



Vital but Vulnerable:
UK Critical Minerals Policy

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Introduction

This Dods Political Intelligence report provides an overview of why critical minerals are important, the global context surrounding critical minerals, and the UK policy in the sector. The report concludes with an evaluation of the effectiveness of the UK Government's policy on critical minerals, which argues that while the UK's policy is correctly oriented, it is unlikely to address the structural problems in the critical minerals supply chain in the short term.

Critical Minerals – What are they and why are they important?

While the term “critical mineral” lacks a globally agreed definition – because different minerals are critical for different countries – one [working definition](#) is “a mineral or element that is essential for modern technology and cannot be easily substituted with a different mineral, and there is a risk that the supply of that mineral could be disrupted.”

The varying scarcity of different minerals for different countries contributes to the differing definitions. For example, the [EU defines](#) “critical raw materials” as “non-energy, non-agricultural raw materials that are important for the EU economy, the supplies of which are subject to a high level of supply risk”. The [US defines](#) critical materials as “any non-fuel mineral, element, substance, or material that the Secretary of Energy determines: (i) has a high risk of supply chain disruption; and (ii) serves an essential function in one or more energy technologies, including technologies that produce, transmit, store, and conserve energy.” As a practical example, based on these definitions, while the EU assesses phosphorous to be a critical raw material, the US does not consider it to be one.

The “critical” nature of these minerals is derived from the fact that they are both vital for modern technology and are scarce, although scarcity can be for geological or geopolitical reasons.

There is a high and growing demand for critical minerals because they have a host of applications, particularly in emerging technologies such as those needed for the transition to net zero. For example, lithium, cobalt, nickel, and manganese are vital for batteries, which will be needed for electric vehicles and other energy storage applications. Solar panels, transmission and distribution infrastructure, and wind turbines require copper, cobalt, graphite and nickel, as well as other rare earth metals.

Critical minerals also have national security applications due to their role in modern defence technologies. For example, minerals like vanadium are used in alloys needed for aircraft and rocket engines, and others are used in the components needed for missile, navigation and communication systems.

Modern defence manufacturing is becoming more important in a world increasingly threatened by conflict, and economies are shifting towards green industries as part of the net zero transition. As these industries grow, the quantities of critical minerals required per unit of new production in relevant industries will also rise, further exacerbating supply chain constraints. For example, the [International Energy Agency \(IEA\) estimate](#) that “a typical electric car requires six times the mineral inputs of a conventional car and an offshore wind plant requires 13 times more mineral resources than a similarly sized gas-fired plant.”

In addition to issues with meeting the increasing demand, there are concerns over the extraction of critical minerals, as the mining industry can be socially and environmentally

destructive. In mining regions, particularly those involved in conflict or without effective regulation and labour laws, the mining and refining of critical minerals [can involve](#) major environmental degradation and the use of underpaid or forced labour. When traded on global markets, the cost of these negative environmental externalities is often not recognised in the price paid for the commodities. Many countries also want to address the negative social costs of unethical mining. In addition to their opposition to the poor treatment of forced labourers, some countries wish to establish reliable access to mineral resources via global trade based on “fair competition”, which precludes the use of unfair practices which make certain countries or businesses more competitive.

Countries will increasingly rely on critical minerals for manufacturing in green industries, for the maintenance of nationally significant infrastructure such as energy infrastructure, and for their use in modern defence systems. In this context, many countries want a secure supply of ethically produced critical minerals, which will be vital for their future economic and national security, and for the global transition to net zero.

The Global State of Play

The House of Commons Foreign Affairs Committee has [assessed](#) that geopolitical factors are the primary driver of global critical mineral supply challenges. As well as the risks to supply which stem from the concentration of minerals in politically unstable countries, such as cobalt in the Democratic Republic of the Congo, the committee identified that “China dominates global critical minerals processing and has proved ready to exploit the economic advantages accruing from this global dominance.” This artificial scarcity is a growing concern as demand for critical minerals increases, with the [IEA estimating](#) that “the world is currently on track for a doubling of overall mineral requirements for clean energy technologies by 2040.”

