IRSTI 11.25.91 https://doi.org/10.26577/IRILJ.2024.v108-i4-a1

D.A. Tumanshiyev, L.T. Issova*, M.A. Abduali

Al-Farabi Kazakh National University, Almaty, Kazakhstan
*e-mail: tanirbergenlaura@gmail.com

THE GEOPOLITICAL SIGNIFICANCE OF KAZAKHSTAN'S URANIUM RESERVES IN THE GLOBAL SECURITY

The article describes the role of the Kazakhstan as one of the largest uranium producers and producers and exporters in the world and its impact on global security. With its extensive uranium reserves, Kazakhstan plays a key role in meeting the world's needs for nuclear energy, which significantly enhance its geopolitical importance. The article analyzes key aspects of Kazakhstan's uranium diplomacy, including its participation in international non- proliferation initiatives, as well as the development of strategic partnerships with countries such as Russia, China, the United States and the European Union. Particular attention is paid to how Kazakhstan uses its uranium resources to strengthen its position in world politics, balancing the interests of the world's largest powers and ensuring energy security. The article also touches upon the challenges and prospects in the field of uranium resource management, including issues of ensuring environment and population. Kazakhstan's uranium resources can become an become an important tool for strengthening national security, stability and enhancing the country's international authority in nuclear diplomacy and energy cooperation.

Key words: global security, nuclear energy, uranium reserves, strategic partnerships, world politics, diplomacy.

Д.А. Туманшиев, Л.Т. Исова*, М.А. Абдуали

Әл-Фараби атындағы Қазақ ұлттық университеті, Алматы қ., Қазақстан
*e-mail: tanirbergenlaura@gmail.com

Қазақстанның уран резервтерінің жаһандық қауіпсіздік жүйесіндегі геосаяси маңызы

Мақала Қазақстанның әлемдегі ең ірі уран өндіруші және экспорттаушы елдердің бірі ретіндегі рөлін және жаһандық қауіпсіздік жүйесіне ықпалын зерттейді. Қазақстанның кең уран резервтері әлемнің ядролық энергия қажеттіліктерін қамтамасыз етуде маңызды рөл атқарады, бұл оның геосаяси маңыздылығын арттырады. Сонымен қатар, мақала Қазақстаннның уран дипломатиясының негізгі аспектілерін, оның халықаралық ядролық қаруды таратпау бастамаларындағы үлесін, сонымен қатар Ресей, Қытай, АҚШ және Еуропалық Одақ секілді маңызды елдермен стратегиялық серіктестік қатынастарын талқылайды. Қазақстанның уран ресурстарын жаһандық саясаттағы орнын нығайту үшін қаншалықты тиімді пайдаланатыны, әлемнің ең ірі державаларының мүдделерін теңестіре отырып, ерекше назарға алынады. Уран ресурстарын басқарудағы қиындықтар мен перспективалар, сонымен қатар экологиялық қаупісіздік пен тұрақты дамуды қамтамасыз ету мәселелері де талқыланады. Қазақстан уранды өндіру және экспорттау процесі экологиялық жағынан тиімді болуы керек, өйткені тұрақты даму мен экологиялық қауіпсіздік маңызды орын алады. Мақала уран резервтерін стратегиялық тұрғыда пайдаланудың маңыздылығы мен қажеттілін, ұлттық қауіпсіздікті нығайту мен елдің ядролық дипломатиядағы халықаралық беделін арттыру қажеттілігін атап көрсетеді. Қазақстанның уранға қатысты саясаты жаһандық қауіпсіздікті қамтамасыз етуде маңызды фактор болып табылады, әрі оның геосаяси маңызы арта түсуде.

Түйін сөздер: жаһандық қауіпсіздік, атом энергетикасы, уран қорлары, стратегиялық әріптестік, әлемдік саясат, дипломатия.

Д.А. Туманшиев, Л.Т. Исова*, М.А. Абдуали
Казахский национальный университет имени аль-Фараби, г. Алматы, Казахстан
*e-mail: tanirbergenlaura@gmail.com

Геополитическое значение урановых резервов Казахстана в системе глобальной безопасности

В статье исследуется роль Казахстана как одного из крупнейших в мире производителей и экспортеров урана, и его влияние на глобальную систему безопасности. Огромные запасы урана Казахстана играют важную роль в удовлетворении мировых потребностей в атомной энергетике, что повышает его геополитическое значение. Кроме того, в статье рассматриваются основные аспекты урановой дипломатии Казахстана, ее вклад в международные инициативы по нераспространению ядерного оружия, а также отношения стратегического партнерства с такими важными странами, как Россия, Китай, США и Европейский Союз. Особое внимание будет уделяться тому, насколько эффективно Казахстан использует урановые ресурсы для укрепления своих позиций в глобальной политике, одновременно балансируя интересы крупнейших мировых держав. Также обсуждаются проблемы и перспективы управления урановыми ресурсами, а также вопросы обеспечения экологической безопасности и устойчивого развития. Процесс производства и экспорта урана в Казахстане должен быть экологически эффективным, поскольку устойчивое развитие и экологическая безопасность важны. В статье подчеркивается важность и необходимость стратегического использования запасов урана, необходимость укрепления национальной безопасности и повышения международной репутации страны в ядерной дипломатии. Урановая политика Казахстана является важным фактором обеспечения глобальной безопасности, и ее геополитическое значение возрастает.

