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Raw Materials Security in the European Union: The Critical Raw Materials Act



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Raw materials security

Raw materials security is a recurring phenomenon resulting from the uneven distribution of mineral resources in the Earth's crust. It leads to a dependence on mineral imports by countries that lack domestic deposits (Mancini, Benini, Sala, 2018).

Critical Raw Materials

- **Critical raw materials (CRM)** are those materials that are economically and strategically important to the European economy, but their supply is associated with high risk (Ferro & Bonollo, 2019).
- Critical raw materials are essential for a modern and low-emission economy. They have broad applications in environmentally friendly technologies.
- Critical raw materials support the reduction of pollution emissions, energy efficiency, the production and storage of renewable energy, and electric mobility.

2023 Critical Raw Materials

2023 Critical Raw Materials (*new CRMs in italics*)			
aluminium/bauxite	coking coal	lithium	phosphorus
antimony	*feldspar*	LREE	scandium
arsenic	fluorspar	magnesium	silicon metal
baryte	gallium	*manganese*	strontium
beryllium	germanium	natural graphite	tantalum
bismuth	hafnium	niobium	titanium metal
boron/borate	*helium*	PGM	tungsten
cobalt	HREE	phosphate rock	vanadium
		*copper**	*nickel**

Source: Study on the Critical Raw Materials for the EU 2023 Final Report

Critical Raw Materials Act

- **Objective:** To ensure the EU has access to secure, diversified, affordable, and sustainable supplies of critical raw materials.
- **CRM targets for 2030:**
  - Production capacity for the EU:

Mining should account for at least 10% of the EU's annual consumption. Processing should cover at least 40% of the EU's annual consumption. Recycling should account for at least 15% of the EU's annual consumption.

  - No more than 65% of the annual consumption of any strategic raw material in the Union at any stage of processing should come from a single third country.

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boron/borate	helium	*PGM*	*tungsten*
cobalt	*HREE*	phosphate rock	vanadium
		*copper**	*nickel**

* Copper and nickel do not meet the CRM thresholds, but are included as Strategic Raw Materials.

Source: Study on the Critical Raw Materials for the EU 2023 Final Report

Research objective

- The aim of the presentation is to analyse the impact of the Critical Raw Materials Act on the raw materials security of the European Union, with particular emphasis on the ability of this initiative to reduce import dependencies and to enhance the resilience of European supply chains for critical raw materials to geopolitical risks.

Methodology

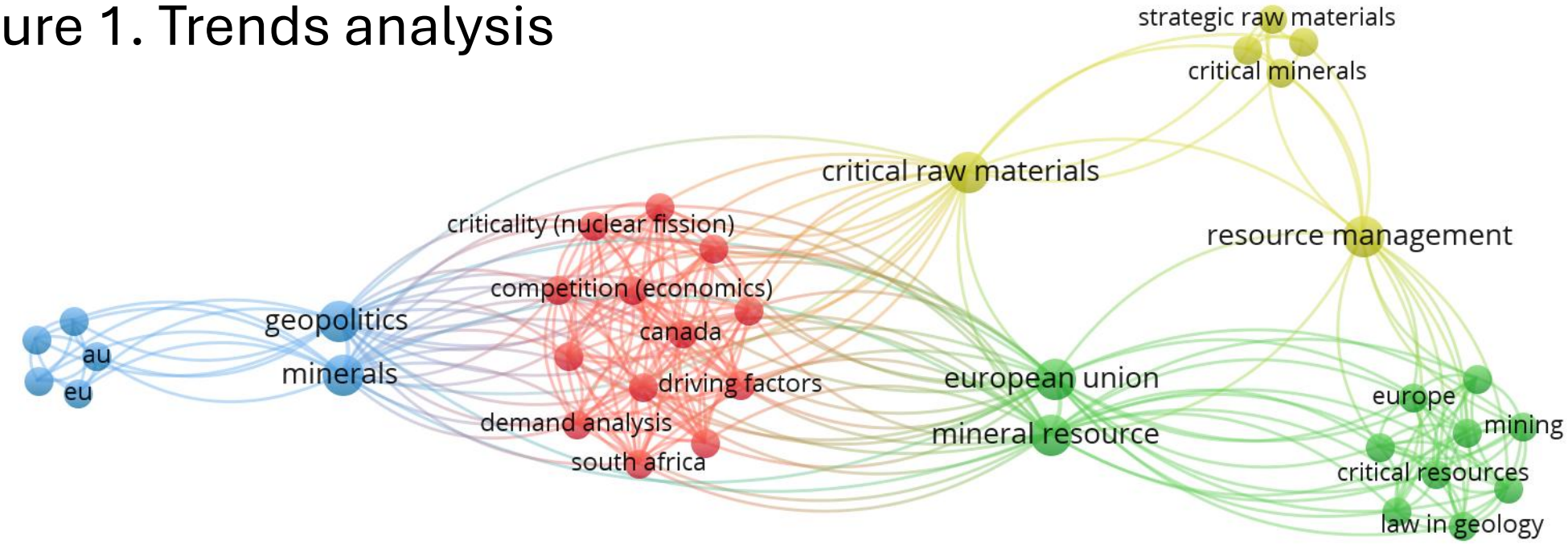
- The study employed a keyword co-occurrence analysis.

