Ca' Foscari
University
of Venice

Masters Degree programme
in Environmental Humanities

Final Thesis

The New Era of Extractivism

Analysis of the European Critical Raw Materials Act
between War and Green Transition

Supervisor
Prof. Francesco Della Puppa

Graduand
Beatrice Trussardi
Matriculation Number 879529

Academic Year
2025 / 2026

Abstract

In April 2024, the European Parliament adopted the *Critical Raw Materials Act*, a framework presented to strengthen the production and supply of minerals considered Critical for key areas like the Green Energy Transition and the Defence Sector. Its objective is to increase the internal production of Materials through the reopening of mining sites, together with a new plan of exploration set to locate new mining zones within the Member States. The Act also focuses on strengthening relationships with third countries through the promotion of partnered projects, to widen the net of suppliers and make the Union less vulnerable to supply disruption. With a strong focus on Recycling, Circularity, and Sustainability, the CRMA shows a willingness to be a turning point in achieving a Green Transition and lowering emissions in the EU. But is this the real objective the EU wants to achieve? Recent geopolitical events like the COVID-19 pandemic and the Russia-Ukraine war exposed the vulnerability of the EU to the disruption of Supply chains, while the escalating USA-China rivalry enhanced the sense of global instability and brought the EU to focus on Defence and rearmament. In 2025, the *REArm Europe Plan* was published, a framework set to supply €800 billions for European rearmament. Critical Raw Materials play a key role in the production of weapons and military equipment, and the escalating production must be met with an increased supply of these materials. Furthermore, the mining industry has some of the most impactful effects on the environment and societies, leaving after effects that damage the affected areas for centuries; not to mention, CRMs are non-renewable materials, and a Green Energy Transition starting from these bases raises doubts on its effectiveness. Through the study and comparison of official documentation, together with the analysis of two case studies, this thesis aims to answer the following question: can the CRMA lay solid foundations for the Green Transition and break from the logic of extractivism, or is it just an asset for implementing the EU's economic interests, especially of the Defence/Military sector?

INDEX

Abbreviation list

CRMA = Critical Raw Materials Act

CRMs = Critical Raw Materials

MS = Member States

GVA = Gross Value Added

PGM = Platinum Group Metals

REEs = Rare Earth Elements

SPs = Strategic Projects

SPoC = Single Point of Contact

SRMs = Strategic Raw Materials

FPIC = Free, Prior and Informed Consent

AUDCB = Associação Unidos em Defensa de Covas do Barroso

INTRODUCTION

In April 2024, the European Parliament adopted the *Critical Raw Materials Act*, a framework presented to strengthen the production and supply of minerals considered Critical for key areas like the Green Energy Transition and the Defence Sector. Its objective is to increase the internal production of Materials through the reopening of mining sites, together with a new plan of exploration set to locate new mining zones within the Member States. The Act also focuses on strengthening relationships with third countries through the promotion of partnered projects, to widen the net of suppliers and make the Union less vulnerable to supply disruption. With a strong focus on Recycling, Circularity, and Sustainability, the CRMA shows a willingness to be a turning point in achieving a Green Transition and lowering emissions in the EU. However, an over-the-surface analysis of the text casts doubts on its real intentions. In recent years the EU shifted its focus from Sustainability to Rearmament and the implementation of the Defence Sector, publishing in 2025 the *REArm Europe Plan*, a framework set to supply €800 billions for European rearmament. The dual use of the minerals presented in the Critical Materials list also raises questions about whether the supply demand will be equally distributed between Sectors, and how the EU will meet the increasing demand from a finite source, such as minerals. Furthermore, considering that mineral extraction generates some of the most damaging impacts on the environment, the question about whether it is possible to build a green future with this kind of foundation comes naturally. This thesis aims to answer the question: can the CRMA lay solid foundations for the Green Transition and break from the logic of extractivism, or is it just an asset for implementing the EU's economic interests, especially of the Defence/Military sector? Starting from a geopolitical overview that will show the reasons why the EU decided to bring the focus back on extractivism after decades of inactivity, and moving to the relationship between CRMs and their critical role in both the Defence sector and Green Energy, I will show how the relationship between war and minerals seems to be much stronger than that with green energy and mineral extraction and how the Critical Raw Materials Act presents itself as a strong asset to support the military lobby's interest, rather than a pillar for the Green Energy Transition.

The thesis is divided into 5 chapters, which will give a complete overview of the Regulation and its implications with both the Defence/Military Sector and the Green Energy Sector. In the first chapter I will analyze events of recent history that exposed the fragility of international relations and that tested historical alliances: starting from 2020 and the COVID-19 outbreak, which showed Europe's fragility in depending on one major supplier, to Russia's invasion of Ukraine, that created an energy

crisis and contributed to a heightened sense of instability, and the escalating USA-China rivalry that is testing international alliances.

The second chapter will dive deep into the analysis of the Critical Raw Materials Act, explaining the objectives set and the methods to reach them, with a focus on the Strategic Projects, the innovative tool introduced for the implementation of both European and International collaboration in the creation of projects that will strengthen the extractive chain, from extraction to processing and recycling.

In the third chapter, I reach the heart of the research question, showing the direct connections between the Defence/Military Sector and the Mining industry. With the help of official documents, I show how the interests of war align perfectly with the need for more mineral availability, and how the materials chosen as Strategic by the Critical Raw Materials Act had already been identified by previous documents as essential for the Defence implementation.

The fourth chapter instead underlines the fragility of the strategies set by the Regulation to implement Sustainability and Circularity. A reading of the 5th section of the Act, completely dedicated to guidelines for reducing the impact of the extractive projects, exposes the inconsistencies between the strategies to safeguard the environment and the loopholes created to prioritize economic advantage over environmental and social well-being.

Finally, the fifth chapter shows the direct consequences of following the road of the New Extractivism through two case studies: the Covas do Barroso Lithium Project in Northern Portugal, and the wind farm construction in the Tuscan Apennines. These two examples show the impacts of the mining industry on the environment and of the installation of green energy technologies, exposing the extent of the impact this model of "green" transition requires to exist.

By tracing the line from geopolitics to regulation to the lived experience of communities on the extractive frontier, this thesis aims to show that the question of Critical Raw Materials is not just a matter of supply chains and benchmarks, but of power, justice, and the kind of future Europe is building.

1- Frame analysis

On the 1st July 2025, the Italian Government gave the start to mapping the sites of interest regarding deposit of the so-called "strategic" or "critical" raw materials on Italian territory. By Critical Raw Materials (CRMs) we mean minerals that have been identified by the European Commission as playing a key role in the energy transition and are used in the production of wind turbines, solar panels and batteries of electric cars.

The drafting of the mapping process has been entrusted to ISPRA (Higher Institute for Environmental Protection and Research), following the guidelines found in the Critical Raw Materials Act[1] (CRMA), emanated by the European Parliament on April 11th, 2024. This Act brings attention to the need of the European Union to source its raw materials without being dependant from other countries and aims to establish a framework that all Member States (MS) can follow to reach supply diversification, a need that has been brought to light by various events from recent history: the crisis started with COVID-19 and the Russia-Ukraine conflict, two events that exposed Europe's vulnerability to energy and raw material supply disruptions.

These raw materials are also key elements used in the implementation of defence forces, and with Europe preparing for war (the *ReArm Europe Plan* has been presented on March 2025, and its objective is to increase defence military by 2030 with the leverage of €800 billion), being able to source these raw materials becomes essential. The goals stated in the CRMA aim to increase the availability of CRMs for the Union by 2030 by these criteria:

- to increase EU's extraction capacity needed to produce at least 10% of the Union's annual consumption of Strategic Raw Materials (SRM).
- to be able to produce at least 40% of the Union annual consumption of SRM.
- to produce at least 25% of the Union's annual consumption of SRMs through recycling steps.
- to ensure that, by 2030, the Union is not dependent on a single third country for more than 65% of its supply of any SRM.[2]

To reach these goals, the European Commission set to identify projects in the Union that are intended to start or expand the extraction, processing or recycling of SRMs, or the production and

[1] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 on the establishment of a framework for ensuring a secure and sustainable supply of critical raw materials and amending regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020.
[2] Regulation (EU) 2024/1252. P. 21/67.

scale-up of materials that can substitute them in strategic technologies, with the aim of recognising such projects as Strategic Projects[3] (SPs).

If it's true that CRMs are fundamental for the production of facilities necessary for the "Green" Energy Transition, their use in military production can't be left out in the analysis of the reasons behind the emanation of the CRMA: 2030 is a crucial date for the European Union, marking both the deadline for reaching the desired autonomy of CRMs provisions and for increasing its Defence Military forces. It's important to notice the dual application of CRMs, which are crucial both for Energy Transition and Defence applications. The CRMA draws attention not only to the need for the Union to increase its provisioning of raw materials but also underlines the need for factories to be sufficiently prepared to face supply disruptions by implementing their supply chain and creating preventive mitigation strategies,[4] putting the scenario of war not as a remote possibility, but as a nearly sure reality. In December 2024, NATO released a list of 12 raw materials that considered "integral to the manufacture of advanced defence systems and equipment", stating that: "the availability and secure supply of these critical materials is important for NATO's technological edge and operational readiness."[5]

The arms race is ongoing since 2014, with European States increasing their expenses in defence equipment and an exponential peak of these orders after February 2022. Much of this equipment is built with a variety of raw materials[6] that have been identified as strategic in the CRMA, putting the factor of the impelling war a crucial point for the emanation of this Act. Considering that the distribution of many of these key materials like Gallium, Iridium, Tungsten, Cobalt and Titanium, is owned nearly in its totality by China and Russia and taking into note the geopolitical tensions between the USA-UE and Russia-China blocs and their deteriorating relationships, the urgency of Europe to source these materials independently becomes clear: by obtaining a stable supply chain and investing in development of domestic production, processing, and recycling, the EU aims to reduce its exposure to external supply shocks while at the same time increasing its military power.

Before studying in detail the dual use of CRMs for Defence/Military purposes and Green Energy Transition, I will start with an understanding of the reasons that brought the EU to focus on provisional independence now and not in a previous moment. In this chapter I'll try to underline the

[3] Ibid. Pp. 3-4.
[4] Ibid. Pp. 10-11.
[5] Hackett, J. et al. (2025). *Critical Raw Materials and European Defence: Supply Chain Security*. International Institute for Strategic Studies. P. 5.
https://www.iiss.org/research-paper/2025/03/critical-raw-materials-and-european-defence/
[6] Ibid.

geopolitical frame and follow the steps that brought the Union to focus on inside provisioning rather than relying on external supplying of the CRMs, analysing the crises of the recent years and the way they impacted on the perception of security and trade stability of the EU. With this chapter I aim to show how the pressure to achieve greater independence in CRMs sourcing is not the result of a single crisis, but of a series of events that exposed the limits of market-driven globalization.

1.1 From *Multilateralism* to *Strategic Autonomy*

The EU strategy to counter economic pressure has traditionally been to rely on multilateral governance frameworks, with *multilateralism* as one of the core values to approach foreign policies, prioritizing cooperation through international institutions to solve global challenges. Given that the strongest asset of the EU is the export of values rather than goods, *effective multilateralism* is the key principle with which the EU secures a way to address global challenges, prioritising cooperation rather than unilateral actions. However, recent global events like the outbreak of COVID-19, the Russia-Ukraine war and the increase of power-rivalry between the USA and China, challenged the ability of *multilateralism* to face global crises; moreover, the Genocide of Palestinian people perpetrated by Israel has demolished the collective trust that cooperation with international institutions like the UN or the International Court of Justice can have an impact in solving international crises. And even though *multilateralism* is still at the centre of the EU's agenda,[7] the Union is gradually shifting its focus towards *Strategic Autonomy*.

Strategic Autonomy is the EU's ability to make decisions independently, rely in its own resources in key strategic areas and cooperate with partners whenever needed, protecting its interests;[8] in 2021 the European Commission's Strategic Foresight Report identified 10 areas in which the EU should strengthen its *Strategic Autonomy*;[9] in the list are cited points like: "securing and diversifying supply of Critical Raw Materials; strengthening security and defence capacities and access to space; strengthening capacity in data management, artificial intelligence and cutting edge technologies; securing decarbonised and affordable energy",[10] all key values repeated in the Critical Raw

[7]European Union External Action (2025). *EU agenda for a renewed multilateralism*. https://www.eeas.europa.eu/eeas/eu-agenda-renewed-multilateralism_en

[8]Anghel, S. E. et al. (2020). On the path to 'strategic autonomy': The EU in an evolving geopolitical environment (PE 652.096). European Parliament. P. 1. https://www.europarl.europa.eu/thinktank/en/document/EPRS_STU(2020)652096

[9] European Commission. (2021). *Strategic Foresight Report: The EU's Capacity and Freedom to Act*. COM(2021) 750 final. Brussels: European Commission. https://commission.europa.eu/strategy-and-policy/strategic-foresight/2021-strategic-foresight-report_en

[10] Ibid.

Materials Act. Interesting also to notice how in the 2021 report, the topic of Critical Raw Materials is already addressed as such:

"Critical raw materials are essential for the EU's twin transitions. The expansion of green technologies, such as those underpinning wind and solar power, domestic energy storage, and the production of batteries for electric vehicles will drive up demand for raw materials such as cobalt, lithium, graphite, manganese and nickel in the next two decades. However, the challenge goes beyond green technologies. For instance, the sector for small drones, for which China delivers more than a third of the raw materials, is expected to grow exponentially between now and the 2030s, with high potential for the civil and commercial sub-sectors, and sharply increasing demand for gallium, indium, scandium and titanium, among others. The defence industry relies heavily on critical raw materials, for example almost half of the materials needed in aircraft production come from non-EU countries. The increase in demand for critical raw materials is expected to coincide with an upturn in the major suppliers' readiness to impose export restrictions."[11]

Strategic Autonomy is sought to protect the EU's interests and influence when geopolitical interdependencies become unstable; it doesn't aim to a complete self-sufficiency, but to lower reliance on third parties in strategic areas like energy imports, increase defence capacity and to be more economically competent,[12] especially in regards of keeping up with USA and China's economic and technological advancement. It can be seen as a form of protection to gain advantage in its internal position while still cooperating with global partners. It is important to notice that this isn't the first time the European Union focused on economic independence, but events of recent history like the intensifying of power-rivalry between USA and China, the outbreak of COVID-19 and the Russia-Ukraine war increased the sense of instability and highlighted how the Union is still strongly dependent on supplying energy and materials from third parties; this brought to the understanding that the supply chain cannot be guaranteed given the increasing destabilising geopolitical alliances. These factors created an urgency to focus more on *Strategic Autonomy*, taking a restrictive stance on market access rather than the openness strongly associated with EU's values since its formation.[13] As this chapter continues, I'll focus on the impact that each of these recent events had on the perception of instability of supplying chains and the crumbling sense of security that led to a *Strategic Autonomy* thinking.

[11] ibid. P.11.
[12] Steinbach, A. (2023). The EU's Turn to 'Strategic Autonomy': Leeway for Policy Action and Points of Conflict. European Journal of International Law (forthcoming).
Available at SSRN: https://ssrn.com/abstract=4269304 or http://dx.doi.org/10.2139/ssrn.4269304.
[13] Ibid.

1.2 COVID-19 and the crisis of supply chains

The COVID-19 pandemic signs a major global crisis that touched almost all aspects of everyday life. For the first time in our lifespan a disease changed completely the way we lived, with governments worldwide implementing restriction of movement and digital surveillance. In particular, restriction of movement led to an intensifying economic crisis, people lost jobs and the ability to have a stable income during the pandemic. Factories shutting down and closing of borders led to delays of production and an increase of transportation costs both in the import and export globally. This led to a shortage of medical equipment like gloves, surgical masks and goggles, not only needed in the hospitals but also by workers who had to respect the newly-imposed social distancing and protection to work in other fields. A global health crisis became a lens to show how supply chains are subjected to external pressures or disruptions and broke the assumption that global markets would remain reliable in moments of systemic stress.

In March 2020 the European Commission stated that "production of personal protective equipment (PPE) such as mouth protection masks in the Union is currently concentrated in a limited number of member States, namely the Czech Republic, France, Germany and Poland".[14] Given the sudden peak of demand for these medical goods and the few internal suppliers, the EU found itself unprepared to cover the increasing demand. Before COVID, the biggest exporter to EU and USA of these medical supplies was China, with an export that covered up to 50% of the European demand.[15] With the outbreak of the pandemic, however, China found itself in need for PPE and drastically reduced the export of these materials to cover internal demand. And even though by April 2020 the export of PPE went over pre-COVID sales, the export price grew exponentially, with prices 1250% higher than before the pandemic for masks and respirators and 700% higher for protective garments.[16] The EU found itself in dire demand and, to make things worse, MS like France and Germany (countries between the major manufacturers of the Union) closed their export even to other MS to focus on their internal needs. By 2020 internal demands for PPE had increased exponentially, and the EU couldn't cover the total demand, as imported goods from China were too expensive and internal production was already too low even before the pandemic started.

The difficulty in sourcing materials to face a health crisis was a wake-up call for the EU in rethinking ways to grant supply autonomy for materials considered critical. This experience

[14] Bown CP. (2022). How COVID-19 Medical Supply Shortages Led to Extraordinary Trade and Industrial Policy. *Asian Economic Policy Review*. 17(1), 114–135. P. 115. https://onlinelibrary.wiley.com/doi/10.1111/aepr.12359
[15] Ibid. P. 117.
[16] Ibid. P.120.

demonstrated that access to strategic goods could no longer be taken for granted and that market mechanisms alone were insufficient to guarantee supply security. A second warning came from the Russia-Ukraine war and the shortage in energy provisioning that it caused.

1.3 The Russia–Ukraine War and Energy Weaponization

The Russian invasion of Ukraine in February 2022 had a strong impact on the perception of energy security in the EU, where the long-standing dependence on Russian energy supplies suddenly came to a halt, forcing the EU to face energy sourcing challenges. Before the beginning of the war, Russia supplied almost 40% of natural gas, oil and coal,[17] but after the escalation of the conflict between Russia and Ukraine in 2022 and the economic sanctions against Russia imposed by both USA and the EU, Russia halted gas supplies to Poland and Bulgaria. The immediate effect of this supply disruption was an exponential rise in gas prices across all the MS. As an attempt to respond to the energetic and economic crisis, the EU introduced in March 2022 the *REPowerEU Plan*, focusing on the diversification of energy supply to detach from Russian dependence on one side, and increasing investments in green energy on the other, with the specific objective of "rapidly reducing our dependence on Russian fossil fuels by fast forwarding the clean transition and joining forces to achieve a more resilient energy system and a true Energy Union."[18] With this decree the EU aimed to reduce gas consumption by 15%, promoting energy saving and switching to alternative energy sources and at the same time urged Member States to fill their gas storage to 80% before winter 2022,[19] which has been possible through the diversification of gas suppliers and newly signed agreements with Norway, USA and Algeria, now the major gas suppliers to all the MS.[20] Big attention is also brought to the implementation of investments in renewable energy, to become independent from Russian fossil fuels. In particular, great importance is given to boosting solar and wind energy, aiming to increase solar photovoltaic to 600GW by 2030.[21] In the plan for the diversification of energy sources and implementation of green energy, the CRMA fits perfectly in

[17] Shoukat, W., Mustafa, Z., Muneer, M, U & Shahzadi, A. (2024). *The Impact of the Russia-Ukraine War on EU Energy Security*. Social Sciences Spectrum, 3(4), 337-351. P. 338. https://doi.org/10.71085/sss.03.04.177
[18] European Commission. (2022). *REPowerEU Plan*. (COM(2022) 230 final). Brussels: European Commission. P. 1.
[19] Vecchio, A. (2024). Changing the flow: The European Response to the Russian Weaponization of Gas. *European Papers*, 9(1), 39-52. P. 43.
[20] Shoukat, W., Mustafa, Z., Muneer, M, U & Shahzadi, A. (2024). *The Impact of the Russia-Ukraine War on EU Energy Security*. Social Sciences Spectrum, 3(4), 337-351. P. 338. https://doi.org/10.71085/sss.03.04.177
[21] Ibid. P. 6.

the idea of scouting different sources for extracting minerals, both by implementing internal extraction and diversifying imports from various sources.

The *REPower EU Plan* also dedicates a section to the need to improve the ability of the EU to be ready to face future supply disruption: despite the quick response to energy scarcity, MS found themselves, for the second time in the span of a few years, underprepared to withstand a supply chain disruption. Historical alliances crumbling and strategic partners withholding their resources from the market reinforced the idea that multilateralism is a plan of action that can't protect the EU's economy from geopolitical instability. The fact that the EU has used legal tools like sanctions imposed on Russia is a strong sign that the MS are starting to take into consideration not only supply issues but also threats of retaliation from hostile states[22] when thinking about guaranteeing the provisioning of resources.

1.4 China-USA rivalry and a changed perception of security

Geopolitical alliances and global strengths are constantly evolving, and the growing power of major countries is reshaping pre-existing political and economic relationships. China is one of the fastest-growing countries in recent history, and its rising power has led to major instability in pre-existing alliances and deals. In 2012, Xi Jinping became the Secretary General of the Communist Party, and the following year, he became President of China, initiating a series of reforms aimed at strengthening China's role in international trade, such as the "Belt & Road Initiative", a project that promotes a "new form of globalization." Xi Jinping's reforms align with China's will to become a leading figure outside the USA-led imperialistic market, a project that began even before Xi Jinping's mandate, with China being one of the leading states supporting the creation of BRICS back in 2009.

In 2017, under Trump's mandate, the US' National Security Strategy labelled China a "revisionist power" and started to ban Chinese companies from its territory, imposing tariffs on Chinese products, with the EU following the US pace with a shift of perception towards China, defining it "simultaneously a cooperation partner, a negotiating partner and a systemic rival promoting alternative models of governance."[23] By 2019, a general negative perception of China in the US reached 60% amongst the population, in contrast to 2011, when unfavourable views were only

[22] Vecchio, A. (2024). Changing the flow: The European Response to the Russian Weaponization of Gas. *European Papers*, 9(1), 39-52. P. 52.
[23] ibid. P. 7.

shared by 36% of the population. In contrast, favourable views of China in Russia increased from 64% in 2014 to 70% in 2019.[24] The outbreak of the pandemic accelerated the negative view against China, especially in Europe, where supply chain disruption and a communication campaign that aimed to highlight the lack of a prompt response to the crisis by European MS led to a declaration of the European Council President and Commission President stating that: "we have to recognise that we do not share the same values, political systems, or approach in multilateralism" and MS calling to take all necessary measures to protect strategic assets with a view to protect the "EU strategic autonomy, during the crisis and afterwards."[25]

Global relations faced a deteriorating relationship between the USA and China, and a worsening opinion of China from the EU. At the same time, relationship between US and EU started getting tense since Trump administration in 2017, bringing the EU to rethink its perception of security: comments questioning the usefulness of NATO instilled the fear of a possible withdrawal of the US from the alliance and raised the fear of political insecurity in the EU, which led to an increase in defence spending registered in all NATO allies and the creation of the European Defence Fund in 2019.[26] Furthermore, the imposition of tariffs on European steel and aluminium imports and travel restrictions on passengers from the Schengen zone to the US accelerated the need for autonomy and self-reliance in the EU. Also, the US Inflation Reduction Act (IRA) signed into law by President Biden in 2022, fuelled the growing tension between the USA and the EU. This act, which is considered the biggest effort of the USA to reduce gas emissions and invest in green energy, aims to raise around $739 billion through the imposition of new taxes that will then be invested in implementing domestic energy security and climate change, among other goals.[27] The IRA aims to gather private investments to promote domestic production of clean fuels, renewable energy and electric cars, offering incentives for consumers by making more affordable clean energy products like electric vehicles and renewable energy systems[28]. EU responded warily to the Act considering some of the tax provisions a potential violation of the World Trade organization: with the IRA the US is redirecting climate investments to the US at the expenses of EU operations with, for example, incentives of $7500 for electric vehicles available only for cars produced in North America or a

[24] Ibid. P. 7.
[25] Ibid. P.9.
[26] Ibid. P.11.
[27] Scheinert, C. (2023). *EU's Response to the US Inflation Reduction Act (IRA)*. PE 740.087. Brussels: European Parliament. P. 2.
https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA(2023)740087
[28] Suárez-Cuesta, D., & Latorre M.C. (2024). Governance and Policy Implications of the Inflation Reduction Act: A European Perspective. *Global Policy* 15(S8) 37–43. P. 38.
https://doi.org/10.1111/1758-5899.13448.

10% increase in subsidy for renewable installations that use at least 40% of US products for their manufacturing.[29] Battery production and electric vehicles production market is dominated by China, which has centred the supply chain around itself. With the US increasing Chinese EV import tariffs from 25% to 100%,[30] China may focus its export on the EU, becoming the major supplier in a time when the EU is trying to find autonomy in materials supply. Including local sourcing of raw materials to benefit from US subsidy "raises the risk that some European equipment manufacturers and hydrogen producers pull up stakes and move to the US […] just when we need to reinforce the emerging supply chain for green tech, some of the IRA's provisions could disrupt it – benefiting America at Europe's expenses," stated the European Investment Bank.[31] The introduction of the CRMA can also be read as a direct response to the US Act, aiming to strengthen the European supply chain of the CRMs needed for the Green Transition.

1.5 Connecting the dots

Recent crises and unstable geopolitical relations highlighted the risks and limits of having few highly concentrated supply chains and instilled in the EU the need to become more autonomous in sourcing its materials without being dependent on a single country and be ready to face supply disruption through diversification of supply sources and an incrementation of internal production. This pressure brought the need to focus on a strategy whose keywords are *economic security* and *de-risking*, to provide a framework for an assessment and management of risks to economic security at a national and business level, while preserving and increasing economic dynamism.[32] The European Economic Security Strategy, published in 2023, focuses on these issues, identifying three priorities:

- promoting European competitiveness
- protecting EU from economic security risks

[29] Gros, D. (2024). *The Impact of the US Inflation Reduction Act on European Industry*. IEP@BU Publications, Bocconi University.
https://iep.unibocconi.eu/publications/impact-us-inflation-reduction-act-european-industry-0
[30] Suárez-Cuesta, D., & Latorre M.C. (2024). Governance and Policy Implications of the Inflation Reduction Act: A European Perspective. *Global Policy* 15(S8) 37–43. P. 39.
https://doi.org/10.1111/1758-5899.13448.
[31] Ibid.
[32] European Commission. (2023). *Communication from the Commission to the European Parliament, the European Council and the Council on "European Economic Security Strategy."* (JOIN(2023) 20 final). Brussels: European Commission. P. 2.
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023JC0020

- partner with the broader possible range of countries with the same interest in economic security

The guidelines to achieve these priorities and thus a better economic security are based on diversifying sources of supply and export markets, increasing research in strategic areas like clean energy and CRMs, trade and cyber defence and creating new alliances with countries that share the same de-risking objectives,[33] with the final goal of strengthening the economic power and strategic autonomy of the Union. In this project, the CRMA inserts itself with the hope of increasing internal production of rare minerals, strengthening chains of recycling and green transitions and diversifying supply chains through third-country alliances.

The recent events, like the healthcare crisis of COVID-19 and the Russia-Ukraine war, highlighted the need to shift from market efficiency to economic defence. Furthermore, historic suppliers like China and Russia withholding goods shook the belief in the power of multilateralism. Finally, growing tensions between USA and EU, even though not changing the subservience on EU towards the States, increased the sense of instability and pushed Member States in investing in the military defence sector and economic defence; The European Economic Security Strategy set the guidelines to mitigate the risks of supply disruption and of the weaponisation of economic dependence by third countries by focusing on strengthening the single market, expanding policies to protect economic security and increasing the partnership with third countries who, like the EU, are currently dependent on third countries for sourcing raw materials and energy and aim to increase their economic security.

