

Spotlight on Innovation— NAC Kazatomprom



JSC National Atomic Company Kazatomprom (LSE:KAP | AIX:KAP), the partially state-controlled uranium mining company in Kazakhstan, has maintained the position as the world's largest uranium producer since 2009 and annual production for 2021 totaled 21,819 tU (56.7 million pounds U_3O_8 —12 percent higher than the previous year.

Kazatomprom's assets include the entire complex of Kazakh enterprises involved in the front-end of the nuclear fuel cycle—from geological exploration, uranium mining, and production of nuclear fuel cycle, to scientific research and development of patented technologies. The Group benefits from the largest reserve base in the industry and operates, through its subsidiaries, Joint Ventures, and Associates, 26 deposits grouped into 14 mining assets. All of the company's mining operations are located in the Central Asian nation of Kazakhstan and extract uranium using in-situ recovery technology with a focus on maintaining industry-leading health, safety, and environment standards.

Following Russia's invasion of Ukraine on February 24, and the ongoing conflict, Kazatomprom has acknowledged the risks associated with transporting exported products through the territory of Russia, including insurance and the delivery of cargo by sea freight. In its Q1 2022 Operations and Trading update, Kazatomprom suggested it may have an alternative route that does not enter Russia. In addition, the company pointed to its inventory volumes kept at several global locations, and its ability to negotiate swaps with its partners and customers, which could help mitigate potential risks to Kazatomprom's deliveries. Therefore, the company is working to implement transportation solutions.

Toward this goal, on June 15, a meeting was held in Brussels, Belgium to discuss "Transit and Transport Cooperation Between Kazakhstan and European Union: Prospects for the Development of Middle Corridor." The event was organized by the Embassy of the Republic of Kazakhstan in Belgium, with the support of the International Association "Trans-Caspian International Transport Route" and JSC "NC Kazakhstan Temir Zholy." About 150 participants from 18 countries participated in the event, which was organized to bring the business communities of Kazakhstan and the European Union closer together by using the infrastructure capabilities of the Trans-Caspian International Transport Route.

The Central Asian nations of Kazakhstan, Georgia, Azerbaijan, and Turkey have signed a quadrilateral declaration on the Trans-Caspian East-West Corridor, which strengthens the four countries' collaboration on an international transport system. The declaration also reportedly notes the important role of the Baku-Tbilisi-Kars (BTK) Railway Line in promoting competitive transport between Europe and Asia, and stresses the importance of completing construction work to improve the capacity of the railway line.

In this next installment of the "Spotlight on Innovation" series, The Nuclear Review presents a conversation with Kazatomprom's Chief Commercial Officer, Mr. Askar Batyrbayev, which highlights how innovative and alternate transportation proposals could provide timely solutions for delivery of material to market (**Figure 1**).

TNR: The majority of Kazatomprom's uranium production has been routed overland through Russia and then transported via container ships at the Port of St. Petersburg. However, the conflict in Ukraine

had led to increased uncertainty related to the transportation of nuclear materials via Russian sea ports. Notably, on June 7, the Canadian government amended its Special Economic Measures on Russia, which will delay shipments

from Russia. Could this and other regional geopolitical issues impact Kazatomprom's ability to release shipments at Russian ports?

KAP: There are always risks associated with using our long-established

transportation route via Russian ports, given existing sanctions and the global political concerns, but we are ensuring that existing and potential risks are properly mitigated to the maximum extent possible. Although we have not yet faced any significant restrictions in using that route, we are keeping an eye on the rapidly changing sanctions and, along with our transportation agents, insurers, and partners, we are working to be prepared for potential limitations related to Russian ports.

At the moment, the amended Canadian rules related to shipments from Russia may have an impact on Russian EUP (enriched uranium product) shipments, but Kazakh natural uranium passing through Russia is not expected to be impacted, based on our conversations with the shipping companies moving our material.