Ключевые слова: глобальная безопасность, ядерная энергетика, запасы урана, стратегическое партнерство, мировая политика, дипломатия.

Introduction

The relevance of the study of the topic "The geopolitical significance of Kazakhstan's uranium reserves in the global security system" is due to a number of factors influencing modern international and energy policy. Kazakhstan is one of the largest uranium producers in the world, which automatically makes it a key player in the field of global nuclear energy and security. In the context of growing demand for clean energy sources, uranium as the main element for the production of nuclear energy is becoming a strategic resource for many countries, including the United States, China, Russia and the European Union. Global political instability, changes in international relations and growing tensions around energy resources emphasize the importance of Kazakhstan's uranium reserves. An important aspect is Kazakhstan's participation in international initiatives on non-proliferation of nuclear weapons and its role in ensuring energy security through uranium resources. In the context of changing global energy balance and geopolitical challenges, it is relevant to study the opportunities and risks associated with Kazakhstan's uranium resources to strengthen its position on the world stage and ensure internal stability.

The *target* of the article is to analyze the geopolitical significance of Kazakhstan's uranium reserves in the global security system. The study is aimed at identifying the role of the country's uranium resources in international energy and political processes, as well as assessing their impact on Kazakhstan's foreign policy strategy.

Objectives of the article:

To study Kazakhstan's current uranium reserves and assess their place in the global economy.

- To analyze Kazakhstan's role in the global uranium market, identify its key partners and competitors.

- To consider Kazakhstan's participation in international initiatives on non-proliferation of nuclear weapons and its contribution to global security.

- To assess possible geopolitical risks and prospects associated with the exploitation of uranium resources.

- To develop recommendations for the effective use of uranium reserves to strengthen the country's foreign policy positions.

Since independence, Kazakhstan has followed a unique path, advancing nuclear disarmament while capitalizing on its uranium resources for economic growth. By hosting the International Atomic Energy Agency's (IAEA) Low Enriched Uranium (LEU) Bank and actively advocating for nuclear non-proliferation, Kazakhstan has taken a leadership role in promoting global security. The country's strategic location as a bridge between East and West, coupled with its uranium wealth, makes it a significant play-

er in shaping the future of nuclear diplomacy and energy security. This article examines the geopolitical significance of Kazakhstan's uranium reserves, focusing on their impact on the global security system. It will examine how Kazakhstan's policies contribute to nuclear non-proliferation, energy security, and international diplomacy, highlighting the delicate balance the country maintains on the world stage.

Theoretical-methodological base

In this part of research authors use geopolitical theory as the main theoretical methodology of the research work, including classical geopolitics (Halford Mackinder, Nicholas Speakman): This theory provides a basic understanding of how geographic factors affect international power dynamics. Mackinder's "Heartland Theory" can be used to explain Kazakhstan's strategic position in Central Asia and its control over important natural resources such as uranium. Also among the classical schools, Neo-realism (Kenneth Waltz): Neo-realism emphasizes the importance of the existence and power of the state in an anarchic international system. Kazakhstan's uranium reserves can be analyzed in terms of national security and how states use natural resources for international influence and protection.

As the main part of foreign policy, we use resource geopolitics, which is often considered nowadays. This theory focuses on how the domestic sphere's control of natural resources, especially important minerals such as uranium, shapes international relations and power balances. Kazakhstan's enormous uranium reserves make it a key player in energy security and nuclear proliferation issues.

World uranium energy security is being discussed

Using the theory of energy security allows us to consider how important resources are. This theory focuses on accessibility, affordability and political stability surrounding energy resources. Uranium is essential for nuclear power generation and non-renewable energy sources, which makes Kazakhstan's uranium reserves very relevant in the global debate on energy security and stability.

The following security dilemma (Herbert Butterfield, John Hertz) is important in considering uranium security. The security dilemma suggests that when one state tries to increase its security (for example, by securing uranium for nuclear energy or weapons), it may lead to an arms race or increased tensions with other states. It is related to how countries view Kazakhstan's uranium reserves and nuclear ambitions.

International Political Economy (IPE):

It also helps in analyzing uranium's flow to other countries, especially with regards to their global trade as well as supply chains, and energy and security alliances. Global Commodity Chains (Gary Gereffi): Global Commodity Chain Theory, it's utility in consideration of an analysis on the flow of uranium to countries besides Kazakhstan.

Dependency Theory is the theory which can analyze the developing of Kazakhstan resource-rich state depend all on the foreign markets or on international entities for production and also sale of its uraniam. There can be evaluated careful attention on the involvement of multinationals and foreign countries (for example Russia, China and USA) in Kazakhstan's uranium sector. It needs to use a combining of quantitative and qualitative methods as a methodological basis.