1.6 The imperialistic agenda – energy control as a strategic tool

Recent news of the US blockade of the Strait of Hormuz brings an additional layer of uncertainty regarding energy supply, and talks concerning a possible energy lockdown are already spreading. The aggression on Iran led by Israel and the US has been escalating rapidly since the first attacks started last summer. This attack can't be read only as a way to win over the control of the energy route, but a solid attempt to re-establish hegemony: Iran is the last standing country in the Middle East that isn't aligned with the US-imperialistic agenda; not only that, but it's also a member of BRICS and a strategic partner to China, supplying gas and oil. With the expansion of BRICS and the creation of economic measures like the Belt & Road Initiative, the imperialistic system is facing a concrete threat to its hegemony, and it's responding with an aggressive policy, hoping to re-

[33] Ibid. P. 4.

establish its power. Attacking Iran now means to weaken China indirectly.[34] Another important element to take into consideration is the attack of January on Venezuela, ordered by President Trump, that ended with the capture of President Maduro and the shift under USA control of the country. Venezuela was one of the 3 major exporters of oil to China, along with Iran and Russia, providing 55% of its oil exports to China.[35] Not only that, but Venezuela officially became a partner of the BRICS+ in 2024, gaining access to alternative payment methods outside of the dollar (the transactions of oil export were made in yuan[36]), contributing to weakening the dollar's influence on the global market. Taking control of the Venezuelan oil export is an attempt to weaken China's supply chain of energy and undermine the new economic alliance of BRICS. By gaining power over oil supplies of Venezuela, the US made also a strategic move to destabilize Cuba, another Country that opposes the USA imperialistic agenda: Venezuela and Cuba are in a solid alliance, the Bolivarian Alliance for the Peoples of Our America (*Alianza Bolivariana para los Pueblos de Nuestra América*, ALBA), established by Fidel Castro and Hugo Chávez in 2004 as an alternative to the Free Trade Area of the Americas (FTAA)[37]. Through this alliance, Cuba received oil to withstand the economic crisis and US sanctions; in exchange, it would supply Venezuela with professional labour such as doctors, nurses, and teachers. Trade with Venezuela is essential for Cuba's economy. In 2014, bilateral trade exceeded US$14 billion, accounting for nearly 45% of Cuba's total foreign trade and close to 20% of its GDP. A drop in oil prices from 2014, followed by sanctions of Venezuela's oil industry by the US in 2019 had a strong impact on the trade of the two countries, which saw a dramatic fall in the following decade: imports of Venezuelan goods fell by 83% (including oil imports), and total trade fell by 60%,[38] leading to a worsened condition of Cuba's economy. The attack of the USA on Venezuela and the siege of the oil routes risk worsening this situation, completely blocking the trade between the two Countries, deepening inflation problems, and increasing levels of poverty and scarcity in the island. By cutting ties with Venezuela, the USA weakened Cuba's economy and worsened its internal situation; by removing its strongest ally, this move leaves Cuba alone without the possibility to find other ideological partners in the

[34] Collettivo Sumud. (2025). *Note sulla guerra in corso – appunti leggeri "da spiaggia" per addentrarsi nella complessità*.
[35] Marino, G. (2026). La Cina, il petrolio iraniano (e quello venezuelano). *Renewable Matter*. https://www.renewablematter.eu/cina-petrolio-iraniano-e-quello-venezuelano
[36] Gabellini, G. (2026). *Perché il petrolio del Venezuela è così importante per l'amministrazione Trump*. Analisi Difesa. https://www.analisidifesa.it/2026/01/perche-il-petrolio-del-venezuela-e-cosi-importante-per-lamministrazione-trump/
[37] Gratius, S., & Padel Vidal, A. (2026). *Cuba and a possible loss of Venezuelan support: macroeconomic vulnerabilities and political risks.* Elcano Royal Institute, April 2026. https://www.realinstitutoelcano.org/en/analyses/cuba-and-a-possible-loss-of-venezuelan-support-macroeconomic-vulnerabilities-and-political-risks/
[38] ibid.

region, making it more difficult to export an anti-imperialistic model and the participation of Cuba in south-south projects, and the ALBA initiative.[39]

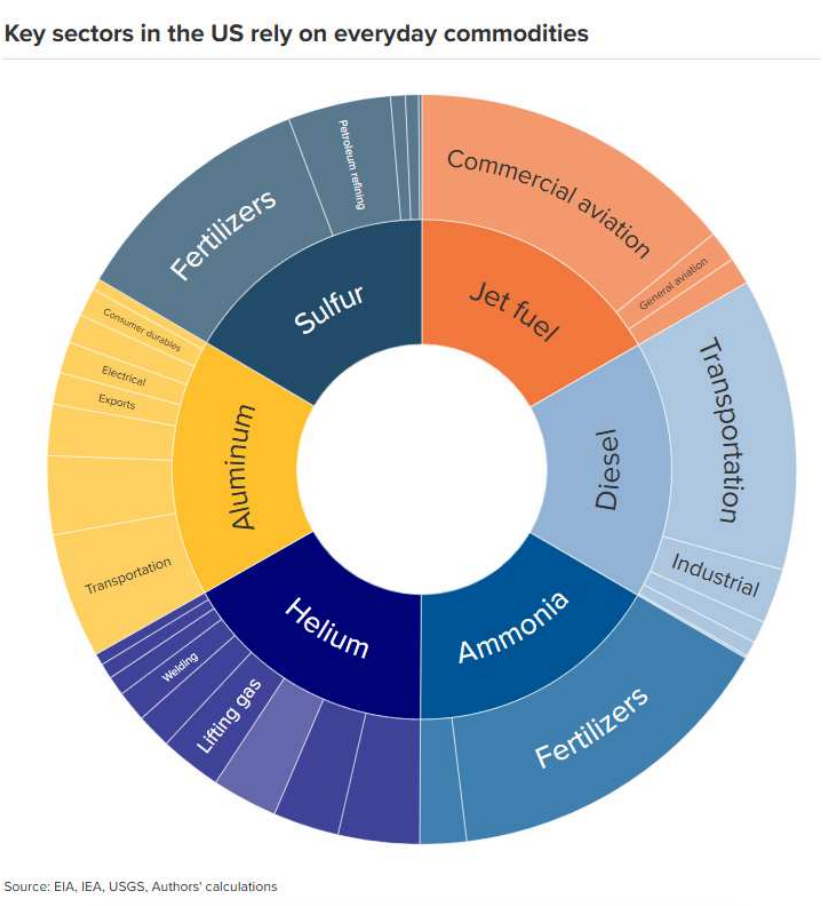
With the resumption of the aggression on Iran in February of this year, we witnessed a shift in the situation: the USA-Israel attack of June was an attempt to destabilize China by weakening its first energy supplier of the region, and even if it drastically raised tension, the aggression ended only with a ceasefire. In February, instead, Iran responded by sending missile and drone attacks towards Israel, US military bases in the surrounding regions, and US-allied Gulf States. Most importantly, shipping traffic through the Strait of Hormuz has been blocked to ships coming from and to the USA, Israel, and their allied Countries. The Strait of Hormuz is a crucial point for oil trade routes, with around 20 million barrels of oil transiting daily[40]. Such a huge quantity can't be resourced elsewhere, and the blockade, if persistent, will lead to scarcity of oil in international markets and a subsequent rise in gas and oil prices. We can already see the first results of this, with the oil price per barrel rising from 72.6$ on February 27 to 119.23$ on April 29, the highest since the energy crisis of 2008.[41] The US replied with a counterblockade targeting Iranian ports and, once again, indirectly targeting China, which imports more than 10 million barrels per day from Iran. The EIA (US Energy Information Administration) estimates that 89% of the crude oil and condensates passing through Hormuz in the first half of 2025 went to Asian markets, with China, India, Japan, and South Korea alone accounting for 74% of those flows. These countries are also the major industrial producers of Asia, and a spike in energy prices risks destabilizing the whole economic power of East Asia.[42]

Europe doesn't rely so strongly on oil trafficking from the Strait, receiving only about 4% of crude flows, but its gas supply is at risk: about one-fifth of global LNG trade passes through the Strait of Hormuz, with Qatar at the centre.[43] After breaking supply routes with Russia, the possibility of losing another supplier could bring the union to face yet another energy disruption.

Energy supply isn't the only chain facing a crisis risk: the Strait of Hormuz is a key passage for other resources, such as global seaborne jet fuel, Diesel, Ammonia, Helium, and Aluminium.

---

[39] Ibid.
[40] Pietri, M. (2026). Il pedaggio dell'impero. *Sinistra in Rete*. https://www.sinistrainrete.info/geopolitica/32801-mario-pietri-il-pedaggio-dell-impero.html
[41] Trading Economics. (2026). Bent crude oil. https://tradingeconomics.com/commodity/brent-crude-oil
[42] Pietri, M. (2026). Il pedaggio dell'impero. *Sinistra in Rete*. https://www.sinistrainrete.info/geopolitica/32801-mario-pietri-il-pedaggio-dell-impero.html
[43] Ibid.



[44]Not to mention, half of global seaborne Sulfur comes from the Gulf.[45] Sulfur and Ammonia are chemicals at the base of the fertilizer production; a disruption to their market could lead to a reduction of crops in the fall harvest, which will increase food prices on a global scale. Ammonia is at the base of nitrogen fertilizer production, used for the growth of staple grains like wheat, rice, and maize.[46] Sulfur is needed to create sulphuric acid, at the base of phosphate fertilizer production. A failed attempt to diversify the supply chain of these elements could lead not only to an increase in food prices but to a serious famine threat if the fields can't be properly prepared for crop growth. Since the conflict began, sulfuric acid prices in Africa have already risen by 30%, and by 13% in China.[47]

Even though it is still early to know with certainty how strong the impact of the blockade will be, we can foresee an increased instability in energy and food supply for the near future.

By attacking Venezuela and Iran with the attempt to control their energy supplies, the US is warning all countries that stand against the US-controlled economy; disrupting the internal stability of the countries sends a clear message: if you oppose the imperialistic agenda, you will face the consequences and lose. The fact that the BRICS axis led by China and Russia hasn't yet directly responded to these aggressions shows how the new anti-imperialistic alliances are still too weak to

[44] Image sourced from: Burnett, K., Li, K., Basquel, L., & O'Connor, C. (2026, April). 15 charts that explain why the Strait of Hormuz shutdown matters for the global economy. Atlantic Council. https://www.atlanticcouncil.org/dispatches/15-charts-that-explain-why-the-strait-of-hormuz-shutdown-matters-for-the-global-economy/

[45]Ibid.

[46] Ibid.

[47] Ibid.

withstand a confrontation and prefer to focus on strengthening their economic alliances rather than entering a face-to-face war.[48]

[48] Collettivo Sumud. (2025). *Note sulla guerra in corso – appunti leggeri "da spiaggia" per addentrarsi nella complessità*.

2- EU Strategic Response: The Critical Raw Materials Act

Having established the geopolitical and economic reasons that drove a shift in European resource policy, this chapter will examine the Critical Raw Materials Act (CRMA). The Regulation represents a step of the EU from a multilateralism model to Strategic Autonomy. The Act has been created with the intention to counter supply disruption of resources considered critical or strategic for the EU economy, the Defence Sector and the Green Transition, and its primary objective is to "improve the functioning of the internal market by establishing a framework to ensure the Union's access to a secure, resilient, and sustainable supply of critical raw materials, including by fostering efficiency and circularity throughout the value chain."[49]

The analysis is structured around the core pillars of the Regulation. First, it investigates the distinction between Critical and Strategic Raw Materials and how these materials are selected. Second, it evaluates the 2030 Benchmarks for domestic extraction, processing, and recycling, which serve as the metrics for European self-reliance. Third, the chapter explores the procedural innovations of the Act, specifically the Strategic Projects, the tool added to increase internal production of CRMs and supply from third countries.

Finally, while the CRMA dedicates a whole chapter to Sustainability and Circularity, the following analysis will not discuss it yet, as it will be tackled in later chapters. Instead, the focus here remains on the governance and security mechanisms that aim to shield the European Single Market from the geoeconomic shocks of an increasingly fragmented global order.

[49] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 on the establishment of a framework for ensuring a secure and sustainable supply of critical raw materials and amending regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020. P. 17/67
https://eur-lex.europa.eu/eli/reg/2024/1252/oj/eng

2.1 Identifying Strategic and Critical Raw Materials

The CRMA sets a list of Critical and Strategic Raw Materials and a Union Framework tasked with defining which materials are to be included in the list.

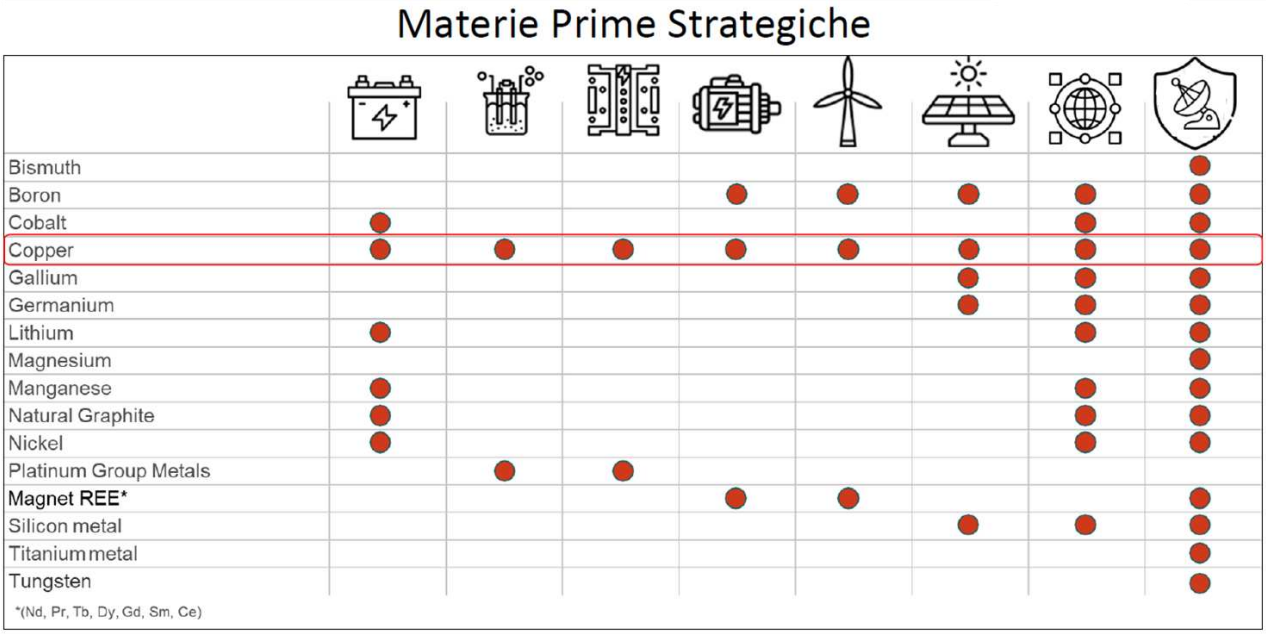
50

34 raw materials have been established as "critical", considering their economic importance for the EU and the high risk of supply disruption they may face, be it because they are sourced from one major supplier or because the demand for a specific material is foreseen to increase in the future.

Strategic Raw Materials are minerals contained in the CRMs list but differentiate themselves by being key components needed for the Green and Digital transition and for Defence and Aerospace applications; usually, they are completely or widely supplied by third countries, and there is a huge gap between production and demand, making the increase in their production the biggest challenge.[51] Considering that SRMs are key elements in the production of technologies, their utility has to be regularly reviewed and updated.

[50] Table of CRMs sourced from: European Commission. (2024). European CRM Act, Agreement on proposal for a regulation – establishing a framework for ensuring a secure and sustainable supply of critical raw materials. https://www.sustainablesupplychains.org/wp-content/uploads/2024/03/European-CRM-Act_Salvatore-Berger_2024-03-12.pdf

[51] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … P. 2/67



52

The methodology to determine CRMs is based on two main parameters: the likelihood of supply shortages of a certain material, referred to as *Supply Risk*, and the impact the supply shortage of said material could have, referred to as *Economic Importance*.[53]

To identify a *Supply Risk*, the framework considers the supplying pool from which materials' demand is met: reliance on a single or restricted number of providers increases the risk of supply disruption, which is instead decreased by a wider pool of sources. *Economic Importance* instead is related to how the European Economy is affected by the products that can be made with a specific material and if said material can be substituted with others to create the same product; so the value of a certain material is calculated both on how many products can be made from it/how important these products are, and also by the possibility of said material to be swapped with another to create the same product.[54]

[52] Table of SRMs sourced from: Senato. (2023) *Materie prime critiche/strategiche, le attività per la definizione delle potenzialità nazionali*, Audizione 9ª Commissione Senato su Atti UE n. COM(2023) 160 def. e n. COM(2023) 165 def. https://www.senato.it/application/xmanager/projects/leg19/attachments/documento_evento_procedura_commissione/files/000/427/371/2023_07_18_ISPRA.pdf

[53] Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI). P. 1.

[54] Ibid. P. 2.

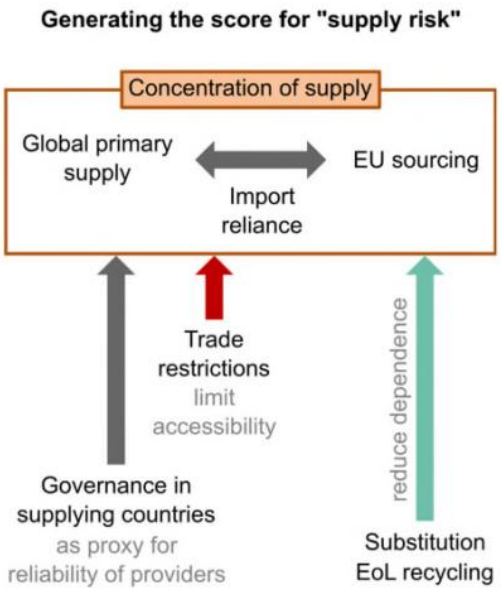


Figure 2: Elements of the equation for calculating the "supply risk" score in the EU criticality methodology.

[55]*Supply Risk Score* is calculated by analysing different factors:

- **Monopolies of sourcing:** how wide or narrow is the sourcing pool; if the supplier is only one, like for HREEs (Heavy Rare Earth Elements) exported 100% from China, or Boron, supplied 99% by Turkey, the Risk Score is higher.

- **Import reliance:** how much a material is produced inside the EU and how much of it is imported by third countries;[56] the less the EU produces internally, the higher the supply disruption chances.

- **Balance between global production and EU suppliers:** if the market has many suppliers, risks are lower, but if the EU decides to supply its materials from a limited range, like the decision to cut off gas supply from Russia, this increases the risk factor.[57]

- **Country governance**: supply disruption is also calculated on the reliability of the third Country sourcing the material. If the producer has a low World Governance Indicator (WGI), which means the country is likely to face instability such as civil unrest or sudden export bans, this raises the *Supply Risk*; if, on the other hand, the producer has a high WGI, the risk decreases.[58]

- **Availability of substitutes**: considering that the raw material is important for the function it provides, finding a different way to do the same function (a different technology or a different material) reduces the risk score.[59]

- **Post-consumer recycling**: the ability of the EU to recycle materials after they have been used significantly reduces Supply Risk. Given that the EU already has solid infrastructures and circulates

[55] Figure of the supply risk score sourced from: Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI). P. 2.
[56] Ibid. P. 10.
[57] Ibid. P. 6.
[58] Ibid. Pp. 2;6.
[59] Ibid. P. 11.

many products within its economy, the ability of recycling can potentially be a major source of raw materials, reducing the total demand to supply by third Countries.[60]

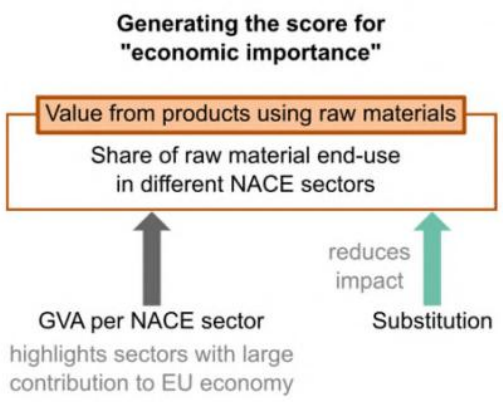


Figure 4: Elements of the scoring equation for economic importance. GVA = gross value added; NACE (*nomenclature statistique des activités économiques dans la Communauté européenne*) is the industry standard classification system used in the European Union.

[61]*Economic Importance Score* is calculated by taking these elements into account:

- Sector Gross Value Added (GVA): demand for a raw material is matched to EU industry sectors and the total income of all the industries using a specific mineral. Through the GVA of each sector it is possible to calculate the true financial footprint of a material[62] (e.g., if a small amount of a specific mineral is needed for the entire EU aerospace industry, that mineral gets a high score because the aerospace industry is worth billions to the EU economy).

- Share of material use in each sector (AS): The proportion of a material's total use that occurs in each sector weights that sector's GVA; the weighted sum across all sectors yields the raw material-specific importance.[63] (if 80% of a material goes into automotive and 20% goes into electronics, the methodology "weights" the importance based on which of those industries is bigger and more vital to the EU).

- Substitution index for economic importance (SIEI): This adjusts the GVA-based score by accounting for available substitutes. It combines the substitute-cost-performance score (whether the substitute is just as good and if it's affordable) with the "sub-share" (whether there is enough of the substitute available to replace the original material)[64]. If a different and cheaper material is available, the importance score drops.

Both *the Supply Risk* Score and the *Economic Impact* Score are assessed on a1-10 scale; the next step is to introduce threshold values, specifically of 1.0 for *Supply Risk* and 2.8 for *Economic Importance*. Materials with scores at or above the threshold level are considered "critical". Some

[60] Ibid. P. 3.
[61] Figure of Economic Importance score sourced from: Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI). P. 4.
[62] Ibid. p.12.
[63] Ibid.
[64] Ibid. Pp. 13-14.

materials that have a high *Economic Importance* Score but a low *Supply Risk* Score, like Copper and Nickel, are identified as Strategic Raw Materials and thus enter the list of the CRMs.[65]

2.2 Objectives and Benchmarks

The Critical and Strategic Raw Materials list has been created to identify the minerals whose supply chain needs to be strengthened between the MS, as these minerals are necessary for the Green Transition and to implement the Defence sector. As it has previously been portrayed, recent events have highlighted the need to strengthen the supply chain for CRMs between the Union, and the speed in which the CRMA has been enforced is proof of the perceived urgency to secure a stable supply chain (the European Commission´s proposal was published on 16 March 2023 and the CRMA was approved on 18 March 2024, entering into force on 23 May 2024).[66]

The general objective of the Act is "to improve the functioning of the internal market by establishing a framework to ensure the Union's access to a secure, resilient and sustainable supply of CRMs, including by fostering efficiency and circularity throughout the value chain."[67] Secondary objectives that support the main goal are: lower the risk that supply disruptions distort competition or fragment the internal market, improve the Union's ability to monitor and mitigate supply risks, and increase the Union's circularity by boosting Recycling and resource efficiency throughout the raw materials value chain.[68]

In addition to the objectives, the CRMA set benchmarks for the EU, with the aim of strengthening the different stages of the value chain for SRMs and increasing the Union's capacity for every raw material. The first deadline set to achieve these goals is 2030.

- **Extraction**: Union capacity must extract ores, minerals, or concentrates needed to produce at least 10% of the Union's annual consumption.
- **Processing**: Union processing capacity, including all intermediate processing steps, must supply at least 40% of the Union's annual consumption of SRMs.

[65] Ibid. P. 15.
[66] Wittenberg, A., & v. Vietinghoff-Scheel M. (2025). The European Critical Raw Materials Act from a FutuRaM Perspective. *FutuRaM*.
https://futuram.eu/critical-raw-materials-act-futuram-perspective/
[67] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … P. 17/67
[68] Ibid.

- **Recycling**: Union recycling capacity, including all intermediate recycling steps, must provide 25% of the Union's annual consumption of SRMs and progressively increase the recycled amount from every material.
- **Supply diversification**: the import of SRMs must be diversified to ensure that, by 2030, the Union's annual consumption of each SRM (at each stage) can rely on imports from different countries and that no third country supplies more than 65% of the Union's annual consumption of a single SRM.[69]

To make sure the benchmarks' objectives are met, the CRMA added specific measures that aim to strengthen European CRM production throughout the whole value chain. The regulation introduces a new framework for selecting and implementing Strategic Projects, which can take advantage of faster permitting procedures and supportive mechanisms for financing. MS must also set up national exploration programmes for CRMs for these materials. In addition, every CRM project must have a Single Point of Contact to coordinate all relevant permits. Strategic Projects can also be carried out in third-country locations, given that they are of mutual benefit for the EU and its partners. The following table aims to illustrate the connection between benchmarks, the instruments necessary to reach the set goal, and how these instruments will help achieve the said goals:

Benchmark (2030)	**Key instrument in the regulation**	**How they help to achieve the benchmark**
≥ 10% of EU annual consumption from Union extraction of each Strategic Raw Material	Strategic Projects in extraction with priority status, streamlined permits (≤ 27 months),[70] Single Points of Contact and coordinated financing support; mandatory national exploration programs to map deposits.[71]	Faster, more predictable permitting and better access to finance reduce project risk and lead times, while systematic exploration increases the pipeline of viable mining projects, raising EU extraction capacity.
≥ 40% of EU annual	SPs in processing with fast-track permitting	De-risking and accelerating mid-stream investments encourages new/refurbished

[69] Ibid. Pp. 21-22/67.
[70] Ibid. P. 26/67
[71] Ibid. P. 30/67

consumption from Union processing	(≤ 15 months);[72] support via EU/national funds; facilitation of offtake agreements and joint purchasing.[73]	refineries and processing plants in the EU, building domestic processing capacity instead of exporting concentrates for treatment abroad.
≥ 25% of EU annual consumption from Union recycling, plus waste-stream based recycling benchmarks	National circularity programs (collection, sorting, recycling of CRM-rich waste), obligations to assess recovery from extractive waste[74] and create databases of waste facilities,[75] and specific measures for permanent magnets (recyclability info and minimum recycled content).[76]	Better information on CRM-containing wastes, mandatory assessment of recovery options, and product-level design and content rules make secondary raw materials more available and investable, scaling EU recycling capacity.
No single third country > 65% of EU supply of any SRM	SPs in third countries chosen for diversification value; Strategic Partnerships and trade policy;[77] monitoring dashboard, stress-tests, strategic stocks, and joint purchasing to manage risk and bargaining power.[78]	By backing diversified projects abroad, embedding CRMs in trade/partnership frameworks, and coordinating buying and stock-building, the EU reduces over-reliance on any single supplier and can respond more effectively to shocks.

[72] Ibid. P. 26/67
[73] Ibid. P. 29/67
[74] Ibid. P. 13/67
[75] Ibid. P. 38/67
[76] Ibid. Pp. 39-40/67
[77] Ibid. P. 5/67
[78] Ibid. P. 32-35/67

2.3 Strategic Projects

The selection and implementation of Strategic Projects is one of the most useful tools to achieve the Regulation benchmarks and objectives. The aim of SPs is "to start or expand the extraction, processing or recycling of Strategic Raw Materials, or the production and scale-up of materials that can substitute raw materials in strategic technologies."[79] They are granted a special status under the CRMA, which gives them preferential access to public and/or private funding and an accelerated approval process.[80] These projects are not identified spontaneously but are discovered after a MS's national exploration program has been carried out. Through these programs, MS can collect the systematic, publicly available geological data that underpin the selection and justification of SPs under the CRMA.

Following the Regulation, each Member State should adopt a national programme for the exploration of CRMs and the minerals that are extracted together with them. The exploration programme should include geological mapping, geochemical campaigns, geoscientific surveys, and comparison of new data with the existing data. The programmes are intended to map and identify new deposits to stimulate investment in exploration, increase the availability of geological information and support the Union's 2030 supply-security benchmarks.[81] To reduce bureaucratic times and help the EU meet the set benchmarks, each MS designated a Single Point of Contact (SPoC) that serves as a referring point to all project promoters and companies that want to submit Strategic Projects' applications. SPoCs facilitate and coordinate all relevant permits, provide project promoters with clear information on the completeness of applications, set and publish a detailed schedule for the permitting timeline, and act as the sole communication channel for the promoter throughout the procedure. When a promoter submits a SP application, the SPoC acknowledges receipt within 45 days, checks completeness, and, if needed, requests missing information.[82] Once the application is ready, project promoters send it to the European Commission, which will evaluate if it can be deemed "strategic", checking that it fits the following criteria:

- **Contribution to supply security**: the project must prove that it contributes to reaching the benchmarks set in the regulation and actively increases the production and supply of CRMs in the Union.

