



Nuclear future: the role of uranium in the USA's energy policy

The current global uranium and enriched uranium products market is characterized by increased demand, with uranium suppliers struggling to meet supply.

U.S. President Joe Biden's ban on the import of Russian uranium will contribute to the development of the nuclear industry in the U.S. in the medium and long term and will have limited short-term impact on uranium prices for the following reasons:

- firstly, the bill grants the Minister of Energy the power to lift the ban and allow imports under certain conditions;
- secondly, the US industry has been working proactively to secure uranium supplies from

- outside Russia in anticipation of the ban since last year. Thus, the cost of a possible supply disruption may already be factored into uranium prices (for the record, uranium prices have risen significantly over the past six months);
- thirdly, US reactors typically maintain a working supply of fuel and uranium feedstock to cover refueling every 18 to 24 months, meaning the material needed for their next refueling has likely already been secured.

Consequently, the ban has minimal impact on the activities of the two largest uranium suppliers, Kazakhstan's Kazatomprom and Canada's Cameco.

Kazatomprom and Cameco

As we described above, the impact of the ban on the operations of Kazatomprom and Cameco, the two largest uranium suppliers, will be minimal in the short term.

Currently, uranium prices are more dependent on the dynamics of uranium supply, as the demand for energy carriers remains high.

In January of this year, Kazatomprom announced that issues with accessing sufficient volumes of sulfuric acid could limit the increase in uranium production in 2024.

Previously, the company had stated its intention to increase uranium production in 2024 to 90% of the volumes stipulated in subsurface use contracts, compared to a target of 80% in 2023, in response to growing global demand.

However, Kazatomprom reported that problems with the availability of sulfuric acid and delays in construction now put this goal in doubt. Following Kazatomprom's unexpected announcement, uranium prices increased by another \$16, reaching a cyclical high of \$106 per pound.

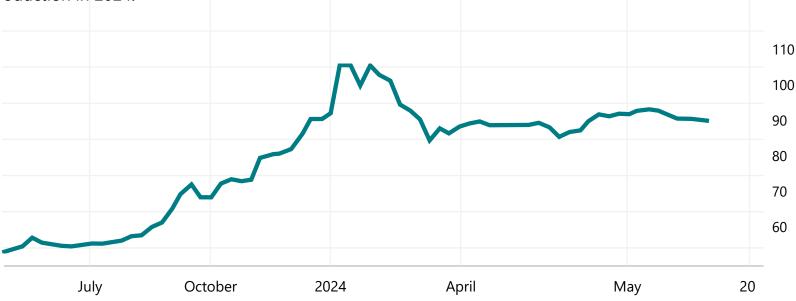


Figure 1: Spot prices for U3O8 over the past year (in dollars per pound). Source: tradingeconomics



On September 3, 2023, Cameco, the world's second-largest uranium producer, announced expected production shortfalls at McArthur River and Cigar Lake, totaling 1,600 tons. Given that prior to their recent announcements, Cameco and Kazatomprom were likely fully contracted for the

next four years. We believe both companies have committed to selling more uranium than they can produce. If this is true, both companies may have to buy material on the spot market, causing prices to rise.

Spot prices for U3O8 in \$ per pound	\$20	\$40	\$60	\$80	\$100	\$120	\$140
2024	44	48	53	56	58	58	59
2025	39	44	54	61	64	65	65
2026	41	44	56	66	69	70	71
2027	42	45	57	68	72	73	75
2028	45	47	58	69	73	74	76

Figure 2: U3O8 spot prices over the past year (in dollars per pound). Source: tradingeconomics

As we can see from Table 2, Cameco will not significantly increase realized prices even when uranium spot prices rise sharply, but will suffer significant decreases in realized prices when spot prices are low.

This is due to the fact that in the uranium market contracts are concluded several years in advance and prices are fixed by forward contracts.

Background of the ban

In response to the conflict between Russia and Ukraine, the United States and other countries imposed sanctions on many sectors of the Russian economy and banned imports from Russia.

These sanctions included a ban on the import of Russian oil and gas, but did not include a ban on the import of Russian uranium and uranium enrichment products.

The decision not to ban imports of Russian uranium was driven in part by the American nuclear industry's dependence on uranium and enrichment services provided by Russian companies.

As acknowledged in the House of Representatives report, the US nuclear industry relies on imports from the Russian state nuclear energy company Rosatom and its subsidiary Tenex for more than 20% of its enriched uranium needs.

However, as the war in Ukraine continued, the US government decided to approve a ban on Russian imports, which was signed by President Biden on May 14, 2024. The ban will come into force 90 days after the law is adopted, that is, August 12, 2024. The law's prohibition expires on December 31, 2040.



Law on the ban of importing Russian uranium

The Act amends section 3112A of the USEC Privatization Act (42 USC 2297h-10a) to prohibit the import into the United States of (1) non-radioactive low-enriched uranium (LEU) produced in the Russian Federation or a Russian entity, and (2) non-radioactive LEU that has been exchanged, substituted or otherwise obtained in place of non-radioactive LEU produced in the Russian Federation or a Russian entity in order to circumvent the import ban.

The law also grants the Minister of Energy, in consultation with the Ministers of Foreign Affairs and Trade, the authority to lift the ban and allow the import of Russian LEU until 2028.

