Darya Basin in the north of the country flows from east to west.
- North-flowing river basins that either disappear within or outside the country.
- The Hari Rud River Basin flows from west to north, eventually entering Turkmenistan.
- Helmand River Basin flowing toward the south-west.
- The Kabul River Basin flows into Pakistan and joins the Indus River in the easterly direction.

Millions of people use the water resources in the Kabul River basin for industry, power generation, drinking, agriculture, and sanitation, making it one of the country's most significant water resources. Originating 72 kilometers west of Kabul city in the Sanglakh Range, the 700-kilometer Kabul River spans both eastern Afghanistan and northwest Pakistan. After flowing 560 km across east Afghanistan, passing through Kabul and Jalalabad, it enters Pakistan to the north of the Khyber Pass and joins the Indus River northwest of Islamabad, the country's capital (IUCN, 2010). The rivers Logar, Panjsher, Kunar, Alingar, Bara, and Swat are its sub-tributaries (Azam, 2015). The Kunar River, which originates in Pakistan and enters Afghanistan in the Kunar province before joining the

Kabul River at Jalalabad, is a significant tributary of the Kabul River Basin (Parvez and Khan 2014). About 12% of Afghanistan's total water supply comes from the sub-tributary Kunar River (IUCN, 2010). According to Mustafa (2011), there are currently nine rivers that share an annual flow of approximately 18.3 MAF between Pakistan and Afghanistan. Of them, 16.5 MAF come from the Kabul River alone.



Map of Five Major River Basins (Source: AIMS and FAO)

In terms of water use, the nation is mountainous, with only 12% of its land ($7.86x10^6$ ha) being arable, and only 50% of that area being used for cultivation. The nation uses just 55000 million M3, or 65%, of the entire discharge. The remaining, useless water is exported from the nation. Assessments from UN agencies and NGOs indicate that Afghanistan's use of water resources is in disrepair. In addition to using water resources for agriculture, the government has built a few reservoirs to hold floodwater, allowing it to be utilized for power generation as well as irrigation (Aini Abdullah).

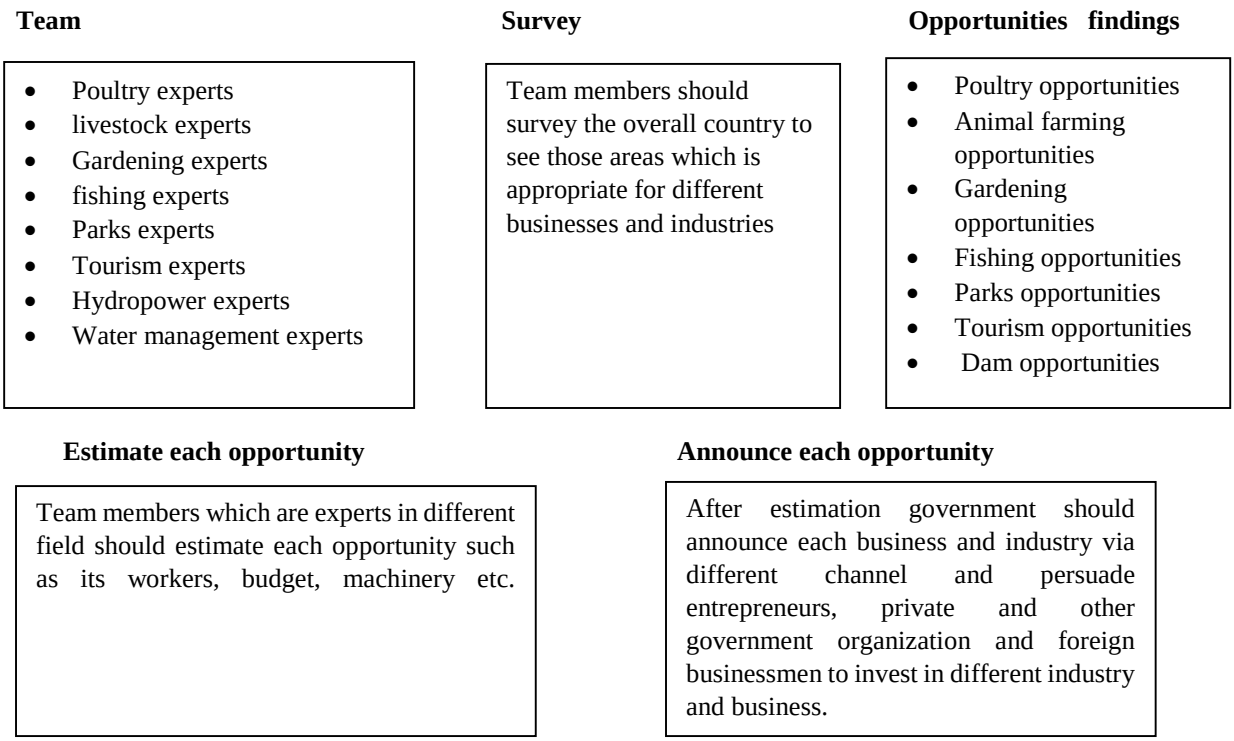
Causes of water mismanagement in Afghanistan

