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Opportunities and Challenges for Sustainable Economic Development in Azerbaijan

Abstract

This research paper evaluates the perspectives of sustainable development in Azerbaijan, particularly focusing on the country's efforts in economic diversification, environmental challenges, and the role of the oil and gas industry. The study highlights the importance of balancing economic growth with environmental sustainability and social equity, aiming to provide practical recommendations for enhancing sustainability in Azerbaijan. By examining the current state of economic diversification, identifying the challenges and opportunities in sectors such as renewable energy and agriculture and analyzing government policies aimed at promoting sustainable development, this paper seeks to offer valuable insights for policymakers and researchers.

Keywords: *sustainable development, renewable energy, Azerbaijan Economy, oil and gas industry, green technology, environmental sustainability*

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Azərbaycanda Davamlı iqtisadi inkişaf üçün imkanlar və problemlər

Xülasə

Bu tədqiqat işi Azərbaycanda davamlı inkişaf perspektivlərini qiymətləndirir, xüsusən də ölkənin iqtisadiyyatın şaxələndirilməsi, ekoloji çağırışlar və neft və qaz sənayesinin rolu sahəsində söylərinə diqqət yetirir. Tədqiqat Azərbaycanda davamlılığın artırılması üçün praktiki tövsiyələr vermək məqsədi ilə iqtisadi artımın ekoloji davamlılıq və sosial ədalətlə tarazlaşdırılmasının vacibliyini vurğulayır. İqtisadiyyatın şaxələndirilməsinin cari vəziyyətini araşdıraraq, bərpa olunan enerji və kənd təsərrüfatı kimi sektorlardakı çətinlikləri və imkanları müəyyən etməklə və davamlı inkişafı təşviq etməyə yönəlmiş hökumət siyasətini təhlil etməklə bu sənəd siyasətçilər və tədqiqatçılar üçün dəyərli fikirlər təqdim etməyə çalışır.

Açar sözlər: *davamlı inkişaf, bərpa olunan enerji, Azərbaycan iqtisadiyyatı, neft və qaz sənayesi, yaşıl texnologiya, ekoloji davamlılıq*

Introduction

The idea of sustainable development has become increasingly significant worldwide as countries acknowledge the importance of balancing economic growth with environmental and social factors. Azerbaijan, traditionally reliant on its natural resources, finds itself at a pivotal moment as it seeks to transition towards a more diversified and sustainable economic framework. This research is pertinent as it explores the nation's efforts to lessen its reliance on oil and gas, broaden its economic base, and tackle the environmental issues arising from resource extraction.

Research

The goal of this paper is to assess Azerbaijan's current trajectory towards sustainable development, emphasizing the challenges and opportunities within key sectors such as agriculture, renewable energy, and technology. Additionally, the study examines the continued influence of the oil and gas sector on the country's economic structure and the implications this has for long-term sustainability.

Sustainable Economy Background

Sustainable economy is a concept born out of the need to address the long-term consequences of economic activities that damage the environment and disrupt social equality. Traditionally, economies have prioritized short-term growth, often neglecting the environmental and social costs of this growth. However, the growing realization of finite natural resources, environmental degradation, and social inequity has led to the development of models that aim to balance economic prosperity with environmental stewardship and social justice.

The Brundtland Commission's 1987 report, *Our Common Future*, introduced the modern understanding of sustainable development, defining it as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." This shift in thinking has guided global sustainability initiatives, including the United Nations' Sustainable Development Goals (SDGs), which emphasize interconnectedness in achieving economic, environmental, and social sustainability.

A sustainable economy is one that strives to balance these elements while maintaining natural resources for future generations. It involves the adoption of policies that promote efficiency, equity, and environmental responsibility. For countries like Azerbaijan, which have relied heavily on natural resource extraction, transitioning to a sustainable economy is both a challenge and an opportunity to build a more resilient future.

Azerbaijan's Economic Landscape

Historically, Azerbaijan's economy has been heavily reliant on its oil and gas sector, which has been the main driver of its economic growth. With abundant reserves in the Caspian Sea, Azerbaijan has generated significant revenues from exporting oil and gas. In 2022, oil and gas accounted for nearly 90% of the country's total exports (State Statistical Committee of Azerbaijan, 2022). These revenues have allowed for considerable investments in infrastructure, public welfare, and economic modernization.

However, the fluctuations in global oil prices have made Azerbaijan's economy vulnerable to external disruptions. For instance, the dramatic fall in oil prices during the 2020 COVID-19 pandemic had a major impact on the country's economic stability (World Bank, 2020). Similarly, the 2014 oil price drop highlighted the dangers of relying too heavily on a single industry, which led the Azerbaijani government to recognize the importance of diversifying the economy (International Monetary Fund, 2014).