Qualitative Methodology:

Case Study methods: The research provides a very detailed case study concerning the uranium sector in Kazakhstan that demonstrates this sector's role within the broader global geopolitical field. It examines specific events, policies, and international treeties that signal the geopolitical importance of uranium production in Kazakhstan.Process monitoring: This method is used to monitor how Kazakhstan's uranium reserves have historically influenced its foreign policy and relations with major global powers such as Russia, China, the United States, and the European Union.

Quantitative analysis: Collection of Data and Analysis: A statistical analysis of the trends in Kazakhstan's uranium production and exports, as well as its contribution to the global uranium supply chain, could provide insights into the present geopolitical importance of this resource. It would also be beneficial if Kazakhstan's uranium production could be compared with that of important producers such as Canada and Australia in order to develop it.

Security Indicators: Employing international security indices, the extent to which the strategic value of uranium coincides with the geopolitical stability and influence of Kazakhstan in its international forums (International Atomic Energy Agency (IAEA), UN Security Council), will be measured in the study.

It enables one to comprehend the extent to which the reserves of Kazakhstan differ from those in major uranium-producing nations (like Canada, Australia, Niger etc.) with different geopolitical footprints. On the one side, Kazakhstan has conclusively laid

out before the common on the unique position of the country in terms of geographies, political stability and foreign relations. It will be compared with this study other countries in their roles concerning nuclear non-proliferation agreements like NPT, international sanctions regimes, etc. for one to conclude on Kazakhstan's position in the debate on regional nuclear security in the international arena.

This theoretical-methodological background will help the full consideration of Kazakhstan's uranium reserves as a major geopolitical problem affecting global security, as well as the respective nuclear non-proliferation policy and world energy markets. Thus, integrating geopolitical theory, energy security dimensions, and qualitative and quantitative research methods, the article would make a deep analysis of Kazakhstan's role in global security.

Literature survey

Geopolitical value of natural resources

The geopolitical importance of natural resources had been on the table long back in international relations literature. Scholars like Halford Mackinder and Nicholas Speakman have maintained that control over the life resources, particularly energy, is a major determining factor of the geopolitical power (Mackinder, 1904; Speakman, 1942). Current research in resource geopolitics (Klare, 2008) suggests that access to essential mineral types like uranium is increasingly shaping the global security and power architecture. According to Clare (2001), countries that possess these resources may, using them, become dominant actors in international relations with the capacity to influence world politics, shifting the regional and global balance of power. Kazakhstan's huge uranium reserves make it a major player in this field. Kasenova (2010) points out that the country's control of more than 40% of the world's uranium supply gives it an important strategic value in the field of regional and global nuclear energy in Central Asia. Newnham (2012) argues that countries with abundant natural resources, especially important for energy production, often face both economic opportunities and political challenges due to their strategic importance. Kazakhstan's ability to influence the global nuclear energy market makes it a country of growing geopolitical relevance, especially in its relations with major powers such as Russia, China and the United States.

In the context of global security, uranium is a dual-use resource, important for both civilian nuclear power generation and nuclear weapons development. The International Atomic Energy Agency (IAEA) and scholars such as Paul (2000) and Sagan (1996) have focused on the non-proliferation aspects of uranium, noting that control of uranium stockpiles is a crucial factor for global nuclear stability. Sagan and Waltz (2003) debate whether the proliferation of nuclear capabilities (through access to uranium) promotes security (through deterrence) or security (through proliferation risks). Kazakhstan's role as a major uranium exporter and its commitment to non-proliferation are central to these discussions.

After the collapse of the Soviet Union, the status of Kazakhstan's nuclear disarmament has been praised in several studies (Spektor, 1994; Kasenova, 2013). The country voluntarily gave up its nuclear arsenal inherited from the Soviet Union and established itself as a champion of nuclear disarmament. Kasenova (2014) further explores how Kazakhstan's leadership in nuclear non-proliferation through hosting the IAEA Low Enriched Uranium (LEU) Bank strengthens its diplomatic standing in global security forums. However, scholars such as Down (2016) warn that Kazakhstan's dependence on uranium exports, especially to nuclear-weapon states, complicates its role as a non-nuclear actor. The emergence of Kazakhstan as the world's largest uranium producer attracted the attention of scientists. According to Blackwill and O'Sullivan (2016), countries with a dominant share of primary energy resources have disproportionate power in shaping global energy policy. This is especially true for nuclear power, where uranium remains the main raw material for energy production. Studies by Luciani (2012) and Victor, Hults, and Thurber (2011) show that uranium-producing countries such as Kazakhstan can use their market position to influence global energy policy, particularly through bilateral agreements with major energy consumers such as China and the European Union.

