

CRITICAL AND STRATEGIC RAW MATERIAL AS A CHALLENGE TO THE EU'S STRATEGIC AUTONOMY AND SECURITY

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Abstract: The purpose of this article is to present the issue of growing demand for critical and strategic raw materials used in key sectors of the EU economy, as well as to relate them to the situation in Bulgaria in the context of National Research Program “Critical and Strategic Raw Materials for the Green Transition and Sustainable Development”. The methodology used is a classical historical and legal teleological approach. The study is focused on the Critical Raw Materials Act: the current lists of critical and strategic raw materials, the Act's legal nature and some of its key components: benchmarks and the mechanism for strategic projects. The conclusion provides a critical assessment of some of the findings from the first phase of the above-mentioned Research Program.

Key words: Critical Raw Materials (CRMs), Strategic Raw Materials (SRMs), Critical Raw Materials Act (CRMsA), internal market, Strategic projects.

1. INTRODUCTION

The study aims to highlight the issues and challenges facing the EU and its member states in connection with the growing importance of CRMs and SRMs for the economy, security and defence. It focuses on presenting the main content: the list of the CRMs and SRMs, its objectives, benchmarks and the mechanism for Strategic projects of the Regulation (EU) 2024/1252 of the European parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials, known as Critical Raw Materials Act (CRMsA) (OJ L, 2024/1252, 3.5.2024).

Its content has not been the subject of research in the specialized literature in Bulgaria and is of interest for the Bulgarian economy and defence, as well for the implementation of the Ministry of Education and Science's National Research Program “Critical and Strategic Raw Materials for the Green Transition and Sustainable

Development,” approved by Council of Ministers Decision No. 508/ July 18, 2024 (2024–2029).

Critical and strategic materials are increasingly becoming central to the economies of countries around the world. Global trends indicate that demand for them will grow exponentially in the near future.

Europe uses a quarter of the world's critical materials but produces only 3 percent of them, leading to a high dependence on imports [1].

For example, 63 % of the world's cobalt, used in batteries, is extracted in the Democratic Republic of Congo, in 2025 the EU is heavily dependent on China for import of magnesium, gallium and ferro-tungsten, from Brasil on ferro-niobium, on Türkiye for import of borate [2].

The vast majority of these materials come from China, which exposes Europe to significant geopolitical risks.

The current state of the research is mainly in the field of geology, mining, but also political science [3], economics, as well different reports of the European institutions [4]. Research in Bulgaria also focuses on the fields of geology, mining geology, mineralogy, and crystallography, however, there is a lack of research on legal regulations in this area in the light of the security and international trade.

2. DEFINITION OF THE PROBLEM

The EU's dependence on imported CRMs and SRMs calls into question Europe's strategic autonomy. In a broader context, this also affects the EU's security, because access to energy and resources is crucial not only for the economy but also for other sectors such as defence, the defence industry, energy, the environment, science, the development of new technologies, and others.

As Todor Kobourov rightly points out „At the beginning of the twenty first century, however, the problem „security“ took on completely new dimensions. The need for a new, much broader approach to the security problem has come to the fore. Countries have become too interdependent, and a crisis or regional conflict immediately triggers responses and influences processes throughout the world. In modern conditions, there is more and more talk of common security, of global and regional arrangements to guarantee the national security of states” [5].

The risk of disruptions to the supply CRMs and SRMs in the EU is growing against the backdrop of existing geopolitical tensions and the competition for resources. On the other hand, the growing demand for CRMs poses a risk to the environment and also has a social dimension.

For the EU, the issue has two aspects: internal and external. The internal aspect involves the urgent need to explore deposits of CRMs and SRMs, develop extraction methods, and increase recycling in member states. Another important technological challenge is extracting these raw materials from waste, for which new technologies are being developed.

