Rare Earth Metals: Between External Dialogue and Russia's Internal Strategy

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Introduction

Rare earth metals play a key role in the production of high-tech products such as electric vehicles, solar panels, batteries, and other equipment for “green” energy, which has granted them strategic importance in the global economy. The United States and the European Union pay particular attention to rare earth elements (REEs), which are critical for the production of high-tech components. In the United States, these materials are used in magnets, batteries, and defense technologies, while in the EU they are essential for the production of batteries, catalysts, and components for green energy and mobility.

Against this backdrop, interest has intensified in Russia's resource potential, which possesses some of the largest rare earth metal reserves in the world.

Diplomatic Initiatives and Negotiations between Russia and the United States

Negotiations between the United States and Russia on rare earth minerals in the spring of 2025 began within the broader framework of diplomatic efforts to resolve the situation around Ukraine. At the end of February 2025, U.S. President Donald Trump expressed U.S. interest in Russia’s "very valuable resources," including rare earth metals. In response, Russian President Vladimir Putin held a meeting during which he proposed U.S.-Russia cooperation in the field of rare earth metal extraction, noting that, according to him, Russia held about 20% of the world's reserves of these strategically important resources (Russian Government, 2025a).

The negotiation process began at the end of February and continued at least through the end of March. In early March, the head of the Russian Direct Investment Fund (RDIF), Kirill Dmitriev, confirmed the fact of negotiations and the interest of American companies in Russian projects in Yakutia and the Krasnoyarsk Territory (Kommersant, 2025b). However, in April, the activity of negotiations on rare earth metals noticeably declined. This lull was likely connected with difficulties in the main track of negotiations between Russia and the United States on Ukraine. Nevertheless, Russian authorities continued to show interest in the topic.

In April, several governmental meetings were held on this issue. Deputy Prime Minister Dmitry Patrushev, at a meeting in Siberia on April 9, initiated the creation of a rare earth metal processing cluster and an expert group. At the board meeting of the Federal Agency for Subsoil Use on April 25, he emphasized the importance of the Arctic and announced plans for investments in geological exploration and the extraction of rare metals (ONZ News, 2025). In addition, in April, Russian Presidential Advisor Nikolai Patrushev stated that Russia was ready for cooperation with the United States in the Arctic, stressing the country’s strong position in the region and proposing a renewed dialogue for joint economic projects and building mutual trust (Kommersant, 2025c).

At the end of April, the United States and Ukraine signed an agreement providing for joint management of revenues from the sale of Ukraine's natural resources, including rare earth minerals and critical materials (RBC, 2025b). This event, if peace negotiations were to progress, could potentially stimulate the resumption of U.S.–Russia contacts on rare earth metals.

Amid the U.S.–Russia dialogue on REEs, other lines of international tension have intensified. The most prominent development was the escalation of the conflict between the United States and China.

Global Trade Tensions: The China Factor

In parallel with diplomatic contacts between Russia and the United States in the REE sphere, global trade tensions also escalated, particularly between China and the United States. In response to the growing trade tensions with the U.S., China introduced export restrictions in April 2024 on six key rare earth metals and related products, including permanent magnets. Starting in April 2025, the controls were expanded: export licenses became mandatory for both raw materials and processed products. These measures were a reaction to the U.S. raising tariffs up to 145% on Chinese goods (Reuters, 2025).

The restrictions apply to all countries, including the U.S., the EU, and Japan. Elements critical for high-tech industries—such as dysprosium, terbium, samarium, and others—were placed under control. This caused concern among American companies dependent on Chinese supplies, especially in the defense and electronics sectors.

China holds a dominant position in the global REE industry: approximately 60% of global mining and more than 80% of processing takes place in China (Zhao and Zhao, 2025). The country is the only one in the world with a complete production chain—from extraction to finished products Around 85% of global rare earth exports are shipped through Chinese ports (Zhao, 2025).

The visit of Chinese leader Xi Jinping to Moscow, scheduled for May 7–10, during which the signing of a number of bilateral intergovernmental and interagency documents was expected, may also touch upon the topic of rare earth metals, given their strategic importance for China, including in the context of bilateral relations with Russia and the ongoing trade confrontation with the United States (RBC, 2025c).

At the same time, the focus of the Russian authorities remains on internal challenges associated with the development of the national segment of the REE industry.

Domestic Barriers and the Structure of Russia’s REE Industry

Amid active foreign policy initiatives, the attention of Russian authorities has increasingly shifted to domestic barriers hindering the full development of the sector.

The extraction of rare earth elements (REEs) in Russia faces a number of significant challenges that limit the industry's growth. At the end of April 2025, Deputy Prime Minister and Presidential Plenipotentiary Representative in the Far Eastern Federal District, Yury Trutnev, stated that REE extraction projects in the Arctic had essentially stalled. At the same time, 90% of all Russian REE reserves are concentrated in the Arctic and the Far East, making these regions key to the future development of extraction and processing capacities for REEs in Russia (ANGI, 2025).

