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# EUROPE'S MINING RENAISSANCE: CONTENT AND GOALS OF THE CRITICAL RAW MATERIALS ACT

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**Europe's Mining Renaissance**

by Susanna Lukacs

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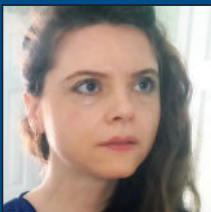
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## EXECUTIVE SUMMARY

- Europe needs to reinvent itself and focus on economic growth. At the moment its dependency on China and the Ukrainian-Russian war are weakening the EU's economy.
- China's encroaching predominance of the battery and rare earth minerals production is detrimental to Europe.
- Europe's governments are shifting towards reinvigorating the mining sector that has been stagnating for multiple decades.
- The European Union's critical-minerals legislation will streamline mine approvals across the bloc with environmental approval review times shortened to two years maximum.
- The regulation stipulates it would diversify the Union's imports of strategic raw materials ensuring that by 2030, the Union's annual consumption of each raw material can be dependent on imports from multiple third countries.
- New sources of critical raw materials are being discovered across Europe. Cutting the red tape thanks to the CRM Act may very well change the industry for the better. ■



### THE AUTHOR

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**E**urope's governments' attitudes are shifting towards mining. Governments need to secure the supply of minerals, especially since they are processed in a limited number of countries. The EU is scrambling to find new sources of critical materials after China said it would favour export restrictions on germanium and gallium – critical minerals used to produce semiconductors.

Europe's mining sector has been on the decline for several decades, due to a variety of factors. In the early 2000s Europe had made up 40 per cent of global mining production and now that decreased to just 3 per cent.<sup>1</sup>

China's encroaching predominance of the battery and rare earth minerals production is detrimental to Europe and boosting the European mining sector is of utmost importance. European Commission President Ursula von der Leyen after all did announce that lithium and other rare earths will be more necessary than oil and gas, and the demand for rare earths alone will “increase fivefold by 2030”, also adding that the EU must not become dependent on resources ever again.<sup>2</sup>

## Key factors leading to the decline of Europe's mining sector

### A decrease in coal mining

Europe's mining sector plummeted in the past few decades essentially as a result of the decline in coal mining, and Europe having transitioned towards sustainable energy production. In a 2019 EU briefing it is claimed “the EU has committed to cut greenhouse gas emissions by 40% before 2030, and by at least 80% by 2050. This will require a transition from relying on fossil fuels to renewable energy sources, and in particular a reduction in power generation from coal”<sup>3</sup>. As a result after 2012 EU coal production was cut to about a third, several power plants and coal mines closed. An EU Commission report states<sup>4</sup> that, in 2015, there were about “128 coal mines in 12 Member States and 207 coal power plants in 21 Member States. The largest number of coal mines is in Poland (35), followed by Spain (26), Germany, and Bulgaria (12 each). Between 2014 and 2017, 27 mines were closed down across Czechia, Germany, Hungary, Poland and additional closures were made in 2018, including 5 in Germany, Italy, Po-

<sup>1</sup> Lahiri, Indrabati. *Here's why Europe needs to revive its mining sector*. Euronews, 12 March, 2024. <https://www.euronews.com/business/2024/03/12/heres-why-europe-needs-to-revive-its-mining-sector>

<sup>2</sup> The European Commission, 14 September, 2022. [https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT\\_22\\_5523](https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_22_5523).

<sup>3</sup> Widuto, Agnieszka. *EU support for Coal Regions*. The European Parliament Research Service, October, 2019. [https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/642217/EPRS\\_BRI\(2019\)642217\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/642217/EPRS_BRI(2019)642217_EN.pdf).

<sup>4</sup> *JRC Publications Repository*. <https://publications.jrc.ec.europa.eu/repository/>.

land, and Romania and 26 in Spain". In 2022 the EU made about "55 million tonnes of hard coal – an 80% fall compared to 1990 levels", according to the European Commission.<sup>5</sup> With the green agenda intact, EU investment was put towards sustainable projects, like wind turbines and solar panels.