The external aspect concerns international trade in CRMs and SRMs, in the context of the trend toward using trade instruments as a means of exerting pressure and achieving

foreign policy objectives. From the perspective of international law, this also touches on the functioning of the World Trade Organization (WTO), strengthening the WTO, expanding its network of Sustainable Investment Facilitation Agreements and Free Trade Agreements, and combating unfair trade practices.

The EU faces a complex dilemma against the backdrop of strained transatlantic relations and China's dominant role in the supply chain.

Amid the complex political and trade relations between the EU and China, there have already been attempts by China to use restrictions on the supply of rare materials.

In response to the tariffs imposed by the administration of U.S. President Donald Trump, China is leveraging its monopoly on the export of seven types of heavy rare-earth minerals (REEs). On 4 April 2025 the Chinese government introduced a licensing requirement for the export of these minerals, as well as for related compounds.

On 3 June 2025 the EU was seeking formal communication from Beijing regarding the statements suggesting China may ease restrictions on rare earth mineral exports.

On 9 October 2025, China added five new elements (holmium, erbium, thulium, europium, and ytterbium), as well as dozens of refining technologies, and announced regulations for foreign rare-earth manufacturers that use Chinese materials.

Foreign manufacturers that use any of these minerals/elements and the related magnets on this list require a Chinese export license if the final product contains or is made with Chinese equipment or materials.

The second wave of export control is suspended by the Chinese government until 10 November 2026 [6].

For this reason, the Union seeks to establish strategic partnerships and work with trusted actors on the international stage, promoting their economic development in a sustainable manner and creating value chain creation in their countries. This approach is embedded in the CRMsA and supported by some authors, such as Poorva Karkare, they are calling for new relations with African countries within the framework of the Clean Trade and Investment Partnership with South Africa [7].

3. CRITICAL RAW MATERIAL ACT – LIST, OBJECTIVES, BENCHMARKS, STRATEGIC PROJECTS

The challenge of securing critical raw materials (CRM) and sustainable resources (SRM) for EU industry and defence requires not only political decisions, strategic objectives and policy definition, but also regulatory measures. The instrument for this is a regulation, which is directly applicable in the domestic law of the Member States, is fully enforceable and does not require domestic implementing legislation. Such a role within the EU is played by Regulation 2024/1252 of 11.04.2024, which introduces rules for the reliable and secure provision of sustainable supplies of CRMs, thereby amending the requirements introduced in previous regulations, such as No 168/2013, 2018/858, 2018/1724 and 2019/1020.

The European legislator's rationale for adopting a regulation stem from the complexity and transnational nature of trade in critical materials, as well as the risk posed by uncoordinated national measures to ensure their supply, which could affect the proper

functioning of the internal market. The need for these materials in a number of strategic sectors, such as the digital industry, renewable energy, defence and space industries, is another important reason for adopting a directly applicable act. Furthermore, individual actions by member states would not be sufficiently effective in preventing supply disruptions and would be less efficient for this purpose.

The regulation defines which materials are critical and strategic in order to strengthen the resilience of supply chains. The aim of the regulation is to establish measures through which the EU can strengthen its ability to monitor and address/manage existing and future supply risks. Third, the regulation aims to increase the circularity and sustainability of CRMs used within the EU.

3.1. Definition and list of critical and strategic raw materials

The first list of CRMs was published by the European Commission in 2011 and updated in 2023. It is currently defined in two annexes to Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials – Critical Raw Materials Act (CRMsA) (Table 1).

This Regulation gives legal definition of “raw materials”. According to Art. 2, para 2 of the CRMsA ‘raw material’ means a substance in processed or unprocessed state used as an input for the manufacturing of intermediate or final products, excluding substances predominantly used as food, feed or combustion fuel”.

To include a raw material on this list, the European Commission uses two criteria: the economic value that each individual raw material represents in the value chains of the European economy, and the risks associated with the supply of each individual raw material.

SRMs are those for which demand is expected to grow exponentially. They are characterized by a complex production process and a high risk of supply disruptions.