[79] Ibid. P. 4/67
[80] Marin, D., Pravuljac, M., Tralmaka, I. & Martins, M. (2024). *Understanding Strategic Projects Under the CRMA: A Guide to Rights and Processes*. European Environmental Bureau & ClientEarth. P. 6.
[81] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … Pp. 9-10/67
[82] Ibid. Pp. 26-27/67

- **Technical feasibility**: the project must prove that it can be carried out and that it can succeed in obtaining the identified goals within a reasonable timeframe, and the expected production volume can be estimated with a realistic proportion.[83]
- **Environmental, Social, and Governance (ESG)**: a sustainable framework that monitors, prevents and minimizes both environmental and socially adverse impacts. It plans to engage with local and Indigenous communities, protect human rights, create jobs and enforce business practices to eliminate corruption and bribery.
- **Cross-border benefits**: the project's setup, operation, or output will have cross-border advantages that extend past the host country and would also benefit downstream industries in other MS.[84]

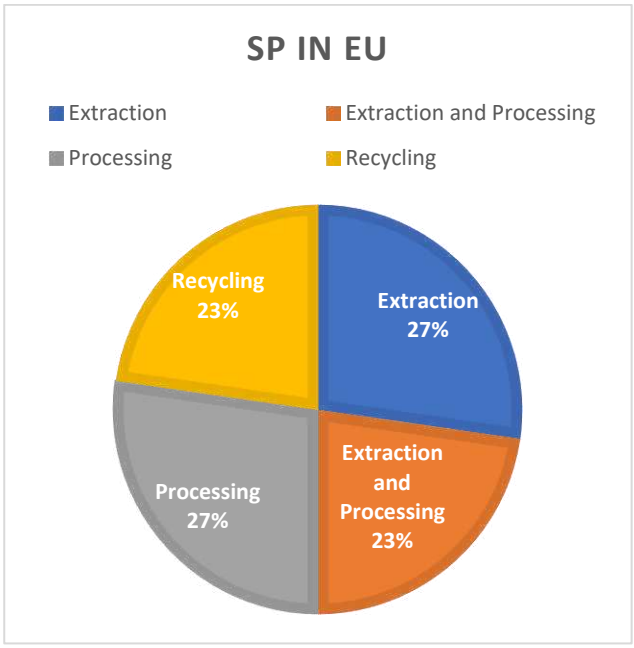
If the proposed project respects all the criteria and pass the Commission evaluation, it is brought to discussion to the EU MS during the CRM Board meeting: the board is composed of one representative per MS and one representative of the Commission; in addition to check that the proposed project respects the criteria to be considered strategic, it also takes care of developing the monitoring for risk mitigation and monitoring the progress of national exploration programmes.[85] If in this phase the project receives approval, it is granted Strategic status[86] and will have preferential access to funding and accelerated approval processes.

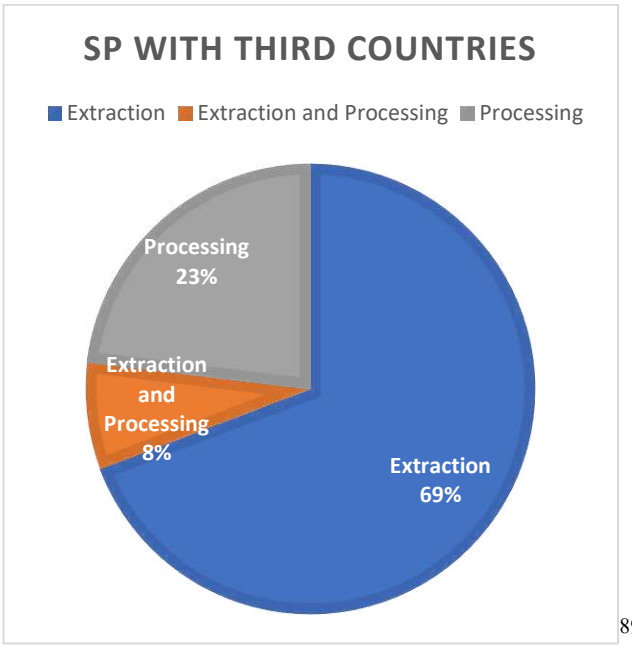
SPs can also be identified in third countries, but they must be beneficial both for the Union, by contributing to reach the set benchmarks, and the third Country involved, whether by strengthening more than one stage of the raw material value chain, fostering private investments in the raw materials value chain, or creating wider economic or social benefits like the creation of employment.[87] When applying for international SPs, the Project Promoters must also provide explicit approval from the third country involved, as well as the Board approval,[88] and follow international standards that cover sustainability criteria.

The first list of SPs has been approved in 2025, 47 of which are active inside the EU (approved on 25 March 2025) and 14 involving partnerships with third Countries (approved on 4 June 2025),

[83] Ibid. P. 61/67
[84] Marin, D., Pravuljac, M., Tralmaka, I. & Martins, M. (2024). *Understanding Strategic Projects Under the CRMA: A Guide to Rights and Processes*. European Environmental Bureau & ClientEarth. P.14.
[85] Ibid. P. 20.
[86] Ibid. P. 13.
[87] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … P. 62/67
[88] Marin, D., Pravuljac, M., Tralmaka, I. & Martins, M. (2024). *Understanding Strategic Projects Under the CRMA: A Guide to Rights and Processes*. European Environmental Bureau & ClientEarth. P. 25.

focusing on the extraction of 14 Strategic Raw Materials mainly used for the Defence and Green Energy sectors:



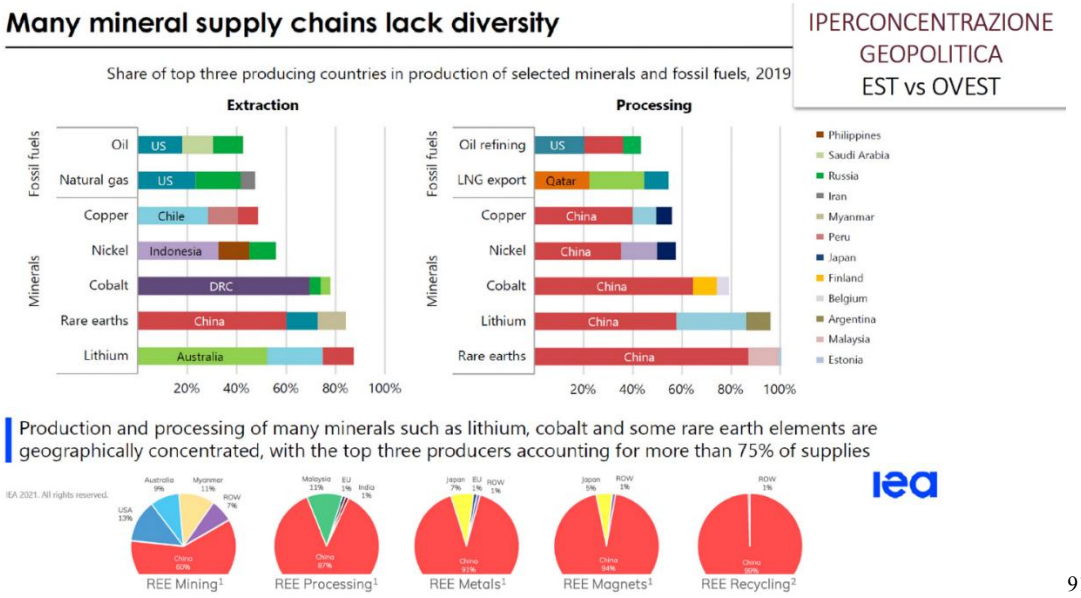


[89]

If domestic projects are evenly distributed between all the points that need to be strengthened to increase supply and internal production, third countries' SPs are focused mainly on the extraction, especially on Lithium, Nickel, Cobalt, Manganese, Graphite, and REEs, all minerals whose supply chain is heavily dependent on China's production:[90]

[89] Data taken from European Commission, "Selected strategic projects," *European Union – Single Market Economy* (accessed April 9, 2026). https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/strategic-projects-under-crma/selected-projects_en

[90] European Commission. (2025). *Commission Selects 13 Strategic Projects in Third Countries to Secure Access to Raw Materials and to Support Local Value Creation*. [Press release]. .https://ec.europa.eu/commission/presscorner/detail/en/ip_25_1419



91

By creating SPs with third countries, the EU is aiming to weaken the dependence on imports from China and widen its pool of suppliers, directly tackling the main objective of the CRMA of having more maneuverability in case of future supply disruptions.

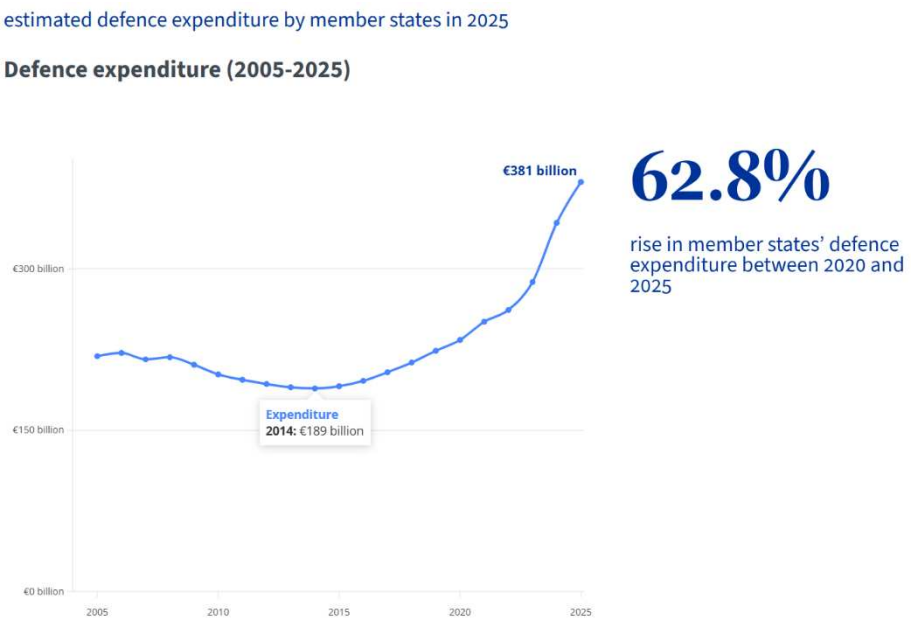
The adoption of the CRMA marks a definitive shift in European policy, transitioning the Union from a traditional multilateralist model toward a framework of Strategic Autonomy. By establishing a clear methodology for identifying 34 Critical and 17 Strategic Raw Materials, the EU has created a targeted roadmap to secure the "building blocks" of the Green Transition, the Defence Sector, and the Digital Economy. To achieve a solid CRM supply chain, the Regulation sets specific benchmarks to help reach these goals by 2030, using SPs as the main resource to increase domestic production through the implementation of recycling, and increase domestic and international extraction with the approval of SPs.

However, it's still too early to say if the benchmarks will be reached, as the exploration programmes are still undergoing and many Strategic Projects are still in their initial phase. Considering that the majority of the CRMs are heavily imported, the EU will have to strengthen its international relations and set more projects to actually create a supply chain system that is resilient against the geoeconomic impact of fragmentation in the global world order.

[91] Table of SRMs sourced from: Senato. (2023) *Materie prime critiche/strategiche, le attività per la definizione delle potenzialità nazionali*, Audizione 9ª Commissione Senato su Atti UE n. COM(2023) 160 def. e n. COM(2023) 165 def. https://www.senato.it/application/xmanager/projects/leg19/attachments/documento_evento_procedura_commissione/files/000/427/371/2023_07_18_ISPRA.pdf

3- CRMs for Military Purposes

The CRMA puts a lot of attention on war and on the need for MS to achieve CRMs supply autonomy to strengthen their defence sector. As chapter one analysed, growing tension in geopolitical relations and a crushed belief in multilateralism and historical alliances brought the EU to gradually focus on the implementation of defence equipment:



[92]Since 2014, following Russia's annexation of Crimea, we have witnessed an increase in the EU's defence expenditure, accelerated by Trump's election as president in 2016 and the Russia-Ukraine war in 2022. Last year, the EU presented the *REArm Europe Plan*, followed by the *White Paper for European Defence-Readiness 2030*, two joint plans that aim to transform the EU defence industry by 2030 through massive investment, joint procurement, and expedited innovation. Growing tension with the US also made the EU wary and fed the need to organize a stronger defence, even though, in recent events, the EU showed its complete submission to the US and not a willingness to go against it: regarding the genocide in Gaza, the EU kept and is still supplying Israel with weapons and defending it ideologically by branding any criticism as anti-Semitic; the same goes for the attack on Venezuela, where only Spain took a condemning position, and the attack in Iran, where most of the EU leaders recognized a violation of international law but didn't follow up with a clear condemnation. After the attack on Iran, global tension is rising, and the shadow of a greater conflict is getting closer; the imperialistic bloc is attacking its rivals to show dominance and restore its advantage against an alliance that is growing and getting stronger, creating economic routes outside the dollar-dominated field. And it's in this climate that the CRMA emerges, a moment in which geopolitical relations are unstable, and the supply chains risk sudden disruption. Currently, China holds the monopoly on REEs, Copper, Nickel, Cobalt, and Lithium,

[92] Graphic sourced from: European Council. (n.d.). *EU defence in numbers*. https://www.consilium.europa.eu/en/policies/defence-numbers/

and Russia controls the majority of the oil and gas supply. For the EU, obtaining autonomy in sourcing these materials means gaining an economic advantage over these countries and securing a stable materials supply for military implementation. In this chapter, through the analysis of official documents, I will show how the importance of the Defence/Military sector for the EU gained a priority role that shaped the list of SRMs, and how the CRMA serves as a tool to achieve supply autonomy for the Defence sector.

3.1 *REArm Europe Plan*

On March 4, 2025, the European Commission presented the *REArm Europe Plan*, followed on March 19 by the *White Paper for European Defence*. Together, these two documents set out the financial and strategic guidelines for proceeding with European rearmament. The need to increase military funding is justified in the text by geopolitical tensions, as the *White Paper* states in its introduction:

"Strategic competition is increasing in our wider neighbourhood, from the Arctic to the Baltic to the Middle East and North Africa. Transnational challenges such as rapid technological change, migration and climate change could put immense stress upon our political and economic system. Authoritarian states like China increasingly seek to assert their authority and control in our economy and society. Traditional allies and partners, such as the United States, are also changing their focus away from Europe to other regions of the world. This is something that we have been warned about many times but is now happening faster than many had anticipated. The moment has come for Europe to re-arm. To develop the necessary capabilities and military readiness to credibly deter armed aggression and secure our own future, a massive increase in European defence spending is needed. This needs to be coordinated and directed more effectively than ever between Member States, reflecting our collective strengths and addressing the weaknesses that come from uncoordinated action."[93]

The proposal aims to increase European defence spending by creating €800 billion destined for defence investment. To achieve this goal, the plan sets 5 key pillars:

1- **Security Action for Europe (SAFE)**: the introduction of a new loan instrument to accelerate defence investments; the Commission would raise up to €150 billion in capital markets and lend it to Member States for defence investment and common procurement from European defence industries. SAFE aims to improve interoperability, cost efficiency,

[93] European Commission. (2025). *White Paper for European Defence – Readiness 2030*. Brussels: European Commission. P. 2. https://commission.europa.eu/document/download/e6d5db69-e0ab-4bec-9dc0-3867b4373019_en?filename=White%20paper%20for%20European%20defence%20%E2%80%93%20Readiness%202030.pdf

and strategic coordination across the EU[94]. In the *White Paper*, SAFE is treated as an urgent, immediate action that needs to be taken, and the Council is asked to adopt it quickly.[95]

2- **Boosting national defence funding**: MS are encouraged to activate the Stability and Growth Pact's national escape clause, so they can spend more on defence without being blocked by normal fiscal constraints.[96] This mechanism, together with SAFE, could mobilise at least €800 billion over the next four years.[97]

3- **Making EU instruments more flexible to allow greater defence investment:** The EU should use existing budget tools more creatively to redirect funds toward defence and security; this includes using the mid-term review of cohesion policy to shift some resources toward defence-related priorities, especially where defence also supports regional development and local innovation ecosystems.[98]

4- **Contributions from the European Investment Bank (EIB)**: The plan asks the EIB to expand its lending scope for defence and security projects while preserving its financing capacity; EU leaders also urged the EIB to adapt its lending policies, revisit its excluded-activities list, and increase available funding for the sector.[99]

5- **Mobilising private capital**: objective to draw in private money through the Savings and Investments Union; the idea is to make defence finance more sustainable by attracting capital from start-ups through major firms, mixing public and private investments.[100]

Furthermore, the *White Paper* proposes the creation of strategic stockpiles and defence industrial readiness pools through the European Defence Industry Programme (EDIP), with three action lines:

---

[94] Clapp, S., Höflmayer, M., Lazarou, E., & Pari, M. (2025) *ReArm Europe Plan/Readiness 2030.* European Parliament. P. 3.
https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/769566/EPRS_BRI(2025)769566_EN.pdf

[95] European Commission. (2025). *White Paper for European Defence – Readiness 2030*. Brussels: European Commission. P. 20.
https://commission.europa.eu/document/download/e6d5db69-e0ab-4bec-9dc0-3867b4373019_en?filename=White%20paper%20for%20European%20defence%20%E2%80%93%20Readiness%202030.pdf

[96] Clapp, S., Höflmayer, M., Lazarou, E., & Pari, M. (2025) *ReArm Europe Plan/Readiness 2030.* European Parliament. P. 3.
https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/769566/EPRS_BRI(2025)769566_EN.pdf

[97] European Commission. (2025). *White Paper for European Defence – Readiness 2030*. Brussels: European Commission. P. 16.
https://commission.europa.eu/document/download/e6d5db69-e0ab-4bec-9dc0-3867b4373019_en?filename=White%20paper%20for%20European%20defence%20%E2%80%93%20Readiness%202030.pdf

[98] Clapp, S., Höflmayer, M., Lazarou, E., & Pari, M. (2025) *ReArm Europe Plan/Readiness 2030.* European Parliament. P. 3.
https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/769566/EPRS_BRI(2025)769566_EN.pdf

[99] Ibid. Pp. 3-4.

[100] Ibid.

1- supporting cross-border industrial partnerships to coordinate reserves of defence products, components, and related raw materials;
2- supporting procurement actions to build strategic reserves;
3- creating Defence Industrial Readiness pools of EU-made defence products.[101]

The two documents are complementary and reinforce each other in presenting a plan to rebuild European Defence, increase readiness, and strengthen Europe's ability to deter aggression by 2030. The *White Paper* is the strategic framework, setting out the goals, priorities, and tone of urgency (what Europe needs to build and why); the *ReArm Europe Plan* is the financing tool designed to step up defence spending fast enough to make that happen (how to raise the money needed).

The plan has been received with general enthusiasm by the MS, with 19 of them requesting access to the SAFE fund. The only controversy rose regarding the name of the plan, as the term "REArm" was deemed "misleading" by Italian and Spanish prime ministers, stating that "we are called to strengthen our defence capabilities, but today this doesn't mean trivially buying armaments. […] operability, essential services, energy infrastructures, supply chains: all things that are not simply done with weapons." And "Defence can be explained under a much broader umbrella, which is security […] when we talk about security and defence, we're fundamentally talking about technology, often dual-use goods, because the drones that can be used in the event of a conflict […] can also be used to fight wildfires."[102] After this, the Commission rebranded the plan "Readiness 2030". It is maybe pointless to say that changing the name doesn't hide the fact that this is a plan created to prepare the MS for participating actively in war, not only to build defence for possible attacks: if it's true that implementing security systems like air defence systems and drones is one of the priorities,[103] importance is also put on ammunitions, missiles, and artillery systems, that are explicitly named as priority areas[104] for finding funds. Making the name friendlier doesn't change

[101] European Commission. (2025). *White Paper for European Defence – Readiness 2030*. Brussels: European Commission. P. 10. https://commission.europa.eu/document/download/e6d5db69-e0ab-4bec-9dc0-3867b4373019_en?filename=White%20paper%20for%20European%20defence%20%E2%80%93%20Readiness%202030.pdf
[102] Liboreiro, G. (2025). Brussels rebrands 'Rearm Europe' plan after backlash from leaders of Italy and Spain. *Euronews*. https://www.euronews.com/my-europe/2025/03/21/brussels-confirms-rearm-europe-rebrand-after-backlash-from-italy-and-spain
[103] European Commission. (2025). *White Paper for European Defence – Readiness 2030*. Brussels: European Commission. P. 11. https://commission.europa.eu/document/download/e6d5db69-e0ab-4bec-9dc0-3867b4373019_en?filename=White%20paper%20for%20European%20defence%20%E2%80%93%20Readiness%202030.pdf
[104] Ibid. P. 7.

the content of the document or the objectives the EU is set to achieve. And of course, Italy and Spain are part of the countries that requested access to the SAFE fund.

Where do CRMs fit into the rearming discourse? The *White Paper* stresses the importance of securing the supply of CRMs, stating that "in defence, industry access to critical inputs is a key factor"[105] and is essential for defence readiness and competitiveness. One current issue for the EU is its inability to produce or scale up production in the Defence industry, which complicates efforts to increase European revenue through long-term orders for military equipment. To enable greater production, securing a stable supply chain of CRMs becomes the priority. And this is where the CRMA, with its guidelines for increasing internal production and securing diversified supply chains, becomes an asset in the European rearmament plan.

3.2 Strategic Raw Materials for Defence

European military spending has been rising since 2014, and interest in CRMs has grown alongside it: the first review of the CRMs list since its 2010 publication was presented on 26 May 2014; the list was updated again in 2017 and 2020, culminating in the latest revision in 2023. From 2010 to 2020, we don't see many differences, except for an increase in the materials considered critical. With the 2023 review, the CRMs list introduces a differentiation between Critical and Strategic materials, and, with the CRMA, the supply of these materials is linked for the first time to the implementation of the defence sector.[106] The last decade has seen rapid shifts in geopolitical alliances, generating a climate of tension; moreover, the 2020 pandemic and the Russia-Ukraine war in 2022 have led the EU to face supply disruptions and increased uncertainty toward historical allies. All of this has led the EU to invest more in the military sector. But producing more armaments requires more raw materials. That's where the CRMA enters as a key enabler of military production: the objectives set will help the EU to increase internal extraction by 10%, supply more materials through internal production and recycling, and diversify supply chains with third countries.

An important document that shows the deep influence the military demands had on the last review of the CRMs list and the priority war has taken for the EU's agenda is *Strategic Raw Materials for defence*, presented by The Hague Centre for Strategic Studies on January 2023. The study,

[105] Ibid. P. 13.
[106] The various lists of CRMs are available at the European Commission website: https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials_en

published almost one and a half years before the presentation of the CRMA and 3 months before the 2023 renewal of CMs list, focuses its attention on the CMs needed for the implementation of military supply, stating how CRMs have a "fundamental role in the defence sector"[107] and showing a list of 40 minerals considered critical in "defence application for light and heavy weapons operations".[108] The study considers the risk assessment of supplying CRMs for defence to be essential for the path towards Strategic Autonomy, offering a "defence-specific insights into the type of materials, components and applications most at risk from a supply security perspective"[109]. The study starts with the 2020 CRMs list and adds other minerals connected to the production of military equipment, showing the risk assessment method used to identify the minerals considered critical and dividing them into four categories: Very High-Risk Materials, High-Risk Materials, Medium-Risk Materials, and Low-Risk Materials. The methodology applied to categorize the materials uses two parameters: the *impact* and the *probability* of supply chain disruptions. *Impact* calculates how much each material is used in the defence sector (how much the sector depends on each material). It is measured by frequency of use across defence applications. Since precise quantities of each material per weapon system are not publicly available, the study uses frequency as the best proxy: if a material appears in many components across many systems, a supply shock affects more of the defence sector.[110]

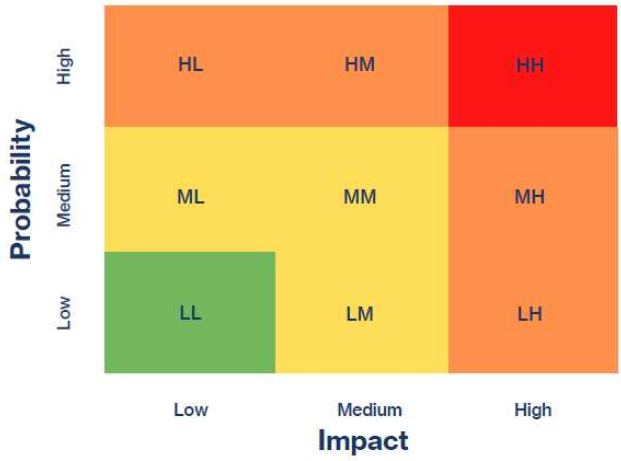
Probability is the likelihood that the supply chain will be disrupted and is built in three dimensions:

Dimension	**What it captures**	**How it is measured**[111]
Short-term supply security	Can the system absorb a disruption right now?	Supplier diversity; potential supply-chain bottlenecks
Long-term supply security	Can the system adjust over time?	Global reserves, future sources, recycling options
Geopolitical Challenges	Are the main suppliers politically stable and reliable?	Fragile States index for stability; analysis of geopolitical frictions (sanctions on Russia, US-China rivalry etc.)

[107] Girardi, B., Patrahau, I., Cisco, G. & Rademaker, M. (2023). *Strategic Raw Materials for Defence: Mapping European Industry Needs*. P. IV
[108] Ibid. P. 1.
[109] Ibid.
[110] Ibid. P. 3.
[111] Ibid.

The data from the two parameters are then combined and cross-referenced on a 3x3 matrix to produce the four risk categories:

Figure 1. Risk Assessment Matrix

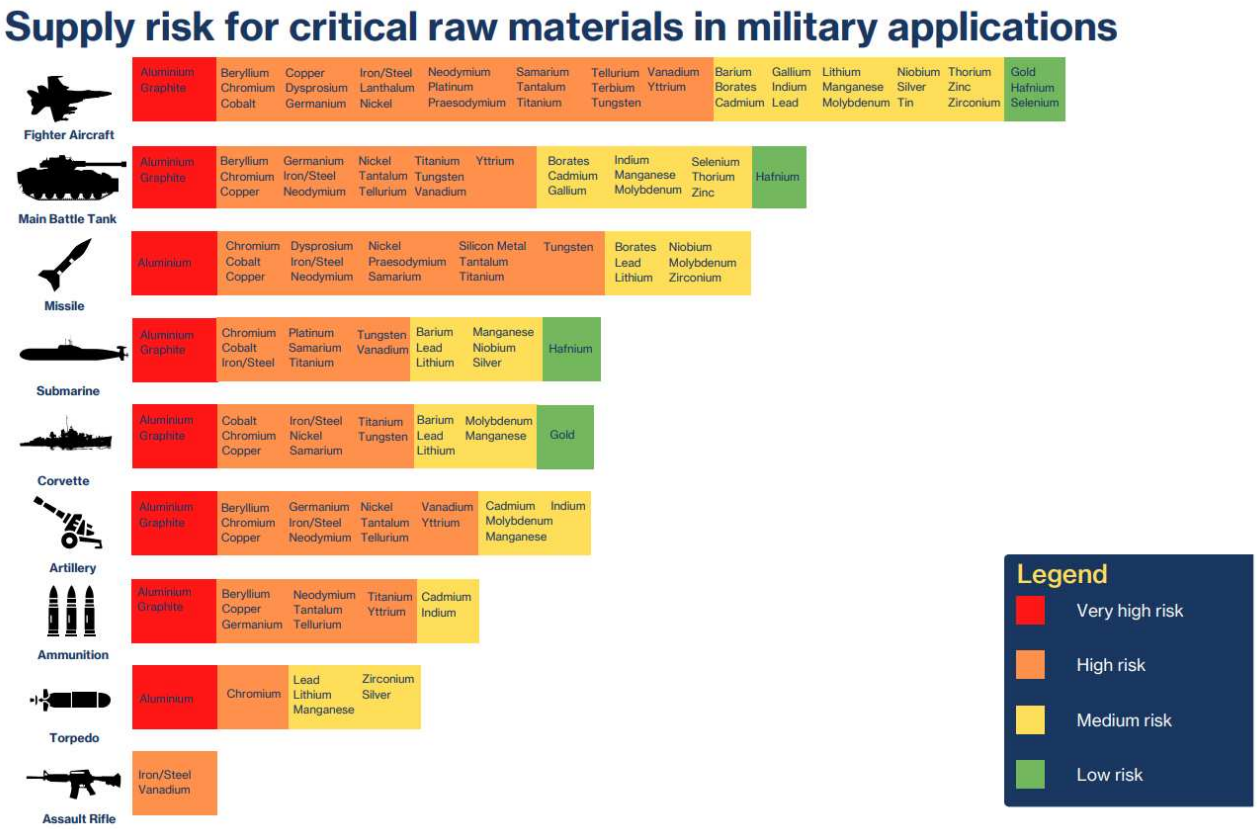


[112]

A similar assessment is used in the CRMA to identify the SRMs: the *Supply Risk* (the likelihood of supply shortages for a given material) and the *Economic Importance* (the impact a supply shortage for a given material could have). The main difference is that the risk assessment in the Hague document covers only the defence sector, whereas the one in the CRMA includes all of the EU's economic sectors. As stated in the CRMA, the SRMs are relevant to specific strategic sectors or technologies, namely "for the energy and digital transition as well as defence and aerospace applications"; so it shouldn't be surprising to find all the Very High-Risk and High-Risk materials (except for Vanadium, Beryllium, and Chromium) and some of the Medium-Risk Materials, all included in the SRMs list (Aluminium, Graphite, Dysprosium (REEs), Lanthanum (REEs), Platinum, Praseodymium (REEs), Silicon Metal, Terbium (REEs), Tellurium (REEs), Tungsten, Yttrium (REEs), Copper, Nickel, Titanium Metal, Lithium, Gallium, Manganese, Cobalt, Germanium). Vanadium and Beryllium are not considered SRMs but are still included in the CRMs list, together with Tantalum, Niobium, Cobalt, and Hafnium, making the number of materials needed for the implementation of war 58.8% out of all the materials included in the CRMA (20 out of 34). If to these we also add Antimony (CRM), Bismuth, Boron, and Magnesium (SRMs), materials that aren't cited in the Hague study but that still have a military purpose, the total of minerals listed in the CRMA that serve a military function rises to 73.52%.[113]

[112] Ibid. P. 4.

