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THE OIL AND GAS INDUSTRY AS A BACKBONE SECTOR OF UZBEKISTAN'S ECONOMY

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Abstract: This article analyzes the role of the oil and gas industry in Uzbekistan's economy and its strategic significance at both national and international levels. Based on statistical data, the study examines the country's hydrocarbon resources, extraction and processing capacities, export potential, transit and geo-economic opportunities, as well as the sector's impact on macroeconomic indicators. The article scientifically substantiates that digitalization of the sector, improvements in energy efficiency, diversification of export markets, and participation in international energy projects contribute to strengthening Uzbekistan's competitiveness within the global energy system.

Key words: oil and gas industry, Uzbekistan's economy, energy security, hydrocarbon resources, export potential, energy transit, macroeconomic indicators, digitalization, energy efficiency, global energy market.

Annotatsiya: Ushbu maqolada O'zbekiston iqtisodiyotida neft-gaz sanoatining tutgan o'rni va uning milliy hamda xalqaro miqyosdagi strategik ahamiyati tahlil qilinadi. Tadqiqotda mamlakatning uglevodород resurslari, qazib olish va qayta ishlash quvvatlari, eksport salohiyati, tranzit-geoiqtisodiy imkoniyatlari hamda tarmoqning makroiqtisodiy ko'rsatkichlarga ta'siri statistik ma'lumotlar asosida tahlil qilingan. Maqolada tarmoqning raqamlashtirilishi, energiya samaradorligini oshirish, eksport bozorlarini diversifikatsiya qilish hamda xalqaro energetik loyihalarda ishtirok etish O'zbekistonning global energetika tizimidagi raqobatbardoshligini yanada mustahkamlashiga xizmat qilishi ilmiy asosda yoritilgan.

Kalit so'zlar: neft-gaz sanoati, O'zbekiston iqtisodiyoti, energetik xavfsizlik, uglevodород resurslari, eksport salohiyati, energetik tranzit, makroiqtisodiy ko'rsatkichlar, raqamlashtirish, energiya samaradorligi, global energetika bozori.

Аннотация: В данной статье анализируется роль нефтегазовой отрасли в экономике Узбекистана и её стратегическое значение на национальном и международном уровнях. В исследовании на основе статистических данных рассмотрены углеводородные ресурсы страны, мощности по добыче и переработке, экспортный потенциал, транзитно-геоэкономические возможности, а также влияние отрасли на макроэкономические показатели. В статье научно обосновано, что цифровизация отрасли, повышение энергоэффективности, диверсификация экспортных рынков и участие в международных энергетических проектах способствуют дальнейшему укреплению конкурентоспособности Узбекистана в глобальной энергетической системе.

Ключевые слова: нефтегазовая отрасль, экономика Узбекистана, энергетическая безопасность, углеводородные ресурсы, экспортный потенциал, энергетический транзит, макроэкономические показатели, цифровизация, энергоэффективность, глобальный энергетический рынок.

INTRODUCTION

The oil and gas industry is one of the most important backbone sectors of the modern economy, exerting a direct influence on national economic stability, energy security, and the growth of macroeconomic indicators. Geoeconomic processes unfolding around hydrocarbon resources in the global market, volatility in energy prices, global energy transition policies, and the shift toward a "green economy" are creating new strategic challenges and opportunities for developing countries such as Uzbekistan.

Uzbekistan's oil and gas sector has been formed as one of the main sources of economic revenue, accounting for 10–12 percent of the country's GDP and nearly 25 percent of industrial production (data from the Ministry of Energy of the Republic of Uzbekistan, 2024). In recent years, natural gas production has amounted to approximately 54–56 billion cubic meters, while gas condensate and crude oil production has remained at around 1.8–2.0 million tons. These indicators position Uzbekistan as one of the leading energy centers in the region.

The relevance of this article lies in the fact that the oil and gas industry plays a decisive role in the structural transformation of Uzbekistan's economy, investment policy, diversification of export composition, domestic

energy supply, and international energy integration processes. Therefore, a scientifically grounded assessment of the sector's role in the economy, along with an analysis of existing opportunities and strategic advantages, is of significant scientific and practical importance.