Currently, the list of CRMs includes 34 metals and minerals (Annex 2 of the CRMsA), while the list of SRMs includes 17 (Annex 1 of the CRMsA), all of which are of vital importance to the energy/green transition, digital transformation, space, and defence.

The list of CRMs and SRMS is subject to review and does not prevent Member States from creating personalized options related to specific situations in their country, as well as from introducing national measures.

The Regulation sets out measures for a common approach to strategic projects for the extraction, processing, or recycling of strategic raw materials.

To support the implementation and financing of strategic projects, research programs, monitoring capabilities, and strategic stockpiles, as well as to advise the Commission, the European Critical Raw Materials Board is established. It shall consist of representatives of the member states and the Commission, with the possibility of including observers, in particular from the European Parliament. The Board issues recommendations and opinions that are not legally binding on the Commission, and the Commission acts solely on the basis of the Regulation.

Table. 1. List of CRMs and SRMs

<i>Critical Raw Materials (CRMs)</i>	<i>Strategic Raw Materials (SRMs)</i>
• Antimony • Arsenic • Bauxite / Alumina / Aluminium • Baryte • Beryllium • Bismuth • Boron • Cobalt • Coking coal • Copper • Feldspar • Fluorspar • Gallium • Germanium • Hafnium • Helium • Heavy REE • Light REE • Lithium • Magnesium • Manganese • Graphite • Nickel (battery grade) • Niobium • Phosphate rock • Phosphorus • Platinum group metals • Scandium • Silicon metal • Strontium • Tantalum • Titanium metal • Tungsten • Vanadium	• Bauxite / Alumina / Aluminium • Bismuth • Boron (metallurgy grade) • Cobalt • Copper • Gallium • Germanium • Lithium (battery grade) • Magnesium metal • Manganese (battery grade) • Graphite (battery grade) • Nickel (battery grade) • Platinum group metals • Rare earths for magnets • Silicon metal • Titanium metal • Tungsten

3.2. Benchmarks

The measures provided for in the CRMsA are aimed to ensure by 2030

- The Union should achieve the capacity to extract the ores, minerals, or concentrates (to the extent possible given the EU's reserves) necessary to meet at least 10 % of its annual consumption of SRMs;

- To achieve processing capacity, including intermediate processing, sufficient to cover at least 40% of annual consumption of SRMs;
- The objective is also to achieve a recycling capacity, including intermediate recycling, of more than 25% of the annual SRMs consumption (Art. 5, OJ L, 2024/1252, 3.5.2024)

Other measures for the efficient use of resources relate to research and innovation, substitution, raising awareness, and so on.

These guidelines are consistent with other EU objectives set forth in the so called ‘European Climate Law’, establishing a comprehensive legal regulation to mitigate the climate changes, including carbon removal as well a 90 % reduction in the net greenhouse gas (GHG) emission by 2040 in comparison to 1990 levels. The above cited benchmarks are also in line with the digital goals, established in the Digital Decade Policy Programme 2030.

Another important objective set out in the Regulation is that, by 2030, the EU’s dependence on supplies of strategic materials from a single country should not exceed 65 percent. Nevertheless, it should be noted that the Union has entered into strategic partnerships, free trade agreements, or other forms of cooperation in the field of raw materials.

3.3. Strategic projects

An important component of the Regulation is the mechanism for Strategic projects.

Upon analyzing the provisions, it is clear that these are the ones that have the potential to improve access to SRMs, create economic opportunities—including for small and medium-sized enterprises—and have a positive social impact in terms of employment.

An important requirement in the regulation is the existence of simplified and predictable procedures for issuing permits for such projects, as well as securing funding.

One of the criteria for these projects to be recognized as strategic is that they must strengthen the EU’s security of supply of strategic materials.

Other requirements include: projects must be technically feasible, including with regard to the expected volume of strategic materials produced from substitutes; they must be implemented in accordance with the requirements of European environmental law and social rights provisions, and must benefit more than one Member State.