TNR: *Kazatomprom has recently noted it is seeking an alternate shipping route that would not involve transportation within Russia or shipment from a Russian*

port. Why is the company seeking an alternate route? Is this at the request of your customers?

KAP: Kazatomprom is fully aware of the industry's concerns today over the reliability of supply through Russia. As we are looking closely at alternate shipping, the Trans-Caspian route is not a new option for us—it is very important to note that the establishment of the route was not due to any customer requests or concerns (**Figure 2**). We established the route in 2018, when the Port of St. Petersburg was temporarily off limits for Class 7 material due to FIFA World Cup matches taking place in the city in 2018.

Following the establishment and permitting of the route, we have since been maintaining it as a viable secondary transportation option to make sure we steadily build institutional memory for all parties involved in the transportation of Class 7 material within Azerbaijani and Georgian authority circles.

TNR: *The Trans-Caspian International Transport Route starts*

from Southeast Asia and China, runs through Kazakhstan, the Caspian Sea, Azerbaijan, Georgia, and further to European countries. Within this area, there are certain jurisdictions that previously had or have relationships with Russia. Do you anticipate any challenges when working with these regions or nations?

KAP: While both Azerbaijan and Georgia share a past as former USSR republics, over the past 30 years, as with many other 13 republics, they have been steering their foreign and economic policies independently, each being integral parts of local economic alliances and playing an important part in global trade. It is true that, at times, their relationships with our shared neighbor have been strained, but we believe that it is crucial to have continuous and predictable dialogue with each country in the region.

Economically, Georgia is routinely rated as one of top emerging countries for its transparency developments. Azerbaijan is well on the way to become a regional leader in the South Caucasus. We do not anticipate any challenges in continuing to build a stable and reliable cooperation with either Georgia or Azerbaijan.

TNR: *Presently, there is a quota on the maximum amount of material that can be sent through Azerbaijan of 3,000 tU. How much total material is Kazatomprom seeking to ship to Western facilities in 2022? Is it possible this quota could be increased?*

KAP: Capacity is the biggest question right now, but stakeholders should be aware that the Trans-Caspian International Transport Route is primarily used for general cargo and has the potential to accommodate millions of



Figure 1 Kazatomprom Chief Commercial Officer, Mr. Askar Batyrbayev, at the port of Poti, Georgia

Source: NAC Kazatomprom

tons of capacity. Our shipments would be a tiny piece of the overall cargo that goes through the Caspian Sea. Also, due to the nature of our cargo and existing relationships with ongoing government-to-government discussions, we are confident there would be space within the overall flow of materials.

Our efforts to keep the Trans-Caspian option viable have not ceased since 2018. We are now engaged in multilateral discussions to ensure it has the capacity to potentially accommodate greater quantities for both Kazatomprom and for our JV partners and other producers in our region, should the need arise. The mentioned limit under a quota is related to contracts that were used in previous applications. We have already applied for an expansion of that limit and our team is planning to meet with Azerbaijani governmental authorities in July regarding capacities and quotas.

However, I need to re-iterate once again that I'm still talking about risk mitigation

in the event the risks to the primary route are realized, as we are still able to use our route through St. Petersburg today.

TNR: How does Kazatomprom allocate the quota space among its own uranium production and that of its Joint Venture partners?

KAP: According to the permits that are in place, the current quota is for Kazatomprom's shipments only, as prior to the current situation, our partners at JVs were not party to this project when it was completed in 2018. Now, as our partners have asked to reroute their share of production from JVs through the Trans-Caspian route, we are assisting them in getting the required transit approvals, as we are the national operator for nuclear products in Kazakhstan and understand our responsibility for all the mines.

TNR: Does this quota also cover uranium from Uzbekistan that is scheduled for shipment to Western facilities?

KAP: No, but we can consider assisting our colleagues in Uzbekistan in case they come up with a request for transportation of uranium from Uzbekistan, given it would comply with necessary regulations and it would be mutually beneficial.

