

Preventing the Critical Minerals Crisis

How the Global Gateway and transatlantic connectivity cooperation can help secure critical raw material supply chains

Tobias Gehrke & Mart Smekens

From fighting climate change to limiting dependencies on systemic rivals – radically shifting towards a green economy has become a strategic imperative to secure European autonomy, prosperity, and security. The catch: the EU's dependence on minerals and metals at the heart of green technologies foreshadows looming geoeconomic and geopolitical crises. In the long-term, recycling and technological advances will scale and become key measures for decreasing supply vulnerabilities. But to fully unleash a green economy also requires a bold foreign policy agenda to boost global mineral capacities, ease bottlenecks, and ensure sustainability standards. The Global Gateway can offer an important strategic framework to scale infrastructure capacity along the green mineral value chain and, especially in tandem with the United States, can be a real gamechanger to boost green economies both in Europe and our partner countries.

Minerals that make the world go round

There has been much debate about the fragility of global supply chains in recent years. Medical equipment scarcity in the early months of the pandemic gave way to semiconductor crunches, as well as food and basic commodity shortages. The Russian invasion of Ukraine has amplified the supply chain anxiety by confronting the EU with a grave policy error: putting its energy security in the hands of an unscrupulous dictator. Some observers have pointed to the lack of clarity and direction of the idea of strategic autonomy. Today's context should help concentrate minds: taking autonomous decisions requires the EU to remove or limit its strategic dependencies.

Green energy is clearly Europe's way out of its disastrous dependence on Moscow. Nothing short of a radical shift to innovate, develop, and scale alternative energy sources is required. But green technologies require a new kind of fuel: mineral ores which are mined and then refined to release a variety of metals and alloys in ubiquitous use in all manners of technologies. Mining and refining these 'critical raw materials' (CRMs), a label the EU uses to categorize minerals of [particular importance](#), is often heavily concentrated geographically, [even more](#) so than oil and natural gas.

China, in particular, has become a systemic broker in green minerals supply chains: it is the [largest supplier](#) of magnesium (89%) and rare earth elements for example. These are indispensable in the production of permanent magnets which power wind turbines, electric vehicles (EVs), and many other applications. China produces no less than 93% of the global supply of permanent magnets. Lithium, a mineral widely used in electric batteries powering EVs is also [highly concentrated](#) in both mining (Australia and Chile together extract over 75% of global lithium) as well as refining: China, again, controls over 50%. A similar picture emerges around cobalt. Over 70% of global cobalt supply originates in the Democratic Republic of the Congo; but Chinese investments in both upstream segments (15 of the 19 major cobalt-producing mines in the Congo are [owned or financed](#) by Chinese companies) and downstream segments (some 50% of cobalt is refined in China) of the cobalt value chain have made it a powerful broker in its primary technology use: electric batteries.

China's dominance is [no coincidence](#). Seven decades of industrial policies aimed at capturing first the upstream segments – mining – before strategically guiding foreign investments and technologies, coupled with major research funds, to develop downstream segments of the value chain – refining, but also ever more advanced product development from magnets to solar panels, batteries to EVs – have been a key ingredient. Add the [reports](#) piling up about grave violations of human rights and environmental norms in both mining and refining practices and the picture becomes even bleaker.

Demand for metals and materials is now predicted to skyrocket. The International Energy Agency [predicts](#) global demand of rare earths to increase three- to sevenfold by 2040, while lithium demand could increase 42-fold. Another study [found](#) that supplies of copper, lithium, nickel, cobalt, and rare earths are particularly concerning for the EU, risking to throttle its green transition goals. Magnesium, silicon metal, indium, gallium, germanium and borates were also [associated](#) with high supply risks. In short: a high degree of industrial concentration, strategic dependencies on a systemic rival, sustainability challenges, and exploding demand are, when put together, a recipe for a major crisis jeopardising EU strategic interests.

ELEMENTS TO REDUCE STRATEGIC DEPENDENCIES

Awareness of this looming raw material crisis is higher than ever before, thanks in no short part to the unravelling of a catastrophic energy dependence on Russia. At Versailles in March, for instance, EU heads of state [stressed](#) the importance of reducing strategic dependencies in this field. The European Parliament made similar [demands](#), while the [Green Deal](#) calls access to materials a “strategic security question.” Indeed, the EU has for years been analysing which materials are absolutely critical – [30 CRMs](#), currently – and provided an [action plan](#) to reduce dependencies and supply bottlenecks. The update to the EU's [industrial strategy](#) and [strategic dependency reviews](#) give further substance to the seriousness of the issue.