REVIEW OF LITERATURE ON THE SUBJECT

Extensive scholarly research has been conducted on the role and strategic importance of the oil and gas sector in Uzbekistan's economic development. International organizations and academic researchers widely recognize the oil and gas industry as a key pillar of national economic stability, export revenues, and energy security in hydrocarbon-rich countries.

The World Bank [1], analyzing the macroeconomic contribution of the oil and gas sector in resource-rich developing economies, notes that Uzbekistan's hydrocarbon revenues significantly support industrial production, fiscal stability, and foreign exchange earnings. The study emphasizes that improving energy efficiency and developing deep processing capacities can reduce vulnerability to global price volatility.

Studies by the International Monetary Fund (IMF) [2] focus on fiscal stability in hydrocarbon-dependent economies, highlighting that oil and gas revenues in Uzbekistan play a stabilizing role in public finances while also generating long-term challenges related to diversification and structural reforms. The IMF underscores the importance of reinvesting resource rents into infrastructure, human capital, and non-resource sectors.

Chen and Kim [3], examining energy transit corridors across Eurasia, identify Uzbekistan as a potential regional energy hub due to its central location and established pipeline infrastructure. According to their conclusions, transit-oriented energy strategies not only enhance geopolitical significance but also ensure stable transit revenues.

Local researchers such as Karimov [4] analyze the structural role of the oil and gas sector in Uzbekistan's GDP and industrial output. Their findings confirm that the sector accounts for 10–12 percent of GDP and nearly one-quarter of industrial production, underscoring its strategic importance in national economic planning.

Jurayev and co-authors [5] emphasize the growing importance of digitalization and technological modernization in Uzbekistan's oil and gas enterprises. The authors demonstrate that the introduction of digital monitoring systems, automation, and advanced drilling technologies significantly increases operational efficiency and reduces production costs.

Yusupov and Saidov [6] focus on export diversification and international cooperation, noting that Uzbekistan's participation in multilateral energy projects strengthens its integration into global energy value chains and enhances national energy security.

This study differs from existing literature in that it provides a comprehensive assessment of Uzbekistan's oil and gas industry based on a unified, systemic approach from geoeconomic, macroeconomic, and strategic perspectives. While previous studies have focused on individual aspects—such as reserves, exports, or fiscal effects—this research integrates production dynamics, transit potential, export diversification, and global energy market trends to identify Uzbekistan's evolving role within the global energy system.

RESEARCH METHODOLOGY

The research methodology is based on the collection of official statistical data from national and international sources, including energy sector reports, government publications, and databases of international organizations. The analysis employs comparative, dynamic, and structural methods to assess production trends, sectoral changes, and macroeconomic impacts, as well as analytical synthesis to identify strategic patterns and relationships within the oil and gas industry.

ANALYSIS AND RESULTS

In order to significantly increase the country's oil refining capacity, a decision was made to construct the Fergana Oil Refinery, which began operations in 1959. The Fergana Oil Refinery has a capacity of 114,288 barrels per day and produces gasoline, liquefied gas, fuel oil (including aviation fuel), sulfur, and solvents.

The second major oil refinery was commissioned relatively recently. The Bukhara Oil Refinery was built in 1997 and has a processing capacity of 50,000 barrels of oil per day, with the potential to expand its capacity to 110,495 barrels per day. The refinery's main products include gasoline, diesel fuel, LPG, and fuel oil [7]. The combined capacity of these refineries in Uzbekistan not only fully satisfies domestic demand but also enables the export of petroleum products to foreign markets.

Oil production volumes are considered one of the decisive factors in ensuring the country's energy security, achieving economic stability, and developing export potential. In Uzbekistan, oil production indicators underwent significant changes during the period 2010–2023. Figure 3.1 below illustrates the dynamics of this

period, reflecting not only statistical changes but also the practical impact of economic reforms, external market conditions, domestic resource utilization policies, and energy diversification processes.

In recent years, due to the absence of newly discovered large oil fields in the country, efforts have been directed toward increasing oil production volumes by intensifying extraction rates at existing oil fields (Figure 1).

