

IMPORTANCE OF NATURAL RESOURCES AND ENVIRONMENT IN TAJIKISTAN

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Abstract. Sustainable management of natural resources will ensure that future generations have a suitable environment for the development of humanity. The planet can survive without humans, but humanity cannot survive if we destroy the environment. Most people hope that our generation will not witness human-caused climate change. Unfortunately, this is already evident. However, it is believed that it is not too late to improve the situation, both for us and for future generations and for plant and animal species. This study focused on the natural resources and environment of Tajikistan, a country in Central Asia, which is unique in terms of biodiversity, water and mineral resources. Tajikistan's unique geography greatly impacts its natural resources, especially minerals and agricultural output. The elevation and specific climate conditions help support a variety of farming activities, such as growing cotton, fruits, and vegetables, which are key to the economy. The mining industry, rich in minerals like aluminium, lithium, and gold, is also crucial for the economy; however, it carries environmental risks, such as soil and water pollution. Protecting the natural resources of Tajikistan is very important, not just for the environment but also for the economic health of its people. Sustainable management of natural resources and environmental protection are key to maintaining ecological health and economic security for future generations in Tajikistan.

Keywords: natural resources, environment, climate change, footprint, sustainable management, economic security

INTRODUCTION

The exploitation of natural resources is an essential condition to support the growing human population. This refers to food production, but also to economic development, natural resources being an important basis for a stable economy and for social development. The extraction of resources and their transformation into food, buildings, furniture, clothes, etc. is a normal activity for the well-being of humanity. However, when the rate of exploitation exceeds the capacity of the resources to recover, it is obvious that the environment suffers and, implicitly, the human population (Rogelj et al., 2012, Pascalau et al., 2021, 2024).

Both progress and poverty of the population depend to a large extent on the quality and condition of natural resources. Their irrational exploitation will have a negative impact on the environment, leading to the reduction or even exhaustion of certain resources, environmental degradation and the emergence of economic and financial crises (Bringezu et al, 2017, Dobbs et al., 2011).

Situated in Central Asia, Tajikistan has many natural resources and a varied environment that affect its economy and society (Jurakhonzod et al, 2023). The relationship between the country's mountains and its different ecosystems not only supports local jobs but also enriches its culture. These resources, including plenty of water from melting glaciers and large mineral reserves, have great potential for economic growth (Smuleac et al., 2023, 2024). Still, managing these resources in a sustainable way is very important due to the challenges posed by climate change and quick urban growth, which put pressure on Tajikistan's environment. Grasping these issues is key, as they affect the country's ability to use its natural resources while keeping the environment safe (Ali et al., 2017). This research looks into the challenges and opportunities of Tajikistan's natural surroundings to highlight the need for

sustainable methods to ensure a successful future for the nation (Wiedmann et al., 2015, Wilting et al, 2017).

MATERIAL AND METHODS

Tajikistan, located in Central Asia, has tough terrain and varied ecosystems. About 93% of the land is mountainous, mainly featuring the Pamir Mountain Range in the east, which is part of the larger Hindu Kush area. This geography not only offers stunning views but also creates many small climates that promote various plants and animals. Elevation differences and the Amu Darya, the main river in the country, are key in affecting both water systems and wildlife in Tajikistan. Additionally, being near Afghanistan and Uzbekistan complicates its environmental and resource management. Water is one of Tajikistan's most important environmental resources. Melted glaciers provide around 70% of the country's water, which is essential for farms, power generation, and drinking. As one of the most water-rich areas in Central Asia, Tajikistan's heavy dependence on rivers highlights the need for responsible water management. Nonetheless, climate change is causing glaciers to shrink, threatening water supplies and increasing conflicts over resources with neighboring nations. Thus, it is important to understand how Tajikistan's geography affects its environmental resources for effective national planning and regional collaboration. Furthermore, Tajikistan's unique geography greatly impacts its natural resources, especially minerals and agricultural output. The elevation and specific climate conditions help support a variety of farming activities, such as growing cotton, fruits, and vegetables, which are key to the economy. Nevertheless, careful management is essential because poor farming practices can harm these resources. The mining industry, rich in minerals like aluminum, lithium, and gold, is also crucial for the economy; however, it carries environmental risks, such as soil and water pollution. In summary, Tajikistan's geographic and environmental settings are not just a backdrop but are vital to its economic health and sustainability, demanding thorough policies that balance resource use with environmental protection (figure 1).



Fig. 1. Tajikistan
<https://www.azomining.com>

RESULTS AND DISCUSSIONS

Tajikistan has many types of land, like rough mountains and good valleys. These areas have many natural resources that are very important for the country's economy and its future. The tall mountains help create valuable minerals, such as gold, silver, and aluminum (figure 2). They also affect how much hydropower the country can produce. Hydropower is very important because Tajikistan has the most potential for this kind of energy in Central Asia. This energy is essential for local use and for selling to other regions. The government's effort to take advantage of these resources is very important, as being self-sufficient in energy could help the economy grow and lessen reliance on other countries. Furthermore, careful use of these resources is needed to balance protecting the environment and growing the economy. Poor mining and hydropower methods can harm the fragile ecosystems that support Tajikistan's special plants and animals. Therefore, a complete approach to using resources is very important for encouraging sustainable growth while also keeping the country's natural beauty safe.

