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The Impact of the Energy Crisis on the Economies of Central Asian Countries: The Case of Kazakhstan, 2019–2024

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Abstract. This article analyzes the impact of the 2022–2023 energy crisis on the economies of Central Asian countries, with particular focus on Kazakhstan over the period 2019–2024. The study is based on an assessment of global energy price dynamics and key macroeconomic indicators characterizing economic security. The paper employs descriptive and comparative macroeconomic analysis, distinguishing the pre-crisis period, the peak stages of the crisis, and the adaptation phase. Using data from the World Bank and the U.S. Energy Information Administration, the main changes in economic growth rates, inflation levels, and exchange rate fluctuations are identified. The results demonstrate that the energy crisis exerted a dual impact, combining increased export revenues with significant domestic macroeconomic risks. General conclusions are drawn regarding the nature of the energy crisis's effect on the economies of Central Asian countries.

Keywords: energy crisis; Central Asian economies; Kazakhstan; economic security; regional cooperation; energy prices; macroeconomic indicators; inflation; energy exports.

Introduction

The energy shock of 2022–2023 had a significant impact on the global economy. The sharp rise in oil and gas prices, supply chain vulnerabilities, and geopolitical factors led to higher production costs for businesses and fueled global inflation.

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The current energy crisis emerged from a combination of structural and geopolitical factors that intensified after 2021. According to the International Energy Agency (2022), following the COVID-19 pandemic, global energy demand recovered rapidly, while energy supply remained constrained due to years of underinvestment in fossil fuel extraction and ongoing disruptions in global supply chains.[1]

These imbalances were sharply exacerbated by the escalation of the Russia–Ukraine conflict in early 2022, which triggered sanctions, a reduction in energy exports, and severe price volatility on global oil, gas, and electricity markets.

The impact of the energy crisis is particularly significant for Central Asian countries, whose exports and production consumption are heavily dependent on the availability of conventional energy resources. As the largest economy in the region and a full member of the Eurasian Economic Union (EAEU), Kazakhstan is a major exporter of oil, petroleum products, and natural gas, which underscores the country's vulnerability to shifts in global energy prices.

In this article, economic security refers to a country's capacity to maintain macroeconomic stability—including the management of inflation, fiscal policy, and exchange rates—in the face of global shocks.

Energy resources are defined as resources from which energy can be extracted for the generation of power, light, or heat (GEMET).[2]

The purpose of this article is to analyze the impact of the 2022–2023 energy crisis on Kazakhstan's economic security by comparing macroeconomic indicators before and during the crisis.

Literature Review

Various sources highlight the considerable impact of energy crises on macroeconomic indicators. Rising energy prices increase production costs and erode household purchasing power through the inflationary pressures they generate. Ozili and Ozen (2022) share this view, noting that increases in energy prices affect production costs and adversely impact macroeconomic stability in both energy-exporting and energy-importing countries.[3]

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Shtunder et al. (2022) observe that the energy crisis creates substantial barriers to sustainable economic development, particularly in countries with high economic dependence on natural resources.[4]

An International Monetary Fund report (IMF Working Paper WP/25/3, 2025) notes that in recent years, inflation in the Caucasus and Central Asia has exhibited significant fluctuations under the influence of global price shocks, including energy-related ones.[5]

According to World Bank data,[6] in 2023, the share of fuel exports accounted for 58.93% of the country's GDP, with Italy, China, and the Netherlands being the key trading partners.[7]

The energy security of Central Asian countries is largely shaped by regional cooperation and the actions of major actors in the international economy. Darke, Karatayev, and Lisiakiewicz (2022) highlight the roles of China, the United Nations, and international financial institutions in supporting sustainable development and energy security in the region through the export of technology, knowledge, and capital for Kazakhstan's effective "green" transition.[8] Korneev and Pechishcheva (2023) likewise underscore the need to develop cross-border trade and increase investment in the construction of oil and gas transportation networks to ensure economic efficiency and resilience to external shocks in the region.[9]

In the context of integration, Ziyadullaev, Bakhriddinova, and Omarova (2023) note the growing role of Uzbekistan in strengthening regional cooperation. Having oriented its foreign policy toward developing ties with neighboring countries, Uzbekistan seeks not only to ensure its own economic security but also to consolidate efforts in addressing key challenges facing Central Asian states, including the provision of energy security.[10]

Scholars also emphasize the role of transitioning economies to renewable energy sources (RES) as a measure to mitigate the impact of energy crises. The study by Filipovic et al. (2024) points to the significant potential of Central Asian countries in generating "green" energy, largely owing to the not yet fully realized hydropower potential and the region's abundant uranium reserves.[11]

Methodology

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To assess the impact of the 2022–2024 energy crisis, this article employs descriptive and comparative macroeconomic analysis.