The global concerns about securing an accessible and reliable critical mineral supply are multifaceted.

Firstly, critical minerals are vulnerable to price shocks. In a globalised world, commodity price shocks can threaten economic growth and societal stability. The energy crisis of 2021 demonstrated the widespread impacts of unexpected or unpredictable supply shortages of key industrial inputs. Price volatility also tends to increase risk and deter investment, undermining economic growth.

In a world where conflict is also on the rise, secure critical mineral supplies will impact countries’ ability to maintain their national security and wage war effectively. With critical minerals increasingly becoming a key input in modern defence technologies, supplies will be crucial for well-resourced, well-supplied and technologically advanced armed forces, which can act as a deterrent against conflict.

Beyond immediate economic and security concerns, due to their use in green technologies, a secure supply of critical minerals will be vital for combating climate change and reaching global net zero. The IEA predicts that “in a scenario that meets the Paris Agreement goals...[the] share of total demand rises significantly over the next two decades by over 40 percent for copper and rare earth elements, 60-70 percent for nickel and cobalt, and almost 90 percent for lithium” and that “an even faster transition, to hit net-zero *globally* by 2050, would require six times more mineral inputs in 2040 than today.”

The combination of unreliable supply but growing reliance to meet key goals- economic security, national security, and combatting climate change- make critical minerals a strategic vulnerability for many countries. In this context, major economies such as the USA, UK, and the EU have looked to address their ability to reliably and sustainably procure critical minerals. They have done this by developing domestic mining and refining capacity and through building partnerships with key countries in the mining and refining process.

For example, through the Inflation Reduction Act, the USA has subsidised mineral-intensive industries. The US Government has also instituted requirements for those industries to use certain amounts of critical minerals that have been produced and refined in the US or in countries with which the US has free trade agreements.

The European Union has also tried to address the need for secure supplies of “critical raw materials” through the [Critical Raw Materials Act](#), which aims to strengthen the EU’s critical raw materials capacity; improve resilience to supply chain disruptions; and, promote supply chain sustainability and circularity. In an attempt to build supply resilience, the Act sets targets for the EU’s critical minerals needs, including that 10 percent of supply should come from local extraction, 40 percent should be processed in the EU and 25 percent should come from recycled materials.

Critical Minerals and the UK – Context and Policy

Context

In the UK, the House of Commons Foreign Affairs Committee [has said](#) that “critical minerals are those that are essential to the UK’s national security, to its economic resilience and to its ability to meet net zero targets”. Like other developed economies, the UK faces the challenge of meeting a growing demand for critical minerals, whilst lacking the capability to meet those demands from domestic sources.

The scale of the challenge faced by the UK was highlighted in the [Critical Minerals Strategy](#) which says that “the UK currently relies on complex and delicate global supply chains for its rapidly growing demand for critical minerals to fuel its net zero future” and that “seven of the government’s Ten Point Plan targets for a green industrial revolution assume a stable supply of critical minerals.” As an example, the UK’s automotive and electric vehicle battery industry could grow by 100,000 jobs by 2040, assuming there is battery manufacturing capability, which depends on access to critical minerals.

The critical mineral supply challenges faced by the UK differ from past resource supply constraints, such as those for oil, iron and rubber. This is because those resources are less geographically concentrated, occur in greater relative abundance, and are also attainable through simpler extraction and refining processes.

While geological scarcity is a factor in the tight supply of some critical minerals, the main reason for concern over the UK’s security of supply is because the “vast majority of critical minerals are concentrated in countries that are autocratic, non-aligned, or actively hostile” to the UK. As identified in the Critical Minerals Strategy, beyond the direct threat of supply shortages needed for industrial requirements, “foreign actors may use control of resources as leverage on other issues.”



Critical Minerals Strategy

In order to address this challenge, in 2022 the Department for Business and Trade (DBT) produced a [Critical Minerals Strategy](#). The strategy aimed to “mitigate risks and to improve [the] resilience of the UK’s critical mineral supply chains”, with the intention of ensuring “the minerals [the UK] will need... can be made available in the quantities needed, extracted in responsible ways and supported by well-functioning and transparent markets.”