To successfully develop these resources, Russia needs to establish processing facilities capable of creating a complete production chain. Unlike China, which is the global leader in REE processing and possesses a closed technological cycle, Russia lacks the necessary infrastructure for processing and utilizing these materials (Sibirskiy ekonomist, 2025). Without demand for processed rare earth metals, the implementation of extraction projects will not be economically viable.

In 2022, Russia's production volume of REEs amounted to only 2.2 thousand tonnes, which is significantly below the estimated national demand of 15–16 thousand tonnes per year. As a result, Russia is heavily reliant on imports, as the majority of rare earth materials enter the country in the form of finished products. In 2023, Russia exported approximately 2,200 tonnes of REE concentrate worth about 22 million USD. At the same time, it imported products containing these metals worth over 500 million USD (ONZ News, 2025). Approximately 90% of the rare earth metals consumed in Russia are imported, primarily from China, effectively making Chinese supplies the main source of domestic demand satisfaction (Forbes Russia, 2024; TASS, 2024).

Russia possesses significant reserves of rare earth metals, concentrated primarily in the Murmansk region and Yakutia. According to the Russian Ministry of Finance, nine deposits in the Murmansk region account for 46% of national reserves, with the Lovozero deposit (estimated at 7 million tonnes) remaining the only site where industrial development of REE ores is ongoing in Russia's Arctic zone (Ministry of Finance of the Russian Federation, 2022).

In Yakutia, a key site is the Tomtor deposit, with estimated reserves of approximately 4 million tonnes (Rosnedra, 2021). Like the Lovozero deposit, it is located in the Arctic zone. Together, the Murmansk region and Yakutia form the industrial core of Russia's rare earth sector.

As of today, only one facility in Russia conducts industrial processing of rare earth elements—the Lovozero Mining and Processing Plant (GOK). In 2023, it was transferred under the control of the state corporation Rosatom, which is responsible for the development of Russia's Arctic zone (TASS, 2023). The plant produces around 6.4 thousand tonnes of loparite concentrate annually and serves as a key component of the region's industrial and transportation infrastructure.

The sector's development is progressing through new investment projects. In the Murmansk region, the construction of a mining and processing plant at the Kolmozerskoye site is planned, focused on lithium extraction, as well as a chemical and metallurgical complex at the Afrikand deposit, where the production of titanium dioxide and niobium pentoxide is envisaged (Neftegaz.ru, 2024). Implementation of these projects will require significant investment in processing capacities and logistics, but in the long term may reduce the region's dependence on external supplies of strategic materials.

The key project in Yakutia remains the development of the Tomtor deposit in the northwest of the republic. Its reserves are estimated at 154 million tonnes of ore with high concentrations of oxides of ten rare earth elements, making it one of the largest deposits in the world. According to some estimates, this single site could meet up to 10% of global demand for REEs (ONZ News, 2025; Zhao, 2025). Although geological exploration has already been completed, industrial mining is not expected to begin before 2027–2028. The delay is due both to harsh climatic conditions and the need to build infrastructure and implement processing technologies. Proposed methods include mechanical beneficiation in combination with radiometric, gravity, and magnetic techniques.

At the federal level, in February 2025, the head of the Federal Agency for Subsoil Use, Oleg Kazanov, announced that 28.5 million tonnes of rare earth metals had been explored and prepared for development in Russia, which, according to Russian data, amounts to about 20% of global reserves (TASS, 2025). Meanwhile, the U.S. Geological Survey estimates Russian resources at around 10 million tonnes (U.S. Geological Survey, 2024). Despite the discrepancies, both sides recognize that Russia possesses significant potential in the REE sector, especially given the global shortage of strategic materials.

The development of these deposits entails a range of technological and logistical challenges. Russian ores have a complex mineral composition and a low concentration of rare earth components, which necessitates the use of complex and costly processing methods. Additional

difficulties stem from severe climatic conditions, the remoteness of the sites, and the lack of necessary infrastructure.

The challenges associated with processing, logistics, and external dependency were among the reasons behind the revision of priorities in Russia's strategic documents, including development programs extending to 2030 and 2050.

To overcome systemic limitations and unlock industrial potential, the government is undertaking measures of a strategic nature.

State Strategy and Support Measures for the Industry

The development of the rare earth metals (REE) sector has been recognized as one of the priorities of Russia's national resource policy. The Strategy for the Development of the Mineral Resource Base of the Russian Federation until 2050 (Russian Government, 2024) highlights key challenges affecting the extraction and processing of REEs, ranging from infrastructure constraints and technological dependence to the remoteness of deposits and harsh natural and climatic conditions.

According to estimates by the Ministry of Industry and Trade of the Russian Federation, in 2024, the total production of rare and rare earth metals in the country was expected to reach approximately 20 thousand tonnes per year (including 11.8 thousand tonnes of rare metals and 7 thousand tonnes of rare earth metals). By 2030, production is planned to increase to more than 70 thousand tonnes, of which about 30 thousand tonnes will be rare earth metals. An interim target of 50 thousand tonnes of REEs has been set as a means to reduce import dependence (Experts IBDV, 2025; Interfax, 2025).