**According to the European Commission data, in 2022 the EU made about "55 million tonnes of hard coal. An 80% fall compared to 1990 levels"**

Additionally, Europe has very strict environmental and conservation laws, with locals protesting strongly over new mines or the expansion of existing ones. Since several critical metal and mineral deposits also happen to be near conservation or ecologically sensitive areas, governments have to engage with utmost caution when it comes to new mines.<sup>6</sup>

### Red-tapism and mining approvals

Up until May 2024 it could take over ten years to receive a mining permit, discouraging the mining industry from setting up shop and investing in Europe. Finally, the Commission has suggested curtailing "reporting obligations" by 25 per cent in the sector. The European Parliament has put a directive in place as regards the "time limits" for "sustainability reporting".<sup>7</sup>

Having amended the Corporate Sustainability Reporting Directive (CSRD), more time is available for companies to submit their sectorial European Sustainability Reporting Standards (ESRS). Standards for large non-EU companies will be adopted in June 2026, two years later than the "scheduled date". The Commission has now put into place "cross-cutting standards" to "facilitate" reporting.<sup>8</sup>

Regulations and reporting uphold Europe's environmental and conservation laws. It is certainly of essence to uphold safety and reduce waste. For one, mining waste "is one of the largest waste streams in the EU. It can contain large quantities of dangerous substances,<sup>9</sup> such as heavy metals. Extracting and processing metals and metal compounds can result in acid or alkaline drainage". The EU's Extractive Waste Directive, for example, "aim[s] to prevent or

<sup>5</sup> *Coal production and consumption statistics.*

[https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Coal\\_production\\_and\\_consumption\\_statistics&oldid=641466](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Coal_production_and_consumption_statistics&oldid=641466).

<sup>6</sup> Lahiri, Indrabati. *Here's why Europe needs to revive its mining sector.* Euronews, 12 March, 2024.

<https://www.euronews.com/business/2024/03/12/heres-why-europe-needs-to-revive-its-mining-sector>.

<sup>7</sup> *Council and Parliament agree to delay sustainability reporting for certain sectors and third-country companies by two years.* Council of the EU, 7 Febr., 2024.

<https://www.consilium.europa.eu/en/press/press-releases/2024/02/07/council-and-parliament-agree-to-delay-sustainability-reporting-for-certain-sectors-and-third-country-companies-by-two-years/>.

<sup>8</sup> *Ibid.*

<sup>9</sup> *Mining Waste.* The website of the EU. [https://environment.ec.europa.eu/topics/waste-and-recycling/mining-waste\\_en](https://environment.ec.europa.eu/topics/waste-and-recycling/mining-waste_en).

reduce any adverse effects on the environment due to the management of mining waste”.<sup>10</sup> However, apart from the Extractive Waste Directive there are other 16 regulations and directives<sup>11</sup> targeting the initiative of waste management. There are endless regulations that make opening up and operating mines difficult. Mines need to undergo strict “impact assessments”, to ascertain the lack of harm to the environment.<sup>12</sup>

“The EU’s water laws, for example, require companies to pass very high thresholds, such as zero emissions to water, which is quite difficult to do”<sup>13</sup> according to Kerstin Brinnen, counsel at LKAB. When critical metal and mineral deposits are present in conservation or ecologically

**Proceeding with caution is absolutely reasonable, but the red-tape needs to be limited and fast paced bureaucratic proceedings are necessary if Europe wants to become competitive**

sensitive areas, governments have to take cautionary measures with the opening of new mines. Proceeding with caution is absolutely reasonable, but the red-tape needs to be limited and fast paced bureaucratic proceedings are necessary if Europe

wants to become competitive. Hopefully, this new amendment to the CSRD could be a start.