After assessing the projects against these criteria, the Commission adopts an act in the form of a decision.

This mechanism for strategic projects also includes an “external” aspect. This involves the possibility for third countries to be designated by the Commission, with the support of the Board, to apply for projects involving the extraction, processing, or recycling of SRMs or of materials that can substitute for SRMs.

Such projects will benefit from improved access to financing, such as risk-mitigation mechanisms for investments. The same criteria used for projects submitted by member states are applied when evaluating these projects. Another important aspect is that if a project originates from an emerging market or a developing country, it must

be mutually beneficial to both the Union and the developing country and must be consistent with the EU's common commercial policy [8]. Here, too, the project is designated as strategic by a decision.

Projects involving deep-sea mining are expressly excluded from the scope of the mechanism due to their impact on marine biodiversity and the activities to protect the marine environment.

Significant attention is devoted to the issue of national permitting frameworks, including compliance with environmental law, social regulations, and safety requirements. Here, too, national legislation must be in line with EU environmental law, which sets the general framework for the content of permits and ensures a high level of environmental protection and conditions for the exploitation of potential raw materials. The deadlines for issuing permits are particularly important; they may not exceed for the extraction Strategic Projects 27 months and for the processing or recycling Strategic Projects - 15 months.

They were introduced to regulate national permitting procedures, which are often unpredictable, complex, or excessively lengthy.

Another requirement of the regulation is that the national legislation must grant to the strategic projects priority status and to ensure swift administrative processing and the expedited resolution of any related judicial and arbitration proceedings.

The regulation does not prevent national authorities from improving procedures for issuing permits for projects along the value chain of CRMs that are not strategic projects.

4. CONCLUSION

The brief analyses of the state-of-art of the supply of the CRMs and SRMs in the EU shows serious problems to meet the demand for them in light of the ambitious goals of the Green Transition, the needs of industry, defence, and security in the broadest sense.

A thorough understanding of the legal framework governing critical and strategic raw materials under EU law is essential because the primary source—the CRMsA—is directly applicable in the member states, including Bulgaria, and does not require any additional legislation for its implementation into national law.

The regulation establishes two lists of CRMs and SRMs, as well non-binding benchmarks: by 2030, the EU

- should achieve the capacity to extract the ores, minerals, or concentrates (to the extent possible given the EU's reserves) necessary to meet at least 10 % of its annual consumption of SRMs;
- to achieve processing capacity, including intermediate processing, sufficient to cover at least 40% of annual consumption of SRMs;
- to achieve a recycling capacity, including intermediate recycling, of more than 25% of the annual SRMs consumption.

A key component of the CRMsA is the mechanism for strategic projects: criteria, the approval procedure, deadlines for issuing national permits, and the possibility for third countries—non-EU members—to apply.

The National Research Program “Critical and Strategic Raw Materials for the Green Transition and Sustainable Development” is already contributing, in its very first phase of implementation, to achieving the objectives of the first pillar of the Regulation, namely to identify the country’s own geological resources of strategic materials, as well as the technologies needed to increase production from existing deposits and begin exploitation of future deposits.

This is achieved by identifying key geological profiles, representative cross-sections, prospective locations, and specific sites for specialized geological, petrophysical, and geochemical studies to assess the potential of these areas in subsequent phases of work.

The areas in Northern Bulgaria that show promise for exploration have been identified; these are associated with both zones of potential hydrocarbon generation and those where accumulation may occur along hydrocarbon migration pathways [9].

I must agree with some of the conclusions reached by the research team in the first phase, namely that the EU lacks the extraction and processing capabilities for CRMs and SRMs due to its long-standing neglect of resource security. However, this conclusion is rather limited and does not reflect the dynamics of international relations, the constantly changing security environment, and the global race for resources, as well as trade in CRMs and SRMs. Now, the EU must adapt to all the challenges of the dynamic security environment, of which critical and strategic raw materials remain an integral part.