[113] The minerals listed here have been sourced through the cross-examination of the following documents:



114

Another point that strengthens the bond between CRMs and the military sector is NATO's release of a list of "12 defence-critical raw materials essential for the allied defence industry", stating that ensuring the availability of these materials is crucial to maintaining NATO's technological edge and operational readiness.[115] Needless to say, all of the materials listed are part of the SRMs list, except for Beryllium, which is only in the CRMs list. Regarding SPs, the new tool introduced by the CRMA to reach the European benchmarks, only 4 out of the 47 European SP are explicitly created to contribute to the resilience of the EU's defence industry.[116] Still, if we take a closer look to the materials selected for each SP, both in European and third countries SP, we can see that 45 out of 47

European Commission. *Study of the Critical Raw Materials for the EU 2023*
The Hague Centre for Strategic Studies. *Strategic Raw Materials for defence - mapping European industry needs.*
IPIS. *The EU Critical Raw Materials Act and the defence industry*. Table 1.

[114] Girardi, B., Patrahau, I., Cisco, G. & Rademaker, M. (2023) *Strategic Raw Materials for Defence: Mapping European Industry Needs*. P. V.

[115] NATO. (2024) NATO releases list of 12 defence-critical raw materials. https://www.nato.int/en/news-and-events/articles/news/2024/12/11/nato-releases-list-of-12-defence-critical-raw-materials

[116] European Commission. *Commission selects 47 Strategic Projects to secure and diversify access to raw materials in the EU*. March 2025. https://ec.europa.eu/commission/presscorner/detail/en/ip_25_864

for the first and 11 out of 13 for the second are focused on the supplying of minerals present in the NATO list.[117]

The geopolitical tensions and the growing instability brought the EU to focus more on Defence, and the publication of the *REArm Europe 2030*, together with the *White Paper for European Defence*, set the financial and strategic guidelines to put the European rearmament into action. The publication of these documents shows a shift in the EU interest, where war seems to rise at the top of European's priorities, compared to previous years where the energetic transition was the first on the list. CRMs are essential in the plan of rearm, as rare minerals are used in multiple military components, and securing a stable supply chain to support the increasing production is a key factor in the realisation of the rearm project. The CRMA offers a solid guide to increase internal production and diversify third countries' supply chains, while the special status of the SPs grants the possibility to start projects faster, answering the EU's urgency. The study presented by the Hague Centre shows how CRMs are deeply rooted in the production of defence equipment, and the NATO list of CRMs reinforces the connection and stresses the importance these minerals have for the implementation of the defence sector. The shift towards a war economy might overshadow the other main objective of the CRMA: the EU's Green Transition. The focus on military goals might lead the EU to use the CRMs mainly for implementing the Defence Sector, leaving little quantity for the energy transition projects; furthermore, as SPs have a preferential and accelerated route for their implementation, it's important to question whether the environmental and human rights criteria will be considered or overlooked to favour the extraction of minerals required for the rearmament. The CRMA states that the SPs should comply with environmental, social and safety requirements, and that project promoters should provide a plan to improve the environmental state of the affected sites after the end of the extraction,[118] to ensure a high level of environmental protection along the extraction process. At the same time, all SPs are considered to be in the public interest[119] or serving public health and safety as a matter of law,[120] and, if the public interest served by the project overrides the impact this project has on the environment, then it's possible for the authorities and

[117] Fahlbusch, M.; & Walschot, M. (2025). *The EU Critical Raw Materials Act and the defence industry*. IPIS. Table 2. https://ipisresearch.be/weekly-briefing/the-eu-critical-raw-materials-act-and-the-defence-industry/

[118] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 on the establishment of a framework for ensuring a secure and sustainable supply of critical raw materials and amending regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020. Pp. 5-6/67.

[119] Ibid.

[120] Marin, D., Pravuljac, M., Ilze Tralmaka, and Margarida Martins. *Understanding Strategic Projects Under the CRMA: A Guide to Rights and Processes*. London: European Environmental Bureau & ClientEarth, December 2024. P. 41.

project leaders to overlook standards of safety for the environment in favour of extraction.[121] Furthermore, questions regarding the transparency in choosing the SPs have risen, especially since corporate and military lobbying had an influence on the selection of the selected projects.[122] Controversy regarding environmental safety will be discussed in depth in the following chapter, but this matter already shows how deeply the Defence sector is influencing the extraction decisions, from choosing which minerals are considered critical, to the Projects that gain funds for their implementation, and even the priority the extraction projects have over environmental safety in favour of an accelerated supply chain for the implementation of war supplies.

3.3 Raw Materials in Modern Military Technologies

After showing the weight the military sector has on the decision-making regarding which minerals are to be considered critical and their extraction process, let's dive deeper into understanding where each material is needed in the production of military equipment and which role it covers. This paragraph will provide an extensive list showing how each material is deployed in the Defence sector. I start from the tables found in the Hague study,[123] and expand them through the cross-examination of three other documents: the International Institute for Strategic Studies report,[124] the table 1 provided by IPIS[125] and a list provided by the SFA Oxford company.[126] The table obtained covers the main sector of the military field: Aircraft, Land and Naval Sectors, including Aerospace, which wasn't treated in the Hague Centre's study due to its cutting-edge nature, which makes it difficult to create an extensive list; through the cross-examination of the documents and especially the IISS and SFA Oxford reports, I was able to integrate data related to this Sector. Keeping the Hague Centre's original structure, each table will show the mineral, the Application/subsystem (where the mineral goes) and the Specific Components created with the materials. As my research is

[121] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 on the establishment of a framework for ensuring a secure and sustainable supply of critical raw materials and amending regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020. P. 6/67.
[122] Fahlbusch, M.; & Walschot, M. (2025). *The EU Critical Raw Materials Act and the defence industry*. IPIS. https://ipisresearch.be/weekly-briefing/the-eu-critical-raw-materials-act-and-the-defence-industry/
[123] Girardi, B., Patrahau, I., Cisco, G., & Rademaker, M. (2023) *Strategic Raw Materials for Defence: Mapping European Industry Needs*. The Hague Centre for Strategic Studies. Pp. 17-27.
[124] Hackett, J. et al. (2025). *Critical Raw Materials and European Defence: Supply Chain Security*. International Institute for Strategic Studies. https://www.iiss.org/research-paper/2025/03/critical-raw-materials-and-european-defence/
[125] Fahlbusch, M., & Walschot, M. (2025). *The EU Critical Raw Materials Act and the defence industry*. IPIS. https://ipisresearch.be/weekly-briefing/the-eu-critical-raw-materials-act-and-the-defence-industry/
[126] SFA Oxford.(2026). Critical Minerals and Defence Technologies. https://www.sfa-oxford.com/knowledge-and-insights/critical-minerals-in-low-carbon-and-future-technologies/critical-minerals-in-defence-and-national-security/

focused on the connection between the defence sector and the CRMA, the tables below will include only the minerals listed in the CRMA, so it doesn't provide a full examination, as some minerals employed in the military production aren't part of the CRMs list at the current time.

AEROSPACE SECTOR (Fighters, Helicopters, transport/maritime patrol, F-35, advanced combat aircraft, satellites, hypersonic vehicles)

Figure 8. Use of raw materials in a fighter aircraft

127

[127] Image sourced from the Hague Centre for Strategic Studies report.

Material	Application (subsystem)	What it is used for
Aluminium (Very High-Risk Material)	Airframe; Propulsion; Landing gear	Airframe: fuselage, body, wings, tail, nose, axis; Propulsion: drive shaft and propellers, F135 engine, combustors; Landing gear: landing gear body
Graphite (Very High-Risk Material)	Airframe; Propulsion	Airframe: body, wings, tail, nose; Propulsion: thermal management for directed-energy weapons
Titanium (High-Risk Material)	Airframe; Propulsion; Landing gear; Sensors	Airframe: body, bulkheads, wings, leading-edge flaps, F-35 structure (30-40% Ti-6Al-4V); Propulsion: drive shaft and propellers, F135 engine disks and structures; Landing gear: leading-edge flaps; Sensors: avionics
Nickel (High-Risk Material)	Airframe; Propulsion; Landing gear; Connectors; Electronic systems	Airframe: structural fasteners; Propulsion: nozzle, post combustion, F135 single-crystal superalloy blades and vanes; Landing gear: wheels; Connectors: control systems, magnets/radar/lasers/sensors; Electronic systems: energy storage

Lithium (Medium-Risk Material)	Propulsion; Landing gear; Electronic systems; Propulsion and power supply	Propulsion: nozzle, post combustion; Landing gear: landing gear body; Electronic systems: energy storage; Propulsion and power supply: Li-ion batteries in F-35 integrated power package
Niobium (Medium-Risk Material)	Airframe; Propulsion	Airframe: body, wings; Propulsion: helicopter combustors, aircraft turbines; Niobium C-103 for hypersonic leading edges and scramjet combustors
Beryllium (High-Risk Material)	Airframe; Landing gear; Connectors; Sensors	Airframe: horizontal stabiliser (Cu-Be alloy); Landing gear: landing gear body (Cu-Be alloy); Connectors: electrical connectors (Cu-Be alloy); Sensors: AN/AAQ-40 EOTS housing (Be-Al alloy), gyroscopes, radar seekers
Gallium (Medium-Risk Material)	Airframe; Electronic systems; Sensors; Communications	Airframe: wings; Electronic systems: sensors & avionics, communication/identification; Sensors: AN/APG-81 (GaAs), AN/APG-85 (GaN) AESA radars, AN/AAQ-37 DAS; Communications: satellite payloads
Boron/Borates	Airframe; Propulsion; Electronic systems	Airframe: tail, nose; Propulsion: drive shaft and

		propellers; Ramjet gas-generator propellant additive; Electronic systems: communication/identification, sensors, avionics, electro-optical
Tantalum (Medium-Risk Material)	Airframe; Electronic systems; Connectors	Airframe: tail; Electronic systems: sensors & avionics, communication/identification, electro-optical, integrated wire network; Connectors: control systems, magnets/radar/lasers/sensors
Silicon Metal (High-Risk Material)	Airframe; Electronic systems; Communications	Airframe: body, wings; Electronic systems: energy storage; Communications: AN/ASQ-242 CNI avionics
Germanium (Medium-Risk Material)	Electronic systems; Canopy; Sensors	Electronic systems: sensors & avionics; Canopy: special glass; Sensors: thermal targeting, EO/IR surveillance platforms
Yttrium (REE) (High-Risk Material)	Propulsion; Electronic systems; Sensors; Propulsion and power supply	Propulsion: turbine (high and low pressure), yttrium-stabilised ceramic TBCs; Electronic systems: AN/AAQ-40 laser designators, Nd-Y-Al garnet lasers, HUD phosphors; Sensors: YAG lasers, YIG filters; Propulsion and power supply: heat-resistant ceramics

Dysprosium (REE) (High-Risk Material)	Propulsion; Electronic systems; Sensors; Propulsion and power supply	Propulsion: turbine (high and low pressure); Electronic systems: control actuator systems, JTRS secure communications; Sensors: laser targeting and guidance; Propulsion and power supply: heat-resistant NdFeB magnets, aircraft power systems
Cobalt (High-Risk Material)	Propulsion; Electronic systems; Connectors; Propulsion and power supply	Propulsion: nozzle, post combustion, F135 engine superalloys; Electronic systems: sensors & avionics; Connectors: control systems, magnets/radar/lasers/sensors; Propulsion and power supply: $LiCoO_2$ UAV batteries, stealth coatings
Lanthanum (REE) (High-Risk Material)	Propulsion	Propulsion: fan & compressors, combustor
Praseodymium (REE) (High-Risk Material)	Propulsion; Propulsion and power supply	Propulsion: fan & compressors, combustor; Propulsion and power supply: NdFeB magnet durability, high-power actuators
Terbium (REE) (High-Risk Material)	Propulsion; Sensors; Propulsion and power supply Propulsion: turbine (high and low pressure);	Propulsion: turbine (high and low pressure); Sensors: AN/AAQ-40 EOTS components; Propulsion and power supply: Terfenol-D actuators, integrated power package

Vanadium (High-Risk Material)	Propulsion	Propulsion: nozzle, post combustion
Hafnium (Low-Risk Material)	Landing gear; Electronic systems	Landing gear: wheels; Electronic systems: electro-optical, integrated wire network
Tellurium (REE) (High-Risk Material)	Electronic systems	Electronic systems: sensors & avionics, communication/identification, energy storage, electro-optical

LAND SECTOR (MBTs, IFVs, artillery, ammunition, assault rifles)

Figure 14. Use of materials in an infantry fighter vehicle

128

[128] Image sourced from the Hague Centre for Strategic Studies report.

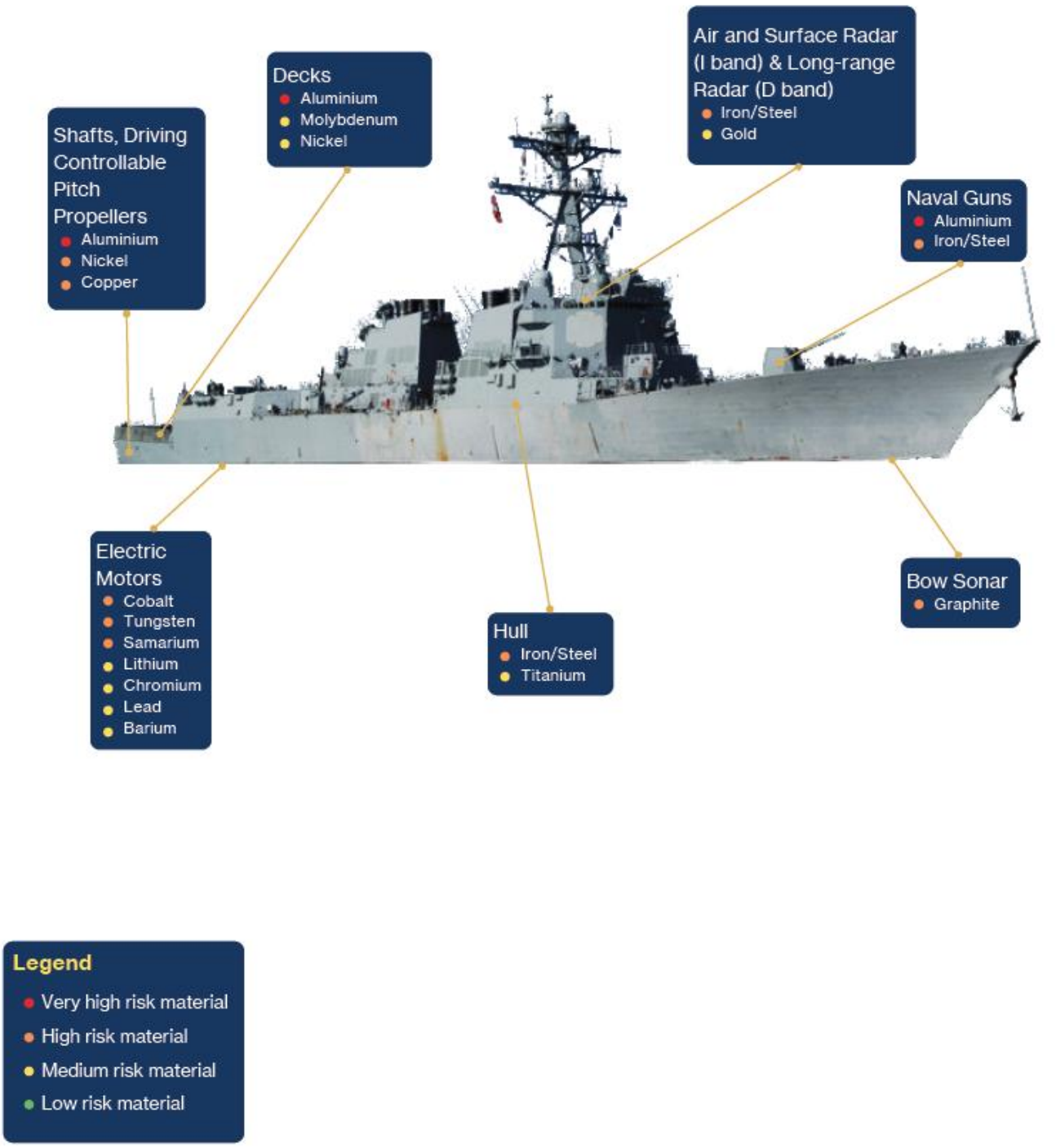
Material	Application (subsystem)	What it is used for
Aluminium (Very High-Risk Material)	Armour; On-board electronics; Structure	Armour: IFV hull (light Al alloys); On-board electronics: phased array radars; Structure: artillery systems, navigation equipment, guidance systems in IFVs and ammunition
Graphite (Very High-Risk Material)	Armament	Weapon component
Titanium (High-Risk Material)	Armour; Armament	Armour: MBT turret armour, armour composites (ceramic-filled plastics); Armament: cannon, howitzer, turrets
Nickel (High-Risk Material)	On-board electronics; Armament	On-board electronics: electronic components; Armament: barrel (alloying element)
Beryllium (High-Risk Material)	Armour; On-board electronics	Armour: MBT hull, turret, tank floor; On-board electronics: combat identification equipment/IR
Gallium (Medium-Risk Material)	On-board electronics	GaAs/GaN components in radios, battlefield-management systems
Boron/Borates	On-board electronics; Armament	On-board electronics: SIT communication, combat identification, inertial navigation, phased array radar; Armament: cannon, howitzer,

		smoothbore tank gun, ammunition
Tantalum (Medium-Risk Material)	Armament	Armour-piercing munitions; kinetic energy penetrators; explosively formed penetrators for heavy armour
Germanium (Medium-Risk Material)	On-board electronics; Armour (mounting)	On-board electronics: combat identification/IR, GPS/SAL guidance, thermal sights; Armour (mounting): FLIR modules for armoured vehicle mounting systems
Yttrium (REE) (High-Risk Material)	On-board electronics; Armament	On-board electronics: binoculars, combat identification/IR, GPS/SAL guidance, laser rangefinders; Armament: mounting systems (yttrium-stabilised ceramics)
Terbium (REE) (High-Risk Material)	On-board electronics; Armour (mounting)	On-board electronics: binoculars, combat identification/IR; Armour: Terfenol-D vibration dampening for tank mounting systems
Vanadium (High-Risk Material)	Armament	Tank gun, machine gun, howitzer
Hafnium (Low-Risk Material)	On-board electronics	On-board electronics components
Tellurium (REE) (High-Risk Material)	On-board electronics components	On-board electronics components
Tungsten (High-Risk Material)	Armour; Armament	Armour: MBT composite armour (high strength-to-weight ratio);

		Armament: kinetic energy penetrators
Copper (High-Risk Material)	On-board electronics	Wire systems, circuits, binoculars, navigation, communications equipment
Antimony	On-board electronics; Armament	On-board electronics: electronic components; Armament: main gun armament
Manganese (Medium-Risk Material)	Armament	Cannon barrel (alloy steel)

NAVAL SECTOR (surface combatants, submarines, carriers, corvettes, patrol vessels)

Figure 11. Use of raw materials in a naval surface vessel



129

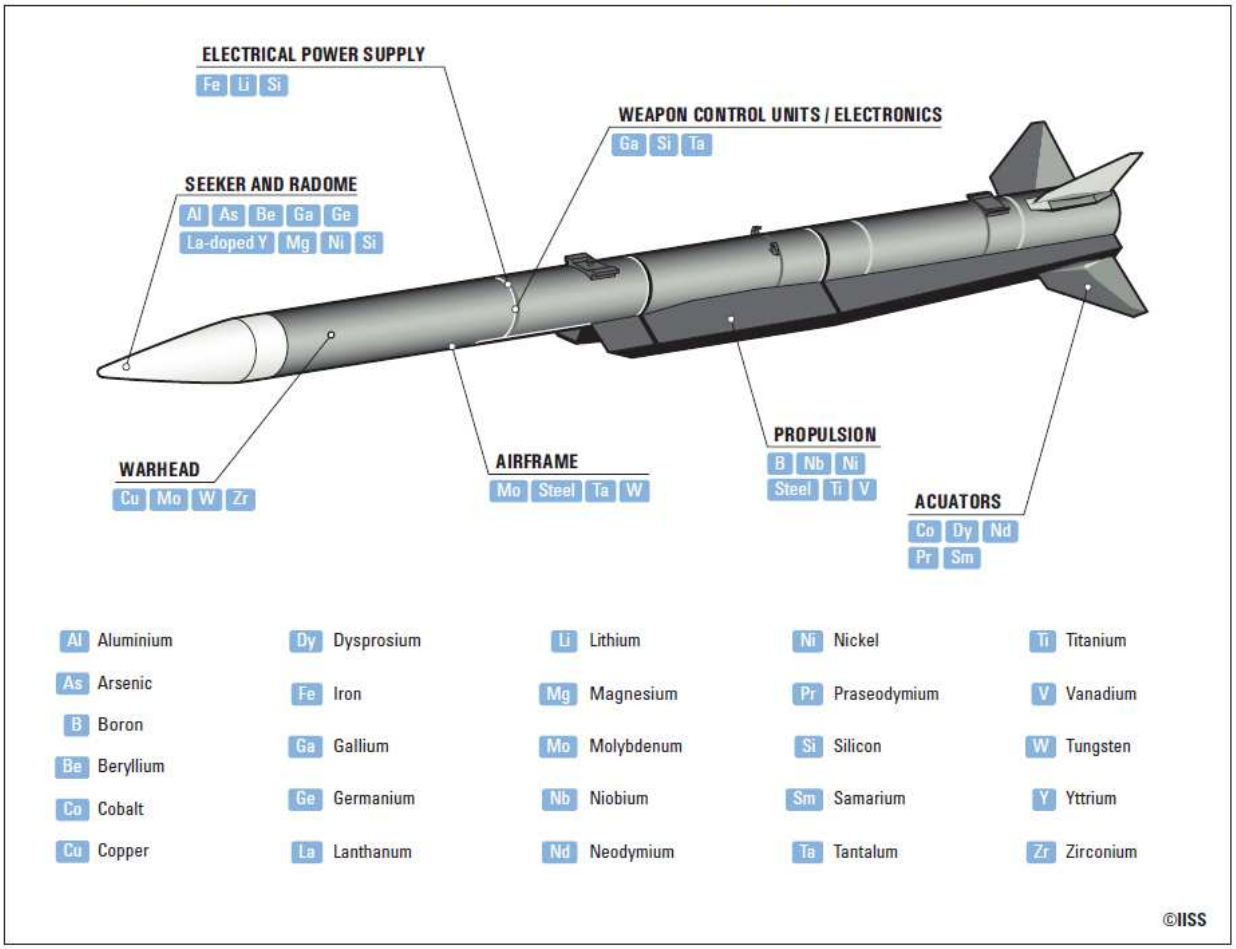
[129] Image sourced from the Hague Centre for Strategic Studies report.

Material	Application (subsystem)	What it is used for
Aluminium (Very High-Risk Material)	Hull; Propulsion; Armament; On-board electronics	Hull: decks, superstructure, shafts; Propulsion: diesel turbines, propellers, battery construction (torpedoes); Armament: naval guns, torpedo bodies, missile bodies; On-board electronics: radar components
Graphite (Very High-Risk Material)	Hull; Propulsion; On-board electronics	Hull: superstructure (submarines); Propulsion: battery technologies, fuel cells; On-board electronics: bow sonar (corvettes), radars (carriers), sonar systems
Titanium (High-Risk Material)	Hull; Propulsion; Armament	Hull: belt and upper belt (corvettes, submarines, carriers), deep-diving submarine hulls; Propulsion: gas turbines; Armament: guns, torpedo tubes
Nickel (High-Risk Material)	Hull; Propulsion; Armament; On-board electronics	Hull: shafts, decks; Propulsion: diesel and gas turbines, propellers; Armament: Browning machine guns; On-board electronics: electronic components
Lithium (Medium-Risk Material)	Propulsion; Electric motors	Propulsion: submarine batteries, torpedo batteries; Electric motors: carrier electric

		propulsion, corvette electric motors
Gallium (Medium-Risk Material)	On-board electronics	Radar systems, high-frequency components, optoelectronic devices
Tantalum (Medium-Risk Material)	Armament	Saltwater corrosion protection for ships
Yttrium (REE) (High-Risk Material)	On-board electronics	YIG filters in AN/SPY-6 Air and Missile Defense Radar
Cobalt (High-Risk Material)	Propulsion	Diesel engines, gas turbines, thrusters, gearboxes, shafts, propellers
Vanadium (High-Risk Material)	Propulsion; Armament	Propulsion: propulsion components; Armament: guns, torpedo tubes
Copper (High-Risk Material)	Propulsion; On-board electronics; Armament	Propulsion: diesel turbines, thrusters, propellers, shafts; On-board electronics: wiring; Armament: Browning machine guns
Manganese (Medium-Risk Material)	Propulsion; Armament	Propulsion: propulsion components; Armament: guns, torpedo tubes
Antimony	Armament	Weapon components

GUIDED-WEAPON SECTOR (missiles: Meteor, AMRAAM, Tomahawk; precision-guided munitions)

Figure 4: **Components and raw materials used in a modern guided weapon**



Note: The application of materials shown is illustrative and not exhaustive. Some materials could be used in multiple places.
Source: IISS analysis

130

Material	**Application (subsystem)**	**What it is used for**
Aluminium (Very High-Risk Material)	Seeker and radome; Propulsion	Seeker and radome: housing and structure; Propulsion: stator blades in turbojet compressor
Titanium (High-Risk Material)	Airframe; Propulsion	Airframe; Propulsion

[130] Image sourced from the IISS report

		Airframe: ramjet air intakes, structural components; Propulsion: ramjet intake structures, turbojet components
Nickel (High-Risk Material)	Seeker and radome; Airframe; Propulsion	Seeker: nickel plating for beryllium mirrors; Airframe: structural alloying element in steel; Propulsion: Inconel 718 turbojet superalloy
Lithium (Medium-Risk Material)	Electrical power supply	Lithium-silicon/iron disulfide thermal batteries (high energy capacity per unit volume)
Niobium (Medium-Risk Material)	Airframe; Propulsion	Airframe: structural alloying element in steel; Propulsion: alloying element
Beryllium (High-Risk Material)	Seeker and radome	Nickel-plated beryllium mirrors in IR seekers; gyroscopes; radar seekers for inertial guidance
Gallium (Medium-Risk Material)	Seeker and radome; Weapon control units	Seeker and radome: GaAs/GaN MMICs in RF seekers (e.g. Meteor AD4A); Weapon control units: RF electronics and MMICs
Boron/Borates	Propulsion	Gas-generator propellant additive (oxygen-deficient composite fuel) for thrust maximisation
Tantalum (Medium-Risk Material)	Airframe; Warhead; Actuators; Weapon control units	Airframe: structural components;

		Warhead: shaped-charge liner for armour penetration; Actuators: directed-energy weapons, railgun projectiles; Weapon control units: military-grade capacitors for radar, guidance, avionics
Germanium (Medium-Risk Material)	Seeker and radome	IR seeker windows; thermal tracking in seeker heads for fire-and-forget
Dysprosium (REE) (High-Risk Material)	Actuators; Electrical power supply	Actuators: heat-resistant NdFeB magnets for high-speed missile propulsion; Electrical power supply: permanent-magnet generator components
Cobalt (High-Risk Material)	Propulsion; Actuators; Electrical power supply	Propulsion: turbojet alloying; Actuators: Co-Sm magnets, superalloys; Electrical power supply: permanent-magnet generator component
Lanthanum (REE) (High-Risk Material)	Seeker and radome	Windows for IR seeker signal reception
Praseodymium (REE) (High-Risk Material)	Actuators	NdFeB magnet durability; laser designators; infrared tracking sensors
Terbium (REE) (High-Risk Material)	Actuators; Electrical power supply	Actuators: Terfenol-D for stabilisation systems, flight control surfaces;