According to Heather Exner-Pirot, Director of Energy, Natural Resources and Environment at Macdonald-Laurier Institute:

Longer permitting and regulatory processes don’t inherently mean more rigorous processes. Sometimes time and money are lost to bureaucracy, redundancy and a lack of coordination. As an example, more attention is starting to be put to mitigating effects instead of documenting them. If you have a good understanding of what the impacts will be from a particular project, rather than spend two years identifying them, let’s just move on to the plan to mitigate them.

There are also some risks and adverseness in some bureaucratic permitting processes – it seems like the default is to say no, or ask for more studies, instead of proceed with reasonable mitigation strategies.

All of which to say is, long approval processes do not equate to better ones. Most Canadian companies are willing to accept very high environmental standards, but they need

<sup>10</sup> EUR Lex. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006L0021-20090807>.

<sup>11</sup> *Mining Waste*. The EU website. [https://environment.ec.europa.eu/topics/waste-and-recycling/mining-waste/other-relevant-laws\\_en](https://environment.ec.europa.eu/topics/waste-and-recycling/mining-waste/other-relevant-laws_en).

<sup>12</sup> *Managing and Protecting Natura 2000 sites*. The website of the EU. [https://environment.ec.europa.eu/topics/nature-and-biodiversity/natura-2000/managing-and-protecting-natura-2000-sites\\_en](https://environment.ec.europa.eu/topics/nature-and-biodiversity/natura-2000/managing-and-protecting-natura-2000-sites_en).

<sup>13</sup> Zimmermann, Antonia. *Europe’s green dilemma: Mining key minerals without destroying nature*. Politico, 15 March, 2023.

<https://www.politico.eu/article/europes-green-dilemma-mining-key-minerals-without-destroying-nature/>.

to know what those are and how to meet them. The expectations need to be transparent and consistent.<sup>14</sup>

Something needs to be done to facilitate the process, but at the same time uphold environmental conservation.

## The green issue

Thus far the EU's agenda of the past couple of decades was to safeguard the welfare of European people and "export environmental damage to the global south".<sup>15</sup> Instead of investing in solutions that could eliminate the pollution and health concerns of mining, Europe has exported its mining activity only "stepping in" at the end of the supply chain. In June 2023 president Ursula von der Leyen visited Brazil, Argentina, Mexico, and Chile, later announcing that the EU is to invest "€10 billion in 108 green projects in Latin America and the Caribbean".<sup>16</sup> Von der Leyen signed the Memorandum of Understanding on Raw Materials with Argentina and Chile and initiated partnerships with Canada, Ukraine, Kazakhstan, Namibia, and Australia.

As the EU embarks on diversifying its critical raw materials reserves away from China, it has to commence capitalising on domestic minerals required for green technology like wind turbines and solar panels, and green campaigners fear that curtailing bureaucracy for extraction will deplete the work that was achieved protecting biodiversity, highlighting that mining may very well result in water and soil pollution and biodiversity loss.<sup>17</sup>

<sup>14</sup> Interview with the Author on 7 July, 2024.

<sup>15</sup> Kalman, Attila. *Green transition, dirty business*. Investigate Europe, 26 October, 2023. <https://www.investigate-europe.eu/posts/green-transition-mines-metals-minerals-china-europe>.

<sup>16</sup> *In Brazil President Von der Leyen announces 10 billion EUR of Global Gateway Investments*. The website of the EU, 13 June, 2023. [https://ec.europa.eu/commission/presscorner/detail/en/ac\\_23\\_3265](https://ec.europa.eu/commission/presscorner/detail/en/ac_23_3265).

<sup>17</sup> *Social and environmental impacts of mining activities in the EU*.

[https://www.europarl.europa.eu/RegData/etudes/STUD/2022/729156/IPOL\\_STU\(2022\)729156\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2022/729156/IPOL_STU(2022)729156_EN.pdf)

## Reliance on China is a problem

The EU has to act quickly, reduce bureaucracy, develop and implement sustainable means to mine for resources because dependence on China leads to “price volatility, supply blockages, as well as the loss of competitiveness”.<sup>18</sup>

China is the global leader in rare earth mineral production making up approximately 60 per cent of production, globally.

