

# CENTRAL ASIAN ENERGY CORRIDORS IN THE CONTEXT OF GLOBAL ENERGY SECURITY: AN ALTERNATIVE FOR THE HORMUZ STRAIT?

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### CENTRAL ASIAN ENERGY CORRIDORS IN THE CONTEXT OF GLOBAL ENERGY SECURITY: AN ALTERNATIVE FOR THE HORMUZ STRAIT?

The concept of global energy security has been regarded as one of the most important issues in international relations, particularly since the 1973 Oil Crisis. In this context, European countries and the United States faced a major embargo following the Yom Kippur War, which generated severe and long-lasting effects on the global economy and led to a systemic crisis. Although states within the international system attempt to prepare for such crises, disruptions tend to recur over time due to the heavy dependence of energy supply on specific geographical regions. The activities of the Houthis in the Red Sea since 2023 serve as a clear example of this pattern.

In this context, the ongoing US/Israel–Iran conflict since 28 February has also posed a major threat to global energy security. The effective disruption of the Strait of Hormuz, which accounts for approximately 20% of global oil trade despite remaining officially open, has created significant challenges for global energy supply. In this regard, oil price increases of up to 50% since the onset of the conflict have contributed to the global diffusion of its economic impact. Although many countries have attempted to implement measures to ensure the reopening and stability of the Strait, the uncertainty generated by the war has intensified discussions within international relations circles regarding alternative energy routes to the Strait of Hormuz. Within this framework, the rich energy resources and transport corridors of Central Asia, coupled with their relatively more politically stable structure compared to other key routes such as the Strait of Hormuz and the Red Sea, significantly enhance the strategic importance of these corridors. In particular, countries most affected by the crisis, such as China, Japan, and South Korea, have begun to develop closer relations with Central Asian states in order to secure short-term energy supplies. Considering the uncertainty generated by the conflict and its impact on global energy markets, Central Asia can be regarded as a strategic complementary region contributing to the diversification of global energy supply.

This study aims to establish a theoretical framework for the concept of global energy security by drawing on the Neo-classical energy geopolitics approach and prominent strands in the relevant literature, while also examining Central Asia's energy potential and regional energy corridors. Finally, it provides a critical analysis of the extent to which energy corridors involving Central Asian states may serve as a strategic alternative in the context of the Strait of Hormuz crisis.

#### Global Energy Security

This section aims to establish a theoretical framework for the concept of global energy

security by drawing on the Neo-classical energy geopolitics approach and the perspectives presented by Kuzemko et al. (2024) in *Rethinking Energy Geopolitics: Towards a Geopolitical Economy of Global Energy Transformation*. Understanding the concept of global energy security is of critical importance for analysing the Strait of Hormuz crisis and for assessing the strategic significance of Central Asian energy corridors.

The Neo-classical energy geopolitics approach explains energy security through the geographical distribution of energy resources, strategic transit routes, and interstate power competition. According to

this approach, states are in a continuous state of competition over energy resources. In this context, states employ both soft and hard power instruments in order to ensure the security of energy corridors and energy supply. While states conclude various agreements concerning pipeline infrastructure, they may also deploy military forces for these purposes. Moreover, Neo-classical energy geopolitics places significant emphasis on critical energy corridors such as the Strait of Hormuz. The approach effectively accounts for the presence of the US Navy in the region, tanker route protection strategies, and Gulf security frameworks. However, Kuzemko et al. critically evaluate the Neo-classical energy geopolitics approach in their study *Rethinking Energy Geopolitics: Towards a Geopolitical Economy of Global Energy Transformation*, raising several concerns regarding its analytical limitations.

In the study in question, the authors argue that energy security is not limited solely to oil and natural gas, emphasizing that it is undergoing a dynamic transformation process. Therefore, although the closure of the Strait of Hormuz poses a significant risk to energy security, it also increases the importance of alternative energy sources and new energy routes.

Kuzemko et al. (2024) emphasize that in contemporary energy geopolitics, not only oil and natural gas but also other critical resources such as cobalt, lithium, copper, and rare earth elements have become highly significant. When Central Asia is assessed within this framework, it is home to substantial reserves of these raw materials, which are considered critical for electric vehicles, renewable energy, advanced technologies, and the defense

industry. In the context of the article, Central Asia stands out as an important alternative region in terms of global energy security, owing to its resource diversification potential emerging from the transformation of global energy systems.

