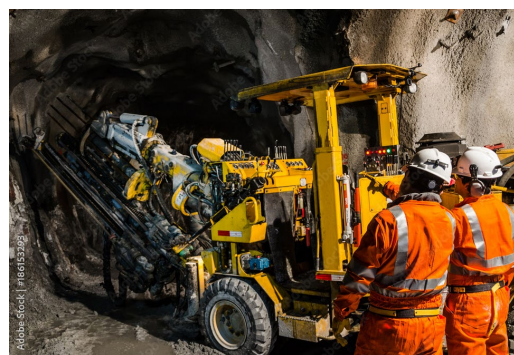


Securing the EU's supply of critical raw materials

Critical raw materials are essential to sustain Europe's economic and environmental ambitions. As geoeconomic aggression and geopolitical tensions rise, the EU is re-thinking its reliance on certain imports. Can the EU secure its supply of critical materials?

For many Europeans, 2020 was a year of reckoning. When Covid-19 emerged in China, global supply chains were immediately affected in a [negative way](#). When governments and businesses raced to buy medical equipment, they faced skyrocketing demand and [market shortages](#). Many states imposed [export restrictions](#), and shortages lasted for months. Now, in 2022, [supply chain disruptions](#) are still affecting the EU, and threatening to [impede its economic recovery](#).



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Against this backdrop, the EU is [re-examining](#) its strategic supply chains. The late 20th century was marked by the [globalisation of trade](#). In a quest for ever greater efficiency, supply chains became highly complex and globally [interdependent](#). Now Covid-19 and rising geopolitical tensions have [cast doubt](#) on this model. [Efficiency is giving way to resilience](#).

[Critical raw materials](#) (CRMs) – such as lithium, cobalt, and rare earth elements (REEs) – are essential commodities for the EU economy. They are also key enablers of Europe's [digital, environmental, and defence](#) ambitions. China currently produces 86 % of the world's [rare earth supply](#). The EU imports 93 % of its magnesium from [China](#), 98 % of its borate from [Turkey](#), and 85 % of its niobium from [Brazil](#). [Russia](#) produces 40 % of the world's palladium. The latter is a reminder of the strategic [implications](#) of the Russian invasion of [Ukraine](#), and the need for the EU to prepare for an increasingly [uncertain world](#).

Potential impacts and developments

[CRMs](#) combine [economic importance with high supply risk](#). [Lithium](#) is a case in point. It is used, for examples, in batteries, which are crucial to the EU's digital and green transitions towards e-mobility and clean energies. EU [demand for lithium](#) could grow up to 18 times by 2030, and 60 times by 2050, but the EU mines only a [small fraction](#) of the lithium it consumes, and [relies on China](#) to process it.

[REEs](#) head the list of critical materials: a group of 17 chemical elements widely used in high technology and low-carbon products. [Neodymium](#) and [praseodymium](#) are used in permanent magnets for power generation and electric motors. [Lanthanum](#) is needed in military equipment. The average smartphone uses up to 16 REEs. Although REEs are abundant in nature, they are so dispersed that their exploitation is only profitable in few places: China dominates the world's supply with a [60 %](#) global market share.

The EU is [particularly vulnerable](#) to REEs supply squeezes. This is partly due to [market forces](#): demand for neodymium and dysprosium will largely exceed production by 2030. However, the main risk stems from [China's dominance](#) of the market. In 2010, China imposed a [two-month embargo](#) on rare-earth exports to Japan, after Japan captured a Chinese fishing boat in waters claimed by both countries. As China becomes more assertive, such actions could [become common](#). Also in 2010, China imposed [export quotas](#) reducing exports by [40 %](#) with the declared objective of clamping down on illegal mining and environmentally damaging practices. The [WTO](#) later deemed these quotas [illegal](#). In the short term, the quotas caused the



cost of some REEs to [skyrocket by 1 000 %](#). Shortly after, a combination of [alternative supply](#), [governance response](#), and illegal trading [brought prices down again](#).