Since 2021, the government has made significant efforts to reduce this dependence, focusing on diversifying the economy by investing in sectors like agriculture, tourism, and information technology (IT). For instance, in 2022, the non-oil sector made up more than 60% of the gross domestic product (GDP) (Central Bank of Azerbaijan, 2022). The agricultural sector saw a growth rate of about 5.5% in 2021 (Ministry of Agriculture of Azerbaijan, 2021), while the tourism industry experienced a strong recovery in 2022, with nearly 3 million foreign visitors to Azerbaijan, nearing pre-pandemic levels (State Tourism Agency of Azerbaijan, 2022).

Azerbaijan also possesses considerable potential in the renewable energy sector. In 2023, the country allocated \$2 billion to renewable energy projects, making significant progress in the development of solar and wind energy (Ministry of Energy of Azerbaijan, 2023). These initiatives are expected to play a key role in supporting the country's long-term sustainable economic growth. Ongoing renewable energy projects are expected to contribute significantly to both environmental conservation and economic diversification. As a result, Azerbaijan's economy is gradually shifting away from an oil-dependent model, embracing a more diverse and sustainable future.

Challenges of Economic Diversification in Azerbaijan

Although Azerbaijan has made some progress in diversifying its economy, it continues to face significant challenges. These challenges can be better understood through practical examples:

Institutional Inefficiencies: While there are policies in place to support economic diversification, the implementation of these policies is often hindered by bureaucratic obstacles and a lack of coordination between different government bodies. For example, in the agricultural sector, despite government programs aimed at supporting growth, delays in the distribution of subsidies, improper allocation of resources, and inefficiencies in reaching farmers have been problematic (Ministry of Agriculture of Azerbaijan, 2021). This hampers the ability to stimulate real growth in non-oil sectors. As a result, financial resources designated for these areas are often misallocated, slowing down overall economic development (State Statistical Committee of Azerbaijan, 2022).

Infrastructure Challenges: The agricultural sector holds significant potential for diversification, but it faces several infrastructure-related issues. Outdated farming techniques, insufficient irrigation systems, and low adoption of modern technologies restrict productivity (Ministry of Agriculture of Azerbaijan, 2021). Additionally, the sector's competitiveness in global markets is undermined due to these infrastructural shortcomings. Similarly, Azerbaijan's tourism sector struggles with a lack of adequate infrastructure. For instance, the underdevelopment of accommodation and transportation facilities in popular tourist areas limits the country's ability to fully capitalize on its tourism potential, especially when compared to neighboring countries with better infrastructure (State Tourism Agency of Azerbaijan, 2022).

Dutch Disease Effect: Azerbaijan's economy suffers from what is known as the "Dutch Disease," a phenomenon where the strength of the national currency, driven by oil exports, reduces the competitiveness of other sectors. In the early 2000s, the country benefited greatly from oil revenue, which strengthened the economy but weakened other sectors (International Monetary Fund, 2014). As oil prices rose, the national currency appreciated, making non-oil exports more expensive and less attractive in global markets (Central Bank of Azerbaijan, 2022). This has made Azerbaijan's agriculture and manufacturing sectors less competitive, with higher production costs resulting from the stronger manat. This situation has slowed down diversification efforts and made it difficult to stimulate growth in non-oil sectors (International Monetary Fund, 2014). These challenges present significant hurdles for the Azerbaijani government, highlighting the need for further reforms and stronger measures to accelerate economic diversification.

Sustainable Development Initiatives in Azerbaijan

Azerbaijan has acknowledged the importance of sustainable development and has taken significant steps to align its national priorities with global sustainability frameworks. In 2021, the Azerbaijani government introduced the *Azerbaijan 2030: National Priorities for Socio-Economic Development* document, which outlines the country's key goals for achieving sustainable growth. These priorities emphasize innovation, infrastructure development, and regional integration as critical components of Azerbaijan's long-term development (President.az, 2021).

Among these priorities, reducing the economy's dependence on oil and gas, promoting green technologies, and advancing renewable energy projects are especially important. Since 2020, Azerbaijan has made notable efforts to develop non-oil sectors, including agriculture, tourism, information technology, and clean energy (Ministry of Energy of Azerbaijan, 2023). The country is particularly focusing on the growth of renewable energy to diversify its energy mix and decrease carbon emissions.

In line with these goals, the government has made significant investments in wind, solar, and hydroelectric power. One of the most prominent examples is the Garadagh Solar Power Plant, which was commissioned in 2023. It is now one of the largest solar energy producers in Azerbaijan, playing a crucial role in increasing the share of renewable energy in the country's energy mix (Ministry of Energy of Azerbaijan, 2023). This initiative not only promotes the production of environmentally clean energy but also helps diversify the country's economy.

In addition, Azerbaijan is working on expanding its wind energy capacity. Several wind energy projects are being developed in the northern and western regions of the country. These projects aim

to optimize the use of Azerbaijan's natural resources while increasing energy independence (Ministry of Energy of Azerbaijan, 2023). Furthermore, the government has set ambitious targets to double the country's wind energy production capacity from 500 MW to 1,000 MW by 2022, with new wind farms under construction.