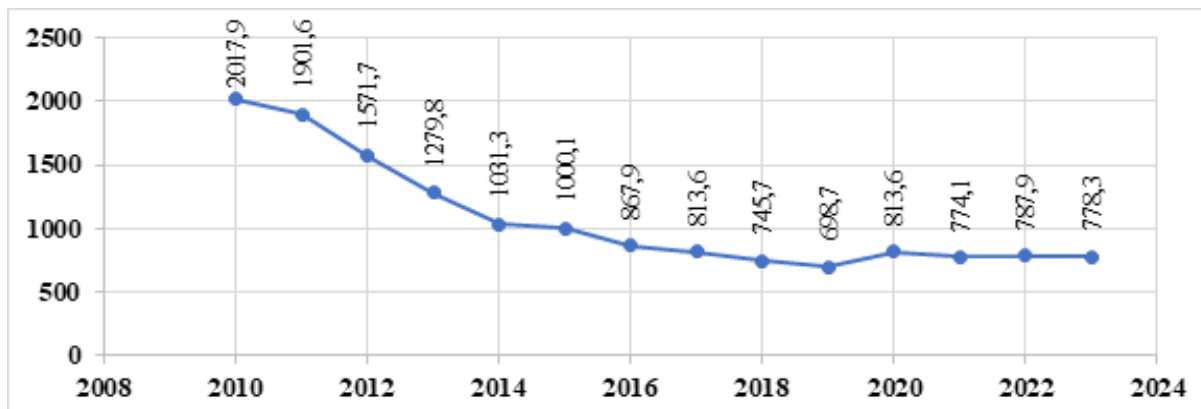


Figure 1. Dynamics of oil production in Uzbekistan (2010–2023) [9]

If attention is paid to the data presented in Figure 1, it can be observed that oil production levels in Uzbekistan have been very low in recent years, with oil output in 2023 decreasing by 61.3% compared to 2010.

During the period 2010–2023, oil production volumes in Uzbekistan experienced a gradual decline, falling from 2,017 thousand tons in 2010 to 778 thousand tons in 2023. This process primarily highlights the need to reassess the efficiency of existing oil fields, deepen geological exploration activities, and improve investment mechanisms. In particular, the dynamic changes recorded between 2010 and 2015 underscore the importance of modernizing technological approaches to natural resource utilization.

From a scientific perspective, this trend can be stabilized through improved resource base management, diversification of investment flows, and the introduction of innovative technologies. At the same time, changes in oil production volumes provide an important methodological basis for pursuing a more balanced economic policy, developing renewable energy sources, expanding the gas-chemical industry, and establishing deep oil refining as a strategic priority.

International experience shows that if the decline in oil production is managed effectively, it can become not an economic risk but an opportunity for diversification. For example, in Norway, revenues derived from natural resources are channeled into sovereign wealth funds. For Uzbekistan, this experience suggests the need to maximize the economic value of resources, ensure sustainable financial policy, and improve the investment climate.

Uzbekistan’s fuel and energy sector is one of the key backbone industries of the national economy, playing a decisive role in ensuring energy security, developing export potential, and providing stable energy supply to industrial sectors. Between 2010 and 2023, electricity generation as well as the production of coal, natural gas, oil, and gas condensate exhibited diverse trends. The table data vividly reflect not only the dynamics of production volumes but also the sector’s internal diversification processes, the impact of global market conditions, and the influence of technological development on the national economy.

During the period 2010–2023, significant changes were observed in Uzbekistan’s oil and gas industry, playing an important role in the country’s energy sector and overall economy (Table 1).

Table 1. Dynamics of the Fuel and Energy Industry in Uzbekistan (2010–2023) [10]

Years	Electricity generation, mln kWh	Coal production, thousand tons	Natural gas production, million cubic meters	Oil production, thousand tons	Gas condensate, thousand tons
2010	51,976.3	3,629.4	65,958.5	2,017.9	2,019.5
2011	52,806.2	3,844.8	63,040.9	1,901.6	1,835.6
2012	52,999.6	3,752.9	61,531.0	1,571.7	1,765.4
2013	54,618.6	4,090.0	58,305.4	1,279.8	1,887.4
2014	55,766.0	4,396.9	54,161.2	1,031.3	1,835.8
2015	57,658.1	3,488.0	54,600.5	1,000.1	1,728.0

2016	59,100.5	3,867.3	56,132.1	867.9	1,747.5
2017	60,820.1	4,038.6	56,642.2	813.6	1,953.0
2018	62,896.6	4,174.4	61,585.5	745.7	2,145.2
2019	63,531.6	4,047.9	60,711.9	698.7	2,116.7
2020	66,500.7	4,133.1	49,768.2	813.6	1,291.0
2021	71,364.6	5,056.3	53,502.0	774.1	1,323.9
2022	74,269.3	5,356.2	51,678.4	787.9	1,287.1
2023	78,005.4	6,519.6	46,710.4	778.3	1,199.4