TNR: Following recent international discussions concerning the establishment of a Trans-Caspian transport route, is it known how long it would take to finalize agreements and begin using this route for uranium shipments?

KAP: This route has been used since 2018, and we constantly work to improve our transportation capabilities. The existing option to go through the Black Sea is fully operational and we have made six shipments over the past several years. We plan to use it again this September. Moreover, I recently visited Turkey in order to meet with governmental authorities and the railway administration regarding

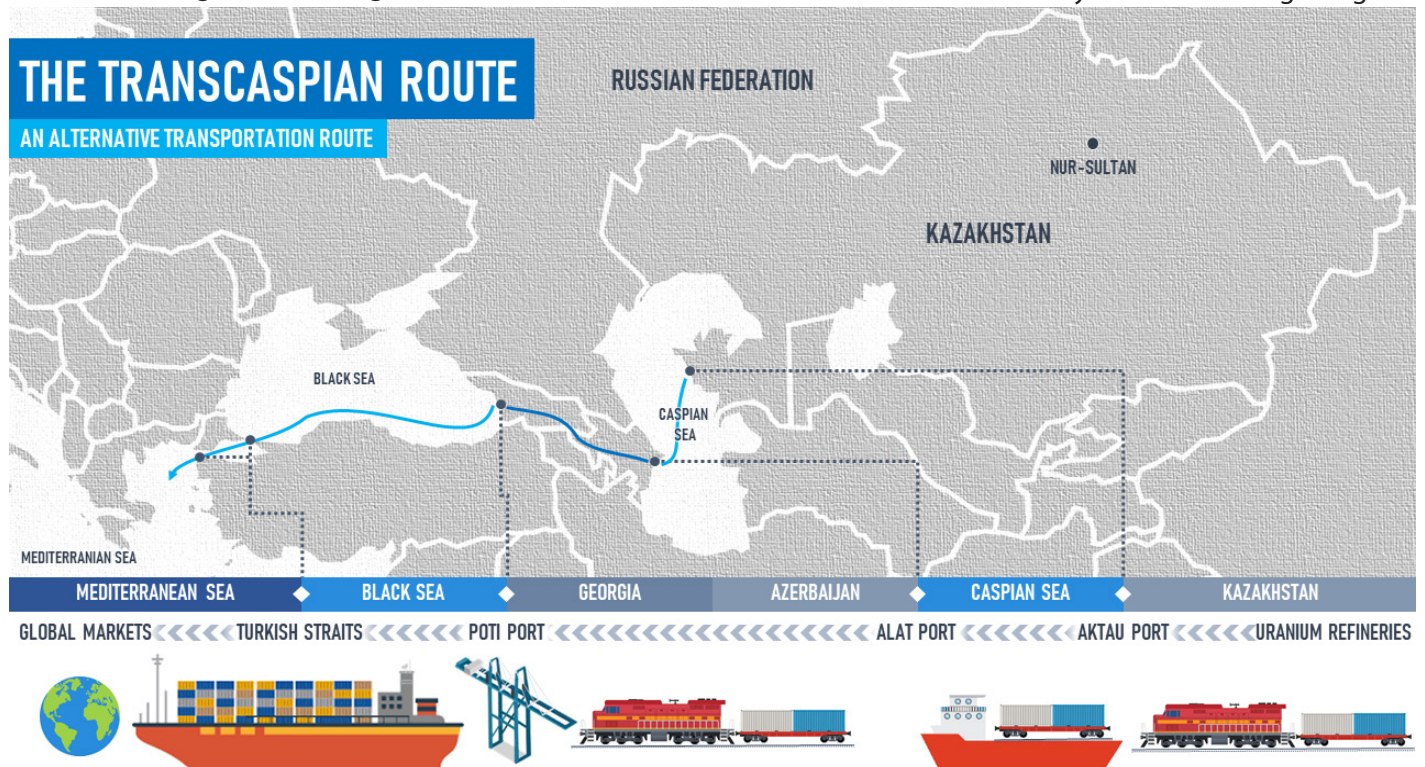


Figure 2 **Trans-Caspian International Transport Route**
Source: NAC Kazatomprom

shipments of uranium materials through Turkey as well. Having seen Turkey's great progress with becoming a new country that would use nuclear energy, we truly believe that it would be a great opportunity to have Turkey as a partner for the transportation of uranium.