Karatnitskyi (2011) notes that Kazakhstan's uranium exports are not just economic deals, but diplomatic relations. China's Belt and Road Initiative (BRI), of which Kazakhstan is a key partner, has promoted energy cooperation between the two countries, especially in the uranium supply chain (Wu & Zhang, 2018). Umbach (2014) also examines the European Union's growing dependence on Kazakhstan for nuclear fuel and suggests that Kazakhstan's uranium reserves are crucial for Europe's energy diversification strategy. In the case of Kazakhstan, studies by Pomfret (2010) and Ohashi (2018) explore how its economic dependence on uranium and other natural resources has shaped its domestic politics and foreign relations.

Despite these risks, Bely (2012) argues that Kazakhstan has effectively used its resource wealth to strengthen its geopolitical influence, particularly through multilateral institutions such as the Eurasian Economic Union (EEU). Similarly, Kalyuzhnova and Nygaard (2009) point out that Kazakhstan managed to avoid some of the negative effects of the resource curse by diversifying its economy and maintaining political stability. However, they warn that continued dependence on uranium could leave Kazakhstan vulnerable to external shocks, particularly global energy markets.

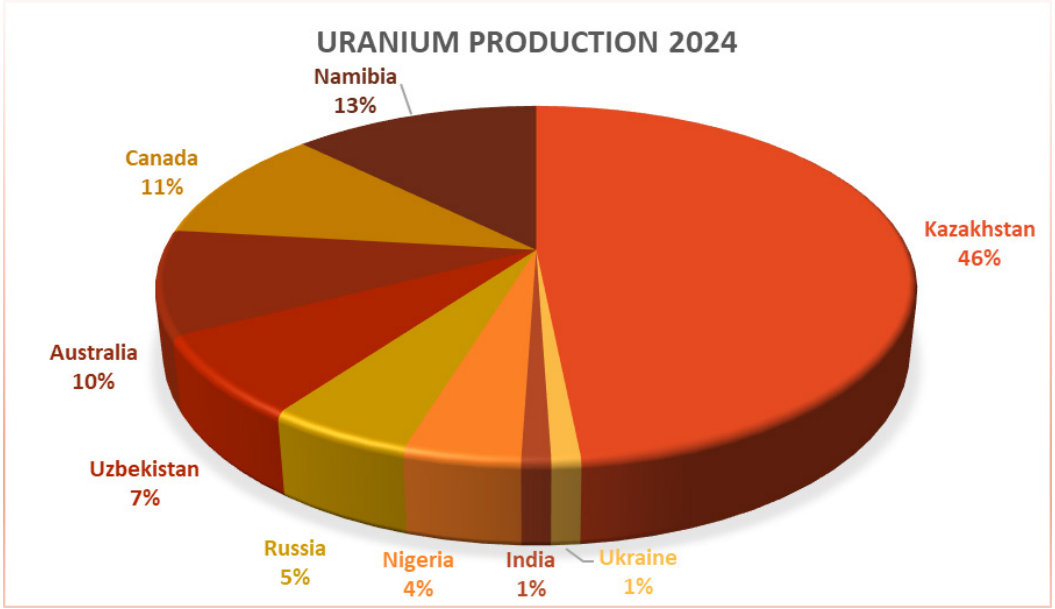
The geopolitical importance of Kazakhstan in Central Asia is a recurring theme in the literature of regional studies. Cooley (2012) and Laruelle (2018) emphasize Kazakhstan's role as a stabilizing force in the region, often using natural resources to maintain influence over neighboring countries. Kazakhstan's uranium reserves, in particular, give it considerable diplomatic leverage over other Central Asian republics, many of which rely on Kazakhstan for energy supplies and infrastructure. Spechler (2009) also notes the importance of Kazakhstan's uranium in its relations with major powers such as Russia and China, noting that the country's ability to balance these relations is critical to its regional leadership.

Kazakhstan's cooperation with Russia in the nuclear sector through the cooperation of Kazatomprom and Rosatom is often discussed in academic and political literature (Baev, 2013). This partnership reflects a broader trend of resource-based diplomacy in which Kazakhstan uses its uranium reserves to secure favorable political and economic terms from its neighbors.

Results and discussions

Kazakhstan is a major global supplier of uranium, holding the second-largest proven reserves in the world. About 14% of the total known uranium resources in the world are located in the territory of Kazakhstan. Explored uranium resources in the country are estimated to exceed 700,000 tons (ME RK 2024).

Kazakhstan has 12% of the world's uranium reserves and produced about 21100 tons of U in 2023. In 2009 it became the world's largest producer of uranium, with almost 28% of global production. In 2022 Kazakhstan produces 43% of world's uranium. A single Russian nuclear reactor operated from 1972 to 1999, producing electricity and desalination of water. Kazakhstan has a large plant to produce nuclear fuels pellets and eventually aims to sell value-added fuels instead of uranium alone. A fuel plant is being built with 49% Chinese capital. The country plans to build a new nuclear power plant, with referendum expected in 2024. The National Atomic Corporation of Kazakhstan, emphasizing its central role in uranium exploration and exploitation and other nuclear activities.