		Electrical power supply: permanent-magnet generator components
Vanadium (High-Risk Material)	Airframe; Propulsion	Airframe: structural alloying element in steel; Propulsion: alloying element
Lithium (Medium-Risk Material)	Electrical power supply	Lithium-silicon/iron disulfide thermal batteries (high energy capacity per unit volume)
Copper (High-Risk Material)	Warhead	Shaped-charge warhead liner for armour penetration; high-energy explosive casings
Magnesium	Seeker and radome	Alloying element in seeker components
Tungsten	Warhead	Fragmentation sleeve; kinetic energy penetrators

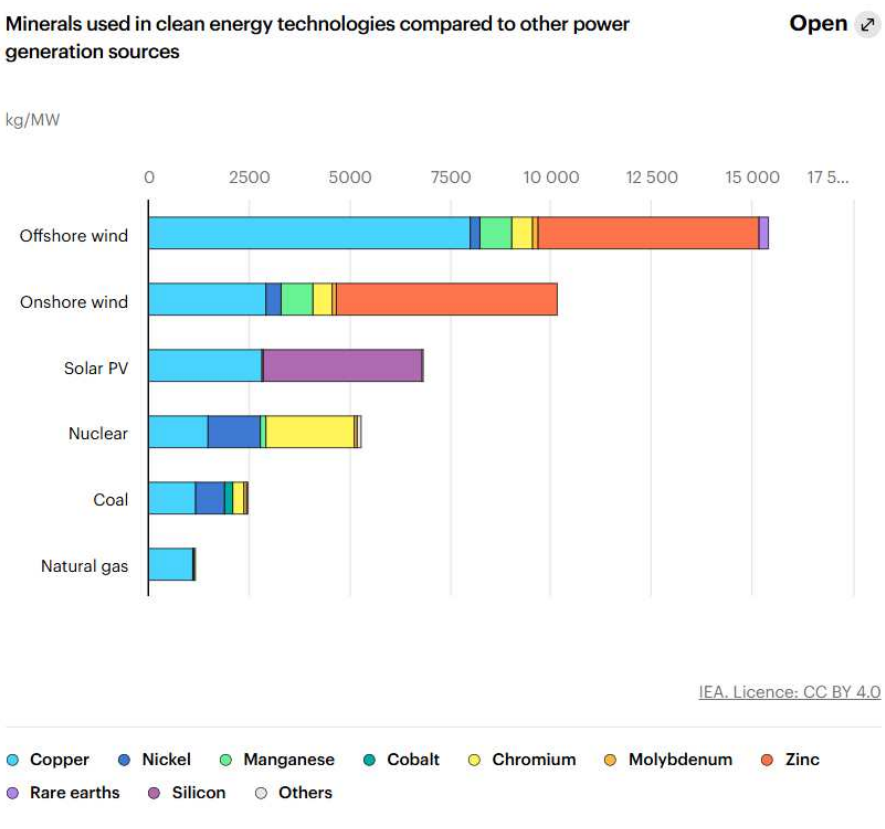
4- Use of CRMs for the Green Transition and issues of Sustainability

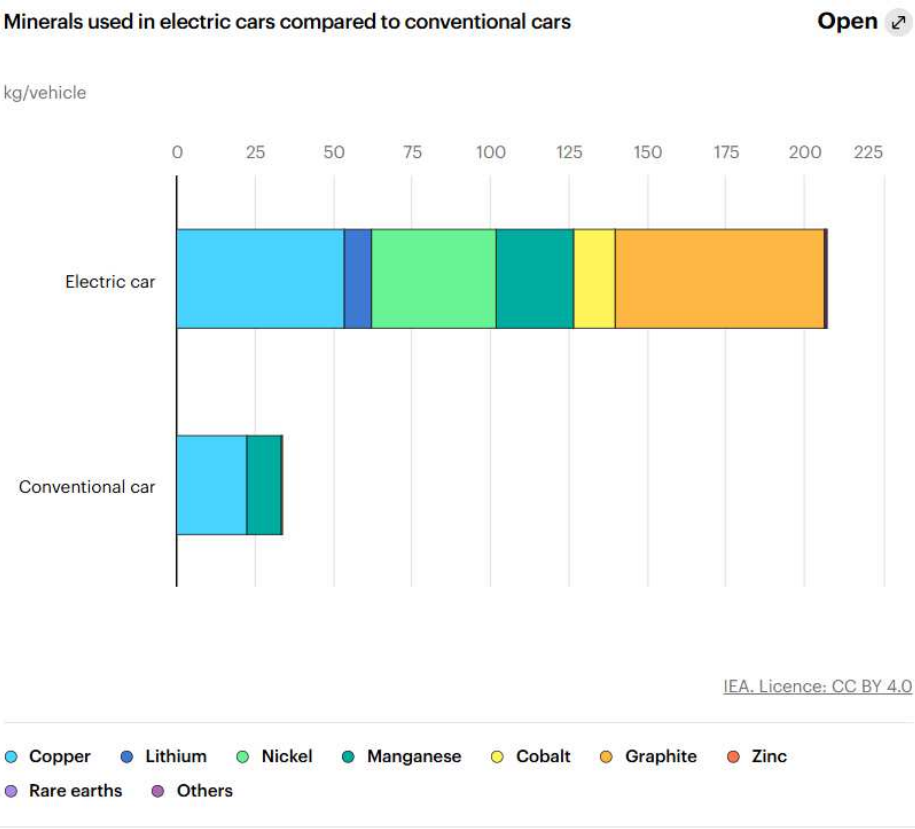
Another key element covered by the CRMA is the focus on the Green Transition, considered one of the funding reasons that justifies the need for the incrementation of internal production and stable supply chains of the CRMs. The Act opens by stating that CRMs are essential because of their key role in realising the Digital and Green Transition,[131] and, together with the *Net-Zero Industry Act* (NZIA) and the reform of the electricity market, the Regulation is considered one of the legal flagship initiatives of the European Green Deal, which aims to make the EU climate-neutral by 2050 and fulfil its commitments under the Paris Agreement.[132]

Reducing emissions and shifting towards a carbon-free economy is one of the primary objectives of the EU, which, through time, has created various regulations going from the sensitization of the public to climate safeguard to an increase in investment in green energy technologies. But shifting the energy from a hydrocarbon-based to a clean-based production requires meeting the increasing demand for minerals and materials needed for the production of these technologies. Products like wind turbines, solar panels, and electric vehicles use a much higher quantity of minerals compared to the traditional carbon-based technologies:

[131] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 on the establishment of a framework for ensuring a secure and sustainable supply of critical raw materials and amending regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020. P. 1/67.

[132] Marin, D., Pravuljac, M., Tralmaka, I. & Martins, M. (2024). *Understanding Strategic Projects Under the CRMA: A Guide to Rights and Processes*. European Environmental Bureau & ClientEarth. P. 6.





[133]

[133] Diagrams sourced from: International Energy Agency. (2021; revised 2022). *The role of Critical Minerals in Clean Energy Transition*.

The CRMA serves in this case to secure a stable supply chain that can keep up with the increasing demand and secure a flux that stands geopolitical crises by strengthening the internal production and widening the third-country supplying sources.

Sustainability seems to hold a certain weight in the Regulation, as the whole section 5 is dedicated to describing measures aimed at reducing the impact of the SPs, increasing the circularity within the chain of extraction, and listing certification schemes that SPs need to follow in order to be approved. Recycling is considered a turning point in the sourcing of CRMs inside the Union, and one of the benchmarks is dedicated to increasing and strengthening the internal supply by sourcing 25% of the Union's annual consumption from the recycling chain.[134] The ability of the EU to recycle materials after they have been used is also a factor considered to calculate the Supply Risk Score in the identification of Strategic Raw Materials.[135]

But is the CRMA a solid foundation for the Green Transition? In this chapter I will show the measures that the Act takes to safeguard environmental and social justice of the places taken in consideration for the development of SPs, but, as I anticipated in the previous chapter, when public interest of a SP is considered critical for the economic revenue or the purpose it will serve the community (like the projects for the implementation of the Defence/Military sector), the project leaders can bypass these security guidelines. About 85% of the CRM sources are less than 5 km from the nearest environmental protected areas, and approximately 69% of active mines containing CRMs are closer than 5 km to the nearest protected areas.[136] This raises a question regarding the safety of these areas compared to favouring economic revenue. Finally, the last question is concerning the extractive industry itself: can an activity that is considered one of the most impactful on the environment and is based on resources that are destined to run out serve as the starting point for an energy revolution? And, are the current green energy sources a useful tool to decrease the human footprint on the planet, or is their creation just another temporary solution that brings more damage to the environment?

https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions

[134] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … P. 3/67

[135] Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI). P. 10.

[136] GTK. (2025). Interactions Between Extractive Activities and Natura 2000 Areas – First Outcomes of the CIRAN Project.
https://www.gtk.fi/en/current/interactions-between-extractive-activities-and-natura-2000-areas-first-outcomes-of-the-ciran-project/

4.1 Raw Materials for Renewable Energy Technologies: Regulations and Controversies

Minerals are a fundamental component of the modern renewable technologies: Lithium, Nickel, Cobalt, Manganese and Graphite are crucial for battery performance; REEs (Neodymium, Praseodymium, Dysprosium, Terbium) are essential for permanent magnets in wind turbines and EV motors.[137] All of these minerals are included in the CRMs list:

Critical mineral needs for clean energy technologies

	Copper	Cobalt	Nickel	Lithium	REEs	Chrominum	Zinc	PGMs	Aluminium*
Solar PV	●	●	●	●	●	●	●	●	●
Wind	●	●	●	●	●	●	●	●	●
Hydro	●	●	●	●	●	●	●	●	●
CSP	●	●	●	●	●	●	●	●	●
Bioenergy	●	●	●	●	●	●	●	●	●
Geothermal	●	●	●	●	●	●	●	●	●
Nuclear	●	●	●	●	●	●	●	●	●
Electricity networks	●	●	●	●	●	●	●	●	●
EVs and battery storage	●	●	●	●	●	●	●	●	●
Hydrogen	●	●	●	●	●	●	●	●	●

Importance	High	Moderate	Low

138

As the focus on the Green Transition grows, so will the demand for CRMs needed to produce the technologies to support the shift in energy production. Green Energy Technologies require a greater amount of minerals compared to the traditional hydrocarbon resources; for example, an electric car requires six times the mineral inputs of a conventional car and an onshore wind plant requires nine times more mineral resources than a gas-fired plant of the same capacity.[139] From 2010 to 2021, the demand of CRMs increased by 50%,[140] but reaching the 2050 zero-net emissions benchmark implies an ulterior spike in demand and a greater push in extraction and supply chains. The IEA study foresees an increase that reaches 30 to 40 times the quantity required in 2021, especially for minerals necessary for the creation of EV Batteries, making about half of the mineral demand growth from clean energy technologies over the next two decades.[141] The scenario offered by the

[137] International Energy Agency. (2021; revised 2022). *The role of Critical Minerals in Clean Energy Transition*. P. 5. https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions

[138] Table sourced from: International Energy Agency. (2021; revised 2022). *The role of Critical Minerals in Clean Energy Transition*. https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions The abbreviation CSP stands for concentrating solar power

[139] Ibid. P. 28.

[140] Ibid.

[141] Ibid. P. 50.

IEA foresees that by 2040, clean energy technologies will meet the majority of the CRMs' demands, with over 40% of total demand for Copper and REE, 60-70% for Nickel and Cobalt, and almost 90% for Lithium.[142] The CRMA as well foresees an exponential growth of CRM demand in the near future,[143] hence the need to strengthen internal production and widen the external supply chains.

These predictions make us understand how the switch to renewable technologies will create a supercharge in the demand for CRMs that will replace the current need for carbon and fossil fuels. This first point already raises questions regarding the usefulness of this strategy towards creating a new, green technology system, as CRMs, just like fossil fuels, are non-renewable materials; the proposal of the CRMA changes the source but not the system that ends up exhausting the Earth's resources, keeping the loop of resource exploitation alive. Creating the basis for a Green Transition while the procedures used to supply materials for the energy production remain the same seems very short-sighted, to say the least. Not to mention, mining and mineral extractivism have a huge impact on the environment, not different from fossil fuel extractivism. The switch to mineral extractivism as the main source of energy production is part of the broader concept of *postfossil extraction*, introduced by Anne Tittor.[144] As Tittor explains in her paper, "this term highlights that what is taking place is not just a shift from classical extractivism to a green one, but a slow, contested and contradictory change in the world's material basis (in a biophysical sense) towards something I (and others) call post-fossil."[145] She argues that a switch to post-fossil extractivism doesn't help to reach a less environmentally impactful way of creating energy, but rather fits itself perfectly in the existing capitalist system, reinforcing power imbalances created by colonialism: the creation of SPs and reopening of mining sites will have a greater impact on Countries of the Global South, that will find themselves to be suppliers of CRMs for the Global North,[146] losing land, environmental and social health. Latin America in particular is due to suffer the consequences of the new partnership deals with Europe, as 25 out of the 34 CRMs are extracted there. In 2022 Chile was the major exporter of CRMs, accounting for 11% of global exports, and Brazil was at the top of Niobium production, accounting for a global 90%.[147] Argentina, Bolivia and Chile have half of the world's Lithium resources, while Chile, Peru, and Mexico are among the world's leading copper

[142] Ibid. P. 5.
[143] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … P. 1/67.
[144] Tittor, A. (2026). Postfossil extractivism. A new lens on decarbonization's land and material intensity. *The Journal of Peasant Studies,* 1–24.
https://doi.org/10.1080/03066150.2025.2606878
[145] ibid. P. 3.
[146] Ibid.
[147] Jütten, (2024). *EU–Latin America: Enhancing cooperation on critical raw materials*. European Parliamentary Research Service. P. 2.

producers[148]. In recent years, China strengthened commercial relations with South America, becoming the second biggest trading partner of South America with 4 bilateral free trade agreements in place (with Chile, Costa Rica, Ecuador and Peru) and 21 South American countries signing on to the BRICS.[149] The EU aims to reduce its dependence on China's export of CRMs and ought to try to enter the South American supply chains with Strategic Projects or partnership proposals to gain access to a secure advantage in the supply market. In 2023, the EU signed a memorandum of understanding with Argentina and Chile, with the intention to intensify cooperation in the field of global sustainable value chains; furthermore, in 2025, it signed a temporary trade deal with Chile that includes a whole section dedicated to energy and natural resources.[150] Finally, among the 13 non-EU SPs, we find a project dedicated to Nickel and Cobalt extraction in Brazil.[151] Reopening or creating new extractive sites raises worries regarding the safety of the environment and of the indigenous communities living in the areas.

Throughout the CRMA, strategies are provided to reduce the risk of environmental impact; regarding SPs, the Regulation states that all the proposals must demonstrate a procedure of sustainable implementation, with plans to reduce the impacts of the excavation site both on the surrounding environment and on the people involved in it:

"the project would be implemented sustainably, in particular as regards the monitoring, prevention and minimisation of environmental impacts, the prevention and minimisation of socially adverse impacts through the use of socially responsible practices including respect for human rights, indigenous peoples and labour rights, in particular in the case of involuntary resettlement, potential for quality job creation and meaningful engagement with local communities and relevant social partners, and the use of transparent business practices with adequate compliance policies to prevent and minimise risks of adverse impacts on the proper functioning of public administration, including corruption and bribery" [152]; in addition, for projects in third countries "the project would be mutually beneficial for the Union and the third country concerned by adding value in that third country"[153], like "promoting sustainable and circular economy practices, decent working conditions and respect for human rights along their raw material value chains."[154]

Looking at the text, it may seem that the regulation sets a solid basis in controlling the creation of SPs from overexploitation, but a first discrepancy is found in the Act itself, where it is stated that

[148] The EU-LAT Network. *A Green and Fair Transition - For Whom? An analysis from Latin America*. February 2025. P.11.
[149] Jütten, (2024). *EU–Latin America: Enhancing cooperation on critical raw materials*. European Parliamentary Research Service. P. 4.
[150] Ibid. P. 6.
[151] Fahlbusch, M., & Walschot, M. (2025). *The EU Critical Raw Materials Act and the defence industry*. IPIS. Table 2. https://ipisresearch.be/weekly-briefing/the-eu-critical-raw-materials-act-and-the-defence-industry/
[152] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … P. 22/67.
[153] Ibid.
[154] Ibid. P. 47/67.

SPs are all considered to be in the public interest and if the purpose they serve is more beneficial to the economy or wellness of society, then they can be authorised regardless of their impact on the environment.[155] At the same time, to receive the status of SP, the presented plan must comply with the directives of all EU laws concerning environmental safeguard, especially the Environmental Impact Assessment Directive, Habitats and Birds Directive, Water Framework Directive, Industrial Emissions Directive, Waste Framework Directive, Seveso III Directive, Nature Restoration Law, EU Biodiversity strategy, the Aarhus Convention and the EU Charter of Fundamental Rights.[156] The compliance has to be checked by the permitting Authority, which will have to check on a case-by-case basis to determine whether all the conditions set out in these Directives are met.[157] This raises another problem that conflicts with the CRMA's regulations: the whole assessment process is time-consuming, but the CRMA sets accelerated schedules for the approval and implementation of SPs, which could risk superficial evaluation in order to fit the time limits. A rushed evaluation sets in motion the following two issues:

1. The over-reliance on Certification schemes to prove a SP's sustainable footprint.
2. The inability (or lack of interest) to include Indigenous People in the decision-making process.

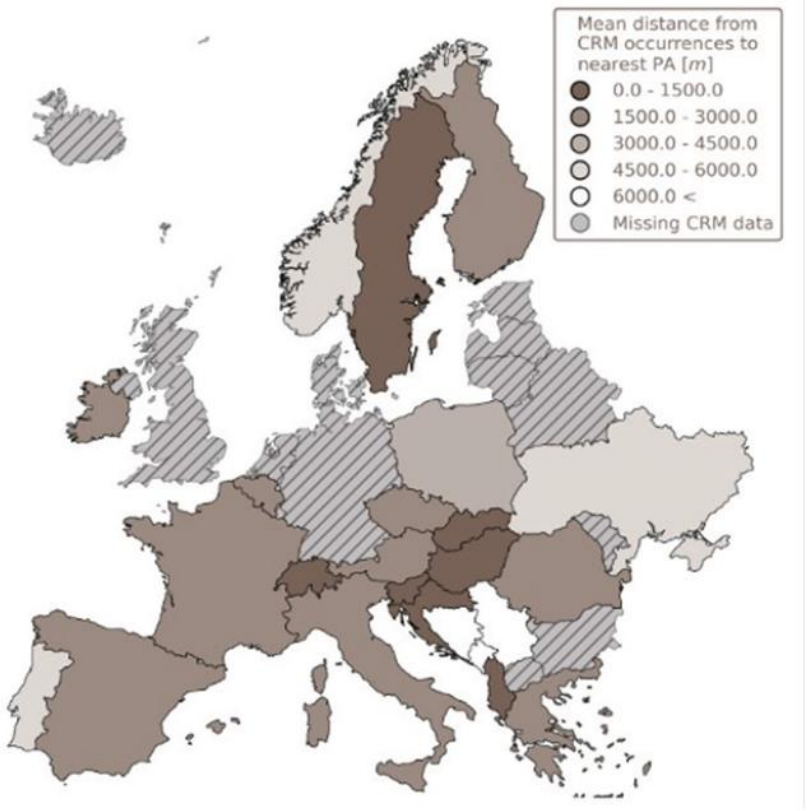
The CRMA offers two paths to demonstrate sustainability: either the SP complies with EU legislation and international law, or it can provide a certification obtained by a recognised industry scheme, or commit to obtaining it if it doesn't have it by the time the project is presented. Certifications are given by private third-party entities that assess and verify a company's compliance with the scheme's sustainability criteria. This second choice is quite controversial, as certification alone cannot replace a comprehensive assessment of a project's human rights and environmental performance: they often overlook the systemic issues inherent to extractive industries, focusing only on isolated metrics like GHG emissions or water usage, neglecting deeper issues like land rights, cultural heritage, and community well-being. The certification processes don't give space to the right holders to express their needs and complaints, turning this process into a smokescreen, allowing companies to claim sustainability credentials while their harmful practices remain undetected.[158]

[155] Ibid. P. 6/67.
[156] Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI). P. 15.
[157] Ibid. P. 44.
[158] Ibid. Pp. 16-17.

The CRMA doesn't recognize the right to Free, Prior and Informed Consent (FPIC) for Indigenous People,[159] a framework recognised under international law that requires governments and companies to seek the explicit consent of Indigenous Peoples before proceeding with any activities that impact their lands, territories, or livelihoods;[160] on the contrary, these communities are not included in the assessment processes of SPs, even if the excavation sites will affect places where they live. As a matter of fact, the process of environmental consideration to grant SP status isn't made transparent by the CRMA**,** nor does it guarantee the right of Indigenous Peoples, NGOs, or the public to participate or express their views in the assessment process before the European Critical Raw Materials Board.[161] Considering that projects connected to the green energy industry have a huge impact on the environment, the lack of enforcement of FPIC continues to be an issue, as Indigenous communities' safety is often sacrificed to gain economic profit.[162] According to the CIRAN policy brief, implementing the CRMA without a transparent decision-making framework could deepen territorial disparities, as resource-rich peripheral regions will have to face concentrated environmental and social burdens for the benefit of serving EU priorities; this could create an increase of Eurosceptic sentiment in mining-affected regions, cause legal challenges and permitting delays and damage public trust in both environmental protection and industrial policy.[163] This point is very true for partner countries that engage in SPs with the EU, especially for Latin America and Africa, historically been exploited by colonizer States for their resources. The CRMA is designed first of all to protect and implement the supply security of the EU, not as a mutual development project. As such, it will always have the EU's needs as a priority, disregarding other countries' well-being. Even though it introduces the concept of "value addition" regarding deals with third Countries, it doesn't provide a clear definition of it and focuses narrowly on financial payments, overlooking true economic diversification, social investment, cultural preservation, and technology transfer.[164] Strategic Partnerships, as they are set now, may risk turning into future environmental and social disasters for the partner Countries, leaving them with only monetary compensation in exchange for the destruction and impoverishment of soil once again for the benefit of colonizing countries.

[159] The EU-LAT Network. *A Green and Fair Transition - For Whom? An analysis from Latin America*. February 2025. P.12.
[160] Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI). P. 33.
[161] Ibid. P. 19.
[162] Ibid. P. 35.
[163] CIRAN POLICY BRIEF. (2025). *Strategies for Balancing Diverging Societal Needs: Critical raw materials extraction vs. environmental protection*. P. 3.
[164] Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI). P. 30.

Another critical point to focus on is the use of land for implementing CRM projects: research from the Horizon Europe CIRAN project shows that 85% of EU critical raw material deposits are located either within environmentally protected areas or within 5 km of them. With the EU committed to expanding protected areas to 30% of its territory by 2030,[165] while at the same time presenting a regulation set to increase the internal production of CRMs, we see a conflict of interests that is expected to intensify rather than subside.



Mean Distance (km) from CRM Occurrences to nearest Protected Area (PA) across Europe (Source: CIRAN project). [166]

In order to increase the internal production of CRMs, the CRMA asks every MS to start national exploration programs to map the territory and update databases of the locations of CRMs to help identify possible extraction sites. It also demands national, regional, and local authorities to "consider including in such plans, where appropriate, provisions for the development of critical raw materials projects," with priority given to "artificial and built surfaces, industrial sites, brownfield sites, and active or abandoned mines."[167] This course of action shows how the mining industry's needs are placed as a priority in the management of land use, removing importance to the safeguarding of the protected areas. The conflict of interest is cited in the Regulation, which states

[165] CIRAN POLICY BRIEF. (2025). *Strategies for Balancing Diverging Societal Needs: Critical raw materials extraction vs. environmental protection*. P. 2.
[166] Image sourced from the CIRAN Policy Brief.
[167] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … P. 28/67.

that “land use conflicts can create barriers to the deployment of critical raw material projects” and calls for spatial plans that “balance public goods and interests.”[168] But, once again, the declaration that all SPs serve the overriding public interest as a matter of law makes it so that economic revenue or implementation of certain Sectors, like the military, can be implemented regardless of where the mineral source is located. And, if the demand for CRMs is set to exponentially increase, this will lead to a continuous expansion of the mining sites further into Protected Areas. The EU is already consuming more than double a sustainable and just level of materials and energy,[169] and the CRMA doesn’t contain any concrete targets to limit overall EU demand and consumption of SRMs,[170] focusing only on increasing the supply and internal production. In addition, the land-use conflict is made more complicated by the overlapping time frame problem: the CRMs list is updated every 3 years, but exploration-to-production time lapse takes 10-15 years or more.[171] This means that by the time the product reaches the market, the technologies for which it was required will have advanced and the original purpose of the material will be outdated, putting the environment at a degradation risk for nothing.

Finally, while the CRMA recognises significant environmental footprints of the CRMs, it doesn’t define clear rules to set an acceptable footprint level of the materials or to describe the wide range of impact the extraction process of these materials has.[172] Mining activities can result in water scarcity and pollution, soil erosion and contamination and biodiversity loss; furthermore, it aggravates the effects of climate change.[173] A lack of regulation of mineral extraction could bring effects that we’ll have to face even long after the extraction sites are closed.

Even though the CRMA presents itself as an ethical way to go back to the extraction era and as the foundational framework for the green energy transition, the guidelines related to environmental protection are weak and full of controversies; the act itself has been designed to implement the production of internal Materials and the strengthening of external Supply Chains, all to favour the European economic revenue. SPs have been assigned the role of serving public interest, and as such have been granted the possibility to overstep regulations safeguarding the environment, while Partner Countries have been identified to implement European supply without a clear and safe

[168] Ibid. P. 8/67.
[169] Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI). P. 11.
[170] Ibid.
[171] CIRAN POLICY BRIEF. (2025). *Strategies for Balancing Diverging Societal Needs: Critical raw materials extraction vs. environmental protection*. P. 3.
[172] European Environmental Bureau. (2023). *A turning point: The Critical Raw Material Act's needs for a social and just green transition: A position paper on the critical raw materials legislation*.
[173] de Haes, S., & Lucas, P. *Environmental Impacts Of Extraction And Processing Of Raw Materials For The Energy Transition*. PBL Netherlands Environmental Assessment Agency.

revenue or additional value, except for monetary compensation, facing the risk of falling further in the colonial lanes of exploitation, where European countries empty the soil from resources leaving behind environmental and social damages without any form of support. This quick overview of the controversies present in the CRMA reinforces the original idea that it is not possible to create a green transition based on mineral extraction: changing the source from fossil fuel to minerals without dismantling the exploitative system and economic capitalist demand won't solve the need for a transition to clean energy production, but it will only widen the damage created by exploiting yet another resource. In the next chapter, I will describe in depth the effective impact of the extractive sector, but the overview of the fallacies regarding environmental protection in the CRMA presented here already shows the damage implementing this Regulation will bring.