The strategy is based on three pillars: to accelerate the UK’s domestic capabilities, collaborate with international partners, and enhance international markets.

Domestically, the Government aims to incentivise the mining of the commercially viable quantities of lithium, tin and tungsten which the UK possesses, primarily in the South West. This includes through planning reform; identifying and removing barriers to mineral exploration and extraction; and, supporting the UK’s higher education offer related to mining and the critical minerals value chain. The Government also aims to create a circular economy for critical minerals, in order to reduce waste and make the most efficient use of limited supplies.

By collaborating with international partners, the Government aims to reduce the concentration of supply, noting that for each of the 18 critical minerals identified in the strategy “the top three producer countries control between 73 and 98 percent of total global production.” The Government aim to do this by helping resource-rich countries develop their mineral resources in a “market-led way”; exporting UK mineral extraction expertise; and working through bilateral partnerships and multilateral fora such as the Minerals Security Partnership and the IEA to reduce barriers to trade.

By enhancing international markets, the Government aims to improve the Environmental, Social, and Governance (ESG) standards in the sector. This ambition acknowledges the negative impacts of unethical mining and refining practices, such as deforestation, wider environmental degradation, community displacement, and political instability. The Government aims to drive ESG improvements through diplomacy with mineral-rich countries and through dialogue with industry. The mining industry also has an incentive to reduce the negative impacts of mineral extraction as the demand for traceable materials increases.

With all of these factors in mind, the Government launched the [Critical Minerals Intelligence Centre in 2022](#), which aimed to provide data on the critical minerals market, as well as insight on ESG issues and geopolitical events.

In light of “a changing global landscape and the sharpening of geopolitical competition”, the DBT then published the [Critical Minerals Refresh](#) in March 2023. The refresh provided additional resources for addressing challenges associated with critical mineral supply, including highlighting the potential for the UK’s research and development (R&D) expertise to play a part in improving the UK’s critical mineral supply. This included the launch of UK Research and Innovation’s [Circular Critical Materials Supply Chains](#) (CLIMATES) programme and a £65.5m Accelerate-to-Demonstrate (A2D) Facility to fund technology innovations for critical minerals in developing countries.

As part of the refresh, Nusrat Ghani, Minister for Industry and Economic Security, launched an independent Task and Finish Group on Industry Resilience for Critical Minerals. The group’s task was to investigate critical mineral dependencies and vulnerabilities across UK industry; design a framework for monitoring critical mineral supply risk; and, develop advice on measures for

government, industry and other stakeholders to promote the UK's security of supply of critical minerals.

The [Task and Finish Group: industry resilience for critical minerals report](#) was delivered in December 2023. It included recommendations that the Government should develop a long-term vision on industry resilience in relation to critical minerals; enhance critical mineral supply chain transparency through improved data availability; work with industry to build a circular economy; and, adopt a holistic approach to assess the environmental and social impacts of critical minerals.

Critical Imports and Supply Chains Strategy

Responding to some of the recommendations from the Task and Finish Group, the Government published the [Critical Imports and Supply Chains Strategy](#) in January 2024.

Taking a broader approach to supply chain security for the UK economy, the strategy, which covered "those goods imported into the UK which are critical to the UK security and prosperity", set a broader framework for how the UK will develop supply chain security, including for critical minerals.

It outlines that the UK will focus on making the UK Government a centre of excellence for supply chain analysis; remove critical import barriers; develop the UK's response to global supply chain shocks; and, expand collaboration between government, business and academia.

Foreign Affairs Committee Report

Following a review of the Government's policy on critical minerals, the Foreign Affairs Committee [published a report](#) in December 2023 which found that the Critical Minerals Strategy was "too broad to be helpful as a guide to industry" and did not "convey the sense of urgency and need for immediate, decisive action." Although the committee acknowledged the UK Government's potential to develop secure supply chains and influence global ESG standards, the committee urged the Government to "define the UK's role in the critical minerals value chain and to set out a coherent 'Team UK' proposition to explain the UK's offer to global partners."

Contextualising the urgency of the need for further policy, the committee said that "the cost of failure would be the loss of key industries."