- Lack of information and data
- Lack of Capital
- Lack of Capacity
- There is a shortage of research on Afghanistan's water.
- Lack of Agreement with Neighboring Countries
- interference of neighboring countries in infrastructure

Research Methodology

This is a qualitative descriptive study, and the data for it was gathered and examined from a number of trustworthy sources, including books, journals, and magazines. While conducting research, every researcher searches for the instruments, data, and supplies they need. Additionally, I made every effort to gather information from a variety of sources regarding water management, the reasons behind poor water management in the nation, the significance of water management, and Afghanistan's water resources.

Model for finding opportunities



team will visit areas that help them obtain research objectives. With the help of an expert ambulant team, they will visit all those areas that are objectives of research, i.e., those areas that have rivers and seas. Observing different areas will help the team find out opportunities for different businesses and industries, like opportunities for creating dams, fishing, farms, livestock, fish cages, poultry, gardening, horticulture, etc. After the survey, the team will illustrate those areas or places that are almost ready for different purposes of research, like creating dams, irrigation purposes, fishing, farms, livestock, fish cages, poultry, gardening, horticulture, parks, tourism purposes, etc. Then the team will estimate the cost of each business and industry and will estimate the income of each business for strategic purposes, and finally, via government procedure, the government should privatize each opportunity to the private sector so that this country may manage sufficient water resources, and finally we might have productive society, national development, a national environment, hydropower generation, economic growth, a good climate, human security, trade, political stability, social potential, success, poverty reduction, employment generation, and prevention of internal and external displacements.

Recommendations

1. The government should develop a long-term plan to manage water resources and reduce the impact of drought on agricultural. The goal of the plan should be to maximize the use of water. This can be achieved by expanding the irrigated command area, upgrading intake structures, improving the information system regarding water availability, and managing water on farms.
2. Increasing agricultural productivity and outputs requires including the communities in the upkeep and operations.
3. putting in place a program of investments for the restoration of official irrigation projects.

4. Water conservation, implementation of suitable technology, implementation of required reforms, and waste water treatment
5. The Afghan government should put significant effort into developing water infrastructure since the nation's water management demands it.
6. The appropriate agencies must carry out specialized research on various water issues in order to fully understand them, as there has been relatively little research done on the nation's water resources.
7. The Regional Center for Training and Water Studies (RCTWS) should focus on capacity building, education, training, and public awareness efforts. The initiative aims to improve advisory services, information sharing, and applied research outcomes. It will provide specialized training programs, workshops, and practical studies for integrated water resource management. Finally, it will strengthen the regional network for water studies. Administrative personnel, professional engineers, technicians, and related managers will all be affected by the program.
8. The international community can help Afghanistan by providing technical improvements that will enable the nation to expand its business and industrial potential. Modern technology can, in many cases, even lower unemployment and poverty in a nation.
9. Encourage the use of scientific research to create novel, reasonably priced desalination methods and to offer high-yielding, highly disease-resistant, low-water-consuming agricultural crops.
10. It is also crucial that national authorities get exposed to new ideas regarding water use and learn from other nations' experiences managing their water resources.

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