Alongside increased extraction volumes, the state policy also includes measures aimed at developing processing infrastructure and establishing value-added chains within the country. Priority is given to localizing processing, employing Russian technological solutions, and reducing dependence on imported equipment and components.

The topic of rare earth metals will be highlighted at the III International Forum "Arctic – Regions," which will take place in Arkhangelsk from July 31 to August 1, 2025. Key agenda items will include the development of mineral resources in the Arctic and the enhancement of logistics along the Northern Sea Route. At the meeting of the Commission of the State Council of the Russian Federation on International Cooperation and Export, discussions will focus on attracting investment to mining projects, assessing the current state of the resource base on the Arctic shelf, and exploring prospects for international cooperation in this area, including rare earth metals (Arctic Ports, 2025).

The structural challenges identified in the sector have necessitated expanded government support and the launch of targeted programs aimed at overcoming technological and infrastructural barriers.

In recent years, Russia has been actively developing the rare earth metals sector, considering it a key component of the national strategy for resource independence. Among the major initiatives is the federal project Geology – Revival of the Legend, within which geological exploration is being conducted in the Arctic and the Russian Far East. The goal is to identify new REE deposits and assess their economic viability (Sibirskiy ekonomist, 2025).

To support the extraction and processing of rare earth metals, several government support measures are in place in Russia. These include concessional loans, tax incentives, subsidies, and the creation of territories of advanced development (TORs), especially in remote regions (ONZ News, 2025).

Issues related to the development of REEs were discussed, in particular, at a meeting on the Siberian Federal District held on April 9, 2025, chaired by Deputy Prime Minister Dmitry Patrushev (Russian Government, 2025b). He noted that approximately 18% of Russia's total REE reserves are concentrated in this region. Among the proposals were the creation of an industrial cluster for deep REE processing in Siberia and the establishment of an expert group to analyze the economy's needs for rare metals and assess the region's production potential. The implementation of these initiatives is coordinated through a project management system operating under the Government Coordination Center, which ensures operational control and monitoring.

On April 25, 2025, at a meeting of the board of the Federal Agency for Subsoil Use, Deputy Prime Minister Dmitry Patrushev emphasized the strategic importance of the Arctic for the exploration, extraction, and processing of REEs (Russian Government, 2025c). In 2024, 450 billion rubles were allocated for geological exploration, which made it possible to significantly increase the volumes of identified reserves, including rare and rare earth metals. In the near future, more than 50 billion rubles are planned to be allocated for the continuation of these activities.

Among the projects under discussion is the formation of a unified rare metals cluster in Yakutia, encompassing several promising directions. These include lithium extraction from the brines of the Udachnaya pipe in the Mirny District, development of the Tomtor deposit with reserves of niobium, scandium, and manganese, as well as development of the Agylkinsky site, which is rich in tungsten, copper, and other strategic metals. These initiatives aim to establish an integrated production chain — from raw material extraction to deep processing. As part of the cluster, the possibility of organizing the production of lithium carbonate, which can be used in the manufacturing of lithium-ion batteries, is also being considered.

In the southern part of Yakutia, an initiative is also being explored to establish a metallurgical cluster focused on the production of ferroalloys, such as ferrotungsten, ferroniobium, and ferromanganese. This initiative is expected to become a logical continuation of the rare metals mining projects and to contribute to strengthening the region's industrial specialization in metallurgical processing.

However, the implementation of such projects is accompanied by risks related to limited market demand and price volatility for rare earth and rare metals. According to expert assessments, their success largely depends on the creation of fully integrated production chains — from extraction to final products — as well as the availability of stable mechanisms for government and investment support.

Conclusion

Rare earth elements (REEs) are not only of significant economic value but also represent a geopolitically sensitive resource on which key sectors of the global economy depend — from green energy and the defense industry to high technology. In the spring of 2025, Russia attempted to leverage its resource advantages as a platform for international dialogue by offering the United States cooperation in the field of REE extraction. However, the implementation of this approach proved to be constrained by a number of factors.

Despite potential economic benefits, serious political and strategic barriers continue to limit the scope for bilateral cooperation. One of the key obstacles remains the sanctions regime, which blocks the participation of American companies in Russian projects. In particular, in April 2025, restrictions concerning the Russian energy sector were extended. Another impediment is the lack of trust between the parties: even amid signs of temporary thaw, Russia and the United States

remain geopolitical rivals, which complicates the launch of large-scale joint initiatives (Drozdiak & Nardelli, 2025).

Despite substantial reserves and officially declared state priorities, the development of the REE sector in Russia faces a number of structural limitations. Among them are technological difficulties in processing, underdeveloped infrastructure in Arctic and remote regions, and limited access to equipment and technology. Additional constraints include weak integration of production chains and limited domestic demand for processed products. These factors create further obstacles to the full-scale implementation of rare earth metals projects and require continued systemic efforts to address institutional and infrastructural bottlenecks.

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