Important measures have already followed. Recycling capacity, for example, could significantly reduce

imports. Support for businesses and governments to set up efficient recycling industries is hence important. Technology innovation along the value chain can also boost more efficient use of minerals, or even substitute them for synthetic or more available materials. The EU has been supporting [different research projects](#) to push recycling technology innovation, for instance. To increase the EU's own capacities, the European Raw Materials Alliance (ERMA) was created to identify viable projects and to support industry networks in exploiting them. For example, ERMA [identified](#) 14 possible rare earth mining projects across Europe which could cover one-fifth of Europe's needs for permanent magnets. Strategic stockpiling, a measure which discussed also for medical equipment, chemicals, and fossil fuels, is also part of package.

But these measures only go so far. Domestic mining capacities are limited and are often [politically toxic](#); recycling efficiency, while key, is [expected](#) to only properly scale after the first life cycle of green technology deployment (some 15-20); innovation may not arrive on time, or may simply exchange dependencies; and stockpiling is merely a crisis mechanism. Without adding new, diversified, and green supplies within the next decade, the EU's radical green transition may be in jeopardy – and its autonomy, prosperity, and security with it. The EU must look outward, therefore, to boost international capacities and partnerships for sustainable, diversified, and secure supplies.

Indeed, first strategic partnerships were signed with Canada and Ukraine in 2021, both rich in mineral deposits the EU [requires](#). Other partnerships are being explored with African countries, as well as in the EU neighbourhood. These partnerships, in combination with domestic measures, are encouraging. But to stem the tide of a critical mineral crisis, significant investments along the supply chains will need to be paired with strong leadership. With some mining project developments exceeding 10 years, big risk of boom-and-bust cycles, volatile price swings, subsidised Chinese competitors, and a myriad of environmental and sustainability concerns, market mechanisms alone will not rise to the occasion.

Strategic public support and international cooperation among leading economies is needed.

CONNECTING THE DOTS

To marshal the necessary resources towards this strategic goal, Europe needs a comprehensive platform which can link the financial firepower of governments and private investors. The [Global Gateway](#), the Union's new infrastructure development scheme, could offer just that.

The EU has promised multibillion euro investments in sustainable infrastructure around the globe based on principles and ambitions reached with [G7 partners](#). But so far, the plan still evokes more questions than answers: is it a mere rebranding of EU development policy, or a bold narrative for global engagement based on attractive offers to link partners physically, legally, and institutionally? Will member states commit to underwrite the initiative politically and financially? How can the plan leverage the vast capital of the private sector towards strategic projects?

The assessment should be clear: economic, technological, and strategic competition is shifting towards infrastructure connectivity in emerging markets. Accepting this competition and the associated risks of economic and technological fragmentation and strategic dependencies would be an important framing for the Global Gateway. This would allow the plan to work in the strategic interests of the Union, such as limiting dependencies on critical minerals and offering our partners close links into our emerging green value chains. These issues require not only technocratic fixes, but a bold foreign policy umbrella outlining a strategic vision for the future of a contested global economy.

TRANSATLANTIC LEVERAGE

Europe cannot do it alone. Boosting international mineral supplies and developing green technology value chains requires strong leadership. Transatlantic cooperation in this field is particularly important and promising for three reasons. One, Brussels and Washington are on the same

page. The Biden administration equally [identified](#) critical mineral supplies as a threat to security and the green transition and promised comprehensive policy action. Two, cooperation platforms are set up. The bilateral EU-US Trade and Technology Council ([TTC](#)), most importantly, has a dedicated working group on supply chain security, with critical minerals as one priority. Three, the transatlantic economy has the financial firepower. Coordinating the Global Gateway with the US equivalent, the Build Back Better World ([B3W](#)) initiative, could mobilize capital to boost global green infrastructure development, including for critical minerals.