At the moment, mineral production and trade are controlled by China.<sup>19</sup> China and Russia have a dominant sway on the market as suppliers. Most CRMs are hardly mined in Europe, and ore processing has completed depleted, as a result Europe is cornered into importing

**Most CRMs are hardly mined in Europe, and ore processing has completed depleted, as a result Europe is cornered into importing all of its essential metals**

all of its essential metals. But, as of late, Europe wants to steer the mining industry away from China. Based on a study entitled *Pathways to solving Europe’s raw materials challenge*,<sup>20</sup> it is assumed that by

2050, Europe will need 21 times more lithium (required for EVs), four times more cobalt and four times more dysprosium (used for magnets in EV motors).

Europe has come to an impasse, but via “strategic autonomy”, optimised recycling, domestic value chain investment, and more active global sourcing<sup>21</sup> it could lay the ground work for a more autonomous future. Europe’s demand for metals may be supplied through two options - primary supply, which is metal production from raw ore via mining and processing, or secondary supply, which is metal production from recycled products.

Recycling of end-of-life products is already an important driver for supply in established base metals markets [...] the secondary supply potential is limited by the volume of material already in circulation. Once the supply potential from this stream is reached, additional supply needs to be provided through primary supply.<sup>22</sup>

The recycling of end-of-life products are prevalent. A notable recycling project is the EU-

<sup>18</sup> Lahiri, Indrabati. *Here’s why Europe needs to revive its mining sector*. Euronews, 12 March, 2024. <https://www.euronews.com/business/2024/03/12/heres-why-europe-needs-to-revive-its-mining-sector>.

<sup>19</sup> Kalman, Attila. *Green transition, dirty business*. Investigate Europe, 26 October, 2023. <https://www.investigate-europe.eu/posts/green-transition-mines-metals-minerals-china-europe>.

<sup>20</sup> Leuven, Ku. *Pathways to Solving Europe’s Raw Material Challenge: Metals for Clean Energy*. <https://eurometaux.eu/media/jmxf2qmo/metals-for-clean-energy.pdf>.