For the ban to be lifted, the Minister of Energy must determine either that there is no viable alternative source of LEU available to sustain the operation of the US nuclear reactor or company, or that allowing the import serves national interests.

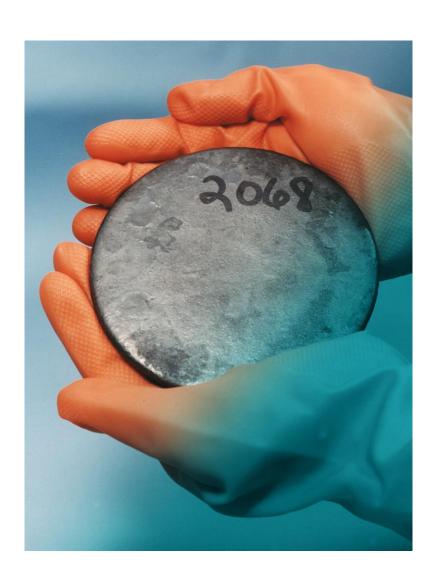
The amount of Russian uranium that can be imported under the exemption is limited in the following calendar years:

2024: 476,536 kilograms **2025**: 470,376 kilograms **2026**: 464,183 kilograms **2027**: 459,083 kilograms

Potential consequences for the nuclear industry

The import ban could have a greater impact in the medium term (24-60 months), as the Department of Energy's ability to grant exemptions (assuming no reciprocal Russian export ban) will expire in 2028. Additionally, companies may face increased costs if the necessary fuel during this period cannot be sourced from non-Russian suppliers.

It's difficult to predict the long-term impact of the bill on the nuclear industry. One potential consequence of the import ban is an increase in measures to revive Western capacities for uranium mining, conversion, and enrichment to meet current and future needs of Western countries. The bill unlocks \$2.72 billion in government funding to support the US uranium enrichment facilities.





Kazatomprom and Russia's influence

Kazatomprom has several joint ventures and subsidiaries with Russian companies: LLP "JV "Budyonovskoye" (Rosatom's share is 50%, uranium mining), LLP "JV "Khorasan-U" (Rosatom's share is 50%, uranium mining), JSC "JV "Zarechnoye" (Rosatom's share is 49.98%, uranium mining), and others. Russia has significant influence over Kazakh uranium through these companies, as well as being a major importer of Kazakh uranium and a primary logistics route for its export.

Sanctions will target uranium produced in the Russian Federation or by Russian entities, which should not affect uranium produced in Kazakhstan and involving Russian companies through shares in joint ventures and Kazatomprom's subsidiaries. Kazatomprom has stated that regardless of whether Kazakh uranium is supplied by Kazatomprom or its joint ventures, the uranium retains its origin until it undergoes processing.

Kazatomprom continuously monitors the potential impact of sanctions on the company's activities and its ability to transport uranium. The Trans-Caspian International Transport Route continues to mitigate the risk that Kazatomprom's primary uranium transport route through St. Petersburg might become unavailable for any reason.



Possibility of Uranium Oversupply in Russia

Kazakhstan is one of the largest suppliers of uranium to Russia. In 2023, Kazakhstan exported uranium worth 182.6 billion tenge (estimated at about 10,000 tons) to Russia, which constitutes a significant portion of Russia's total uranium imports. The main consumers of uranium in Russia are nuclear power plants and uranium enrichment enterprises.

An oversupply of uranium in Russia could occur if domestic uranium consumption significantly decreases or if Russia increases its own uranium mining and enrichment activities. However, it is unlikely that Russia would intentionally reduce imports of Kazakh uranium, as this could

negatively impact the stability of its nuclear energy sector.

Uranium is a strategic commodity, and its demand remains stable due to the growth of nuclear energy worldwide, particularly in countries such as China, France, Canada, Japan, South Korea, and India.

Kazakhstan can redirect excess uranium volumes to these and other growing markets. Redirecting supplies may require changes in logistics and the establishment of new contracts.



Risks

Russia may preemptively ban uranium exports, which would nullify the U.S. ban. Such a move would increase price volatility in the uranium market and drive up spot prices for uranium. We consider this scenario unlikely as we do not see any

intent from the Russian side in this direction.

The head of Rosatom, Alexey Likhachev, believes that this bill is theoretical and that the company will continue uranium supplies to the U.S.

Logistical Risks

Theoretically, Russia could restrict the logistics of Kazakh uranium through its territory. Limiting the supply of Kazakh uranium to the global market could lead to an increase in uranium prices.

Kazakhstan would be forced to seek alternative export routes and has the capability to transport uranium through China, as well as to use Caspian Sea ports to access global markets via Iran and Turkey.

Redirecting uranium supplies may require coordination with international regulators and consideration of political factors. Kazakhstan is actively developing its diplomatic and trade

relations, which could facilitate the successful redirection of uranium volumes to other markets.

It is important to note that Russia has made no statements indicating plans to restrict the logistics of Kazakh uranium, and Kazakhstan and Russia are strategic partners. Both countries are interested in maintaining stable and mutually beneficial relations.

Therefore, the scenario of Russia restricting the logistics of Kazakh uranium is unlikely.



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