A two-stage data analysis was conducted. First, global energy prices were analyzed using annual average Brent crude oil prices, which serve as the benchmark for global oil price formation and thus as a key indicator of the energy shock. The choice of this indicator is justified by the dominance of oil in Kazakhstan's export structure, making it a critical determinant of the country's export and fiscal revenues as well as its external balances. Second, changes in the key macroeconomic indicators of Kazakhstan's economic resilience from 2019 to 2024 were analyzed.

The study incorporates an inductive analysis based on a comparison of the following macroeconomic indicators: GDP growth, reflecting the country's economic development; the inflation rate (CPI); the fiscal balance and current account balance; and the exchange rate—all of which indicate economic security and resilience. These indicators determine internal stability and vulnerability to external factors. Three periods were analyzed: the pre-crisis years (2019–2021), the acute phase of the crisis (2022–2023), and 2024 as a period of ongoing adaptation and crisis mitigation.

The analysis draws on statistical data from the official World Bank database, while the oil price analysis is based on data from the U.S. Energy Information Administration (EIA),[12] which operates under the U.S. Federal Statistical System and the U.S. Department of Energy.

Analysis and Results

Table 1. Annual Average Brent Crude Oil Prices

Year	Price (USD per barrel)	Change
2019	64.30	—
2020	41.96	−35%
2021	70.86	+69%
2022	100.93	+42%
2023	82.49	−18%

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2024	80.52	−2%

Source: U.S. Energy Information Administration[13]

Table 2. Average Brent Crude Oil Prices by Crisis Period

Period	Price (USD per barrel)	Change
Average 2019–2021 (pre-crisis)	59.04	—
Average 2022–2023 (crisis peak)	91.71	+55%
2024 (adaptation period)	80.52	−12%

Source: Analysis based on data from Table 1.

Table 3. Macroeconomic Indicators of Kazakhstan, 2019–2024

Indicator	Pre-crisis			Crisis Peak		Adaptation
	2019	2020	2021	2022	2023	
GDP Growth, %	+4.5	−2.5	+4.3	+3.2	+5.1	+5.0
Inflation Rate, % (year-end)	+5.4	+7.5	+8.5	+20.3	+9.8	+8.6
Overall Fiscal Balance, % of GDP	−1.8	−8.4	−5.1	−0.1	−1.4	−3.3
Export Growth, %	−1.8	−25.3	+45.6	+30.5	−2.9	+1.1
Exchange Rate (KZT per USD)	382.8	413.0	426.0	460.5	456.3	469.4

Source: World Bank Country Sheet: Kazakhstan[14]

Table 4. Average Macroeconomic Indicators of Kazakhstan by Crisis Period

Indicator	Pre-crisis (avg. 2019–2021)	Crisis Peak 2022–2023)	Adaptation (2024)

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GDP Growth, %	2.1	4.2	5.0
Inflation Rate, %	7.1	15.1	8.6
Overall Fiscal Balance, % of GDP	−5.1	−0.8	−3.3
Export Growth, %	6.2	13.8	1.1
Exchange Rate (KZT per USD)	407.3	458.4	469.4

Source: Analysis based on data from Table 3.

Figure 1. Dynamics of average macroeconomic indicators of Kazakhstan by crisis period (based on data from Table 4).

An analysis of energy price dynamics and Kazakhstan's macroeconomic indicators across the different stages of the energy crisis reveals correlations between the relevant factors.

According to the data in **Table 2**, during 2022–2023—identified as the peak crisis period—the average Brent crude oil price increased by 55% compared to 2019–2021, rising from USD 59.04 to USD 91.71 per barrel. This surge reflects broader instability in global energy markets, driven by geopolitical tensions and supply chain disruptions. In 2024, the average price declined to USD 80.52 per barrel, approximately 12% below the crisis peak. Nevertheless, prices remained substantially above pre-crisis levels, indicating that market conditions had not fully reverted to their previous state.

Kazakhstan's macroeconomic indicators, presented in **Table 4**, reflect divergent trends. During the crisis peak (2022–2023), average GDP growth increased from 2.1% to 4.2%. This growth may be attributed to favorable pricing conditions for energy exporters, domestic support measures, and post-pandemic recovery processes. In 2024, GDP growth reached 5.0%, which may indicate a degree of adaptation to the changed external environment, though the influence of other macroeconomic factors cannot be excluded.

Inflation dynamics during the same periods were noticeably more acute. While the average inflation rate stood at 7.1% in 2019–2021, it rose to 15.1% in 2022–2023. This increase may be associated with higher production costs, rising

Academicia Review-A Multidisciplinary Online Journal
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Volume 2, Issue 5, May, 2026

import prices, and shifts in consumer expectations. In 2024, inflation declined to 8.6%, signaling some easing of price pressures. The fact that inflation remained above its pre-crisis level may suggest that stabilization was gradual rather than immediate.