4.2 Recycling and Circular Economy Strategies

Another important objective of the CRMA is that of implementing Circular Economy Strategies inside the EU in order to supply CRMs through recycling activities and thus reduce the demand for direct extraction: one of the benchmarks set is focused on recycling and states that by 2030, EU recycling capacity must be able to produce at least 25% of the Union's annual consumption of SRMs. In addition, the Regulation states that "the Union should be able to recycle significantly increasing amounts of each strategic raw material from waste".[174] To reach these objectives, the Regulation sets different strategies, illustrated in Section 5:

- National Programmes on Circularity (Article 26)

  Each MS must adopt national programmes with measures covering seven areas: Incentivise technological progress and resource efficiency to moderate the expected increase in CRM consumption; waste prevention, re-use and repair of products with CRM recovery potential; collection, sorting and processing of CRM-containing waste, maximising availability and quality of recyclable material; Increased use of secondary CRMs, including through public procurement and financial incentives; increase technological maturity of recycling technologies and promote circular design, materials efficiency and substitution; upskilling and reskilling the workforce for CRM circularity; modulate extended producer responsibility fees to incentivise products containing a larger share of secondary CRMs.[175] These national programs can be integrated into existing waste management plans or waste prevention

[174] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 … P. 3/67.
[175] Ibid. P. 36/67.

programmes under the Waste Framework Directive and must prioritise products and waste streams not already covered by specific EU collection, treatment, recycling or re-use requirements. They can receive financial incentives (discounts, monetary rewards, deposit-refund systems) to encourage re-use and collection of products with CRM recovery potential, subject to EU state aid rules. MS must identify and report quantities of CRM-containing components removed from waste electrical and electronic equipment (WEEE), and quantities of CRMs recovered from that equipment.[176]

- Recovery from Extractive Waste (Article 27)

Operators of extractive waste facilities must submit a preliminary economic assessment of CRM recovery potential from extractive waste of facilities and of extractive waste before it becomes waste; MS must establish a publicly accessible database of closed/abandoned extractive waste facilities with data on location, volume, and raw material content.[177]

- Recyclability of Permanent Magnets (Article 28)

Products containing permanent magnets (wind turbines, EVs, MRI devices, industrial robots, heat pumps, washing machines, etc.) must bear labels indicating magnet type, weight, location, and chemical composition. A data carrier linked to a unique product identifier must provide information on coatings, glues, additives, and safe removal instructions.[178] Defence and space applications are exempt from these controls[179]. Always related to Permanent Magnets, Article 29 regulates the recycled content of the magnets: producers must publicly disclose the recycled content share of Neodymium, Dysprosium, Praseodymium, Terbium, Boron, Samarium, Nickel and Cobalt in permanent magnets above 0.2 kg.[180]

The strategies presented focus primarily on increasing the recovery of waste materials, with a special focus on Permanent Magnets, as they are the technologies whose materials are currently supplied 100% by third Countries like China and Russia. SPs dedicated to recycling in Europe are a minority, with only 10 out of the 47 dedicated to recycling techniques, while none of the partnered SPs with Third Countries are used for implementing recycling techniques. This information not only highlights that the primary focus within the CRMA is to increase extraction levels, but brings

[176] Ibid. P. 37/67.
[177] Ibid. Pp. 37-38/67.
[178] Ibid. P. 39/67.
[179] Ibid. P. 40/67.
[180] Ibid.

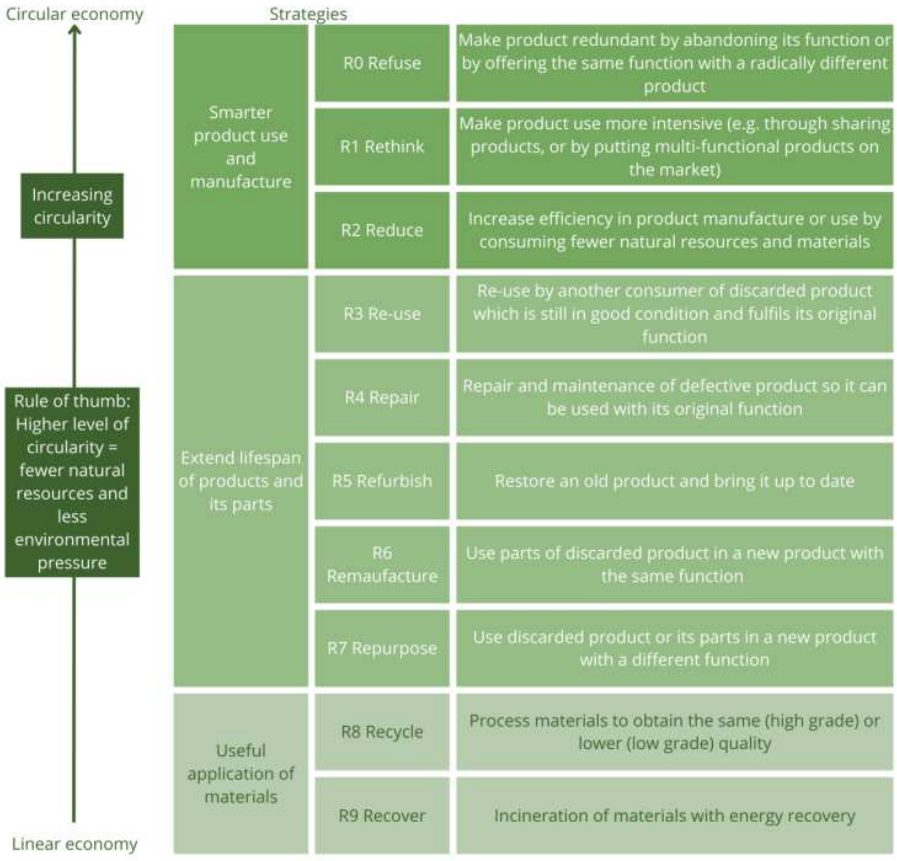
again concern regarding the safeguard of third countries involved in relationships with the EU, as it shows that the European main goal is to gain its own extraction advantage with these partnerships, rather than promoting a mutual advantage for both countries to grow. In 2024, the number of materials coming from recycling and recovery of materials amounted at 12.2%, with most minerals still coming from virgin sources.[181] Considering that the demand of RMs is expected to increase and that the CRMA didn't set any target to limit the European demand, reaching the benchmark of 25% of supply from recycled materials becomes a feeble possibility. Not only that, but the benchmark refers to all the SRMs collectively, without creating specific target for each material;[182] this could lead high-performing materials like Copper and Tungsten (materials that already have a high rate of recycling, 55% and 42%) to raise the percentage of materials recycled, all while masking underperforming materials, whose recycling rate is at 0%,[183] forging false final data for the objective's goal. Reaching 25% from all recycled materials requires massive upscaling of collection, infrastructure, and technology from a very low baseline, which is difficult to achieve in less than 10 years.

While concentrating on the implementation of recycling strategies is a good starting point, the CRMA seems to forget the most impactful strategies from the 9 Rs framework, a circular business model presented in 2017 by the PBL Netherlands Environmental Assessment Agency[184] that builds a framework for using and reusing materials at their highest value while minimizing waste and environmental destruction. Refuse, Rethink, and Reduce are the top three techniques identified for reducing waste, while Recycling stands at the bottom of the priority strategies indicated for shifting to a circular economy,[185] as it's one of the steps already implemented in the linear economy model, but alone is not sufficient to achieve a successful circular economy transition. It is also important to notice that increased recycling rates do not automatically reduce primary extraction if total consumption keeps growing; for example, sourcing 95% of 100 kg of Cobalt from primary material is roughly equivalent to sourcing 90% of 106 kg.[186] If overall demand rises, improved recycling may not reduce absolute primary resource use. This is why it's crucial to cover all of the Rs framework to achieve a solid circular transition plan. Another critical point is the lack of interest in

[181] Azevedo, C. (2026). Circularity as a pillar of the EU's critical raw materials strategy - Promises and pitfalls. *Heinrich-Böll-Stiftung European Union | Global Dialogue*.
[182] Watkins, E., Bergeling, e., & Blot, E. (2023). Circularity and the European Critical Raw Materials Act - How could the CRMA better promote material circularity?
[183] Ibid. Pp. 6-7.
[184] https://grow-circular.eu/knowledge-base/9r-framework/
[185] Watkins, E., Bergeling, e., & Blot, E. (2023). Circularity and the European Critical Raw Materials Act - How could the CRMA better promote material circularity? P. 19.
[186] Ibid. P. 18.

Repair Strategies related to products.[187] Extending products' lifespan is one of the most effective ways to reduce CRMs demand and waste, yet the regulation overlooks this entirely.

Figure 1: Circularity strategies in order of priority based on their level of circularity. Adapted from Potting et al (2017) and RLI (2015)[51]



188

Regarding the Strategy proposed for Permanent Magnets, it's important to notice how the regulations exclude controls for magnets destined for defence and space applications. Similar to the indulgence reserved for SPs over environmental protection regulation, it seems that the Act facilitates the implementation of certain sectors compared to others, sacrificing environmental protection.

Even though the CRMA dedicates a full section to circularity, a closer look at its content shows the fragility of the text: the main focus stays on Recycling, one of the least impactful steps in the scale of circularity strategies. Even the benchmark dedicated to reducing excavation supplying by retrieving minerals from recycling isn't supported by a solid framework, but leaves possibilities of it being overlooked; not to mention, the lack of limits for the growth of demands of CRMs within

[187] Ibid. P. 4.
[188] Table sourced from: Watkins, E., Bergeling, e., & Blot, E. (2023). Circularity and the European Critical Raw Materials Act - How could the CRMA better promote material circularity? P. 19.

the Union works against the attempt of creating a more sustainable way of extracting minerals to the possible extent, considering that mining is one of the most impactful activities for the environment and societies living in the surrounding area of excavation. Once again, the CRMA doesn't seem to present itself as a strategy for a future based on green energy, but just as a guideline to change the source of energy production, making it a perfect example of a post-fossil extractivism guideline.

4.3 Competition Between Defence and Green Sectors

A deeper analysis of the CRMA's content shows an undeniable tension between the Military Sector and the Green Energy Sector: both are considered pillar fields that need to be fuelled by increasing CRMs availability, which can be obtained by strengthening the supply chains and increasing internal production of the CRMs. But, as the demand keeps rising, and considering that the EU is already using more than double the sustainable level of materials and energy, it's clear that it won't be possible to supply the necessary amount of materials for both fields, and that one of the two will be sacrificed in order to support the growth of the other. Many minerals are critical both in the construction of green energy technologies and military equipment: REEs are essential for wind turbine magnets, but also for precision-guided munitions; Lithium is fundamental for EV batteries and military communications equipment, Titanium for aircraft and missiles, while Cobalt, Nickel, and Graphite are used in the implementation of both energy storage and defence electronics. The Hague Centre report estimates that Graphite demand alone could increase 25-fold by 2040 driven by the energy transition, yet it is also "one of the materials perceived to have the highest supply risk for European defence."[189] A further loop that interconnects the two fields is the decarbonisation of the Military Sector, which adds pressure on the same supply chains. Like the Hague Centre report highlights: "dual-use green technologies like electric cars or solar panels will be needed to decarbonise defence, meaning that the civil and military sectors will face similar challenges in terms of raw materials."[190] The CRMA doesn't establish a priority of one Sector over the other, but the deeper analysis of the connection between Military-CRMs and Green Energy-CRMs showed a preference toward the strengthening of the Military Sector: the publication of the White Paper, together with the REArm Europe Plan bring rearmament as the top priority for the EU, clearly stating that "The moment has come for Europe to re-arm",[191] while other studies have been

[189] Girardi, B., Patrahau, I., Cisco, G., & Rademaker, M. (2023) *Strategic Raw Materials for Defence: Mapping European Industry Needs*. The Hague Centre for Strategic Studies. P. 28.
[190] Ibid. P. 1.
[191] European Commission. (2025). *White Paper for European Defence – Readiness 2030*. Brussels: European Commission. P. 2.

published focusing on the importance of CRMs for the implementation of military equipment. Not only that, but the EU presented a framework that will allow to raise €800 billions to use in the defence sector, while the green energy Sector, especially the recycling and the strategies to lower the environmental impact of the extraction haven't been supported by a similar structured financial plan to support its growth. The CRM Communication pledges €200 million to support "ten Hubs for Circularity to substantially increase recovery and recycling of raw materials",[192] but without a clear plan on how to retrieve the said amount. Even this data by itself shows how the funding towards a green economy implementation is much lower than that dedicated to the implementation of the military Sector, which not only received more than double the amount of money, but also two detailed plans to guide the Union in achieving this sum.

Regarding Strategic Projects, 45 out of 47 European Projects and 11 out of 13 of the Partnered Projects are focused on the supplying of minerals considered essential for the implementation of the Defence industry, and the majority of the SPs are dedicated to the implementation of extraction and processing, leaving only a small percentage dedicated to Recycling Projects, showing a clear disparity in interest. Not only that, but controversies related to the choosing of the SPs have risen, since corporate and military lobbying had an influence not only on the selection of the projects,[193] but also of the minerals introduced in the CRMs list: the influence of the defence lobbying in the European Commission has been gradually rising, with a sharp increase after Russia's aggression on Ukraine in 2022; here the situation has been used as an excuse to put pressure on the need to improve the Defence Sector to secure a stronger readiness against this new menace. In 2022, Airbus, the aerospace company that produces military aircraft, unmanned aerial systems for wars (including drones) and solutions for military communications, spent more than €1,250,000 in trying to influence EU decision-makers, together with other defence companies like Rheinmetall Group (arms manufacturing company), which spent over €700,000, and Indra (specialised in developing technologies like Radar and surveillance systems, Command, control, communications, computers, intelligence, surveillance and reconnaissance systems) spent over €1 million.[194] Not only that, but Airbus is the company with the second-highest number of lobbying meetings with EU officials,

https://commission.europa.eu/document/download/e6d5db69-e0ab-4bec-9dc0-3867b4373019_en?filename=White%20paper%20for%20European%20defence%20%E2%80%93%20Readiness%202030.pdf

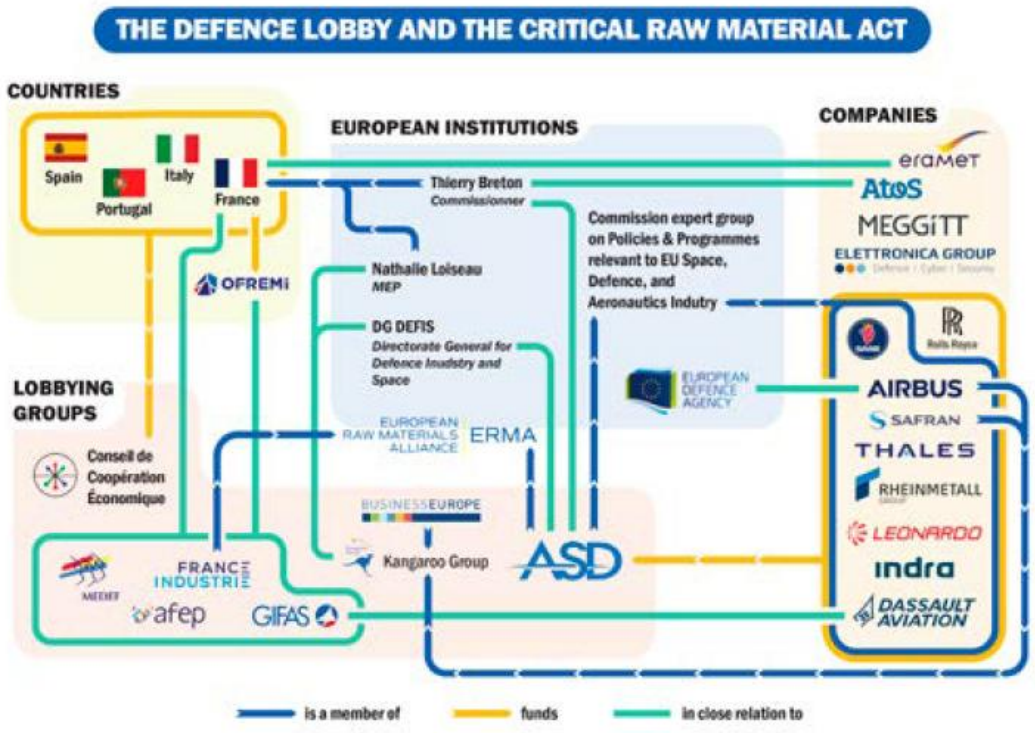
[192] International Energy Agency. (2021; revised 2022). *The role of Critical Minerals in Clean Energy Transition*. P. 15. https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions

[193] Fahlbusch, M., Walschot, M. (2025). The EU Critical Raw Materials Act and the defence industry. *IPIS*. https://ipisresearch.be/weekly-briefing/the-eu-critical-raw-materials-act-and-the-defence-industry/

[194] Corporate Europe Observatory & Observatoire des Multinationales. (2023). *Blood on the green deal - How the EU is boosting the mining and defence industries in the name of climate action*. P. 9.

topped only by Google.[195] The military lobby has taken part in all the steps of the development of the CRMA, to ensure that its need for CRMs supply was included in the Regulation: Safran, the French multinational aerospace, defence and security corporation, met in February and May 2023 with the Executive Vice-President of the European Commission to discuss the CRMA. Airbus also kept an active meeting schedule in 2023, with a total of 14 meetings with Commissioners and members of the Cabinet to discuss CRMs. For example, in February, it held a meeting with the Spanish ambassador to the EU and with the cabinets of both the Commissioner for the European Green Deal and the Commissioner for digital policy.[196] The influence of the Defence lobbies also expanded with the creation of a think tank, the *Conseil de Coopération Économique*, financed by France, Italy, Portugal, and Spain, set up specifically to help the Commission prepare the CRMA: in March 2023, it met with the Defence Industry and Space adviser of Ursula von der Leyen to discuss CRMs.[197] Inside the Commission and European institutions, the Defence lobby could also count on allies to bring forward its interests: Thierry Berton, French Commissioner for the Single Market, has always been vocal about the need to increase funds for the Defence Sector and was the key figure to establish the Commission expert group on Policies & Programmes relevant to EU Space, Defence and Aeronautics Industry in 2021. The Group is formed by representatives of the major weapon and military companies (Airbus, Dassault, Indra, Leonardo, Rheinmetall, Saab, Safran, Thales, and others), and it serves its members as a tool to directly voice their inputs and needs on all programmes and policies that they consider relevant.[198] Not only that, but the Commission created various groups whose role is to give "advice" or help develop policies on defence and CMs, one of these having the defence industry lobby group ASD as its member.[199]

[195] Ibid. P. 10.
[196] Ibid. P. 14.
[197] Ibid.
[198] Ibid. P. 11.
[199] Ibid. P. 15.



200

The cooperation between the Defence industry lobby and the European Commission works to ensure that the companies' needs are met in the Regulation; a perfect example of the pressure the ASD lobby (Aerospace, Security and Defence industries association of Europe) can exert over the Commission is the inclusion of two specific materials into the SRMs list: Aluminium and Titanium. Aluminium is considered a very high-risk material by the Hague Centre report, and it's widely used in the production of equipment from all sectors of the military, like military aircraft, naval vessels, bombs, tanks, helicopters, drones, missiles, and small arms. In 2023, Aluminium wasn't considered Strategic by the European Commission but has been added to the list after ASD exerted pressure on the matter, stressing the importance of this Material for the aeronautic, defence, and space structures.[201] In a similar way, Titanium, with particular attention to Titanium Metal, has been added to the list of SRMs under Airbus pressure, as it is critical in the construction of planes, spacecraft, and arms.[202] Once again, the mineral wasn't considered Critical, but has been added after pressure from the Military lobby. Another important detail to notice is that neither Aluminium nor Titanium are materials which have a strong use in the implementation of the Green Transition,[203] a criterion

[200] Figure sourced from the Corporate Europe Observatory & Observatoire des Multinationales report.
[201] Ibid. P. 23.
[202] Ibid. P. 20.
[203] Ibid. Pp. 22,26.

that is necessary for minerals to be inserted in the Critical and/or Strategic Material list. Instead, this has been overlooked to indulge in ASD's economic interests.

The involvement of ASD in the decision-making process, the creation of a framework to support financing for the rearmament, together with the general interest of the Union towards strengthening the Military sector, all bring to an understanding that the CRMA is a regulation that serves the interests of war and not much of the Green Transition, even less of Environmental protection, as the previous analysis brought to light the weakness of the Strategies included in the Act dedicated to the containment of environmental impact resulted from mineral extraction. Even though the CRMA has been considered a pillar inserted in the Green Deal discourse, this analysis shows that the real use of this Act serves as an instrument in geopolitical positioning, with the main objectives of ensuring the security-of-supply instrument for Strategic Autonomy and the Military Sector, while environmental protection seems to be inserted only as a way to mask the real goal of the Act, being it tolerated only when it doesn't interfere with the Military Sector's needs.

5- Green Transition and Mineral Extractivism: the price to pay

As I introduced in the previous chapter, founding the Green Energy Transition on extractivism isn't a strategy that will lead to a new, lower-impact system, as the way of retrieving materials is still stuck in a post-fossil extractivist way of perceiving the supplies. Alberto Acosta defines extractivism as an activity that takes big quantity of natural resources that are not processed and that are mainly destined for export; this concept isn't applied only to oil and minerals, but also to industrial agriculture, forestry, and fishing.[204] The demand for the energy transition changes the source of extraction but not the logic: post-fossil extractivism replaces coal and oil with Minerals and REE but not the way of retrieving them, and keeps the exploitative needs of capitalism alive, together with the idea that resources are infinite. Extractivism is a structural feature of imperialism, defined by Rosa Luxemburg as the political expression of capitalist accumulation competing for the last non-capitalist territories.[205] Under the CRMA this definition shows itself in the partnership with third Countries, where the Global North, represented by the EU, is trying to re-open commercial plans for gaining massive volumes of materials from Countries of the Global South, who don't see their rights preserved but rather risk deepening structural drains of their past as colonized countries.

The main focus of the CRMA is to strengthen the supply chain and increase the quantity of minerals extracted, without a solid plan to implement circular economy strategies aimed to reduce the demand of materials coming from direct extraction: the benchmark that sets a 25% of materials retrieved from internal recycling isn't supported by concrete strategies, and seems far from being achieved, as demand of CRMs is foreseen to exponentially increase in the near future. This results in the creation of new mining sites, often in protected areas and thus putting at risk natural habitats that are home of protected species, and reopening and expanding old ones, whose presence already brought disastrous consequences on the environment: old mining sites are usually surrounded by ghost villages, born to support the economy of the mines, and abandoned after the closing of the sites, as the quality of air and water became so polluted that living conditions couldn't be met anymore. From the perspective of Marx's theory of "metabolic rift" the destruction of the environment isn't incidental but structural. Capitalism creates a spatial rift by separating sites of consumption from sites of production, and a temporal rift by forcing nature's long cycles (soil formation, mineral deposition) into capital's demand for ever-shorter turnover times. Unequal ecological exchange, like SPs of extraction in Latin America, globalises this rift: the Global North's

[204] STRIKE – Collectif d'enquêtes militantes. (2025). *Extractivisme et Échange Inégal*. https://www.strike.party/articles/extractivisme-et-%C3%A9change-in%C3%A9gal
[205] Ibid.

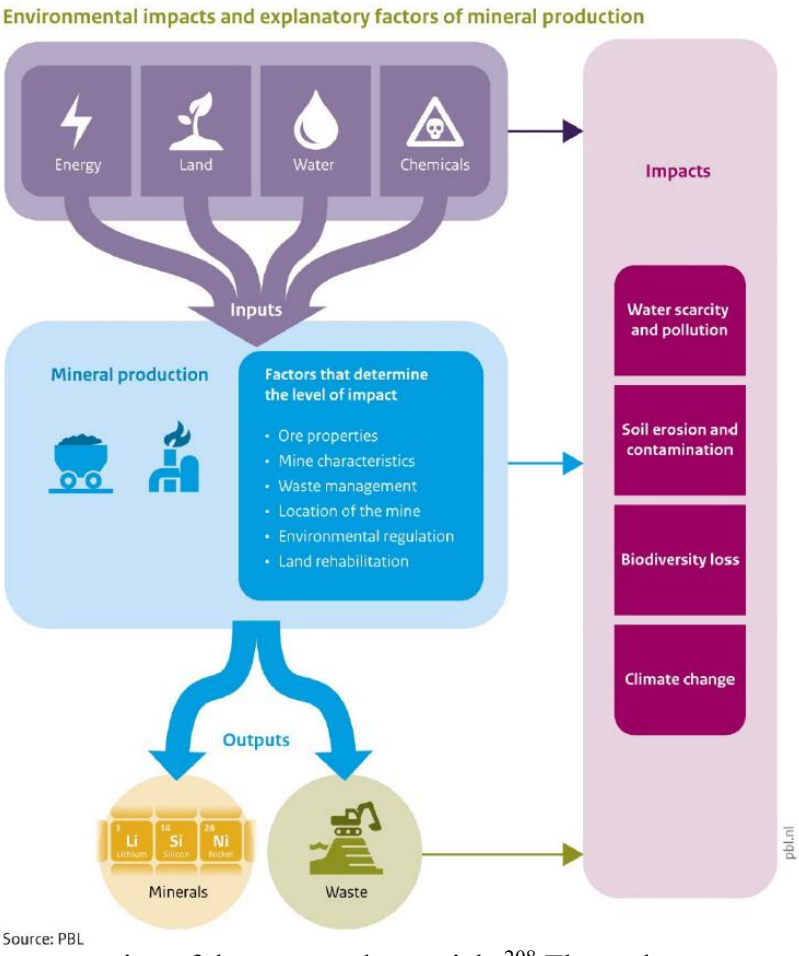
accumulation depends on accelerating extraction in the Global South, which has to face impoverishment and ecological collapse.[206]

In this final chapter, I will focus on exposing the environmental impacts of the mining industries, starting from a general point of view and then introducing the specific case of the Iberian Peninsula, a region that lives with the ghost of mineral extractivism, and where local communities are already fighting to stop the reopening of the mines. Finally, I will bring a case study from Italy that shows the effect the implementation of the new green energy technologies has on the environment, questioning whether the price of a lower-impact future is worth paying, or if we are rushing to trust "green" technologies that still depend on finite resources and inevitably leave a massive footprint of environmental destruction in their wake.

[206] Ibid.

5.1 Environmental and Social Effects of the Mining Industry

When we talk about mines, the imagery that comes to mind is often one of danger and exploitation: from stories of family members who migrated to work in the mining industry, to reports of sickness and child labour, the impact of underground extractivism is so deep that it even shaped pieces of literature and contributed to make this field notorious as one of the most hazardous Sectors in the world. The impacts of mining construction affect the surrounding environment, animal species, and human communities, and expand in time, even long after the mining sites have been closed.



[207]

Opening a mine doesn't require only the excavation of the underground, but it also implies a vast manipulation of the surrounding environment to equip the area with buildings fit for the needs of the mining industry: mining pits, side-stone heaps, tailings areas and landfill sites to store the discharge and waste coming from the extraction; buildings and utility lines to accommodate the workers who usually move to live right next to the site, and roads that are implemented to facilitate the transportation of the extracted materials.[208] These changes transform natural places into industrial areas, changing the biodiversity and safety of the species living nearby. Drilling and excavation generate soil erosion, which makes it more vulnerable to natural events like rain and increases the risk of collapsing and avalanches. This makes it impossible to reconvert the area to different uses

[207] Image sourced from: de Haes, S., & Lucas, P. *Environmental Impacts Of Extraction And Processing Of Raw Materials For The Energy Transition*. PBL Netherlands Environmental Assessment Agency.
[208] Policy Department for Citizens' Rights and Constitutional Affairs. Directorate-General for Internal Policies. (2022). *Social and environmental impacts of mining activities in the EU*. P. 15.

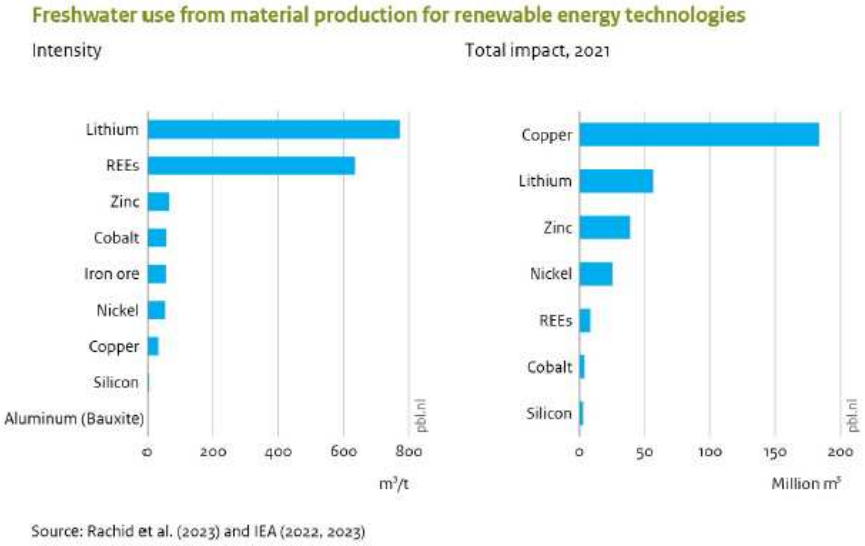
like farming or building once the mining site is closed[209], which then is abandoned, leading to loss of space for the communities living in the area. Also, the extraction and the residual waste left behind are the main causes of environmental pollution: the landfills full of minerals and chemicals used to refine the ores cause acidity, metal solubility, and ecosystems degradation.[210] In particular, metals like Aluminium, Nickel, Copper and Cobalt, considered Strategic in the CRMA's list, are among the minerals with the highest soil contamination impact: the production process of aluminia generates red mud as waste, a toxic and high-alkaline byproduct that is difficult to dispose of and classified as hazardous waste. The increase in demand for Aluminium extraction will significantly increase the production of red mud, land usage for the expansion of the landfills, and toxic erosion due to the corrosive trait of this waste material.[211] Copper, Nickel and Cobalt extraction generate an accumulation of heavy metals on the topsoil and subsoil, spreading through air and water transportation and remaining in the soil for a long time, posing severe threats to the food chain of the communities and animals living in the area.[212] It is estimated that mining areas coincide 8% with protected areas, 7% with key biodiversity areas, and 16% with remaining wilderness.[213] The excavation in these areas also increases the risk of biodiversity loss: deforestation (the mining sector is considered the 4th largest driver of deforestation),[214] soil manipulation and pollution, together with the development of human activities in the area, increase the risk of disruption of habitat for protected species, which risk extinction.