Source: Composed by authors

Diagram 1 – Uranium production of countries

As mentioned, Kazakhstan had the highest uranium production in the world in 2022. In fact, the country's total production of 21,277 tones represents 46 percent of the world's uranium supply. At the last record in 2021, Kazakhstan had 815,200 tonnes of recoverable uranium resources, second only to Australia. Most of the country's uranium is mined through the insitu leaching method. Kazatprom (LSE:KAP, OTC Pink: NATKY), the country's national uranium mining company, is the world's largest producer, with projects and partnerships in several jurisdictions. The announcement that the largest uranium producer may not meet its production plans for 2024 and 2025 was a major reason why uranium prices surpassed the US$100 mark this year (World Nuclear Association, 2024). According to GlobalData, Kazakhstan will become the world's largest uranium producer in 2023, with production falling 5.13% compared to 2022, 9% between 2023 and 2027 (GlobalData2024).

There are three vital aspects of the analysis: the formation and control of Kazatomprom, the legal dispute with a Canadian company, and its partial privatization.

- *Control and Changing:* Kazatomprom was established in 1997 by the Kazakh government, which still owns it. As such, the company monopolizes uranium exploration and mining in the country, while it also handles nuclear material imports and exports. This directly reflects the control that Kazakhstan wishes to exercise over its enormous uranium resources. There are both constitute a backbone to the economy and also represent a geopolitical element for Kazakhstan as the leading processor of uranium in the world.

- *Legal Dispute with World-Wide Minerals (WWM):* There had been prior deals regarding uranium development by Kazakhstan with foreign companies, including WWM which was Canadian-based. WWM had made considerable investments in upgrading and operating uranium facilities in Stepnogorsk and had developed new mines during the mid-1990s. The company later complained that the Kazakh government was blocking its operations resulting in losses of over $50 million. This resulted in a dispute attracting investor-state arbitration where WWM won initially in 2019 but later, the award was set aside by the English High Court in 2020. The case illustrates the risks that foreign investors are likely to face when operating in resource-rich countries such as Kazakhsthn, where government decisions can highly determine the investment outcome.

- *Partial privatization:* Kazatomprom transformed from a wholly state-owned into a partially privatized enterprise in 2018. This included listing 15% of its shares at the Astana International Exchange and the London Stock Exchange. The action indicates the intention of Kazakhstan to draw in international investment and to modernize state companies while keeping the strategic control by majority ownership from the national wealth fund, Samruk-Kazyna, over its nuclear assets. This partial privatization sets the larger trends towards such movement in the post-Soviet economy, with the policies that have been put forth in search of balancing between the states and market-based reforms (Baev, P.2013).

Table 1 – Kazatomprom's International Collaborations

Country	Collaborations	Key Agreements & Projects
Russia	Joint ventures in nuclear reactors, uranium production, and enrichment	JV Atomniye Stantsii for reactors (VBER-300)
		Enrichment plant at Angarsk (Kazatomprom owns 10%)
		Uranium mining (Budenovskoye, Zarechnoye, Akbastau, Karatau)
		2014 agreement for a nuclear power plant with VVER reactors
Japan	Uranium supply, fuel cycle technology, and nuclear reactor development	2007 energy cooperation agreements
		Japanese involvement in Kharasan mine (Energy Asia consortium)
		Ulba fuel fabrication plant upgrade and nuclear energy R&D collaborations
China	Strategic cooperation in uranium mining and nuclear fuel supply	2006 agreement with CGN (uranium supply and nuclear fuel fabrication)
		2015 agreement for Ulba-FA fuel fabrication plant (completed in 2020)
India	Uranium supply	2009 agreement to supply 2100 tonnes of uranium
		2015 agreement to supply 5000 tU over 5 years
South Korea	Nuclear power and uranium mining cooperation	2010 agreement for uranium exports and potential nuclear reactor projects

Continuation of the table

Country	Collaborations	Key Agreements & Projects
Toshiba	Corporate collaboration on nuclear energy institute	2007 purchase of 10% share in Westinghouse (sold back in 2017)
Canada	Uranium production and fuel cycle developments	2007 Cameco partnership (Inkai mine)
		2016 restructuring of Inkai JV
USA	Marketing alliances and nuclear security	2015 agreement with Centrus Energy for uranium marketing in the USA
France (Areva)	Uranium mining, fuel fabrication, and fuel cycle development	Expansion of Katco JV (from 1500 tU to 4000 tU/year)
		Joint venture for a 400 t/yr fuel fabrication plant at Ulba
Iran	Uranium supply	In 2017 contract to supply 950 t of uranium concentrate (subject to UN Security council approval)

Source: Composed by authors

This table summarizes Kazatomprom's international partnerships, emphasizing nuclear collaboration, uranium supply, and fuel cycle developments with major global players like Russia, Japan, China, and others.

Kazatomprom's Trading Subsidiary and Market Strategy:

- In April 2017, Kazatomprom established a Swiss-based subsidiary, TH Kazatkom, to engage in uranium trading on the spot market. The subsidiary aims to enhance market liquidity and align its pricing strategies with customer preferences, particularly targeting the European and U.S. markets.

