Ukraine: critical materials, a strategic challenge for Europe

Description

As Ukraine confronts the war and tries to prepare for its aftermath, the reserves of critical materials in its subsoil have become a bargaining chip. These resources are at the heart of the global energy transition and are shaping profound geopolitical changes.



As the global competition for critical materials escalates, Europe is at a pivotal moment: it must act swiftly and with foresight to maintain its position as a leader in green energy. The decisions made now will shape the future of the continent's energy transition and its geopolitical standing.

Ukrainian critical materials, a long-underestimated asset

Beneath Ukraine's vast landscape lies a hidden wealth of mineral resources that now seem essential to a more sustainable future. As global demand for critical materials grows, Ukraine's natural resources are attracting increasing attention from US President Donald Trump and Europe. Before the large-scale Russian invasion in February 2022, the mining industry accounted for 10% of Ukraine's GDP and a third of its exports(1). The country alone is estimated to have 5% of the world's mineral resources, with nearly 20,000 deposits covering 116 types of ore(2). In particular, it has significant deposits of minerals essential to nuclear energy (beryllium, uranium, zirconium) and the steel industry (iron ore, manganese). It also has the largest reserves of lithium and titanium in Europe and is one of the top ten European countries for copper, lead, zinc, and silver. There are also significant quantities of gallium, graphite, apatite, fluorite, cobalt, and nickel.

The global market for critical minerals has doubled in five years, and growth is set to continue at the same pace: the growing need for lithium, cobalt, nickel, and other raw materials to support the energy transition is driving a massive increase in investment in extraction. As renewable energies and green technologies develop, these materials become the pillars of new global industrial and logistics strategies. While some Ukrainian deposits are currently under the control of the Russian armed forces, the most disputed areas in the east, in the Dniepr-Donetsk Basin, are rich in hydrocarbons (3). On the other hand, large uranium, manganese, and iron reserves in the country's center remain relatively safe for now and are, therefore, more suitable for investment.

A strategic partnership for European autonomy

As part of its strategy to secure supplies of critical raw materials, the European Union signed an EU-Ukrainian strategic Partnership on Critical Minerals with Ukraine in July 2021. This agreement, which covers around a hundred projects, aims to secure the supply of ten essential raw materials. It forms part of the *European Action Plan on Critical Raw Materials*, which seeks to diversify sources of supply and reduce dependence on suppliers from outside the EU.

This partnership brings together several major players, including the European Raw Materials Alliance, a platform that aims to ensure a sustainable and secure supply of raw materials for the European industry, and the European Battery Alliance, a strategic initiative to build a competitive and sustainable battery value chain in Europe. A Memorandum of Understanding (MoU) has been signed to extend this collaboration: in addition to extraction, it provides for developing battery processing and production industries. The MoU affirms the European Union's commitment to the energy transition and recognizes that this depends on secure and sustainable access to the necessary resources.

Challenges for the European supply chain

The European Union’s energy transition success depends on stable access to critical materials. However, this supply chain is subject to some pressures, including environmental regulations, human rights requirements, and geopolitical tensions. At the same time, European policies are accelerating the green transition, increasing demand for these raw materials while exacerbating environmental and social risks. The EU, structurally an importer, has had a trade deficit in this sector since 2002, leaving it in a strategically vulnerable position(4). Many of these resources come from countries with high-risk supply chains, notably China and Russia. While a revival of extraction in Europe is conceivable, it comes up against several obstacles: regulatory constraints, environmental issues, and local opposition.

In this context, Ukraine’s vast mineral resources, located on the European Union’s doorstep, reinforce the country’s strategic value for the EU’s security of supply. However, since the large-scale invasion of 2022, potential access to these resources has become uncertain. In the early weeks of the conflict, Russian forces seized a significant lithium deposit in the Zaporijjia region. Other sites, such as the Shevchenko deposit in the Donbas, are now in a combat zone and are, therefore, highly uncertain(5). Mining operations there have been suspended, and foreign investors, deterred by the risks, are holding back. Russia’s control over these deposits further jeopardizes Europe’s ability to secure its supplies. This underscores the urgent need for strategic decisions to ensure Europe’s supply chains.