In conclusion, when the Neo-Classical energy geopolitics theory is considered together with the ideas presented in Kuzemko et al. (2024) in their study *“Rethinking Energy Geopolitics: Towards a Geopolitical Economy of Global Energy Transformation”*, Central Asia emerges as a region that possesses both traditional oil and natural gas reserves and energy corridors, as well as critical minerals. In this regard, rather than serving as a full alternative to energy routes such as the Strait of Hormuz and the Red Sea, Central Asia stands out as a complementary region that contributes to the diversification of energy supply in terms of global energy security.

### **The Energy Potential of Central Asia and the Geopolitics of Regional Energy Corridors**

In this section, Central Asia’s energy reserves and existing energy routes will be analyzed in detail. Understanding the importance of current energy reserves and routes is crucial for grasping Central Asia’s potential to serve as an alternative to routes such as the Strait of Hormuz. Central Asia’s energy reserves can generally be examined under three headings: oil and natural gas reserves in the Caspian Sea basin, Kazakhstan’s oil production, and Turkmenistan’s natural gas reserves.

Historically, the Caspian Sea region is regarded as one of the oldest oil-producing areas in the world. In this context, historical

records indicate that primitive oil extraction activities dating back hundreds of years were carried out on the Absheron Peninsula. Traditionally viewed as an oil-rich region, the Caspian Sea has also gained significant importance in natural gas production in recent years. According to the U.S. Energy Information Administration (2026), in 2023, the offshore areas of the Caspian Sea contained approximately 7.93 billion barrels of oil and 27.25 billion cubic feet of natural gas reserves.

In terms of distribution, 53% of the oil reserves belong to Kazakhstan, 40% to Azerbaijan, and 7% to Turkmenistan. Natural gas reserves, on the other hand, are predominantly concentrated in Azerbaijan, accounting for 84.6% of the region's total reserves, while Turkmenistan and Kazakhstan hold 8.2% and 7.1%, respectively. Regarding production, the offshore areas of the Caspian Sea generate approximately 1.05 million barrels of oil per day and 4.20 billion cubic feet of natural gas per day. At the country level, 62% of oil production is provided by Azerbaijan, 26% by Kazakhstan, and 12% by Turkmenistan, whereas natural gas production is distributed as 78.7% from Azerbaijan, 13.1% from Turkmenistan, and 8.2% from Kazakhstan. These figures demonstrate that the Caspian Sea holds strategic importance particularly for Azerbaijan among the Turkic States Organization countries, and that the region's offshore areas play a critical role in both oil and natural gas production.

Kazakhstan, which can be considered the logistical hub of Central Asia, possesses significant oil reserves. According to 2025 data, the country holds 30 billion barrels of oil reserves. Kazakhstan's main oil production sites include the Tengiz, Kashagan, and Karachaganak oil fields. A

substantial portion of the operations in these fields is managed by international companies such as Shell, Chevron, Eni, Lukoil, and ExxonMobil. Kazakhstan's proven natural gas reserves, as of 1 January 2025, are estimated at a total of 85 trillion cubic feet (Tcf). Despite its rich gas reserves, the high sulfur content of the gas increases processing costs, adding an additional burden to its production and utilization.

Turkmenistan, in comparison to Kazakhstan, possesses more abundant and higher-quality natural gas reserves. As of 1 January 2025, the country's proven natural gas reserves are estimated at approximately 400 trillion cubic feet, corresponding to the fifth-largest natural gas reserve base in the world. Turkmenistan exports its natural gas to Chinese and European markets through a network of pipelines, thereby maintaining a significant position within regional and interregional energy supply chains. In addition, the country also holds notable oil resources. According to 2025 data, Turkmenistan has approximately 600 million barrels of proven oil reserves.

As can be observed, although Central Asian countries such as Kazakhstan and Turkmenistan stand out as a highly significant region in terms of conventional energy resources, they are also increasingly recognized for their importance in critical minerals. In this context, according to a 2025 report by the British Geological Survey, Kazakhstan accounted for approximately 40% of global uranium production in 2023. In addition, the country hosts substantial reserves of lithium and rare earth elements. From this perspective, Uzbekistan is also positioned as a key actor, ranking among the world's five largest uranium producers. According

to a 2025 report by the Hague Research Institute, Tashkent has emerged as a regional mineral hub in Central Asia, with more than 30 different types of minerals identified across the country. Various studies estimate that Uzbekistan's mineral resource potential amounts to approximately 5.7 trillion USD. Although Turkmenistan is primarily known for its abundant natural gas reserves, it also hosts significant mineral deposits. According to SFA Oxford Consultancy (2023), the country possesses considerable reserves of sulfur, bromine, and iodine, which are widely used in chemical production, the pharmaceutical industry, and clean energy technologies.