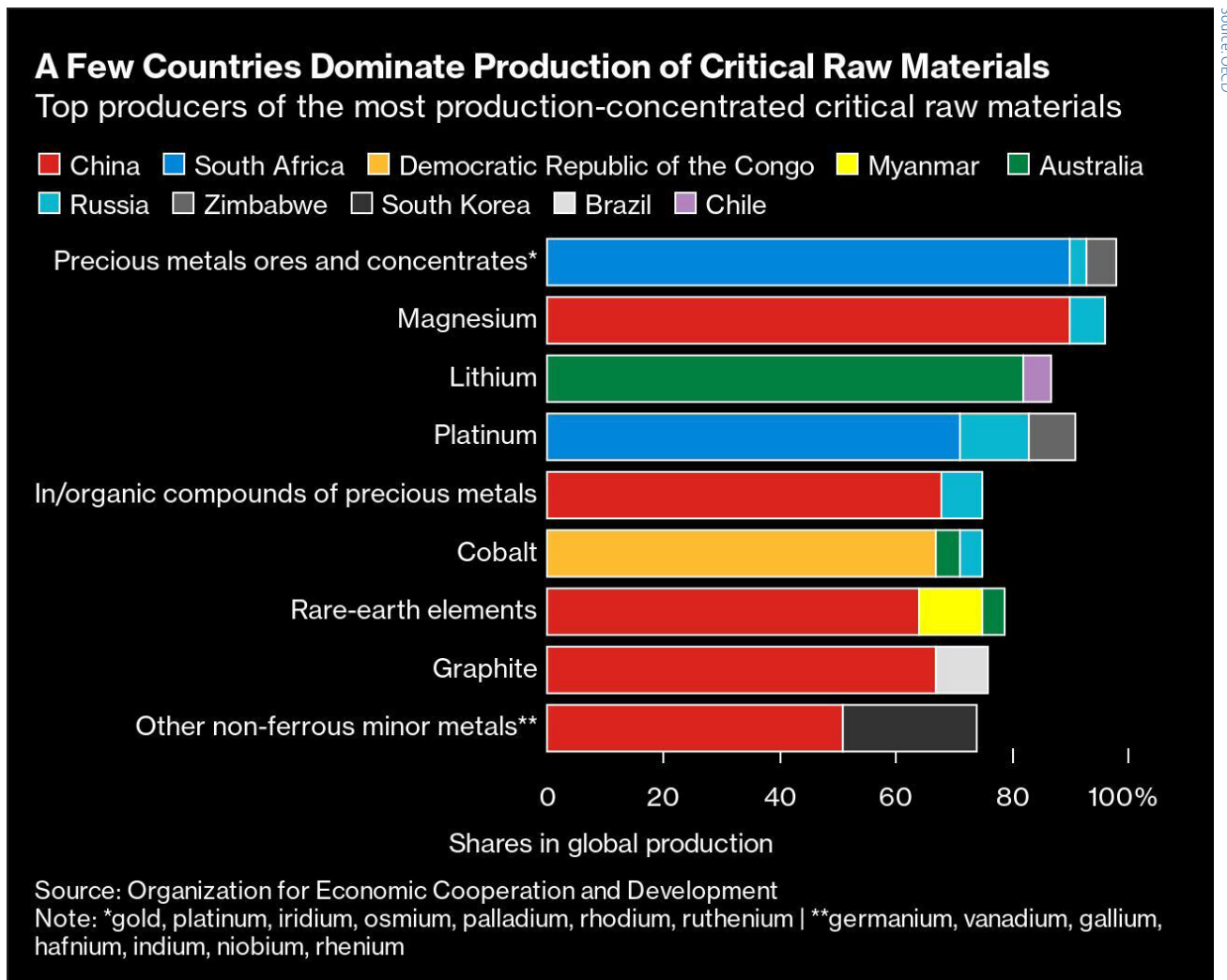
<sup>21</sup> Ibid.

<sup>22</sup> Ibid.



funded Susmagpro project,<sup>23</sup> which took place last year and initiated the recycling of rare-earth magnets used in wind turbines, electronics and electric car motors. One of the project's objectives is to "extract 6 tonnes of neodymium-iron-boron (NdFeB) powders per year" via an innovative pilot robotic sorting line "locating and separating NdFeB-magnet-containing components from various waste electrical and electronic equipment".<sup>24</sup>

However, thus far China is winning the global minerals tournament, advancing in the value chain by setting up its automotive industry. "This year, Chinese car exports overtook German exports".<sup>25</sup>



<sup>23</sup> About Susmagpro. <https://www.susmagpro.eu/about-susmagpro>.

<sup>24</sup> Ibid.

<sup>25</sup> He, Laura. China is 'certain' to have overtaken Japan as the world's top auto exporter in 2023, industry group says. CNN, 10 Jan, 2024. <https://edition.cnn.com/2024/01/10/cars/china-cars-overtake-japan-largest-exporter-intl-hnk/index.html>.

## The Critical Raw Materials Act: EU's solution to increasing mineral production

The European Union's critical-minerals legislation will streamline mine approvals across the bloc with environmental approval review times shortened to two years maximum.

The regulation stipulates it would “diversify the Union's imports of strategic raw materials” ensuring that by 2030, the Union's annual consumption of each raw material can be dependent on imports from multiple third countries”. The Union also made “concessions”<sup>26</sup> to augment its processing capacity with a target to produce at least 50 per cent of the annual consumption of critical raw materials.

According to the European Commission's 2020 list of critical raw materials, which includes 30 minerals and metals, the EU has significant reserves or resources of antimony, bauxite, cobalt, fluorspar, graphite, indium, magnesium, niobium, phosphate rock, platinum group metals, rare earth elements, and vanadium. But the issue is, the extraction of these resources comes with challenges, like high extraction costs, technical ineptness, environmental concerns, not to mention competition from “lower-cost producers”<sup>27</sup> outside of Europe.