Trans – Caspian International Transport Route (TCITR):

- The TCITR was introduced in 2018 as an alternative to routes passing through Russia, due to temporary restrictions in St. Petersburg during the 2018 FIFA World Cup.

- This route avoids Russian territory and operates via Azerbaijan and Geargia, adhering to local nuclear transit regulations.

- In early 2022, Cameco suspended uranium shipments reliant on Russian transit routes, emphasizing the importance of alternative pathways.

First Shipment via TCITR:

- In September 2022, Kazatomprom successfully transported utanium to Cameco using the TCITR for delivery to Canada.

- This consignment cleared and arrived in Canada by December 2022 – a significant further proof of how well the alternative route works.

The following table presents the essential changes made by Kazatomprom in its uranium trading: it's the geographical and geopolitical adaptation of the company's strategical actions. Such research shows that indeed Kazakhstan's strategic alliances go beyond merely economic and industrial cooperation but also reflect some diplomatic position.

Table 2 – Summary uranium cooperation

Year	Advancement	Characteristics
2017	The new establishment of TH Kazatom	The new establishment of TH Kazatom is designed with the purpose of setting up a trading subsidiary in Zurich, Switzerland, in order to enhance liquidity by price-points more aligned to European and US customers.
2018	Trans-Caspian International Shipping Route (TCITR)	Trans-Caspian International Shipping Route (TCITR) Construed as an alternate to Russian routes during the FIFA World Cup, the route passes through Azerbaijan and Georgia.
2022	Cameco Stops Deliveries via Russian Routecameco	Cameco Stops Deliveries via Russian Routecameco suspends the delivery of goods through russian transit routes while seeking alternative routes for delivery.
2022 (Sep-Dec)	First Uranium Delivery via the TCITR	First Uranium Delivery via the TCITR, Successful uranium transfer to Canada through the TCITR.

Source: Composed by authors

As a premier supplier to both the West and the East, Kazakhstan crosses the contours of great power rivalries, particularly that between the United States and China and Russia. This flexibility underscores the country's strategic position as a neutral but highly influential actor in the world security landscape.

Diversification of export routes: mitigating geopolitical risk

The analysis describes that Kazakhstan strategically diversified its pathways for uranium export to conquer geopolitical risk. One of these illusions is the Trans-Caspian International Transport Route (TCITR), which lies outside the purview of Russian territory. This alternative corridor would allow Kazakhstan's uranium exports to proceed even when there are political problems, sanctions against Russia, or both; by Using TCITR to transport uranium to Canada for Cameco, Kazakhstan showed its agility in coping with changing geopolitical realities (World Nuclear Association, 2023). Diversification could weaken a country's susceptibility to such interruptions due to trade or any form of economic sanction while providing adequate uranium supply to sustain a steady stream of supply, ultimately consolidating Kazakhstan's role as a key player in the international nuclear security arena.

Kazakhstan's vital Role in Contributing Towards Global Non-Proliferation Initiatives

On account of being one among the major uranium-exporting countries. Kazakhstan stands as one crucial global nuclear non-proliferation state. This country provides the territory for the established Low Enriched Uranium (LEU) Bank of International Atomic Energy Agency (IAEA 2024): Kazakhstan is therefore in the vanguard of leadership-upon the advancement of nuclear safety and preventing the proliferation of nuclear weapons. Also, an LEU bank provides a secure and internationally-monitored supply of uranium for peaceful nuclear energy undertaking states, thereby minimizing the necessity for countries to develop uranium enrichment capacities that might be diverted into weapons production. Thus, it simultaneously shows Kazakhstan's position as an indispensable supplier of important nuclear resources and a proponent for nuclear non-proliferation. Therefore, through the economic appetites and dedication to global progress, this gets Kazakhstan a valuable geopolitical advantage at the regional and international levels.

Geopolitical Implications on Energy Security

The abundant uranium reserves of Kazakhstan repeat the same roles of energy security for nations within the region and the wider scheme of energy stability in the world at large. With the adoption of low-carbon energy alternatives, nuclear energy has become necessary for the global strategy to mitigate the effects of climate change. Kazakhstan uranium deposits are integral to nuclear power plants worldwide thus, becoming a key actor in shaping the future global agenda on energy. Studies indicate that Kazakhstan's success in such supplies will be imperative in the years to come, especially as global geopolitical conflicts loom over competition for energy resources. Kazakhstan's strategic position in the nuclear energy supply chain provides it with a degree of leverage in international affairs and more power to influence energy policies and engage in deeper geopolitical dialogues (Kazakhstan's Uranium Dilomacy, The Diplomat, 2023).

Director, Ms. Helen Smith, for International Relations Directorate of the Ministry of Foreign Affairs of Kyrgyz Republic. Delivering his remarks during the 'Building energy geopolitics in CAREC region' discussion.