In its response to the committee, the Government disagreed with the assessment that the Critical Minerals Strategy was not fit for purpose, arguing that it was a framework and would evolve over time.

The Government argued that through existing policy it was properly addressing both the security of critical mineral supply chains and the associated geopolitical challenges, such as the UK's relationship with China.

The Government's response did, however, note the scale of the challenge and that success and failure in this policy area would have implications for "industrial policy, science and technology, geopolitics, international trade, the circular economy, environmental and social issues, financial markets and data and transparency."



Conclusion and Insight

In the coming years and decades, critical minerals policy will only increase in importance. In the short term, countries will look to secure critical minerals supplies to provision their defence industries and militaries as the risk of conflict around the world increases. In the long term, demand for critical minerals will grow as part of the net zero transition, with green industries making up a larger part of national economies.

In the UK context, although the Critical Minerals Strategy and other related UK strategies show the UK Government is cognisant of the need to make progress in this space, the UK's proposed actions are unlikely to change the geopolitical status quo on critical minerals.

Without sufficient domestic geological reserves to meet domestic demand, the UK has rightly identified that it is best placed to use international leadership to address challenges around critical mineral supply. However, the proposed measures are unlikely to tip the balance away from the Chinese domination of the industry.

On the positive side, the ambition to use Overseas Development Aid (ODA), UK Export Finance products, and the UK's regulatory diplomacy to diversify supply chains and promote positive ESG developments in the sector will help with both security of supply and the ethical extraction and refining of the minerals which reach the UK.

Aligned with these aims, the Government has also empowered itself to stop the further concentration of critical mineral extraction or refining abroad, using the National Security and Investment Act 2021 to "intervene in acquisitions of control over entities and assets in or linked to the UK economy, including those in critical mineral value chains."

Establishing the UK as a centre of critical minerals R&D, and working to develop a circular economy for critical minerals, are also positive steps. These actions are mutually beneficial, as research and development investments will help to make mineral recovery from waste more efficient, reducing reliance on unstable primary supplies of minerals.

However, the limited UK influence over the activities of major producers and refiners like China- which the Foreign Affairs Committee identified as actively hostile in some cases- means that this approach is inherently limited in its effectiveness in improving supply chain reliability.

It must also be acknowledged that domestic supplies still factor into the UK's approach to critical minerals, and it is notable that unlike the US and the EU, the UK has not set targets for domestic production or refinement, or for industry to meet targets to use domestically produced or refined minerals. In fact, the UK actively worked to delay rules of origin regulations for UK-produced electric vehicles. Without legislation comparable to the EU and US, it is unlikely that UK will rapidly establish a domestic supply chain, leaving industry reliant on imported critical minerals and the accompanying reliability and ESG risks.

Additionally, while providing some funding for the advanced manufacturing supply chain and relevant R&D, unlike other major economies the UK Government has not introduced systematic state subsidies in the critical minerals value chain. For example, while China and the US subsidise critical mineral refining, the UK has committed to merely "highlight the advantages" of economic incentives such as Freeports, Industrial Clusters and support for Energy Intensive Industries.

Without further interventions, the UK is unlikely to address the inherent vulnerabilities in its critical minerals supply chain. However, with the Department for Business and Trade producing an update to the Critical Minerals Strategy in 2024, there is still time for more focused policy interventions to address these key challenges, and support the UK's future economic, national security, and decarbonisation ambitions.

Resources

UK Policy

- [UK Critical Minerals Strategy \(2022\)](#)
- [UK Critical Minerals Strategy Refresh \(2023\)](#)
- [Task and Finish Group: industry resilience for critical minerals report](#)
- [Critical Imports and Supply Chains Strategy \(2024\)](#)

Misc. (UK Policy Analysis, Global Context, ESG)

- [Foreign Affairs Select Committee Report: A Rock and a Hard Place](#)
- [IEA: The Role of Critical Minerals in Clean Energy Transitions](#)
- [EU Critical Raw Materials Act](#)
- [US Department of Energy: What Are Critical Materials and Critical Minerals](#)
- [Written Evidence: Anti-Slavery International](#)

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