Based on the data in Table 1, natural gas production amounted to 65,958.5 million cubic meters in 2010, while by 2023 this figure had declined to 46,710.4 million cubic meters, representing a decrease of 29.2%. According to the analyzed data, this decline can be attributed to the natural depletion of existing fields as well as financial and technological constraints in bringing new fields into operation. As a result, export opportunities have diminished, directly affecting the country's foreign currency revenues.

Oil production decreased from 2,017.9 thousand tons in 2010 to 778.3 thousand tons in 2023, corresponding to a decline of 61.3%. This change is explained by the depletion of oil reserves, the aging of extraction infrastructure, and financial difficulties within the sector. The slight increase observed in 2020 (813.6 thousand tons) was associated with additional measures taken to meet domestic market demand; however, the overall trend clearly indicates a continued decline (Figure 2).

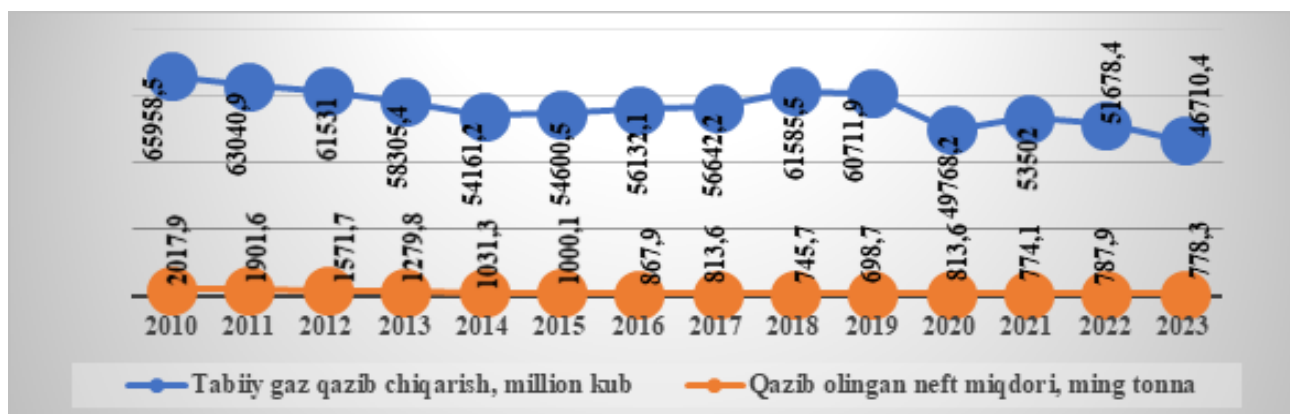


Figure 2. Dynamics of natural gas and oil production in the Republic (2010–2023) [8]

Figure 2 presents the dynamics of natural gas and oil production in the Republic over the period 2010–2023. Natural gas production reached its highest level in 2010, followed by a decline in subsequent years, a renewed increase during 2018–2019, and then a sharp decrease in the following years, particularly in 2023. Oil production shows a similar pattern, with volumes declining steadily after the peak recorded in 2010.

CONCLUSIONS AND SUGGESTIONS

The oil and gas industry occupies a strategically important position in Uzbekistan's economy, performing a decisive function in ensuring macroeconomic stability, foreign currency earnings, export capacity, and energy security. While an energy model based on hydrocarbon resources continues to form the backbone of the national economy, the natural gas and oil sector remains a powerful factor strengthening the country's investment attractiveness, the level of value added in industry, and its external economic relations. The sector's substantial resource potential—estimated at 1.6–1.8 trillion cubic meters of natural gas reserves and 5.9 billion barrels of oil—not only positions Uzbekistan as one of the leading energy producers in the region but also enables it to emerge as a significant participant in the global energy system.

Overall, the transformation of the oil and gas industry is increasingly manifesting itself as a key driver of Uzbekistan's long-term strategic economic development. Through deep modernization of the sector, the adoption of advanced technologies, expansion of export potential, and strengthening of international integration, Uzbekistan has the capacity to evolve from a regional energy hub into a globally significant player.

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