Kazakhstan, therefore, is in history now, as it approved the establishment of a nuclear power plant according to the final results of the Central Referendum Commission: indeed, for the nation, it is a crucial event in its energy policy. The votes' conduct towards the proposal reveals that 71.12 percent of the people's vote supports it; therefore, the referendum will go down as evidence that the government is committed to this ambitious energy project. Indeed, the national vote on October 6 asked whether the people agree to the establishment of a nuclear facility in the country.

The main purpose of the government government is to keep a stable and sustainable energy supply, causing diminished reliance on coal and imported electricity. Nuclear energy is considered an elemental diversification of renewable sources. Another important point is that such a nuclear plant must boost economic growth since it will create jobs and will be benefit to the economy during construction and its operation.

Nuclear-rich Kazakhstan can immensely involve the whole world in acquiring the technical know-how of nuclear accidents and the challenges faced in managing radioactive waste. Kazakhstan's history as a site of Soviet-era environmental testing and atmospheric nuclear bomb testing only compounds

these fears. Besides, the geopolitical implications are considerable. Firstly, Kazakhstan is strengthening ties with Russia through the role of Rosatom, Russia's state nuclear agency. One might ask, what are the implications for Kazakhstan's autonomy and geopolitical strategy in balancing relations with its powerful neighbour?

Although the project was backed overwhelmingly in the referendum it faces many challenges. Public opinion is still divided, and many citizens are anxious about the safety and environmental effects of nuclear energy. Building and operating such a facility is an inherent hurdle to the other financing required, particularly in the global economic uncertainty prevailing today.

Apart from this, Kazakhstan has sufficient reserves of uranium, but there is no domestic know-how to begin developing nuclear power independently. The much-needed dependency on other partners, more so Russia, may compromise the independence of the state while enhancing the geopolitical risks. It will also mean a comprehensive regulatory framework to ensure safety and security, which will require substantial investment in infrastructure and skilled personnel.

In conclusion, Kazakhstan's decision to pursue nuclear energy holds both great promise and notable risks. The government must thoroughly address these factors, ensuring the projects adheres to the highest standards of safety, environmental protection, and geopolitical stability. International collaboration and strong regulatory measures will be critical for the long- term success of this initiative.

Conclusion

Hence, the role of Kazakhstan as a global leader in uranium supply is indispensable, not merely in economic terms, but as well for global nuclear security and energy stability. With reserves of uranium that are the second largest proven reserves in the world and a major contributor in terms of global production, also Kazakhstan has a significant part to play in the nuclear energy supply chain, which in addition becomes acuter in the war against climate change. Part of Kazakhstan's diversification routes for export is the Trans-Caspian International Transport Route, a demonstration of the country's proactive measures against geopolitical risks. In this case, Kazakhstan is very much closer to European and Asian markets and is becoming a strong regional transit hub. Besides, Kazakhstan's actions toward non-proliferation, such as the setting up of the Low Enriched Uranium Bank, give it an additional collective geopolitical value. The facility itself covers the safe supply of nuclear fuel to countries while showcasing Kazakhstan as a leader in responsible nuclear governance. All these are in line with international initiatives toward the non-proliferation of nuclear weapons and their peaceful use in technology. Reasonably, the recent approvals for nuclear power plants are bold steps in the making for sustainable energy futures, even if in the short run they might be overshadowed by the environmental and security concerns raised by nuclear energy itself. However, as Kazakhstan strides toward this ambitious agenda, it also needs to ensure high safety standards for it and invest in cutting-edge technology to mitigate the risks that arise. It is very obedient to balance these issues with the economic and technological benefits as Kazakhstan develops links with Russia, China, and Western countries concerning this initiative. With the increasing global demand for clean energy, Kazakhstan's uranium production will gain greater interest in the energy transition. Kazakhstan has the option not only to supply uranium but also work together with other countries on developing nuclear technology and infrastructures.

Kazakhstan will improve its stature internationally by positioning itself as a center of nuclear innovation and education. In the future, Kazakhstan's reputation as a world's top uranium supplier will define its domestic politics as well as determine how it will be taken into account in global energy strategies. Economic interests will depend on a balance between international relations and environmental factors, which will determine Kazakhstan's future as it attempts to harness its much-loved natural resources into a secure and sustainable global energy landscape.

References

Baev, P. (2013). Kazakhstan's nuclear cooperation with Russia: A resource-based diplomacy. International Affairs Review, 45-67.

Bely, I. (2012). Kazakhstan's resource wealth and geopolitical influence. Eurasian Geography and Economics, 123-145.

Blackwill, R., & O'Sullivan, M. (2016). The geopolitics of natural resources: Kazakhstan's strategic position. Harvard Kennedy School Discussion Paper, 1-28.