Keywords: *Critical Raw Materials Act* or *CRM Act* and *CRM* or *Critical Raw Material* or *raw material security* or *raw materials supply security* or *European Union* or *EU*.

- For this purpose, the Scopus database was used, as it is widely applied in scientific research.
- The keyword co-occurrence analysis was conducted using the VOSviewer tool.

Results

Figure 1. Trends analysis



VOSviewer

Table 1. Clusters and items

Clusters	Cluster colour	No. of items	Items
Claster 1	Red	13	Canada, competition (economics), criticality (nuclear fission), demand analysis, driving factors, geopolitics, high demand, investemnts, minerals industry, south africa, trend analysis, trends over time, two-stage process
Claster 2	Green	11	critical resources, europe, european union, international law, law in geology, mineral resource, mineral resources management, mining, regulatory approach, strategic approach, strategic resources

Table 1. Clusters and items

Clusters	Cluster colour	No. of items	Items
Cluster 3	Blue	7	au, eu, geopolitics, international cooperation, minerals, sadc, supply chain
Cluster 4	Yellow	6	critical minerals, critical raw materials, mineral policies, resource management, strategic projects, strategic raw materials

Strengthening the Circular Economy

- A significant aspect of the CRMA is its focus on the circular economy.
- The EU aims to reduce waste and reliance on primary materials by promoting recycling and material reuse.
- The CRMA introduces policies to encourage more efficient use of resources, minimize waste, and develop new recycling technologies.

“The lion's share of resources for the circular economy of Critical Raw Materials will come from Horizon, where €593 million will be allocated under the 2026-2027 work programme to support the optimisation of resource use in a circular economy and in new production processes.” [source: https://www.renewablematter.eu/en/critical-raw-materials-complex-european-challenge]

Recommendations for Strengthening Material Resilience

- Increase investment in recycling technologies to improve the circular economy.
- Expand strategic partnerships with non-EU countries that adhere to high ESG standards to diversify CRM sources.
- Promote public awareness of the importance of CRMs for the green transition, to build support for sustainable mining and recycling initiatives.
- Enhance regulatory frameworks to streamline CRM projects while maintaining strict environmental protections.

Concluding remarks

- The unique physical and chemical properties of many critical raw materials determine their use in strategic sectors of the economy. Therefore, it is important to ensure access to these materials and continuously develop their recycling.
- Due to limited internal resources and high dependence on imports, the European Union focuses on diversifying sources of raw material supply, promoting the circular economy, and developing alternative materials.
- The Critical Raw Materials Act offers a comprehensive response and an opportunity to mitigate the risks associated with the European Union's reliance on external sources of these key resources.