In this context, Central Asia's rich mineral reserves—particularly strategic minerals such as tungsten, rare earth elements, uranium, and copper—have attracted significant attention from global actors such as China and the United States. These actors have been developing their institutional relations with Central Asian states through initiatives and platforms such as the C5+1 framework and the Belt and Road Initiative. Therefore, Central Asia's energy corridors play a critical role in facilitating the delivery of these resources to foreign states, making the region highly significant in terms of energy geopolitics.

Approximately 83% of Azerbaijan's oil exports are carried out through the Baku–Tbilisi–Ceyhan (BTC) pipeline. Although Azerbaijan exports a significant portion of its oil and natural gas via this route, a certain share of its exports is also conducted through Russia. The BTC pipeline is not only of critical importance for Azerbaijan but also for other Central Asian states. Countries such as Kazakhstan and Turkmenistan utilize this pipeline to

transport their resources to European markets.

According to data from the U.S. Energy Information Administration (2026), Kazakhstan conducts approximately 80% of its oil exports through the Caspian Pipeline Consortium (CPC). As a result, Kazakhstan's heavy dependence on Russia has led to significant challenges in its oil exports to Europe, particularly in the context of the Russia–Ukraine War. Although the Ukrainian government denies targeting energy infrastructure, the pipeline has nonetheless suffered considerable damage due to drone attacks. In response to these vulnerabilities, Kazakhstan has recently pursued a strategy of diversifying its export routes and has increasingly prioritized the Baku–Tbilisi–Ceyhan (BTC) pipeline. A concrete example of this shift is the 54% increase in Kazakhstan's exports through the BTC pipeline in the January–August period of 2023 compared to the same period in 2022 (U.S. Energy Information Administration, 2026).

Turkmenistan, as the largest natural gas exporter in the Caspian region, directs the vast majority of its natural gas exports to China and other Asian countries. In this regard, exports to China reached 1.2 trillion cubic feet in 2022 through the Central Asia–China Gas Pipeline. As alternatives to this route, China and Turkmenistan are also financing the planned Line D and Power of Siberia 2 projects, which are expected to be completed in 2028. In addition, through the planned Turkmenistan–Afghanistan–Pakistan–India (TAPI) pipeline project, Turkmenistan aims to further diversify its natural gas exports toward Afghanistan, Pakistan, and India. Moreover, together with its natural gas swap arrangements with Iran, Turkmenistan supplies

approximately 0.9 billion cubic feet of natural gas per day to Iraq. Finally, through the planned Trans-Caspian Pipeline project, the country seeks to expand its natural gas exports to European markets. However, high methane emissions detected in Turkmenistan's oil and gas fields constitute a significant obstacle in terms of compliance with the European Union's 2030 import emission standards. In this context, satellite data indicate that a total of 849 high methane emission events originating from pipeline leaks were recorded between 2019 and 2022.

In conclusion, Central Asia stands out as a significant region in terms of global energy supply due to its abundant energy resources. However, the full realization of this potential is largely contingent upon the effectiveness of transit energy corridors.

### **The Potential of Central Asian Energy Corridors as an Alternative in the Context of the Strait of Hormuz Crisis**

In this section, the effects of the crisis in the Strait of Hormuz on global energy security will be examined, and the potential of Central Asian energy corridors as an alternative to Middle Eastern energy routes will be assessed.

Following the attack carried out by the United States and Israel on Iran on 28 February, the Middle East has begun to descend into significant chaos. In this context, Iran has launched retaliatory strikes against the US/Israeli attacks, carrying out major assaults on US bases in Gulf countries. As a result of these reciprocal attacks, global energy security has come under serious threat. Although Iran has not officially closed the Strait of Hormuz, the increasing security risks caused by missile attacks in the region have

led many insurance companies to reconsider their coverage for oil and gas tankers. Accordingly, some insurers have announced that they will not cover insurance claims for these tankers, citing active war risk. In this context, energy flows through the Strait of Hormuz—through which approximately 20% of global daily oil exports pass—have been significantly disrupted. This situation particularly affects Asian and Asia-Pacific countries such as South Korea, China, and Japan.

In this context, according to International Energy Agency (2026) data, China and India source approximately 50% of their daily oil imports through the Strait of Hormuz, while countries such as Japan and South Korea obtain around 60%–90% of their oil imports via this route. Contrary to common assumptions, major global actors such as the European Union and the United States are not heavily dependent on the Strait of Hormuz in terms of energy supply. Within this framework, the United States relies on the Strait for approximately 2% of its energy supply, while the European Union's dependence is estimated at around 5%–10%. Although a potential closure of the Strait would not create a major supply disruption for the EU or the US, the significant increase in oil prices extends the impact of the crisis to a global scale. In this regard, oil prices, which stood at approximately 70–80 USD per barrel prior to the conflict, have recently risen to around 96–100 USD per barrel.