Increased volatility and the need for a strategic response

As long as the European Union is heavily dependent on imported raw materials, the stability of its supply chain will remain fragile. In addition to geopolitical conflicts, several factors contribute to price instability: scarcity of resources, global dependence, and lack of investment. These dynamics go a long way to explaining the recent price spikes of certain key materials such as nickel and lithium. Since 2022, Russia’s war in Ukraine has caused significant fluctuations: while the price of lead initially rose before falling by 8%, the prices of cobalt, nickel, copper, and lithium have continued to rise, reflecting increased tensions over global supply(6).

Faced with this situation, the EU must diversify its sources of supply and reduce the risks associated with its supply chains by fully integrating them into its diplomatic strategy. This is no longer just an industrial or economic issue but one of geopolitical security. In response, the EU and other neighboring powers rely on strategic partnerships, international agreements, and targeted investment. These instruments should make it possible to secure deposits, reduce dependence on non-democratic regimes, and limit the effects of market volatility or manipulation.

A new geopolitics of resources

In a global economy that is gradually moving towards renewable energies, dominance is no longer based on control of hydrocarbons alone, but on control of critical materials. As demand for these vital resources increases, so do the vulnerabilities of supply chains and geopolitical tensions. The countries of the BRICS group (Brazil, Russia, India, China and South Africa) seek to strengthen their industrial power by consolidating their hold on these resources. This project is all the more feasible given that most of the world’s critical minerals and rare earth reserves are concentrated in these countries. This shift could increase Europe’s dependence on authoritarian regimes, fuel trade disputes and weaken its strategic alliances. The European Union has embarked on an ambitious energy transition, but its path is strewn with political and geopolitical obstacles.

The major world powers exploit their national resources and use foreign investment as a lever of economic power. China, for example, holds between 85% and 90% of the world rare earths market. This monopoly is underpinned by aggressive industrial policies, low wage costs, and flexible or non-existent regulation, which enable it to dominate this strategic sector.

As Ukraine seeks to attract foreign investment in its mining industry, the choice of partners will be decisive. Properly managed, these investments could help local communities make the most of their resources and rebuild the country long-term. For the European Union, investing in Ukraine’s critical materials is an opportunity to strengthen its supply chains and energy resilience, while reducing its dependence on authoritarian regimes. Acting now will lay the foundations for sustainable energy security in the future.

Notes:

(1) "The future of critical raw materials: How Ukraine plays a strategic role in global supply chains," *World Economic Forum*, 9 July 2024.

(2) Aigars Liepins, "Ukraine's Resources, Critical Raw Materials," *NATO ENSEC COE*, 10 December 2024.

(3) David Groves, D. Müller, M. Santosh, & C. X. Yang, The heterogeneous distribution of critical metal mineral resources: An impending geopolitical issue. *Geosystems and Geoenvironment*, 4(1), 100288. 2025.

(4) Alicja Kot-Niewiadomska, , K. Galos, & K. Guzik, Safeguarding of Mineral Deposits as the Basis of European Union Raw Materials Security in the Era of Unstable Geopolitical Conditions, *International Multidisciplinary Scientific GeoConference*: SGEM, 22(1.1), 2022, pp. 393-400.

(5) Lucile Brizard, "Russia's Seizure of Ukraine's Lithium-Rich Territories Threatens Europe's Green Future" *UNITED24 Media*, 16 January 2025.

(6) Adnan Khurshid, Y. Chen, A. Rauf & K. Khan, Critical metals in uncertainty: How Russia-Ukraine conflict drives their prices? *Resources Policy*, 85, 104000, 2023.

Thumbnail: Copyright Pixabay.

Link to the French version of the article

* Alexandra Day is a Master's student in Sustainable Management and Social Impact at ESSCA Paris.

To cite this article: Alexandra DAY (2025), "Ukraine: critical materials, a strategic challenge for Europe," *Regard sur l'Est*, May 5.

https://doi.org/10.5281/zenodo.15351748

Back to the top of the page

date créée
05/05/2025
Champs de Méta
Auteur-article : Alexandra Day*