There are other concerns. Cobalt is crucial for batteries, wind generators, and digital technologies. The Democratic Republic of Congo (DRC) accounts for over 70 % of the global supply and China in turn owns 70 % of Congo's mining industry. [Political instability and poor governance](#) in the DRC pose significant risks of supply disruptions. Worse still, the boom in demand is fuelling the growth of '[artisanal mining](#)': a dangerous, arduous practice that increasingly uses [child labour](#), including by [armed groups](#). Despite efforts by the Organisation for Economic Co-operation and Development and the EU to promote [due diligence](#), this '[resource curse](#)' could leave the Congolese people even worse off.

Anticipatory policy-making

To support effective decision making, the EU must continue to [monitor](#) both the market and geopolitical developments. There is a long history of exaggerated [fears](#) about access to CRMs. However, supply shortages are highly damaging for economies, no Western country wants to repeat the 1973 oil crisis.

The EU could promote the [recycling](#) or [substitution](#) of CRMs. Recycling reduces waste and lessens the environmental impacts of mining. To boost recycling, the EU could [tighten its regulations](#), promote '[circular by design](#)' manufacturing, and fund research and development. CRMs can often only be [substituted](#) by other CRMs, but [product for product substitution](#) is sometimes an option. For example, hydrogen propulsion requires fewer CRMs than electric (lithium) batteries. Currently, the EU lacks an [economy-wide substitution strategy](#). This could be articulated through the new [European Raw Materials Alliance](#), the European Investment Bank (EIB), and the European Research Council.

For all that, the EU will still [rely on mining](#) to meet its needs. Certain CRMs can be mined in the EU, and some EU neighbours hold [significant CRM deposits](#). The EU could support mining and processing sites in its territory through [EIB investment](#) and subsidies. This would mirror the US, which is supporting the reopening of its REEs mine at Mountain Pass (California). Yet the [Mountain Pass case](#) shows these exploitations are rarely competitive against foreign firms, and the EU could pay dearly for reducing its CRM dependency. [Paradoxically](#), CRMs are needed for the green transition, but mining and processing them is [notoriously polluting](#). However, [effective restoration](#) can greatly reduce damage to the local environment and tilt the balance in favour of reshoring mining. The EU has much tighter environmental regulations than other states, and importing large amounts of CRMs only externalises the environmental impact.

The EU must itself define the extent of its '[open strategic autonomy](#)' ambitions. Complete self-sufficiency, comparable to the post-war agricultural objectives may sound appealing in the light of Europe's history of reliance on oil and gas imports. However, this would be highly expensive and not all CRMs are present on EU soil. Rather, the EU could combine partial CRM reshoring with [diversification and risk management](#). Following the 2010 crisis, Japan pursued ambitious [partnerships and investments in third countries](#), and is now much less reliant on China for REEs. The US is still at 80 % dependency, while the EU continues to import an unmatched [98 %](#) of its rare earths from China. As many of the EU's closest allies, including the [UK](#), share its concerns regarding CRMs, the EU could follow Japan's example and start diversifying its supply chains.

The EU may also opt to invest in environmentally sustainable and socially responsible rare earth mining projects in Africa and elsewhere, as part of its new Global Gateway strategy. At the same time, the EU could gain [international leverage](#) by [reinforcing its strengths](#) – rather than focusing on sectors where it is non-competitive. This could also help defuse geopolitical tension; in the words of Montesquieu: 'The natural effect of trade is to bring about peace'. The Russian invasion of Ukraine has brought this paradigm into question. When the EU and its partners responded to Russian aggression with unprecedented sanctions, the [rouble plunged](#), foreign-listed [stocks of Russian companies plummeted](#), and the Russian economy was put on a path towards [deep recession](#). In a world where direct military action could lead to [nuclear confrontation](#), economic leverage and deterrence including in the field of CRMs, will still be a crucial instrument of foreign and security policy. Here, the EU's new economic reciprocity toolbox, including the upcoming [anti-coercion instrument](#), could soon come into play.

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