I have well-founded criticism regarding the conclusion reached by the research team from the Geological Institute, Sofia University, and others, namely that the Critical Raw Materials Act sets out goals and recommendations but does not provide funding to achieve them [10]. The funds allocated by the European legislature are based on a project-based approach. The regulation contains an extremely detailed framework governing the application process and the funding of strategic projects. Articles 6 through 17 set forth the criteria for project eligibility: criteria for the recognition of Strategic Projects, application and recognition reporting and information obligations for Strategic Projects, permit-granting process, priority status of Strategic Projects, duration of the permit-granting process, environmental assessments and authorizations, planning, accelerating implementation of Strategic Projects and coordination of financing.

It is not possible to present them in detail within the limited scope of this article. Therefore, I will simply note that the Regulation governs the sources of funding: the European Investment Bank Group, other financial institutions, including the European Bank for Reconstruction and Development, private funds, and member states’ programs.

The main conclusion of this analysis is that CRMsA is not well known either among experts on CRMs and SRMs or among entities involved in their extraction. The mechanism for strategic projects is an important tool that can be used when discovering deposits of such raw materials in Bulgaria. Therefore, the issue of CRMs and SRMs in the EU, and in Bulgaria in particular, remains one of the key challenges for economic development, the green transition, and ensuring security.

REFERENCES

- [1] Critical and strategic raw materials. *Geological Survey of Sweden (SGU)*
<https://www.sgu.se/en/mineral-resources/critical-raw-materials/> (visited on 6.07.2026).
- [2] International trade in critical raw materials, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=International_trade_in_critical_raw_materials (visited on 27.07.2026).
- [3] Findeisen, Fr., Wernert, Y. Meeting the costs of resilience: The EU's critical Raw Materials Strategy must go the extra kilometre. *Hertie School, Jacques Delors Centre*, available on <https://www.delorscentre.eu/en/publications/eu-critical-raw-materials> (visited on 6.07.2026).
- [4] Fina. D. Europe's critical raw materials bet: A reality check on the EU's ambitions. *ODI Global, Publication Office of the EU*, 2026. <https://odi.org/en/insights/europes-critical-raw-materials-bet-a-reality-check-on-the-eus-ambitions/>
- [5] Kobourov, T. Fundamentals of the theoretical models of small country security, *International Journal on Information Technologies & Security*, № 4 (vol. 17), 2025, p. 112.
- [6] Szczepanski, M. China's rare-earth export restrictions. *European Parliamentary Research Service (EPRS)*, Nov 2025. Available on:
[https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/779220/EPRS_ATA\(2025\)779220_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/779220/EPRS_ATA(2025)779220_EN.pdf)
- [7] Karkare, P. The EU's partnerships around critical raw materials: Do its ambitions match reality? *ECDPM*, 26 Mar 2025. Available on:
<https://ecdpm.org/work/eus-partnerships-around-critical-raw-materials-do-its-ambitions-match-reality>
- [8] Ilieva, I. For the common trade policy of the EU. See "*EU law after Brexit*", Publishing house of the Bulgarian Academy of Sciences, 2023, pp.337-347 (in Bulgarian).
- [9] Georgiev, S. V. et al. Assessment of the potential of conventional hydrocarbon systems and development of a methodology for the optimization and production of gas-oil and gas-condensate fields in Bulgaria (in Bulgarian)
Available on: https://kss.geology.bas.bg/shr/libraryDocs/101-200/p_125_1.pdf.
- [10] Georgiev, S. V. et al. Key Results from the First Phase of the National Scientific Program "Critical Raw Materials". *National Scientific Program "Critical and Strategic Raw Materials for The Green Transition and Sustainable Development"*, 16 Jun 2026 (in Bulgarian). Available on https://kss.geology.bas.bg/shr/libraryDocs/101-200/p_123_1.pdf.

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