Moreover, Azerbaijan is making strides in the field of hydroelectric power. The capacity of existing hydroelectric plants is being increased, and new projects are being implemented on various rivers. These efforts not only contribute to the country's energy security but also play a vital role in reducing carbon emissions and preserving the environment (Ministry of Energy of Azerbaijan, 2023).

Azerbaijan's sustainable development initiatives, particularly in renewable energy, are critical steps toward achieving both local and global environmental and economic sustainability. The government's primary aim is to expand the potential of renewable energy sources, both domestically and on the international stage, to make the economy stronger and more resilient. These steps are also enhancing the country's competitiveness in the global energy market, solidifying Azerbaijan's position as a key energy supplier internationally (Ministry of Energy of Azerbaijan, 2023).

Oil and Gas Dependency

The oil and gas sector continues to play a vital role in Azerbaijan's economy, contributing a significant share to its GDP and exports. In 2022, approximately 90% of Azerbaijan's total exports were from oil and gas products (State Statistical Committee of Azerbaijan, 2022). However, this dependency also brings risks. The global energy market is volatile, and fluctuations in oil prices can directly impact the country's economic stability. For instance, the collapse of oil prices in 2014 exposed the vulnerabilities associated with over-reliance on a single sector (International Monetary Fund, 2014). Additionally, environmental concerns related to oil extraction and resource management have become increasingly important issues (World Bank, 2020).

To address these challenges, Azerbaijan must focus on diversifying its economy to reduce dependence on oil and gas. While the oil and gas sector will remain important in the foreseeable future, the country must also create new sources of economic growth to ensure its long-term prosperity (Ministry of Economy of Azerbaijan, 2021).

Opportunities in Renewable Energy

Azerbaijan's renewable energy sector holds substantial potential. The country's economically viable and technically feasible renewable energy resources are estimated to have a total potential of 26,940 MW. This includes 3,000 MW from wind energy, 23,040 MW from solar energy, 380 MW from bioenergy, and 520 MW from hydroelectric power from mountain rivers (Ministry of Energy of Azerbaijan, 2023).

Several renewable energy projects have been implemented to harness this potential. A significant portion of Azerbaijan's renewable energy potential comes from wind energy, particularly in the **Khizi-Absheron** region. The **"Khizi-Absheron" Wind Power Plant**, one of Azerbaijan's largest wind energy projects, has a capacity of 240 MW. Located in the Khizi district along the Absheron Peninsula, the station takes advantage of the area's strong winds to generate electricity (Ministry of Energy of Azerbaijan, 2023).

This project represents a key step in strengthening Azerbaijan's non-oil sector and increasing its share of renewable energy production. The energy produced by the **"-Absheron Wind Station** meets the local demand and also contributes to the country's energy independence by supplying power to the global market. In addition, it plays a significant role in reducing carbon emissions, further supporting Azerbaijan's environmental goals (Ministry of Energy of Azerbaijan, 2023).

Moreover, the **"Garadagh" Solar Power Plant** is another major renewable energy project with a capacity of 230 MW. This plant is crucial for increasing the use of solar energy in Azerbaijan and contributes to the country's broader efforts to diversify its energy sources (Ministry of Energy of Azerbaijan, 2023).

In addition to wind and solar power, hydroelectric power projects are also critical to Azerbaijan's renewable energy landscape. The **"Khudafarin"** and **"Giz Galasi"** hydroelectric power stations are examples of important projects contributing to the development of the renewable energy sector. The **Xudafərin Hydroelectric Power Station**, commissioned in 2022, is located on the border between

Azerbaijan and Iran. With a capacity of 50 MW, it is built on the Khudafarin Reservoir and strengthens the energy supply in Azerbaijan's southern region (Ministry of Energy of Azerbaijan, 2022). This project not only enhances energy supply but also promotes efficient use of water resources and environmental protection.

The **Giz Galasi Hydroelectric Power Station**, launched in early 2023, has a capacity of 35 MW. Located on the Araz River in eastern Azerbaijan, it contributes to meeting the energy needs of the local population and positively impacts the regional economy (Ministry of Energy of Azerbaijan, 2023). This project also helps increase clean energy production and reduce carbon emissions, further contributing to Azerbaijan's sustainable development goals.

These and other renewable energy projects are making significant contributions to Azerbaijan's energy security. They enhance local energy production while providing environmentally clean energy. These initiatives are key drivers of long-term economic diversification and sustainable development in Azerbaijan.

Conclusion

Azerbaijan is at a crossroads in its economic development. While its reliance on oil and gas has driven substantial growth, the country faces significant challenges in building a sustainable future. Economic diversification, particularly through investments in renewable energy, agriculture, and technology, offers a path to reduce Azerbaijan's dependence on oil and ensure long-term prosperity.

By continuing to invest in non-oil sectors and promoting sustainable practices, Azerbaijan can position itself as a leader in sustainable development in the region. The government's commitment to diversifying the economy and embracing green technologies will be crucial for building a resilient and sustainable future for the nation.

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