The space used globally by mines and mining-related waste is already impressive: 100,000 km² of land is used for mining sites, and 1 million km² is used for disposing of mining-related waste, more than the total global urbanised area.[215] The reopening of mines will only increase these numbers, depriving communities of living and agricultural areas, and exposing them to toxic waste that will worsen the living conditions of all the biodiversity present.

The effects of the mining industry don't stop only at the soil, but also touch a key element in every ecosystem: water supply. Extraction and processing of ores require a huge quantity of water usage, which is usually sourced from freshwater supplies like groundwater, streams, rivers, and lakes. Considering that around 16% of the CRMs mines, deposits, and districts are set in places with high

[209] de Haes, S., & Lucas, P. *Environmental Impacts Of Extraction And Processing Of Raw Materials For The Energy Transition*. PBL Netherlands Environmental Assessment Agency. P. 20.
[210] Ibid. P. 21.
[211] Ibid.
[212] Ibid.
[213] Ibid. P. 23.
[214] Ibid.
[215] Ibid. P. 5.

or very high water stress,[216] the use of water for mineral extraction will lead to aggravating risks for local communities who already rely on most of the water supply for home use and activities like farming and industries. The water used for mineral extraction usually gets contaminated and the discharge into the surrounding sources leads to contamination of all the surface water in the area. The contamination of chemicals raises the water's level of acidity and fills it with heavy metals, which results in acidification, sediment buildup, reduced oxygen levels, salinity increases, and declines in calcium levels, all of which create imbalances in the water ecosystems.[217] [218] The highest risk of water contamination happens after the mining site is closed. Once the pollutants enter the water, they can persist up to 200 years following the closure of a mine.[219] CRMs have some of the biggest impacts on water contamination and water usage: REE, having a low ore grade, require more complex extraction methods, a greater quantity of water, and massive use of chemicals that are later discharged in the environment. In addition, radioactive thorium and uranium are used in the processing of REE, causing severe and harmful health consequences.[220] Lithium extraction uses 100–800 m3 of water per tonne of lithium carbonate; this Material is mostly found in continental brine, and its extraction involves open-air evaporation. Once the salty water from the brines has evaporated, fresh water can seep through it, starting a process of contamination of the fresh water with salt water, leading to loss of surface and groundwater in the area.[221]



Air quality is also influenced, as mining processes produce dust containing metals or sulphides, which can impact substrate quality and affect the growing conditions of vegetables in the area, increasing the concentration of metals found inside them.[222] The release of minerals and gases from

[216] Ibid. P. 16.
[217] Ibid. P. 17.
[218] Image sourced from: ibid. P. 20.
[219] Ibid. P. 16.
[220] Ibid. P. 18.
[221] Ibid. P. 19.
[222] Policy Department for Citizens' Rights and Constitutional Affairs. Directorate-General for Internal Policies. (2022). *Social and environmental impacts of mining activities in the EU*. P. 20.

the use of heavy machinery needed for the excavation and processing of ores also affects greenhouse gas emissions: 10% of it is estimated to come from mineral and metal production.[223]

The mining industry's impacts go beyond the environmental sphere and create huge societal impacts on communities living near the mining sites. The biggest and most well-known problem related to working and living close to a mining site is health hazards. The contamination of the environment leads to exposition of high levels of metals and chemicals and the development of severe diseases; this led the OECD (Organisation for Economic Co-operation and Development) to insert "human toxicity" as one of the nine environmental impact factors of metal and mineral mining.[224] People working in the mines are also more exposed to human rights abuse; as a matter of fact, the mining sector is one of the highest-risk sectors for human rights abuse: between 2010 and 2022, 510 allegations of human rights abuse in mining for Cobalt, Copper, Lithium, Manganese, Nickel, and Zinc have been reported, including 133 attacks on human rights defenders and 49 abuses of indigenous rights.[225] Communities opposing mining face intimidation, criminalisation, stigmatisation, extrajudicial killings, and wrongful imprisonment.[226] Women represent the minority of employees in the industry, with a 5% presence in industrial mining and a 30% in artisanal ones:[227] however, they are the most vulnerable to human rights violations, being more exposed to sexual violence and human trafficking; children are subject to child labour and employed in mines: in the Democratic Republic of Congo, the presence of minors employed reached 30% in Cobalt artisanal mining sites.[228]

The need of space for the construction of a mining site is met by using territories preserved within natural reserves and indigenous peoples' territories. As explored in the previous chapter, indigenous rights aren't protected by the CRMA and indigenous people aren't included in the decision-making process of approval of SPs. The lack of respect of the FPIC will only increase the already existing tendencies of forced displacement and loss of territories by indigenous people due to a lack of proper information.[229] Forced displacement generates cultural disarticulation and spiritual loss from

---

[223] de Haes, S., & Lucas, P. *Environmental Impacts Of Extraction And Processing Of Raw Materials For The Energy Transition*. PBL Netherlands Environmental Assessment Agency. P. 6.
[224] War on Want & London Mining Network. (2019). *A Just(ice) Transition is a post-extractive transition – centering the exctractive frontier in climate justice*.
[225] Policy Department for Citizens' Rights and Constitutional Affairs. Directorate-General for Internal Policies. (2022). *Social and environmental impacts of mining activities in the EU*. P. 11.
[226] European Environmental Bureau. (2023). *A turning point: The Critical Raw Material Act's needs for a social and just green transition: A position paper on the critical raw materials legislation*. P. 19.
[227] Ibid. P. 18.
[228] World Energy Outlook Special Report. (2022). *The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions. Revised version*. P. 40.
[229] European Environmental Bureau. Friends of the Earth Europe. "Green Mining" is a myth: the case for cutting EU resource consumption. October 2021. P. 19.

severing people from their land,[230] while the manipulation of the soil and the consequent pollution damage, if not destroy, sacred sites, watersheds and local biodiversity.

On an economic level, if the opening of mines at the beginning brings a new source of income for the region, by creating employment and strengthening infrastructures,[231] in the long run it takes away more than it gives: implementing the mining Sector in an area requires a redirection of investments towards the extraction of natural resources and a consequent decline of other industries like the manufacturing and agricultural Sectors. This phenomenon is called the "Dutch Disease" and generates a massive economic distortion of the affected area: the increase in the local currency's value connected to the high revenues generated by the export of minerals makes the production of other goods more expensive, encouraging imports rather than strengthening the local production.[232] This creates dependence on one single Sector, and makes the economy more vulnerable to future disruption, especially once the mines are closed. Considering that the average lifespan for mines extracting CRMs is between 10 and 30 years,[233] the complete distortion of the local economy will generate poverty, loss of land and job opportunities, together with the weakening of other industrial Sectors, agriculture and a fall in the local currency, once the export of Minerals is over.

5.2 The Iberian Peninsula as the blueprint of the New Extractivism

On Tuesday, 12 May 2026, the German Outlet Table published an investigation based on internal confidential European Commission documents; the investigation questions the selection process of the SPs, stating that 11 projects that didn't pass the technical evaluation conducted by external experts still appeared in the final list of projects presented in March 2025.[234] In particular, projects in the Western Iberian Peninsula raise controversies, as the 3 added Lithium-related projects are set in areas where local communities have a long history of opposing the Mineral Extraction Industry (Savannah Lithium's Barroso lithium mine, the Romano mine project by Lusorecursos, and the Lift

[230] War on Want & London Mining Network. (2019). *A Just(ice) Transition is a post-extractive transition – centering the exctractive frontier in climate justice*. P. 17.
[231] Policy Department for Citizens' Rights and Constitutional Affairs. Directorate-General for Internal Policies. (2022). *Social and environmental impacts of mining activities in the EU*. P. 22.
[232] STRIKE – Collectif d'enquêtes militantes. (2025). *Extractivisme et Échange Inégal*. https://www.strike.party/articles/extractivisme-et-%C3%A9change-in%C3%A9gal
[233] Policy Department for Citizens' Rights and Constitutional Affairs. Directorate-General for Internal Policies. (2022). *Social and environmental impacts of mining activities in the EU*. P. 14.
[234] The Portugal News. (2026). Leaked documents raise questions over political pressure during selection of EU strategic raw materials projects. https://www.theportugalnews.com/news/2026-06-04/leaked-documents-raise-questions-over-political-pressure-during-selection-of-eu-strategic-raw-materials-projects/1033557

One lithium refinery project by Lifthium Energy).[235] The Lithium project in the Barroso region in particular, is currently being challenged before the General Court of the European Union by the local association *Unidos em Defesa de Covas do Barroso* (UDCB) as the project is accused of endangering water resources, biodiversity, public participation and tailings dam safety.[236]

The western Iberian Peninsula is not new to the damages and exploitation coming from the Mining industry: before and during the Second World War, the area was at the centre of the "tungsten fever", a mineral fundamental in the rearmament process for its role in building armour and armour-piercing projectiles.[237] From the 1920s until the end of the war, the area was subjected to "land theft" by North American, British and German companies, permitted by Salazar and Franco's neutral position, which allowed them to supply both parties at the same time.[238] We talk about land theft because the territories were expropriated from the private owners, as the underground minerals were considered State property, without any refund. Other pieces of land came from *baldios*, community-owned land used by lower-class farmers for agricultural and sheep-farming purposes.[239]

The use of land for mining purposes had a crucial impact on the Iberian region: once the mines were closed, all they left behind was pollution, sterile soil, water scarcity in agricultural areas, and loss of job opportunities, which contributed to the mass migration movements that followed that period.[240]

Sometimes the land manipulation went as far as creating completely new settlements, all rotating around the mine and its functioning: the village of Borralha for example, was created exclusively for supporting a new Tungsten mine found in the area and, when the mine was closed 80 years later, the village was abandoned, leaving behind contaminated water streams and *escombreras* (mine landfills) situated a few meters from the residents houses.[241] Once a mining site is closed, it is very difficult to convert the area for different industries, because the soil is subjected to erosion and the area is contaminated by toxic pollutants. Borralha tried to turn into a tourist destination, with the creation of museums and tours of the mines, but it was unsuccessful, as the area is rarely visited.[242] Nowadays, the majority of Borralha's population lives off public subsidies, without possibilities of income,[243] as the area is completely devastated by the aftermath of Tungsten extraction. An

[235] Ibid.
[236] Ibid.
[237] Collettivo Escombrera. (2024). Il rimosso della miniera. La nuova febbre dell'oro nell'Europa in guerra. OG Zero. P. j27.
[238] Ibid. P. 77
[239] Ibid.
[240] Ibid.
[241] Ibid. P. 89.
[242] Ibid. P. 91-95.
[243] Ibid. P. 93

economic system so deeply marked by the mineral extraction often finds no other choice than to go back to it and receiving subsidies to live makes the population unable to act against State decision regarding the region: now, after the publication of the CRMA, Borralha is again under the mining industry's attention. As of September 2025, Allied Critical Metals inc, the Canadian company controlling the Mining site in Borralha, published a report showing the progress of the revitalization project, stating that:

"Borralha benefits from existing infrastructure, shallow mineralization, and a simple processing route, making it one of the most advanced tungsten development projects in the European Union. These attributes are particularly important in the context of the EU Critical Raw Materials Act (2024/1252) and NATO strategic autonomy initiatives, both of which explicitly identify tungsten as a defense-critical raw material subject to severe supply risk.

With the EU currently dependent on over 80% of its tungsten imports from China, Borralha represents a rare and strategic opportunity to develop a secure, domestic, and NATO-aligned supply source. As Allied continues to advance drilling, resource expansion, and economic studies, Borralha is poised to play a central role in reshaping Europe's tungsten landscape—supporting both decarbonization technologies and defense-industrial resilience."[244]

The past of the Iberian region makes it more vulnerable to a return to the mining industries implemented by the CRMA, but on the other hand, it also formed a history of resistance that stands strongly against the oppression of the mining system: records of protest characterized by aggression of foreign engineers and boycott of mining companies' vehicles date back to the 20s and 70s.[245] Nowadays, the renewed interest in mines finds the local population ready to oppose the Era of the new Extractivism: Covas do Barroso is a small village located in Northern Portugal, which became famous for its dispute with *Savannah Ltd*, an Anglo-Australian company that has controlled the Lithium reserves since 2016. The northern region of Portugal is known for its Lithium deposits, the largest in the EU, and, for that reason, is now receiving particular attention as it plays a strategic role in achieving the benchmark of internal production set by the CRMA. The sites were used to extract Lithium together with Feldspar and Quartz for ceramic production,[246] but since 2023, the mining site is undergoing expansions for the implementation of Lithium extraction destined to electric batteries production. *Savannah Ltd* has located 5 deposits in the range of 593 hectares, and the expansion projects include the construction of a factory for processing spodumene to convert it

[244] Allied Critical Metals INC. (2025). *Allied Critical Metals Expands High Grade Footprint at Borralha Tungsten Project*. https://alliedcritical.com/2025/09/29/allied-critical-metals-expands-high-grade-footprint-at-borralha-tungsten-project/

[245] Collettivo Escombrera. (2024). Il rimosso della miniera. La nuova febbre dell'oro nell'Europa in guerra. OG Zero. P. 27.

[246] Ibid. P. 99.

into battery-grade lithium, together with an energy transformer, water tanks, and a new road.[247] The concession of the expansions for the project and the speed of which the works went raised concerns in the local population, as Covas do Barroso has been a FAO World Heritage Site for agriculture since 2018.[248] The locals base their income on sheep farming and agriculture, and need land and water to support their business. The expansion of the mining site endangers space for the herds, while some of the farmers have already noticed a reduction in water availability from the wells,[249] as it's being redirected towards the support of the mining activities. The exploration concessions were at the centre of an investigation into corruption in November 2023 which resulted to Prime Minister António Costa's resignation,[250] and the increase in locals' level of protest.

251

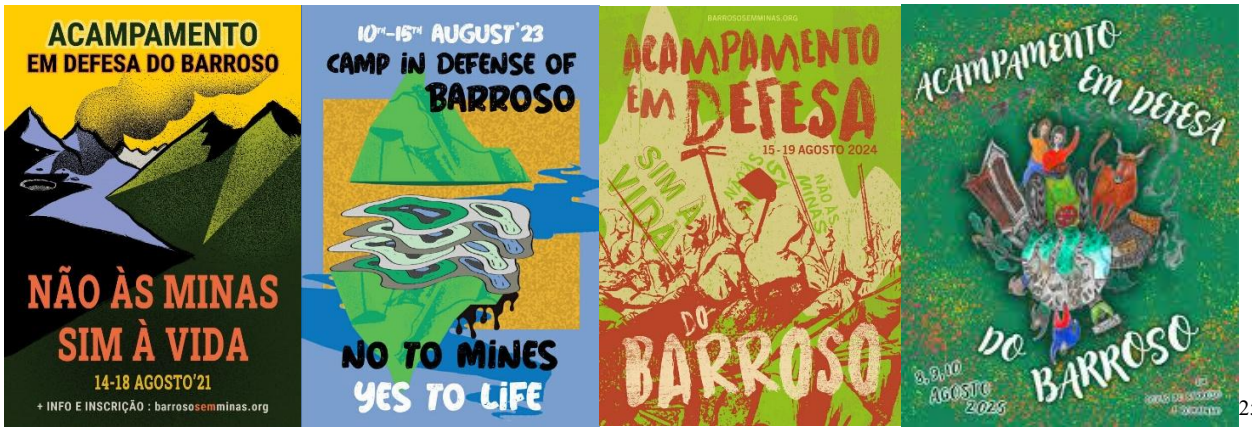
The Government responded with the deployment of a daily police patrol (GNR) to Covas do Barroso, while *Savannah Ltd* mobilised vigilance private security 24/7 and pursued community

[247] Ibid. P. 102.
[248] Antonelli, D., Sini, G. (2024). Covas do Barroso: Local Resistance to Europe's Lithium Race. *Green European Journal*. https://www.greeneuropeanjournal.eu/covas-do-barroso-local-resistance-to-europes-lithium-race/
[249] Ibid.
[250] Ibid.
[251] Image sourced from: Global Atlas of Environmental Justice. https://ejatlas.org/conflict/savannahs-lithium-extraction-conflict-in-barroso-portugal

leaders through intimidatory legal actions and statements.[252] On the same month, the Company tried to access the common lands (*baldios*) to carry out further prospecting. These territories cannot be transferred to third parties but only granted with contracts approved by the assembly, or expropriated by the state for reasons of public utility; this special status has been used by local communities to oppose the company's expansion.[253] This new attempt to overthrow the will of the Community of the Commons (Comunidade dos Baldios) created a counter-reaction in the population: for 7 months, every day, the community and activists group, would go to the entry of the main excavation site, blocking the way to vehicles, while the company was blocked access to common lands, with daily marchs towards the main worksite preventing the entry of the vehicles.[254]

Opposition movement included protests, petitions, meetings, caravans, together with a legal fight started in June 2025 and still ongoing. Walls and road signs on the road connecting the villages of the Barroso area are covered with manifestoes, banners and graffiti supporting the opposition to the mine expansion, while the office of *Savannah Ltd* in Covas do Barros has been targeted with graffiti[255]. The fight is loud and has no intention of stopping until the Barroso area is freed from the threat of the New Extractivism.

Every summer since 2021, the youth section of the local movement organizes a summer camp against mining. These events create opportunities for self-learning, create a network with other anti-mining groups and give an internationalist cut to the fight.[256]



257

[252] Associação Unidos em Defensa de Covas do Barroso. (2024). Camp in defence of Barroso! *Yes to life no to mining.* https://yestolifenotomining.org/camp-in-defense-of-barroso/
[253] Collettivo Escombrera. (2024). Il rimosso della miniera. La nuova febbre dell'oro nell'Europa in guerra. OG Zero. P. 101.
[254] Ibid. P. 103.
[255] Ibid. P. 102.
[256] Ibid. P. 103.
[257] Posters advertising the camping event throughout 2021 and 2025.

At the moment, the case presented by AUDCB is being reviewed by the European Court of Justice, but the expansion works haven't been suspended yet.

The case of the Iberian Peninsula serves as the blueprint for the new Era of Extractivism. In a single geographic frame we can see the full extent of the price to pay for the implementation of the EU's economic agenda: the reopening of historical mining sites, the legislative acceleration of permits and bending of rules, opposed by the resistance of populations who have already lived through the devastation that extraction leaves behind. As the AUDCB states in its article for the advertisement of the 2024 camping edition:

"Barroso is not an isolated mountain range, nor is this an isolated problem that only concerns its population. Here we face fundamental decisions that represent ecological, social and economic transformations, not only for this region but for the type of future we want and will be able to achieve. […] Our struggle demystifies and rejects the approach of States and capital to contemporary ecological and social challenges, highlighting that these devastating projects are a political choice, conditioned by economic logics and energy dependencies. Maintaining the current economy "functional" implies infinite economic growth, the constant creation of new markets, and the continuous extraction of raw materials from the Earth. With this vision many territories and populations — especially the most vulnerable — are considered "sacrificial" in the name of a "greater common good" that is neither good nor common."[258]

What is happening now in the Barroso region is the perfect example of how little the CRMA is interested in the Green Energy Transition and is rather a framework that facilitates the destruction of natural spaces and the oppression of local communities for the Union's economic gain and advantage in the global geoeconomic system, especially with the implementation of the Defence Sector. As one of the people interviewed for the Green European journal article states:

"Of course Lithium is needed for batteries. But we should ask ourselves what we use this energy for. Will lithium make consumerism sustainable? And what green transition are we talking about if we destroy green spaces?"[259]

5.3 Case study: Mugello and the Wind Farm construction

Environmental exploitation doesn't happen only during the process of extraction for CRMs, but it runs through the entire apparatus of Green Energy Transition processes. The Case Study I'm about

[258] Associação Unidos em Defensa de Covas do Barroso. (2024). Camp in defence of Barroso! *Yes to life no to mining.* https://yestolifenotomining.org/camp-in-defense-of-barroso/
[259] Antonelli, D., Sini, G. (2024). Covas do Barroso: Local Resistance to Europe's Lithium Race. *Green European Journal*. https://www.greeneuropeanjournal.eu/covas-do-barroso-local-resistance-to-europes-lithium-race/

to illustrate will focus on the effects of the allocation in the environment of windmills and aims to bring light to a contradiction that the dominant discourse prefers to ignore: the attempt to solve ecological crises through technologies that generate new forms of devastation.

The Italian Apennines region of Mugello is the protagonist of the construction plan of a Wind farm. The construction is managed by AGSM AIMS, a company from Verona, after receiving approval from the Tuscany Region. The plan started in the village of Villore and set to build 7 170 meters-tall windmills on the crest of the Giogo mountain, supported by a 25km long underground cave duct that will connect the windmills to the high voltage cabin to send the energy to the village.[260]

The project is considered a trailblazer for future similar projects in the region; thus, its success is of key importance for the development of the company's plans. AGSM claimed that the project would produce 80 million kWh per year, equal to the yearly energy need of around 30.000 families, while saving 40.000 tons of CO2 every year.[261] What seems a great deal towards a more sustainable future raised instead worries in the local community: the group *Comitato Tutela Crinale Mugellano Crinali Liberi*, together with *TESS* (*Transizione Energetica Senza Speculazione*) showed a strong opposition to the project, because the area involved is located in the buffer zone of the Casentinesi Forests National Park and on the border of the Natura 2000 Area of the Muraglione Waterfall Acquacheta ZSC. This area is home to the golden eagle, a species considered an indicator of the well-being of the natural space: it lives only if the ecosystem is complete and in a good conservation status. At the same time, the Solstretto torrent, a water stream included in the project to supply water for the worksite, is the natural habitat of many aquatic protected species, like the Austropotamobius pallipes, an important crustacean indicator of water purity, the *Salamandra* salamander, the *Perspicillata* salamander, the Italian Stream Frog and the *Speleomantes*.[262] The works needed for the allocation of the windmills will impact these habitats and put at risk the living conditions of these endangered species. Allocating windmills doesn't involve only excavation of the ground in the base where the windmill will be put, but requires the manipulation of a much wider area, in this case the woods around the windmill confining with the national Park. First of all, the vehicles needed for the excavation and transportation of the windmills are huge and cannot go

[260] Radio Blackout. (2025). SIAMO MONTAGNA – la lotta contro il parco eolico del Mugello. https://radioblackout.org/2025/05/siamo-montagna-la-lotta-contro-il-parco-eolico-nel-mugello/
[261] AGSM AIM energia. (n.d.). Nuovo impianto eolico AGSM AIM nel Mugello: la Regione Toscana dà il via libera! https://www.agsmperte.it/nuovo-impianto-eolico-agsm-aim-nel-mugello-la-regione-toscana-da-il-via-libera/
[262] TESS. Fermate i lavori del progetto eolico Monte Giogo di Villore! Forum Nazionale Salviamo il Paesaggio. February 2025. https://www.salviamoilpaesaggio.it/blog/2025/02/un-appello-al-consiglio-di-stato-e-alla-regione-per-sospendere-i-lavori-dellimpianto-eolico-del-monte-giogo-di-villore/

through the typically narrow and winding mountain roads, much less enter a forest. For this reason the project includes the construction of a large, straight road about 20kms long that will start from a nearby village (San Bavello) and will extend for 2kms inside the forest covering 14kms of CAI trails of national and European importance; the works for the widening of the road include mountain excavation and deforestation of woods area, including cutting down chestnut trees identified as PGI (Protected Geographical indication), making local producers face an economical hazard, as residents receive certifications and funds for the protection and maintenance of the native mountain trees, and produce goods from the fruit that can later sell for profit.[263] [264]

[265]

Because the roads leading to the crest are so steep, the concrete mixing centre to supply the worksite has been built in the heart of the forest, involving further deforestation and environmental degradation. To support the water demand of the worksite, the plan includes the intubation and diversion of various water streams in the area, including the Solstretto torrent; removing water from the environment doesn't imply only the destruction of habitat, but it will also deprive the nearby villages of their main water source, making them dependant from other regional streams and more vulnerable to water scarcity.[266] Furthermore, the area is considered at a high hydrogeological and

[263] Ibid.
[264] TESS. Progetto eolico Monte Giogo di Villore: TESS si appella al Consiglio di Stato. Per un'altra città. March 2025. https://www.perunaltracitta.org/homepage/2025/03/02/progetto-eolico-monte-giogo-di-villore-tess-si-appella-al-consiglio-di-stato/
[265] A truck stuck on the mountain road leading to the wind farm of Carpinaccio, FI. Photo sourced from the Facebook group "No Eolico nel Mugello".
[266] Radio Blackout. SIAMO MONTAGNA – la lotta contro il parco eolico del Mugello. May 2025.

seismic risk: creating such a vast project of excavation and land manipulation on a fragile soil exposes the area to increased risks, including the windmills that could be damaged by land collapse. Finally, the groups argue that the plan was approved in 2020, during the lockdown caused by the COVID-19 pandemic, which helped AGSM to have the plan approved in "secrecy" and made it much more difficult for the people to organize and act against it, as aggregation was impossible at the time.[267]

The local committees weren't alone in opposing the project, but have been backed up by local institutions: the Superintendency of Archaeology, Fine Arts and Landscape for the provinces of Ravenna, Forlì-Cesena and Rimini, the Superintendency of Archaeology, Fine Arts and Landscape for the metropolitan city of Florence, the Casentinesi Forests National Park Authority and the Union of Municipalities of Romagna Forlivese, the Union of Municipalities of Valdarno and Valdisieve and the Municipalities of San Godenzo, Portico San Benedetto and Marradi all expressed against the construction project.[268] Various appeals were made to TAR, but were finally rejected on 10 January 2024, with the panel declaring the appeal unfounded on all grounds[269] and works in the area started in the same year. TESS also presented two appeals to the State Council in February 2025, writing that:

"Given the numerous critical issues reported in this document, we ask the Tuscany Region and the institutions to explain and account for how they were able to issue a VINCA (Positive Environmental Impact Assessment) authorization, despite the contrary opinion of the Casentinesi Forests National Park and the Superintendencies, and proceed to authorize this area as a site for an industrial wind farm. This completely undermines the conservation and protection of excellent local products, irreversibly compromising the institutionally certified habitats present there, and the tourism potential of the Mugello Apennines, right on the borders of the Casentinesi Forests National Park and the Natura 2000 Area, the Muraglione Cascata dell'Acquacheta Special Conservation Area."[270]

But, once again, the appeals were rejected in July 2025. In the meantime, first signs of environmental degradation already started to show up: on April 15, 2025, a landslide occurred in the

https://radioblackout.org/2025/05/siamo-montagna-la-lotta-contro-il-parco-eolico-nel-mugello/

[267] Ibid.

[268] Italia nostra. Eolico Mugello. Dopo il No della Soprintendenza sabato 24 luglio giornata di protesta. July 2021. https://www.italianostra.org/nazionale/eolico-mugello-dopo-il-no-della-soprintendenza-sabato-24-luglio-giornata-di-protesta/

[269] Tribunale Amministrativo Regionale per la Toscana, Sezione Seconda. (2024, 10 gennaio). *Sentenza n. 00028/2024, Reg. Prov. Coll., nel procedimento n. 00231/2023 Reg. Ric.* (Comune di San Godenzo c. Regione Toscana e altri). https://www.qualenergia.it/wp-content/uploads/2024/01/sentenza-tar-toscana-n.20-2024.pdf

[270] TESS. (2025). Fermate i lavori del progetto eolico Monte Giogo di Villore! *Forum Nazionale Salviamo il Paesaggio*. https://www.salviamoilpaesaggio.it/blog/2025/02/un-appello-al-consiglio-di-stato-e-alla-regione-per-sospendere-i-lavori-dellimpianto-eolico-del-monte-giogo-di-villore/

area close to the works, caused by the excavation, deforestation and reshaping of the crest done to build the road for the passage of the vehicles transporting the windmills.[271] The area is indeed showing to be unfit to support massive industrial works such as the construction of a windfarm: under the flag of the green transition and clean energy, a fragile ecosystem is being permanently damaged and this will lead to loss of protected species and habitat, but also an impoverishment of the local community who is losing water source and economic revenue from the deforestation of chestnut trees and demolition of an area that attired many tourists for its hiking routes.