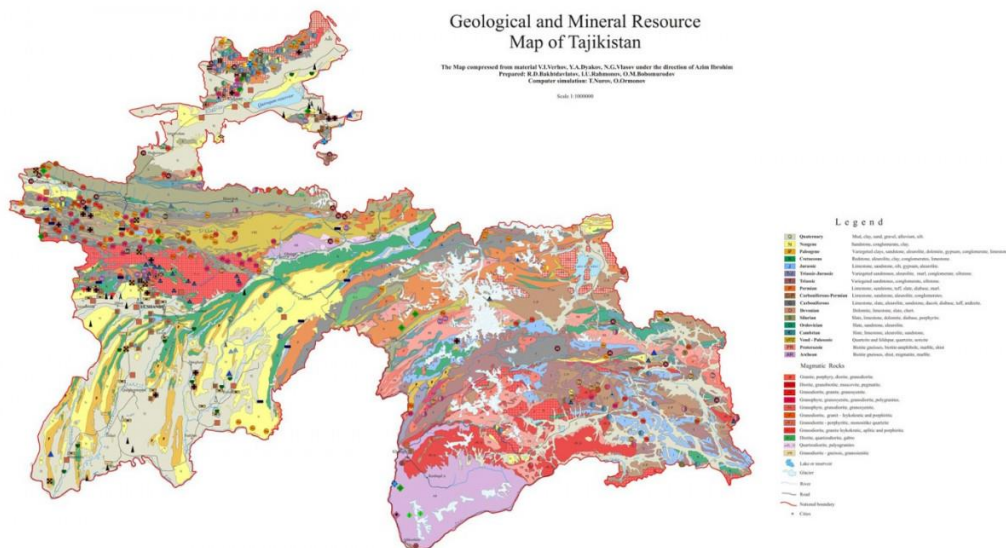


Fig. 2 Mineral resources of Tajikistan
<https://mfa.tj/en/berlin/tajikistan/economy/natural-resources>

Water resources are very important for agriculture and energy in Tajikistan (figure 3), which has many mountains and little land for farming. Water availability helps with irrigation, which is necessary for growing main crops like cotton and fruits. Since Tajikistan depends on agriculture for economic stability and food safety, managing water resources well is very important, especially with climate changes that affect water availability. Also, these resources are vital for energy, as water is used for hydropower, which provides over 90% of the country's electricity. The connection between agriculture and energy highlights the need for water management strategies that support farming and ensure a good energy supply. Therefore, it is vital to understand how water resources impact sustainable development in Tajikistan, making sure economic growth and environmental care go hand in hand.



Fig. 3. Water resources in Tajikistan
<https://www.mapsofworld.com/tajikistan/river-map.html>

Environmental Challenges in Tajikistan

The decline of natural resources in Tajikistan is very serious, mainly due to practices that harm the environment. A major issue is deforestation, which is mainly caused by the need for firewood and farming growth. The country's mountains, which are rich in ecology, are facing soil erosion and loss of species, harming the health of its ecosystems. There is also a major problem with water scarcity, made worse by climate change, which affects snowmelt patterns that are important for farming and energy generation. This situation is worsened by old infrastructure and poor water management, causing more competition for limited resources among farmers, local residents, and businesses. Given these linked issues, it is clear that a comprehensive approach is necessary. Practices for sustainable resource management must be used to protect the delicate environment while meeting the social and economic needs of the people, ensuring ecological balance and farming productivity for the future.

Effects of climate change and deforestation on biodiversity and local communities

The complex link between climate change and deforestation greatly affects biodiversity and local communities, especially in places like Tajikistan. With higher temperatures and changed rainfall patterns disturbing ecosystems, many species lose their habitats, which results in smaller populations and higher extinction rates. This drop in biodiversity puts important ecosystem services at risk, which local communities depend on for their survival, such as farming, cleaning water, and keeping soil fertile. In addition, deforestation worsens these issues by breaking up habitats, making it harder for species to adapt and live. Communities that rely on forest resources are stuck in a tough situation; as natural resources shrink, they have to adjust to tougher conditions or move away, which often causes economic problems. In the end, the combination of climate change and deforestation not only puts the fragile ecosystems of Tajikistan at risk but also threatens the cultural and economic stability of its people.

CONCLUSIONS

Managing natural resources sustainably in Tajikistan is important not just for the nation but also for the region, given its links with nearby countries. The variety of natural resources, especially water and minerals, brings both chances and challenges that need careful handling. Good policies that focus on taking care of the environment can improve local lives and help the overall ecological balance. Furthermore, working together with neighbouring nations on shared resources can help reduce conflicts and ensure fair resource distribution. In conclusion, the complex ties between natural resources and the environment in Tajikistan show the urgent need for combined strategies that consider both ecological health and economic growth. Investing in renewable energy, protecting biodiversity, and applying solid conservation methods can guide how national goals align with caring for the environment. The country's commitment to these actions can raise its global reputation and secure a sustainable future for its people. Thus, as Tajikistan deals with the challenges of managing resources in a fast-changing environment, it is crucial to focus on sustainable practices. Finding a balance between economic growth and ecological health will require teamwork among government bodies, local groups, and global partners. By recognizing how its natural resources and environmental health depend on each other, Tajikistan can lead the way in sustainable development in Central Asia, setting an example for other resource-rich countries aiming for similar goals.

Protecting the natural resources of Tajikistan is very important, not just for the environment but also for the economic health of its people. The country's mountains, which are full of minerals and water, have a lot of potential for development in a sustainable way. But, overuse has caused habitat damage, water shortages, and loss of wildlife, which threaten both nature and the livelihoods of local people. It is essential to use sustainable management practices to reconcile development with conservation efforts. This includes methods like reforestation, careful water management, and creating other job opportunities that lessen the need for resource extraction. Additionally, protecting the environment helps build resilience against climate change—a critical concern in Tajikistan, where higher temperatures and unpredictable weather worsen current challenges. In the end, sustainable management of natural resources and environmental protection are key to maintaining ecological health and economic security for future generations in Tajikistan.

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