This ambition notwithstanding, several hurdles exist. Domestic US politics have already seriously complicated the B3W's deployment; the Global Gateway meanwhile suffered from unclear political ownership. Investments to diversify supply chain may also see competition with China's industrial champions, complicating cost-effectiveness, and high-quality standards. Common sets of environmental and social standards for the transatlantic economy are missing – without which the two plans may work at cross-purposes. Still, the strategic pointers are aligning like never before: decreasing dependencies by boosting global, sustainable, and diversified critical mineral supplies, the vital inputs to a green global economy, is an economic and security interest of highest priority. Taking on the mantle of connectivity powers and unleashing the financial firepower of the transatlantic economy could be a real gamechanger. Towards this goal, some policy action is required.

POLICY POINTERS

1. A geoeconomic umbrella

Rather than just a technical cooperation framework, the Global Gateway should become a geoeconomic umbrella which links directly to EU strategic interests of boosting green innovation, enhancing resilience, and retaining open engagement. Channelling the EU's main international economic, financial, and technological initiatives through this one umbrella – bridging the fragmented landscape of EU financial tools and breaking pervasive silo-mentalities – could significantly boost EU geoeconomic strength and

thus ability to shape the global economy. This is a long process but instilling the Gateway with this bold ambition would be a powerful signal.

2. Global reach

Member states remain divided over the Gateway's geographic priorities (neighbourhood, Indo-Pacific, Africa, etc.). Such discussions are misleading. In fact, only a global reach and ambition will allow the plan to attain the strategic umbrella function it ought to represent. Plus, while local infrastructure needs always play a key role in project selection, identifying strategic priority projects by their ability to advance the Union's strategic interests, including limiting strategic dependencies and strengthening economic resilience, must equally be considered.

3. Connectivity corridors

The Gateway should aim to develop connectivity corridors which link different segments and partners into emerging green energy value chains. For example, upstream investments in mineral mining should be matched with integrating partner countries in Africa, Asia, and the neighbourhood in more valuable downstream segments, such as joint ventures with manufacturers and service providers in battery, solar panels, or EV industries. This holistic approach also links to soft connectivity (e.g., regulatory dialogue, standardisation, technical training, research) which are fundamental enablers of deeper cooperation along entire value chains.

4. Transatlantic connectivity

Transatlantic coordination must follow from internal coordination. The strategic dialogue on critical minerals in the TTC is a good foundation and will likely receive an urgency boost during the meeting in May. As a primary target, the partners should aim to convergence on a set of strong international green and social standards for green infrastructure finance, the lack of which still complicate public and private investments. The [EU taxonomy](#) for sustainable activities and the US-initiated [Blue Dot Network](#) are two key initiatives for which finding common alignments will be crucial. Further, information sharing about wants and needs of specific projects, and

linking EU financial (EIB; national banks) and industrial (ERMA) players to their US counterparts (DFC; Export Import Bank) in targeted coordination structures should be aimed at.

5. Best practices

For over four decades, Japan has been decreasing its strategic vulnerability in critical minerals by, along other actions, leveraging foreign aid, public finance, and trade insurance to support international mining and processing projects helping Tokyo to reduce for example its rare earth dependence on China from 85% in 2009 to 58% in 2018. Similarly, the current measures of some EU member states, Germany in particular, to radically reduce its fossil dependence on Russia will reveal important insights about hurdles and pathways to diversification. Policymakers should consider establishing a dedicated task force to analyse such measures, past and present, to understand which were most successful, and which weren't, in decreasing strategic dependencies. This exercise could produce valuable insights and guide strategic action.

6. Leadership alliance

The looming critical minerals crisis demands global leadership. The annual EU-US-Japan Conference on Critical Materials (joined recently by Australia and Canada) has proven an important information sharing forum, but more ambitious alliances must emerge which seek to boost joint industrial and financial ventures, develop international standards, and conduct joint research projects along critical mineral value chains. Transatlantic cooperation can be a crucial spearhead, but a strong leadership alliance will require political and economic buy-in from major economies.

Tobias Gehrke is Research Fellow in the Europe in the World Programme, where Mart Smekens is a research intern. They are thankful for the many comments received on earlier versions of this text.





The opinions expressed in this Publication are those of the author(s) alone, and they do not necessarily reflect the views of the Egmont Institute. Founded in 1947, EGMONT – Royal Institute for International Relations is an independent and non-profit Brussels-based think tank dedicated to interdisciplinary research.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the permission of the publishers.

www.egmontinstitute.be

© Egmont Institute, May 2022

© Author(s), May 2022