

Lithium, Gallium, Magnesium, Indium, Niobium. Although these [rare metals](#) and minerals appear to belong to the same family, not all were created equal, at least in the eyes of industry.

The European Commission has listed 30 of them it deems strategic for the future of its ambitious **green and digital transitions**, but for whose supply Europe has become reliant on foreign countries over the years.

Called "[critical raw materials](#)" (CRMs), they fall under the European Union's strategic autonomy agenda. The Covid pandemic and the war in Ukraine served to highlight the EU's dependencies on other nations for natural resources and reminded the bloc which states were in its corner, and which were not.

After concluding that **China** plays an outsized role in supplying the Europeans with these materials essential to electric car batteries, windmills and solar panels, Commission President Ursula von der Leyen announced a new strategy in her State of the Union address, in September 2022: the EU will seek to diversify its trading partners through new agreements. It was also announced that, in early 2023, the Commission will present a regulation on CRMs to create strategic reserves of those materials on European soil. Geologists have located critical raw materials across the continent. Finland, Sweden, Spain and Portugal, where deposits have been spotted, are eager to dig into the earth. Will the Europeans go back to the mines? Some countries, such as those in Scandinavia, have a long and ongoing tradition of mining, while others closed their last coal mines decades ago. In any case, the issue worries environmental activists. The word "eco-mining" is on everyone's lips in Brussels as well as in the Member States, and the concept should ostensibly help overcome obstacles to opening new mines.

In its consultation last October and November, the **European Commission** identified a lack of investment to create an EU supply and noted that permit procedures were long and complex. Opening a mine can take up to 15 years, between the exploration process to the extraction itself. Moreover, these projects are highly scrutinised, and the legislation in individual Member States remains demanding when it comes to exploiting their natural resources.

The consultation also pointed out the environmental risk. "We have to define our standards regarding responsible mining," MEP Hildegard Bentele, the EPP rapporteur for the resolution adopted on CRMs by the European deputies in 2021, tells The Parliament. "Because a mine is always an intervention into nature. We should not be blurry about it." Rather than "green" or "sustainable", Bentele hopes for "responsible" mines: the impact on the environment will never be zero, but it is necessary to do everything in our power to

minimise it.

The idea that a mine can be “responsible” is put forward by the French authorities and the companies which have recently announced lithium projects in several parts of the country. France, where mines are still taboo, has high ambitions for the production of this new “white gold” necessary for the batteries of future electric cars.

A boom in demand is expected after the ban on **fossil fuel** cars comes into force in 2035. In the Massif Central, in the centre of France, the French company Imerys has announced a vein capable of producing 34,000 tonnes of lithium hydroxide per year, which translates into 700,000 batteries for future electric cars. It plans to start extracting in 2028.

In the Rhine basin, between France and Germany, several projects aim to extract lithium using geothermal technologies: hot salty water is pumped to the surface, from which operators extract the precious metal before reinjecting the water into the earth. The Australian company Vulcan Energy hopes to produce 50,000 tonnes of lithium hydroxide annually starting in 2027. In the same area, some French companies have also successfully passed their first tests of lithium extraction from geothermal brines.

The zone could supply up to 30 per cent of Europe’s lithium needs. Not bad, considering Thierry Breton, the EU’s Commissioner for the Internal Market, has set the ambitious target of being “almost self-sufficient in lithium for our batteries by 2025”. But what is going to be the environmental impact of those mines?

In the Massif Central, even if the mine is underground, the industrial operator will still have to pump water to be able to work. And if it uses hydro-metallurgical separation techniques to extract lithium, large quantities of water will be required. The enterprise promises to recycle water, but with scant details on how often and how much.

At the Franco-German border, geothermal technologies also raise eyebrows among the locals. People are afraid of seismic tremors caused by the stress generated underground. Others wonder whether they may be affected by the high level of radioactivity concentrated a few kilometres away underneath their feet.

Even employing so-called “clean” technologies, the new mines don’t convince everyone. Judith Pigneur, an engineer from the French association négaWatt, has observed these new technologies carefully and as well as an outsider can, given that each company is still relatively hush-hush about its extraction process.

“In absolute terms, the **environmental impact of CRMs’** exploitation will only increase because deposits will become less and less good and their contents will decrease [in number],” she explains. As a result, companies will have to dig deeper or be more aggressive in the extraction process.

At the European Parliament, the Greens are wrestling with the dilemma of how to ensure the green transition, which requires critical raw materials, while protecting the planet's remaining resources. There must be some limits to mining in Europe, explains German MEP Henrike Hahn, shadow rapporteur for the European Parliament resolution in 2021: "Obviously, a protected area in Europe, like Natura 2000 [a network of protected areas], are off-limits for mining industries."

And the recycling of CRMs must be developed and promoted by future EU regulation, with the objective of creating a market of secondary raw materials.

Of the many CRMs, [lithium](#) holds a special place. The projected need for batteries will be so huge that many people are uneasy about our ability to maintain stocks. Even those advocating for a reduced consumption of CRMs across the board agree on the importance of lithium. For them, the only hope is to be able to reduce demand in small, incremental ways, with the understanding that it will, in any case, remain high. "Are we going to use lithium for SUVs or for small cars?" wonders Pigneur, the engineer.

Creating reserves of [critical raw materials](#) with new mines in Europe will not be enough to meet tomorrow's needs, no matter the geopolitical and economic urgency, and even with new extra-European trading partners. The CRMs will also have to give way to the 3Rs: reduce, reuse, recycle.

Source: The Parliament