In brief, through the CRM Act, the EU aims to increase sustainable and responsible mining, claiming “international trade is key to supporting global production and ensuring the diversification of supply”. The EU shall seek to expand its trading partnerships with a “strong sustainability dimension” and “soft and hard infrastructure deploy projects”.<sup>28</sup>

The Act stipulates that 10 per cent of supply should come from local extraction, with 40 per cent to be processed in the EU and 25 per cent to come from recycled materials.

New mining projects will receive permits within a maximum period of 27 months, while recycling and processing projects should receive their permits within 15 months. It ascertained that “limited exceptions” will be available to certain projects to ensure “meaningful engagement” with local communities and proper environmental impact assessments.<sup>29</sup>

In addition, the EU Commission states that EU countries and business operators will have to examine the “potential” for recovery of critical raw materials from “extractive waste”. This is

<sup>26</sup> Prasad, Seema. “EU Parliament votes in favour of Critical Raw Materials Act” Down to Earth, 15 Sept., 2023. <https://www.downtoearth.org.in/energy/eu-parliament-votes-in-favour-of-critical-raw-materials-act-91789>.

<sup>27</sup> Bassetti, Francesco. *Moving Mining Back to Europe*. Foresight, 28 April, 2023. <https://www.climateforesight.eu/articles/moving-mining-back-to-europe/>.

<sup>28</sup> *Critical Raw Materials Act*. The website of the EU. [https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act\\_en](https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en).

<sup>29</sup> Crossins-Smith, Annabel. *EU Grants Final Approval to Critical Raw Minerals Act*. Mining Technology, 19 March, 2024. <https://www.mining-technology.com/news/eu-approves-critical-raw-materials-act/>.

to incentivise recycling stipulated by the Act.<sup>30</sup>

The Act will try to tackle issues such as the lead time of potential mines, lack of local public support, and higher European labour and energy costs which currently affect new and planned mines in the region.

## New mines are opening across Europe

In the past opening a new mine in Europe took up to 15 years, making it a toil to meet demands with sufficient supply. Cutting the red tape thanks to the CRM Act may very well change the industry in Europe for the better. “Fast-track permitting should be allowed for projects regarded as having strategic importance to the bloc while still keeping high environmental, social and governance (ESG) standards”, said Chief Executive Bernd Schaefer of EU-funded EIT Raw Materials in the follow-up to the publishing of the CRM Act. “In China, you get a permit for a mine in three months as opposed to 15-to-17 years in Europe”, Schaefer claimed.<sup>31</sup>

**Opening a new mine in Europe took up to 15 years, “In China, you get a permit for a mine in three months as opposed to 15-to-17 years in Europe”, said Chief Executive Bernd Schaefer of EU-funded EIT Raw Materials**

To meet clean energy targets the EU will need 35 times more lithium and seven to 26 times the amount of rare earth metals in 2050 compared with today with similar trends expected as regards other critical raw materials such as nickel, copper, and cobalt, all of which are imported and essential to sustainable energy production. Moving mines back to Europe is essential. The supply gap needs to be bridged with opening up mines.<sup>32</sup>

According to the Eurometaux report, Europe has the potential to satisfy up to 20 per cent of its mining needs internally and process above 40 per cent of specific raw materials. The CRM Act is keen on “leveraging this potential” by investing in mineral exploration and alleviating the delays in permits for extraction, refining and recycling.<sup>33</sup>

<sup>30</sup> *Critical Raw Materials Act*. The website of the EU. [https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act\\_en](https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en).

<sup>31</sup> Onstad, Eric. *EU urged to speed up permits for critical mineral projects*. Reuters, 30 Jan., 2023. <https://www.reuters.com/markets/commodities/eu-urged-speed-up-permits-critical-mineral-projects-2023-01-30/>

<sup>32</sup> Bassetti, Francesco. *Moving Mining Back to Europe*. Foresight, 28 April, 2023. <https://www.climateforesight.eu/articles/moving-mining-back-to-europe/>.