Fiscal balance indicators also shifted throughout the analysis period. During the crisis years, the overall budget balance improved from −5.1% of GDP to −0.8% of GDP, which may be linked to increased revenues from energy exports. By 2024, the deficit had widened again to −3.3% of GDP. This deterioration in the fiscal balance may reflect higher government expenditure aimed at sustaining economic activity and addressing the consequences of prior instability.

Export indicators improved significantly in 2022–2023, accelerating to 13.8% compared to 6.2% in the pre-crisis period. This shift coincides with the period of elevated global energy prices. In 2024, export growth decelerated to 1.1%, which may be explained by changing price conditions and weakening external demand.

Throughout all the periods examined, the exchange rate of Kazakhstan's national currency, the tenge, exhibited a consistent depreciating trend. The average rate rose from 407.3 KZT/USD in 2019–2021 to 458.4 KZT/USD in 2022–2023, and further to 469.4 KZT/USD in 2024. This trend points to the currency's sustained sensitivity to external shocks, even in the context of higher export revenues.

Discussion and Interpretation

The results indicate that the energy crisis had a mixed impact on Kazakhstan's economy and economic security. On one hand, the sharp rise in oil prices in 2022–2023 led to a significant increase in export revenues, which in turn contributed to economic growth and a short-term improvement in fiscal balance indicators. This pattern is broadly characteristic of energy-exporting countries and is consistent with theoretical expectations regarding the favorable effects of price shocks on resource-based economies.

At the same time, higher energy prices became a significant source of inflationary pressure. Rising production costs, the increased cost of fuel and electricity, and the transmission of imported inflation placed pressure on

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household real incomes and heightened socioeconomic risks. The elevated inflation observed at the crisis peak underscores the sensitivity of domestic price stability even under relatively favorable external market conditions.

The period from 2024 onward indicates a transition to a recovery phase. Lower inflation combined with relatively strong GDP growth suggests a partial normalization of the macroeconomic environment. Nevertheless, the simultaneous deterioration of the fiscal balance and the continued weakening of the national currency indicate that underlying challenges persist. In particular, the economy's strong dependence on energy exports and external markets continues to determine its vulnerability.

Overall, the energy crisis has exposed a key contradiction within Kazakhstan's economic security framework. While high energy prices may temporarily support macroeconomic indicators, they also tend to amplify inflationary, currency, and fiscal pressures. This dynamic underscores the importance of economic diversification, improved energy efficiency, and reduced exposure to external price fluctuations as conditions for ensuring long-term economic security.

Conclusions and Recommendations

An analysis of the 2022–2023 energy crisis using Kazakhstan as a case study allows for broader conclusions to be drawn regarding the crisis's impact on Central Asian economies. Kazakhstan was selected as the primary case due to its leading role in the regional economy and its high sensitivity to global energy price volatility—features also characteristic of several other Central Asian states.

The results demonstrate that the energy crisis exerted a dual impact on Kazakhstan's economy. On one hand, the sharp rise in global oil prices at the crisis peak led to increased export revenues, accelerated GDP growth, and a temporary improvement in fiscal indicators. Similar short-term effects may be expected in other Central Asian countries involved in the production, export, or transit of energy resources—such as Turkmenistan and Uzbekistan—where global pricing conditions also play a significant role. On the other hand, Kazakhstan's experience demonstrates that even energy-exporting countries face considerable domestic risks during energy crises. Rising inflation, continued pressure on national currencies, and higher production costs eroded internal

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Volume 2, Issue 5, May, 2026

economic stability and reduced households' real incomes. These vulnerabilities are characteristic of Central Asia as a whole, where economies remain energy-intensive and highly exposed to external shocks.

The analysis of 2024 as an adaptation period indicates partial macroeconomic stabilization, as evidenced by declining inflation and sustained economic growth. However, slower export growth, a deteriorating fiscal balance, and continued currency depreciation during that period point to persistent structural constraints related to energy dependence. This suggests that the observed stabilization represents adaptation to post-crisis conditions rather than a full resolution of the crisis's consequences.

Central Asian countries should prioritize economic diversification to reduce dependence on energy exports, as well as strengthen coordination between fiscal and monetary policy to contain inflationary pressures. In addition, improving energy efficiency and accelerating the development of renewable energy sources (RES) can reduce domestic price pressures and enhance resilience to future energy shocks. These priorities are also emphasized by the International Energy Agency in its regional energy outlooks.
15

Finally, this study highlights the need for further, more in-depth research. Future studies should focus on the specific transmission channels through which energy price shocks affect inflation, sectoral output, and household welfare in Central Asian countries. A comparative analysis across the region and an assessment of the role of government support measures, subsidies, and price regulation in mitigating the economic consequences of energy crises would also be of considerable value.

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