TNR: Can you explain the permitting process and regulatory approvals required as the material shipped via the Trans-Caspian route transits multiple nations and territorial waters?

KAP: Development of this route from scratch was a very interesting process in terms of both logistical issues and getting regulatory approvals. We really appreciate the assistance of government authorities in Azerbaijan and Georgia for their support. Despite having no nuclear power plants in those countries, they were very rational and supportive. For getting approval for transit, those authorities ask for a regular set of documents that would be requested by any country, such

as shipping documents, radiation certificates, purpose of use of that material, etc.

Also, I would like to thank management of TITR (Trans-Caspian International Transportation Route) and all the logistical companies that were involved in the process of developing that route and transportation. Additionally, our partners that operate conversion facilities in North America and Europe have been providing great support for the shipments going through this route.

TNR: Is the Trans-Caspian route easy to navigate? Do you anticipate a longer schedule for shipping and delivery of material to Western companies using this alternate route?

KAP: One interesting thing about shipping via the Caspian Sea—we use special ferries that can get railcars with containers loaded right on a vessel. That means that once containers with uranium are loaded at the mine on railcars, they will go all the way to the

port at the Black Sea on the same railcar without any trans-shipment, which definitely reduces risks related with shipment via the Caspian Sea (**Figure 3**).

One of only a few issues that we face using that option is availability of regular commercial shipping vessels from the Black Sea to our regular destinations. However, there are plenty of charter vessels available that can carry Class 7 shipments. Because it would be a charter vessel, it goes directly to the destination port that we choose, so inland delivery from the port of destination may be even quicker. When we use that alternative route, we go to southern ports of France that are located much closer to the Malvesi facility, rather than northern European ports. When we ship to Canada, we can use ports that are located closer to the Blind River facility rather than ports that are used by the major commercial liner vessels.

TNR: If shipping delays occur, how will you meet Western delivery commitments? Could this affect annual sales volumes and revenues?

KAP: We have sufficient inventory at every converter that allows us to meet our contractual commitments in the short term, with other inventory management tools that would provide time to manage a possible delivery delay.

TNR: What is the soonest you expect the first shipment via a possible Trans-Caspian route could arrive at Western processing facilities?

KAP: This year we expect to make a shipment through this route in early September. Ocean freight will take only a couple of weeks and then it will take some time to deliver it from the port to conversion facilities by truck.