<sup>33</sup> Ibid.

## Major mineral deposits in Northern Sweden

The benefit of mining in Europe is sourcing minerals with less environmental risks.

“I think that the way that we mine in Europe is probably [...] one of the best ones in the world. But we don’t get permitted to do mining, [yet] Europe happily [imports] metals from other parts of the world” with much lower “environmental standards”, claimed Mikael Staffas, CEO of Swedish mining firm Boliden. Mike Buxton, Section Head for Resource Engineering at TU Delft in The Netherlands said: “It is possible to drastically innovate mining and make it more attractive to Europe”.<sup>34</sup>

New sources of critical raw materials are being discovered throughout Europe, and the CRM Act may be the facilitator to assist in reviving mining.

Already, Swedish mining company LKAB has hopes to source a “recently discovered reserve of over one million tons of rare earths in the Kiruna area in the north of the country”. LKAB owns iron ore mines in Sweden and invests in the processing of minerals. “According to LKAB, the deposit has the potential of becoming Europe’s most important mine for critical raw materials”.<sup>35</sup>

## With the CRM Act in place mining in Ireland may gain momentum

Based on the premise of the Institute of Geologists of Ireland (IGI), with “its rich geological landscape, and established permitting and regulatory regimes”, Ireland can help meet the EU targets in essential minerals. The Institute claims this will need the “opening up of about 15 new mines in the EU”, including in Ireland, and “revisiting closed mines and mine waste facilities”.<sup>36</sup>

Ireland has potential deposits of copper, lithium, baryte, antimony, and arsenic, in time, it could very well diversify the EU’s raw material supply, but to do that more geoscientists are needed and mining needs to gain a greater momentum with more initiatives in place.

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<sup>34</sup> Ibid.

<sup>35</sup> Ibid.

<sup>36</sup> Goodbody, Will. *EU critical materials rules could lead to new Irish mines*. RTE, 23 May, 2024. <https://www.rte.ie/news/business/2024/0523/1450693-eu-critical-materials-rules-could-lead-to-new-irish-mines/>.

## The Covas Deposit in Portugal

The Portuguese environmental authority APA approved the environmental impact assessment of a lithium mine near Covas do Barroso in northern Portugal. Covas, Portugal, is set to play a role in the green-energy transition for it holds Europe's richest lithium deposits – the silvery metal used in electric-vehicle batteries. Europe is scrambling to find new sources of critical materials. The proposed Covas site is one of the nearly 50 mines now expected to open across Europe by 2030.<sup>37</sup>

Larger scale lithium deposits were discovered in the German-Czech border, in Extremadura, Spain, Carinthia in Austria, the Upper Rhine in Germany and Alsace in France, Serbia and Ukraine worthy of large-scale mining.

## France and Germany will also take part

The European Commission ushered in calls for projects to guarantee the EU's critical mineral supply.<sup>38</sup> Economic incentives and more financial support for small to medium sized enterprises (SMEs) are highly likely. France, Germany and Italy called for private investment to match public funding to build the critical raw materials' supply chain, also announcing investment plans of up to €2.5bn during a summit in Brussels.<sup>39</sup>

The three EU nations laid down the framework to finance domestic mining operations to secure critical raw materials for the energy transition at the EIT Raw Materials Summit with the capital to be available by the 2024 summer.

Raw Materials aid across France, Germany and Italy “will be focused on more than 30 critical minerals identified under the EU's Critical Raw Materials Act (CRMA)”, the representatives stated.<sup>40</sup>

A French project for the extraction and production of lithium for batteries is also making progress. Imerys, a manufacturer of minerals, firmly established that the plant will be constructed in La Loue.

<sup>37</sup> Khan, Yusuf. *Europe Is Embarking on a Mining Renaissance. Winning Over Locals Is Proving a Challenge* 10 Aug., 2023. The Wall Street Journal.