Clare, A. (2001). Natural resources and the global balance of power. Global Affairs, 89-112.
Cooley, A. (2012). Great power rivalry in Central Asia: Kazakhstan's strategic positioning. Journal of International Relations, 34-58.
Down, A. (2016). Nuclear dependencies: Kazakhstan's role in global non-proliferation. Central Asian Survey, 210-225.
IAEA. (2024). Low enriched uranium bank: Kazakhstan's commitment to non-proliferation. International Atomic Energy Agency Report, 15-30.
Karatnitskyi, S. (2011). Kazakhstan's uranium exports: Beyond economics. Asia Europe Journal, 74-88.
Klare, M. (2008). The resource curse: A geopolitical analysis. New Left Review, 23-45.
Kalyuzhnova, Y., & Nygaard, C. (2009). Kazakhstan: Diversifying away from the resource curse. Post-Soviet Affairs, 140-165.
Kasenova, A. (2010). Uranium in Kazakhstan: A geopolitical asset. Eurasian Economic Review, 99-120.
Kasenova, A. (2013). Kazakhstan's nuclear disarmament and its global standing. International Security Studies, 7-22.
Kasenova, A. (2014). Kazakhstan as a leader in nuclear non-proliferation. Nuclear Policy Journal, 33-50.
Laruelle, M. (2018). Kazakhstan's role in Central Asian stability. Central Asian Affairs, 56-78.
Luciani, G. (2012). Energy resources and geopolitical strategies: The case of Kazakhstan. Middle East Journal, 44-60.
Mackinder, H. (1904). The geographical pivot of history. The Geographical Journal, 421-437.
ME RK. (2024). Kazakhstan's uranium resource assessment. Ministry of Energy of the Republic of Kazakhstan, 5-20.
Newnham, J. (2012). The political economy of natural resources: Kazakhstan's challenges. Journal of Resource Economics, 77-94.
Ohashi, K. (2018). Natural resource management in Kazakhstan: The role of uranium. Resource Policy, 118-132.
Paul, T. (2000). The non-proliferation treaty: Current issues and future prospects. Nuclear Non-Proliferation Review, 33-56.
Pomfret, R. (2010). Kazakhstan's economic dependence on natural resources. Post-Soviet Economies, 15-30.
Sagan, S. (1996). The perils of proliferation: Organization, collective action, and the non-proliferation treaty. International Security, 86-112.
Sagan, S., & Waltz, K. (2003). The spread of nuclear weapons: A debate renewed. W.W. Norton & Company, 3-25.
Speakman, N. (1942). Energy resources and global strategy. Journal of International Affairs, 12-29.
Spechler, D. (2009). Kazakhstan's geopolitical balancing act. Journal of Central Asian Studies, 145-160.
Umbach, F. (2014). Energy security in Europe: Kazakhstan's role. European Energy Journal, 50-66.
Victor, D., Hults, D., & Thurber, M. (2011). Resource management and global energy policy: Kazakhstan's position. Energy Policy, 105-120.
Wu, X., & Zhang, Y. (2018). China's Belt and Road Initiative: Implications for Kazakhstan's energy sector. China Quarterly, 233-250.
World Nuclear Association. (2024). World uranium mining production. World Nuclear Association Report, 22-38.

Information about authors:

Tumanshiyev Darkhan – 3rd year PhD student at the Faculty of International relations, Al-Farabi Kazakh National University (Almaty, Kazakhstan, e-mail: tumanshiyev.darkhan@gmail.com)

Issova Laura (corresponding author) – Candidate of historical science, Associate Professor, Faculty of International Relations, Al-Farabi Kazakh National University (Kazakhstan, Almaty, e-mail: tanirbergenlaura@gmail.com)

Abduali Madina – 1st year PhD student at the Faculty of International Relations, Al-Farabi Kazakh National University (Almaty, Kazakhstan, e-mail: abdualimadina5@gmail.com)

Авторлар туралы ақпарат:

Туманшиев Дархан – Әл-Фараби атындағы Қазақ ұлттық университетінің халықаралық қатынастар факультетінің 3-курс докторанты (Алматы, Қазақстан, e-mail: tumanshiyev.darkhan@gmail.com)

Исова Лаура (корреспондент автор) – тарих ғылымдарының кандидаты, Әл-Фараби атындағы Қазақ ұлттық университетінің халықаралық қатынастар факультетінің доценті (Қазақстан, Алматы, e-mail: tanirbergenlaura@gmail.com)

Абдуали Мадина – Әл-Фараби атындағы қазақ Ұлттық Университетінің Халықаралық қатынастар факультетінің 1-курс докторанты (Алматы, Қазақстан, e-mail: abdualimadina5@gmail.com)

Информация об авторах:

Туманшиев Дархан – докторант 3-курса факультета международных отношений Казахского национального университета имени аль-Фараби (Алматы, Казахстан, e-mail: tumanshiyev.darkhan@gmail.com)

Исова Лаура (корреспондентный автор) – кандидат исторических наук, доцент факультета международных отношений Казахского национального университета имени аль-Фараби (Казахстан, Алматы, e-mail: tanirbergenlaura@gmail.com)

Абдуали Мадина – докторант 1-курса факультета международных отношений Казахского Национального университета имени Аль-Фараби (Алматы, Казахстан, e-mail:abdualimadina5@gmail.com)

Previously sent September 27, 2024.
Re-registered October 30, 2024.
Accepted December 3, 2024.