In light of the foregoing discussion, the deepening instability in the Middle East has significantly increased the need for alternative routes in terms of global energy security. As demonstrated in the previous sections of this analysis, Central Asia emerges as a potential alternative due to its rich energy resources and existing

energy corridors. However, in the short term, the capacity of Central Asian energy corridors to replace Middle Eastern energy supply remains highly limited. These limitations can be examined under three main headings: differences in reserves and production capacity, constraints in transport and infrastructure, and geopolitical as well as transit-related dependencies.

Central Asia is generally regarded as a resource-rich region in terms of conventional energy sources such as oil and natural gas; however, it lags significantly behind the Middle East in terms of both production capacity and reserve size. According to OPEC (2025) data, oil reserves in the Middle East amount to approximately 871 billion barrels, whereas in Central Asia this figure stands at around 37 billion barrels. Although reserve volumes are an important determinant of energy supply capacity, export performance in global trade is an even more critical indicator. In this context, the Middle East exports approximately 16 billion barrels of oil, while Central Asia's exports remain at around 1 billion barrels. While it is likely that ongoing regional crises in the Middle East may reduce export volumes in the short term, the region is still expected to remain the most important hub of global oil supply in the future due to the magnitude of its resource base. In this regard, Central Asia is not expected to serve as a comprehensive alternative to the Middle East in the near term.

A similar pattern is also observed in terms of natural gas data. According to OPEC (2025), the Middle East possesses approximately 2,700 trillion cubic feet (Tcf) of proven natural gas reserves, accounting

for a significant share of global reserves. In comparison, Central Asia holds around 632 Tcf of natural gas reserves. In terms of export volumes, Central Asia exports approximately 79.33 billion standard cubic meters of natural gas, whereas the Middle East exports around 191.953 billion standard cubic meters. Considering both reserve levels and export figures, it is assessed that Central Asia is unlikely to compete with the Middle East in the natural gas sector in the long term.

In comparison with the Middle East, a substantial portion of Central Asia's energy exports is carried out not via maritime routes but through pipeline infrastructure. For this reason, the region faces various transportation and infrastructure constraints. The fact that major pipeline projects such as the Trans-Caspian Pipeline, Line D, and Power of Siberia 2 have not yet been completed, combined with capacity limitations in existing pipelines, adversely affects Central Asia's energy flows. Although the region has received billions of dollars in infrastructure investment from major global actors such as China and the European Union, transportation-related challenges persist within the existing network. Consequently, while Central Asia possesses significant potential in terms of energy supply, the realization of this potential largely depends on the continuity and stability of pipeline infrastructure projects.

Finally, Central Asia's energy exports face various challenges arising from geopolitical and transit dependencies. The reliance of Central Asian energy exports on pipeline infrastructure grants significant geopolitical leverage to transit countries along these routes. In this context, actors such as Russia and Türkiye occupy key

positions in facilitating the access of Central Asian energy resources to European markets. Therefore, any international crisis occurring in either Russia or Türkiye may generate substantial risks for Central Asian energy exports. The significant negative impact of the Russia–Ukraine War on Kazakhstan’s energy exports serves as a concrete example of this situation.

### Conclusion

In light of all the foregoing analysis, Central Asia, within the framework of Neo-Classical energy geopolitics, possesses not only abundant traditional energy resources but also significant potential in alternative and strategic minerals such as cobalt, lithium, copper, and rare earth elements. In the context of the ongoing crisis in the Strait of Hormuz, although Central Asia’s energy resources are perceived by some actors as a potential alternative to the Middle East in terms of global energy supply, structural constraints—including disparities in reserves and production capacity, limitations in transportation and infrastructure, and geopolitical as well as transit dependencies—indicate that the region does not have the capacity to fully replace the Middle East’s dominant role in global energy supply in the long term. Nevertheless, in parallel with the crisis, many countries are increasingly reluctant to rely on single and narrow energy corridors such as the Strait of Hormuz, and are instead seeking more secure and diversified alternatives. In this regard, from the perspective of energy diversification, Central Asia emerges as a reliable alternative energy hub, particularly for countries most affected by the crisis, such as China, Japan, and South Korea.

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**Deniz Koray ATTAR** began his studies in the Department of Political Science and International Relations (English) at Bahçeşehir University in 2022. Currently the top student in his department, Attar is continuing his undergraduate studies and is focusing on Central Asia, the Turkic World, and international law as part of an internship program at DİPAM.