<https://www.wsj.com/articles/europe-is-embarking-on-a-mining-renaissance-winning-over-locals-is-proving-a-challenge-b7d14f5f>.

<sup>38</sup> Blenkinsop, Philip. *EU to call for mineral projects, eyes joint purchases*. 15 May, 2024. Reuters <https://www.reuters.com/markets/commodities/eu-call-mineral-projects-eyes-joint-purchases-2024-05-15/>.

<sup>39</sup> Pacheco, Marta. *France, Germany, Italy seek private input for €2.5bn critical mineral investment*. Euronews, 17 May, '24 <https://www.euronews.com/green/2024/05/17/france-germany-italy-seek-private-input-for-25bn-critical-mineral-investment>.

<sup>40</sup> Ibid.

The company plans to make up to “34,000 tonnes of lithium hydroxide per year in the conversion plant, a quantity that should be sufficient to equip 700,000 electric vehicles with batteries per year. The Emili project includes all production steps from extraction to lithium production. The total investment framework amounts to one billion euros. Initially, a demonstration plant around 400 tonnes of lithium hydroxide per year is to be built. The commercial plant is scheduled to be commissioned in 2028”.<sup>41</sup>

### **Landau**

Lithium extraction in the German Upper Rhine Graben has taken flight. The company Vulcan Energy Resources already opened the first lithium extraction plant (LEOP) in Landau, Palatinate.

### **Austria**

There are also promising lithium projects in Austria, particularly in an advanced stage in Wolfsberg (Carinthia). European Lithium claims, spodumene, the primary lithium-bearing material, may be extracted starting next year. The quantities extracted may amount to 10,000 tonnes of lithium hydroxide annually that will be further processed into battery-grade lithium in Saudi Arabia.<sup>42</sup>

### **New mines may be opening up in Romania**

The Romanian government gave its nod to a decree amending the Mining Code to speed up the reopening of non-energy mining. “We know very well that where there is, for example, gold, there are also other rare metals. We don’t know today in what concentration, in what quantity, but through the new law, we can do analyses”,<sup>43</sup> claimed Economy Minister, Radu Oprea. As of yet, no additional information is known as regards further steps, and the opening of new mines seems to be distant.

## **Conclusions**

Thus far Europe has exported the problem of mining and mineral extraction, putting all its eggs in one basket. Technologies for the processing and refining of critical raw materials are

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<sup>41</sup> *Energy and Raw Material Base in Transition*. Powtech, 6 May, 2024. <https://www.powtech-technopharm.com/en/industry-insights/2024/article/lithium-from-europe-first-milestones-reached>.

<sup>42</sup> Ibid.

<sup>43</sup> Clarke, William. *Romanian Government Paves Way for New Mines*. Mining Journal, 25 June, 2024. <https://www.mining-journal.com/miners/news/4327305/romanian-government-paves-mines>.

yet to be launched. Europe is under time constraints and needs to step up execution to meet demands. Thus far, France has taken the initiative. The Ministry of Higher Education and Research has developed a project to research innovation possibilities for the processing of minerals. Europe lacks much of this technology due to its reliance on China. The project will seek to unveil novel systems implementing processing and refining technologies for the “better recovery” of raw materials from “low grade and/or complex ores from extractive wastes”, with less waste and “higher energy efficiency”, all in all, creating up to par novel production systems which better utilise natural resources by cutting down on “losses” during waste-rock separation”.<sup>44</sup>

**Europe is under time constraints and needs to step up execution to meet demands and lacks much of this technology due to its reliance on China**

It is fair to say that mining and the processing of minerals in Europe will generally be significantly more energy-efficient than in Chile or China. Europe has an understanding of how environmental impacts can be monitored and curtailed. So, to some degree European extraction and production of battery-grade lithium, for example, is a gateway to sustainably better the ecological footprint of mining. ■

<sup>44</sup> *Technologies for processing and refining of critical raw materials (IA)*. Horizon Europe <https://www.horizoneurope.gouv.fr/technologies-processing-and-refining-critical-raw-materials-ia-32647>.



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