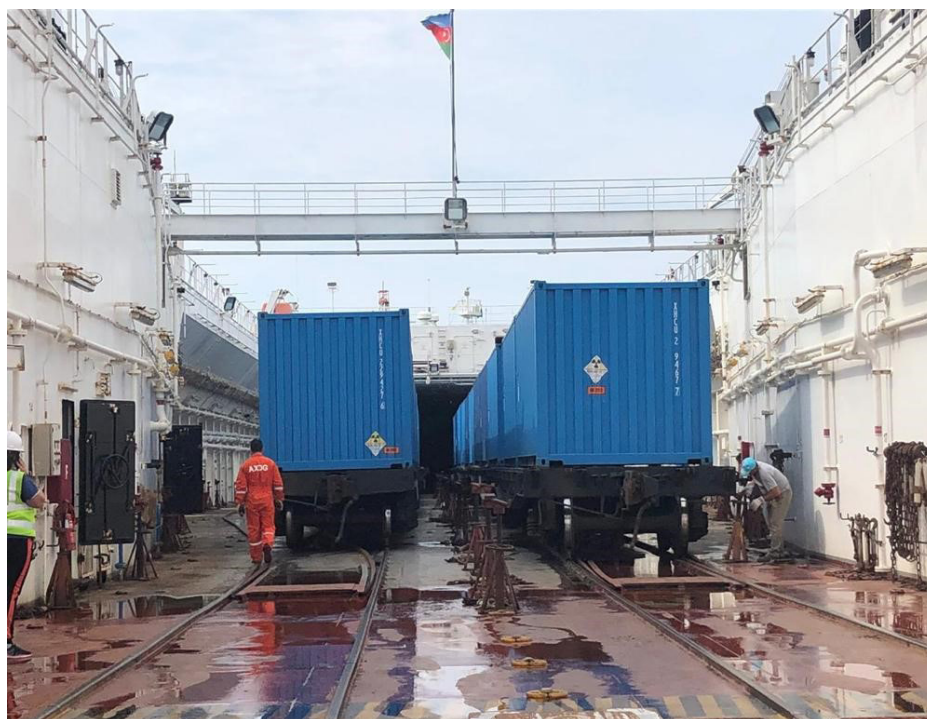


Figure 3 Container Loading on Shipping Vessel
Source: NAC Kazatomprom

TNR: Cost inflation is rising globally today and can be beyond the control of uranium miners; it is applicable at both the mine site and in delivering material to market. Moreover, inflation incorporates material-to-market costs, inclusive of overland freight transport, international shipping costs and surcharges, and other ulterior expenditures related to delivery. Do you anticipate a different cost structure associated with the use of this potential alternate route? Are there specific tariffs and/or fees related to this alternate route?

KAP: Costs have increased globally due to inflation. Transportation costs increased globally even more because of the COVID-19 supply chain crisis. Also, this year cost of fuel has increased significantly. All that together leads to an increased cost of transportation. It's a bit tricky regarding tariffs using that route, as we use charter vessels, so shipping cost per pound would vary based on how much we ship at once.

TNR: Is insurance coverage available for this alternate route?

KAP: Despite many rumors over the availability of insurance on the Black Sea, we can confirm that insurance

coverage is available for this alternative route. In April, the so-called JWC (Joint War Committee) Listed Areas was updated with the addition of part of the Black Sea. However, they have very specific coordinates of listed areas that you can see in the map we've provided (Figure 2). Everything that is below the line is insurable and as you can see, port Poti is below the line and the route to the Mediterranean Sea is below the line as well.

Kazatomprom is fully aware of the industry's concerns today over the reliability of supply through Russia. As we are looking closely at alternate shipping, the Trans-Caspian route is not a new option for Kazatomprom—it was established in 2018, and we have since been maintaining it as a viable secondary transportation option.

The only change we've experienced to date is that we must provide specific route and timing information for each shipment to have it approved by our London-based insurers.

TNR: Kazatomprom has become a full member of the United Nations Global Compact, the world's largest corporate sustainability initiative that aligns more than 16,000 member companies from 161 countries in taking positive actions to advance societal goals. The company has noted that sustainable development

is integral to its development strategy and it is working to improve corporate practices to meet the highest international standards of industrial safety and ESG (environmental, social, and governance) programs and policies? Does the potential implementation of a Trans-Caspian transport route provide any ESG benefits for Kazatomprom?

KAP: In the current environment, the Russian conflict in Ukraine has specifically challenged the social impact aspects of businesses around the world. Having an alternative to our transportation route through Russia could be beneficial, whether we are required to use it due to a change in the risk profile, or if we just choose to use it regardless, as is expected in September.

TNR: Are there other potential transportation solutions that are under consideration by Kazatomprom? (Other maritime options, air freight, or shipping by railway and/or truck transport)

KAP: We consider every option to ensure we meet our commitments to our customers: location swaps, discussions on transit through China, alternative land routes, or even transport by aircraft.