[271] Per un'altra città. (2025). Impianto industriale eolico Monte Giogo di Villore: frana Giogo di Corella dal gasdotto SNAM al Sentiero 00.
https://www.perunaltracitta.org/homepage/2025/04/14/crinale-del-mugello-disastri-ecologici-antichi-e-moderni/

272

But the people didn't give up after being abandoned by the institutions: similarly to what happened in the Barroso region, the group *Siamo Montagna* launched a call for action in the form of a

[272] Pictures of the construction site showing the mountain erosion and land manipulation for the construction of the road. Photo sourced from the Facebook group "No Eolico nel Mugello".

resistance camping between 2 and 6 July 2025. The goal was to extend the knowledge about what was happening in Mugello to a national and hopefully international audience and create a mobilization strong enough to stop the construction works. The camping took place in a site close to the working area, recently restored by the same group in a previous initiative which allowed the participants to get familiar with the area. Just like *Collettivo Escombrera* noticed in their analysis about the mining sites visited in the Iberian Peninsula, in the flyer we read a similar reasoning regarding the exploitation of marginal areas, often sacrificed for the economic revenue of the region:

"If the annihilation of every form of individual and collective autonomy is the most obvious, yet invisible, consequence of projects like Monte Giogo, the wind farm is the paradigm of a way of conceiving "marginal" territories, conceived as reservoirs from which to extract energy and labor, which the infrastructure network brings to the metropolises."

273

All the information reported are coming from the Telegram Channel of the group, but retrieving additional data resulted nearly impossible, as there are no articles or pages documenting the

[273] Flyer advertising the resistance camping, sourced from the Telegram Chat: Siamo Montagna.

mobilization, and I wasn't able to meet anyone who directly participated in the camp. From the program presented, we can see that the camping wanted to unite the possibility of sharing knowledge and views on resistance practices, together with the possibility of a different way to live spaces, based on community decisions and mutual responsibility:

"Collective opposition to yet another senseless project can happily be transformed into an opportunity to create community in struggle, rediscover forms of material and spiritual autonomy, and fragment this single and hostile world into many, finally habitable, worlds.

It's time to identify the fracture points between two ways of thinking and living, defend them, and protect them. To do so, we need to think against our time and its false evidence, and make good use of every crack in the metropolis and the countryside."

The activities included exploration of the area and a generic "mobilisation in defence of the woods"

The channel reports that a group of people managed to interrupt the wood cutting on the 4th of July, inviting people to visit the camping site and join the fight. On the same days, national newspapers report an assault on the working site, with vehicles and machinery damaged as a result.[274] The

[274] Il Fatto Quotidiano. (2025). Mugello, "raid di 50 persone armate e incappucciate contro il parco eolico. Ingenti danni". Sull'opera indaga ancora la procura. https://www.ilfattoquotidiano.it/2025/07/07/armati-e-incappucciati-contro-leolico-nel-mugello-sullopera-ancora-indagini-e-ricorsi-al-consiglio-di-stato/8053153/

allegations suspect the group of being behind this action, but the investigations are still ongoing. A few days later, TESS publicly dissociated from the events, noticing however that the actions taken served the purpose of bringing attention to the Apennine region, with media finally interested in the fate of the area after years of indifference towards the strenuous legal fight.[275] After the incident, construction kept moving forward, and the excavation is still undergoing as of today.

In both the cases presented it's still difficult to see the results the bottom-up movements will achieve, as the fights are currently ongoing and haven't exhausted the proposal of social change from the bottom yet. And even if in both cases the oppositions haven't managed to block the advancement of the construction, it is still crucial to recognize the impact these fights have: first of all, they are a tool that amplifies the knowledge of the situation to a wider media; as expressed by TESS, the use of extra-legal methods is a way to bring widespread attention to the local site. Even though at the moment these fights haven't blocked the constructions yet, they still helped to slow them down. A constant and organized opposition can bring radical change, like the famous No Tav movement, an example of how local organization can expand at a national and international level and achieve in blocking major construction works.

The cases of Covas do Barroso and Mugello are two faces of the same coin: the first shows the damages occurring through the chain of extraction of CRMs, while the second exposes the impact green energy technologies have on the environment. In both cases the green transition is used as an excuse to justify projects that reproduce the very forms of ecological destruction they claim to resolve. Both are rural, economically marginal territories deemed expendable so that metropolitan consumption of energy, mobility and electronics can continue uninterrupted. They become sacrificial spaces for the sake of the economic system that needs to produce without stopping, at the expense of the environment, species and local communities who are impoverished for the enrichment of the metropolis. In both cases, institutional indifference emerges not as an anomaly, but as a structural feature of the New Extractivism: legal appeals are systemically rejected, and the works are carried out with unusual speed. Similarities don't stop only at the exploitation systems, but also in the community practices, that are reproduced in different geographical areas to oppose the same system at the root of injustice. The CRMA and the green transition it enables do not break with the logic of extractivism but rather extend it under a new banner. The line that connects a

[275] Il filo – Idee e notizie dal Mugello. (2025). Attacco all'impianto eolico, la Coalizione TESS replica delle associazioni ambientaliste.
https://www.ilfilo.net/attacco-allimpianto-eolico-la-coalizione-tess-replica-delle-associazioni-ambientaliste/?fbclid=IwY2xjawSRCRVleHRuA2FlbQIxMQBzcnRjBmFwcF9pZBAyMjIwMzkxNzg4MjAwODkyAAEedWlLQf9mOWSzea_SlDX-OKeHNqX30g9F77xoK0OuXm1h7cILj0To3KWf3Ng_aem_MymaGdkKHOXZ10QtzmTbPg

Lithium pit in northern Portugal to a wind farm in the Tuscan Apennines runs straight through the same political choice: whose land is worth sacrificing, and whose consumption is worth protecting.

CONCLUSIONS

This thesis wanted to question whether the CRMA was a regulation that could set solid foundations for the Green Energy Transition or was rather published as an asset to support ulterior economic interests of the EU, especially of the Defence/Military Sector. After an overview that started from global geopolitical tensions, the analysis of official documents and the study of the effects the New Extractivism has on the environment and societies, the answer is clear. The CRMA, even if branded as a pillar for the European green transition, doesn't break from the exploitative model and doesn't bring solid foundations to lower the impact of energy production, but rather justifies environmental degradation for the sake of economic revenue.

The geopolitical context that preceded the publication of the CRMA is inseparable from its content: the COVID-19 pandemic, the Russia-Ukraine war and the energy weaponisation that followed, together with the escalating USA-China rivalry, all challenged historical global alliances and broke the European trust in multilateralism, pushing the EU to focus on Strategic Autonomy and increase funds for the European rearmament, whose technologies heavily rely on mineral supply. The Act itself wasn't born from a sudden interest in environmental discourses, but from a series of events that exposed the fragility of Europe's supply chains and created the political conditions for reopening extractive frontiers: the urgency was never ecological but strategic, and the Green Transition discourse provided a convenient ideological and narrative frame to support the rise of the New Extractivism.

The Act's internal mechanism confirms this priority: the distinction between Critical and Strategic Raw Materials, the 2030 benchmarks and the Strategic Projects all show how the priority of the Regulation is to strengthen extraction and processing, rather than circularity, whose discourse remains secondary. The benchmark of 25% recycled materials supply is not supported by concrete strategies and, without a clear limitation to demand's growth and a stronger structure to implement a circular system, recycling alone won't be able to reduce primary extraction.

A further examination of the dual-use of CRMs for the Defence Sector compared to their use for Green Energy technologies highlights more evidence: of the 47 European Strategic Projects, only 10 are dedicated to recycling, while none of the 13 international partnered projects are. Meanwhile, 45 of 47 SPs focus on minerals essential for the Defence industry. The *REArm Europe Plan* sets to fund €800 billions for the implementation of weapons and war infrastructure, backed up by a solid plan on how to achieve it, while the CRM Communication pledges only €200 million for circularity hubs without a clear retrieval plan. The inclusion of Aluminium and Titanium in the Strategic Raw

Materials List, added after strong pressures from the Defence Industry lobby regardless of their limited relevance to the Green Transition, reveals who the Act truly serves. Defence Sector interests shaped the Regulation at every stage: through lobby meetings, industry-captured expert groups and a think tank specifically created to help the Commission to prepare for the CRMA, companies like ASD and Airbus made sure that their needs would always be satisfied throughout the drafting of the regulation.

The effective price we will have to pay with the implementation of the CRMA is exposed in open excavation sites: the Covas do Barroso Lithium project in Portugal and the wind farm construction in the Tuscan Apennines are two faces of the same coin. In both cases, the green transition is invoked to justify projects that reproduce the very forms of ecological destruction they claim to resolve. The projects are brought on regardless of environmental safeguards and social protection of the communities living in the areas, making us reflect on what we are willing to sacrifice for the sake of a green transition, and who this transition will actually benefit. What emerges is a portrait of post-fossil extractivism: the source of energy changes, but not the underlying logic, as resources are treated as infinite, local communities and ecosystems disposable, while partnership with third countries, especially in the Global South, risks reproducing the colonial dynamics of unequal ecological exchange that has been at the base of resource extraction for centuries.

As long as the CRMA prioritises extraction over reduction, rearmament over sustainability, and supply-chain security over environmental justice, it will not deliver the transition it promises. It will simply change the material on which the old system runs and the price will be paid, as it always has been, by those with the least power to refuse it. The question this thesis posed is ultimately not a technical one, but a political one. And the answer will depend not on how many tons of lithium Europe can extract by 2030, but on whether Europe is willing to confront the logic of extraction itself.

This thesis doesn’t claim to be a full and extensive analysis of the CRMA’s aims and of the impacts of its implementation, but it is a starting point that wishes to ignite a discussion regarding the controversies embedded in the Regulation: green transition and rearmament, circularity and extraction, stated environmental goals and real distribution of costs and benefits. From this research, further studies can be developed to reach a deeper understanding of the various topics introduced here: the evidence of the influence the Defence Industry lobby had on the shaping of the CRMA relies primarily on secondary sources; this opens way to further research focused on tracking meetings and expenditures during the implementation phase, together with a focus on the influence

the Defence Industry lobby has also on the choosing of SPs and of which companies are tasked to supervise them. The case studies presented, while being illustrative of the dangers of the implementation of these regulations, are limited to two European sites and both involve projects presented before the emanation of the CRMA. Further research on the activated SPs between all the MS could help give a clearer picture of what each State is sacrificing for the rise of the New Extractivism. As the matter of Mineral Supply chains is critical at a global level, a third exploration point would be that of a comparative work between the European regulation and its equivalent in other Countries, to widen the map of how the New Extractivism Era is being developed worldwide. Involving Indigenous communities in the research could lead to a deeper understanding of the loss local groups face with the implementation of mining sites, and could lead to an interesting research focused on co-existing with mines and studying practices of resistance. The insights are various and, seeing the importance the mining industry is taking in relation to the geopolitical tensions and the use of minerals in the implementation of the Military Sector, expanding the research on this topic will become essential to understand the near future we will have to face.

BIBLIOGRAPHY

- AGSM AIM energia. (n.d.). Nuovo impianto eolico AGSM AIM nel Mugello: la Regione Toscana dà il via libera!

https://www.agsmperte.it/nuovo-impianto-eolico-agsm-aim-nel-mugello-la-regione-toscana-da-il-via-libera/

- Allied Critical Metals INC. (2025). *Allied Critical Metals Expands High Grade Footprint at Borralha Tungsten Project*.

https://alliedcritical.com/2025/09/29/allied-critical-metals-expands-high-grade-footprint-at-borralha-tungsten-project/

- Anghel, S. E. et al. (2020). On the path to "strategic autonomy": The EU in an evolving geopolitical environment (PE 652.096). European Parliament.

https://www.europarl.europa.eu/thinktank/en/document/EPRS_STU(2020)652096

- Antonelli, D., Sini, G. (2024). Covas do Barroso: Local Resistance to Europe's Lithium Race. *Green European Journal*.

https://www.greeneuropeanjournal.eu/covas-do-barroso-local-resistance-to-europes-lithium-race/

- Associacao Unidos em Defensa de Covas do Barroso. (2024). Camp in defence of Barroso! *Yes to life no to mining*.

https://yestolifenotomining.org/camp-in-defense-of-barroso/

- Azevedo, C. (2026). Circularity as a pillar of the EU's critical raw materials strategy - Promises and pitfalls. *Heinrich-Böll-Stiftung European Union | Global Dialogue*.

- Bown CP. (2022). How COVID-19 Medical Supply Shortages Led to Extraordinary Trade and Industrial Policy. *Asian Economic Policy Review*. 17(1), 114–135.

https://onlinelibrary.wiley.com/doi/10.1111/aepr.12359

- Burnett, K., Li, K., Basquel, L., & O'Connor, C. (2026, April). 15 charts that explain why the Strait of Hormuz shutdown matters for the global economy. Atlantic Council.

https://www.atlanticcouncil.org/dispatches/15-charts-that-explain-why-the-strait-of-hormuz-shutdown-matters-for-the-global-economy/

- CIRAN POLICY BRIEF. (2025). *Strategies for Balancing Diverging Societal Needs: Critical raw materials extraction vs. environmental protection*.

- Clapp, S., Höflmayer, M., Lazarou, E., & Pari, M. (2025) *ReArm Europe Plan/Readiness 2030.* European Parliament.

https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/769566/EPRS_BRI(2025)769566_EN.pdf

- Collettivo Escombrera. (2024). *Il rimosso della miniera. La nuova febbre dell'oro nell'Europa in guerra*. OG Zero.

- Collettivo Sumud. (2025). Note sulla guerra in corso – appunti leggeri "da spiaggia" per addentrarsi nella complessità.

- Corporate Europe Observatory & Observatoire des Multinationales. (2023). *Blood on the green deal - How the EU is boosting the mining and defence industries in the name of climate action*.

- de Haes, S., & Lucas, P. *Environmental Impacts Of Extraction And Processing Of Raw Materials For The Energy Transition*. PBL Netherlands Environmental Assessment Agency.

- European Commission. (2025). *Commission Selects 13 Strategic Projects in Third Countries to Secure Access to Raw Materials and to Support Local Value Creation*. [Press release].

.https://ec.europa.eu/commission/presscorner/detail/en/ip_25_1419

- European Commission. (2025). *Commission selects 47 Strategic Projects to secure and diversify access to raw materials in the EU.*

https://ec.europa.eu/commission/presscorner/detail/en/ip_25_864

- European Commission. (2023). *Communication from the Commission to the European Parliament, the European Council and the Council on "European Economic Security Strategy."* (JOIN(2023) 20 final). Brussels: European Commission.

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023JC0020

- European Commission. (2024). European CRM Act, Agreement on proposal for a regulation – establishing a framework for ensuring a secure and sustainable supply of critical raw materials.

https://www.sustainablesupplychains.org/wp-content/uploads/2024/03/European-CRM-Act_Salvatore-Berger_2024-03-12.pdf

- European Commission. (2022). *REPowerEU Plan*. (COM(2022) 230 final). Brussels: European Commission.

- European Commission. (2025). Selected strategic projects. European Union – Single Market Economy.

https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/strategic-projects-under-crma/selected-projects_en

- European Commission. (2021). *Strategic Foresight Report: The EU's Capacity and Freedom to Act*. COM(2021) 750 final. Brussels: European Commission.
https://commission.europa.eu/strategy-and-policy/strategic-foresight/2021-strategic-foresight-report_en

- European Commission. (2025). *White Paper for European Defence – Readiness 2030*. Brussels: European Commission.

https://commission.europa.eu/document/download/e6d5db69-e0ab-4bec-9dc0-3867b4373019_en?filename=White%20paper%20for%20European%20defence%20%E2%80%93%20Readiness%202030.pdf

- European Council. (n.d.). *EU defence in numbers*.

https://www.consilium.europa.eu/en/policies/defence-numbers/

- European Economic and Social Committee (EESC). (2024). *What ways and means for a real strategic autonomy of the EU in the economic field?* European Union. European Union Publications.

https://www.eesc.europa.eu/sites/default/files/files/qe-02-23-358-en-n_0.pdf

- European Environmental Bureau. (2023). *A turning point: The Critical Raw Material Act's needs for a social and just green transition: A position paper on the critical raw materials legislation*.

- European Environmental Bureau & Friends of the Earth Europe (2021). *"Green Mining" is a myth: the case for cutting EU resource consumption*.

https://eeb.org/wp-content/uploads/2021/10/Green-mining-report_EEB-FoEE-2021.pdf

- European Union External Action (2025). *EU agenda for a renewed multilateralism*.

https://www.eeas.europa.eu/eeas/eu-agenda-renewed-multilateralism_en

- Fahlbusch, M., Walschot, M. (2025). The EU Critical Raw Materials Act and the defence industry. *IPIS*.
https://ipisresearch.be/weekly-briefing/the-eu-critical-raw-materials-act-and-the-defence-industry/
- Gabellini, G. (2026). *Perché il petrolio del Venezuela è così importante per l'amministrazione Trump*. Analisi Difesa.

https://www.analisidifesa.it/2026/01/perche-il-petrolio-del-venezuela-e-cosi-importante-per-lamministrazione-trump/

- Girardi, B., Patrahau, I., Cisco, G., & Rademaker, M. (2023) *Strategic Raw Materials for Defence: Mapping European Industry Needs*. The Hague Centre for Strategic Studies.

- Gratius, S., & Padel Vidal, A. (2026). *Cuba and a possible loss of Venezuelan support: macroeconomic vulnerabilities and political risks.* Elcano Royal Institute, April 2026.

https://www.realinstitutoelcano.org/en/analyses/cuba-and-a-possible-loss-of-venezuelan-support-macroeconomic-vulnerabilities-and-political-risks/

- Gros, D. (2024). *The Impact of the US Inflation Reduction Act on European Industry*. IEP@BU Publications, Bocconi University.
https://iep.unibocconi.eu/publications/impact-us-inflation-reduction-act-european-industry-0
- GTK. (2025). Interactions Between Extractive Activities and Natura 2000 Areas – First Outcomes of the CIRAN Project.
https://www.gtk.fi/en/current/interactions-between-extractive-activities-and-natura-2000-areas-first-outcomes-of-the-ciran-project/
- Hackett, J. et al. (2025). *Critical Raw Materials and European Defence: Supply Chain Security*. International Institute for Strategic Studies.

https://www.iiss.org/research-paper/2025/03/critical-raw-materials-and-european-defence/

- Il Fatto Quotidiano. (2025). Mugello, "raid di 50 persone armate e incappucciate contro il parco eolico. Ingenti danni". Sull'opera indaga ancora la procura.

https://www.ilfattoquotidiano.it/2025/07/07/armati-e-incappucciati-contro-leolico-nel-mugello-sullopera-ancora-indagini-e-ricorsi-al-consiglio-di-stato/8053153/

- Il filo – Idee e notizie dal Mugello. (2025). Attacco all'impianto eolico, la Coalizione TESS replica delle associazioni ambientaliste.

https://www.ilfilo.net/attacco-allimpianto-eolico-la-coalizione-tess-replica-delle-associazioni-ambientaliste/?fbclid=IwY2xjawSRCRVleHRuA2FlbQIxMQBzcnRjBmFwcF9pZBAyMjIwMzkxNzg4MjAwODkyAAEedWlLQf9mOWSzea_SlDX-OKeHNqX30g9F77xoK0OuXm1h7cILj0To3KWf3Ng_aem_MymaGdkKHOXZ10QtzmTbPg

- International Energy Agency. (2021; revised 2022). *The role of Critical Minerals in Clean Energy Transition*.
https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions

- Italia nostra. (2021). Eolico Mugello. Dopo il No della Soprintendenza sabato 24 luglio giornata di protesta.

https://www.italianostra.org/nazionale/eolico-mugello-dopo-il-no-della-soprintendenza-sabato-24-luglio-giornata-di-protesta/

- Jütten, (2024). *EU–Latin America: Enhancing cooperation on critical raw materials*. European Parliamentary Research Service.

- Liboreiro, G. (2025). Brussels rebrands 'Rearm Europe' plan after backlash from leaders of Italy and Spain. *Euronews*.

https://www.euronews.com/my-europe/2025/03/21/brussels-confirms-rearm-europe-rebrand-after-backlash-from-italy-and-spain

- Marin, D., Pravuljac, M., Tralmaka, I. & Martins, M. (2024). *Understanding Strategic Projects Under the CRMA: A Guide to Rights and Processes*. European Environmental Bureau & ClientEarth.

- Marino, G. (2026). La Cina, il petrolio iraniano (e quello venezuelano). *Renewable Matter*.

https://www.renewablematter.eu/cina-petrolio-iraniano-e-quello-venezuelano

- NATO. (2024). *NATO releases list of 12 defence-critical raw materials*.

https://www.nato.int/en/news-and-events/articles/news/2024/12/11/nato-releases-list-of-12-defence-critical-raw-materials

- Per un'altra città. (2025). Impianto industriale eolico Monte Giogo di Villore: frana Giogo di Corella dal gasdotto SNAM al Sentiero 00.

https://www.perunaltracitta.org/homepage/2025/04/14/crinale-del-mugello-disastri-ecologici-antichi-e-moderni/

- Pietri, M. (2026). Il pedaggio dell'impero. *Sinistra in Rete*.

https://www.sinistrainrete.info/geopolitica/32801-mario-pietri-il-pedaggio-dell-impero.html

- Policy Department for Citizens' Rights and Constitutional Affairs. Directorate-General for Internal Policies. (2022). *Social and environmental impacts of mining activities in the EU*.

- Radio Blackout. (2025). SIAMO MONTAGNA – la lotta contro il parco eolico del Mugello.

https://radioblackout.org/2025/05/siamo-montagna-la-lotta-contro-il-parco-eolico-nel-mugello/

- Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11/04/2024 on the establishment of a framework for ensuring a secure and sustainable supply of critical raw materials and amending regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020.

https://eur-lex.europa.eu/eli/reg/2024/1252/oj/eng

- Scheinert, C. (2023). *EU's Response to the US Inflation Reduction Act (IRA)*. PE 740.087. Brussels: European Parliament.

https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA(2023)740087

- Senato. (2023) *Materie prime critiche/strategiche, le attività per la definizione delle potenzialità nazionali*, Audizione 9ª Commissione Senato su Atti UE n. COM(2023) 160 def. e n. COM(2023) 165 def.

https://www.senato.it/application/xmanager/projects/leg19/attachments/documento_evento_procedura_commissione/files/000/427/371/2023_07_18_ISPRA.pdf

- SFA Oxford. (2026). *Critical Minerals and Defence Technologies*.

https://www.sfa-oxford.com/knowledge-and-insights/critical-minerals-in-low-carbon-and-future-technologies/critical-minerals-in-defence-and-national-security/

- Shoukat, W., Mustafa, Z., Muneer, M, U & Shahzadi, A. (2024). *The Impact of the Russia-Ukraine War on EU Energy Security*. Social Sciences Spectrum, 3(4), 337-351.

https://doi.org/10.71085/sss.03.04.177

- Steinbach, A. (2023). The EU's Turn to 'Strategic Autonomy': Leeway for Policy Action and Points of Conflict. European Journal of International Law (forthcoming), Available at SSRN: https://ssrn.com/abstract=4269304 or http://dx.doi.org/10.2139/ssrn.4269304

- STRIKE – Collectif d'enquêtes militantes. (2025). *Extractivisme et Échange Inégal*.

https://www.strike.party/articles/extractivisme-et-%C3%A9change-in%C3%A9gal

- Suárez-Cuesta, D., & Latorre M.C. (2024). Governance and Policy Implications of the Inflation Reduction Act: A European Perspective. *Global Policy* 15(S8) 37–43.

https://doi.org/10.1111/1758-5899.13448

- Tercero Espinoza, L. A. (2023). *Understanding the Methodology Behind the EU List of Critical Raw Materials*. Karlsruhe: Fraunhofer Institute for Systems and Innovation Research (ISI).

- TESS. (2025). Fermate i lavori del progetto eolico Monte Giogo di Villore! *Forum Nazionale Salviamo il Paesaggio*.

https://www.salviamoilpaesaggio.it/blog/2025/02/un-appello-al-consiglio-di-stato-e-alla-regione-per-sospendere-i-lavori-dellimpianto-eolico-del-monte-giogo-di-villore/

- The EU-LAT Network. (2025). *A Green and Fair Transition - For Whom? An analysis from Latin America*.

- The Portugal News. (2026). Leaked documents raise questions over political pressure during selection of EU strategic raw materials projects.

https://www.theportugalnews.com/news/2026-06-04/leaked-documents-raise-questions-over-political-pressure-during-selection-of-eu-strategic-raw-materials-projects/1033557

- Tittor, A. (2026). Postfossil extractivism. A new lens on decarbonization's land and material intensity. *The Journal of Peasant Studies,* 1–24.
https://doi.org/10.1080/03066150.2025.2606878

- Tribunale Amministrativo Regionale per la Toscana, Sezione Seconda. (2024). *Sentenza n. 00028/2024, Reg. Prov. Coll., nel procedimento n. 00231/2023 Reg. Ric.* (Comune di San Godenzo c. Regione Toscana e altri).

https://www.qualenergia.it/wp-content/uploads/2024/01/sentenza-tar-toscana-n.20-2024.pdf

- Trading Economics. (2026). Bent crude oil.

https://tradingeconomics.com/commodity/brent-crude-oil

- Vecchio, A. (2024). Changing the flow: The European Response to the Russian Weaponization of Gas. *European Papers*, 9(1), 39-52.

- War on Want & London Mining Network. (2019). *A Just(ice) Transition is a post-extractive transition – centering the exctractive frontier in climate justice*.

- Watkins, E., Bergeling, e., & Blot, E. (2023). Circularity and the European Critical Raw Materials Act - How could the CRMA better promote material circularity?

- Wittenberg, A., & v. Vietinghoff-Scheel M. (2025). The European Critical Raw Materials Act from a FutuRaM Perspective. *FutuRaM*.

https://futuram.eu/critical-raw-materials-act-futuram-perspective/

- World Energy Outlook Special Report. (2022). *The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions. Revised version*.

Dichiarazione del ricorso a strumenti di Intelligenza Artificiale (IA)

La sottoscritta Beatrice Trussardi, matricola numero 879529, iscritta presso Ca' Foscari al corso di Laurea magistrale in Environmental Humanities, autrice dell'elaborato finale/tesi di laurea The New Era of Extractivism - Analysis of the European Critical Raw Materials Act between War and Green Transition, relatore Francesco Della Puppa, consapevole delle sanzioni previste dall'art. 76 del Testo unico, D.P.R. 28/12/2000 n.445, e della decadenza dei benefici prevista dall'art. 75 del medesimo Testo unico in caso di dichiarazioni false o mendaci, sotto la propria personale responsabilità ai sensi degli artt. 46 e 47 del D.P.R. 28/12/2000 n. 445,

DICHIARA

☒di NON aver fatto ricorso a tecnologie di intelligenza artificiale generativa per supportare vari aspetti della ricerca e della scrittura del suo elaborato finale/della sua tesi di laurea;

☐di aver fatto ricorso a tecnologie di intelligenza artificiale generativa per supportare vari aspetti della ricerca e della scrittura del suo elaborato finale/della mia tesi di laurea, in particolare *(per ogni punto scrivere per esteso quanto viene richiesto)*:

• *indicare il nome dello strumento (es. "ChatGPT" se applicazione o "GPT" se modello) con riferimento alla versione specifica (ad esempio, "ChatGPT-4, versione rilasciata a marzo 2024")*;

• *se sono stati utilizzati più strumenti, specificare ciascuno di essi indicandone nome e versione; • fornire informazioni su come è stato utilizzato lo strumento:*

☐*revisione e ottimizzazione dei testi per migliorare chiarezza e coerenza;*

☐*generazione di grafici e diagrammi per la presentazione dei dati;*

☐*supporto alla scrittura automatica di frasi;*

☐*produzione di immagini illustrative per integrare la parte metodologica;*

☐*altro (specificare)*;

• *indicare le sezioni/i capitoli interessate/interessati;*

• *indicare come è stata verificata la correttezza, la qualità e l'attendibilità delle informazioni o dei testi eventualmente generati*.

DICHIARA INOLTRE

che tutto il materiale generato dall'IA è stato attentamente verificato, rivisto e rielaborato dall'autore/dall'autrice, che si assume la piena responsabilità per la qualità, l'accuratezza e l'integrità scientifica del lavoro.