

Climate, environment and circular economy | Metal recycling

METAL RECYCLING
OVERVIEW AND CHALLENGES

Technological innovations developed to support the energy transition make use of **critical or strategic metals**:

These refined minerals and metals are used for:

- **electric vehicles**: cobalt, lanthanum, lithium;
- **fuel cells**: platinum, palladium, rhodium;
- **wind energy** technologies: neodymium, dysprosium, terbium;
- **aviation**: titanium;
- **photovoltaic** solar technologies: cadmium, indium, gallium;

Critical metals include lithium, transition metals (such as nickel, cobalt, titanium or platinum group metals) and rare earths (such as neodymium, dysprosium or terbium; elements with electromagnetic properties that make them essential to high-tech manufacturing).

Find out more about the geostrategic issues affecting critical metals and rare earths in view of the energy transition
See our Decoding keys

BATTERY RECYCLING AND LIFE CYCLE

Most batteries used in electric vehicles are based on **Cathode Active Materials (CAM)**, consisting of Nickel, Manganese and Cobalt (NMC chemistry). This CAM currently accounts for half of the cost of NMC-type automotive batteries. Consequently, the recycling of car batteries is a top priority issue at both an economic and environmental level.

With electricity making up a growing share of transport, this challenge is effectively twofold:

- securing supply by ensuring industrial sovereignty in Europe,
- meeting European regulations: in 2027, the European Regulation on batteries and waste batteries will impose minimum levels on the amount of cobalt (16%), lead (85%), lithium (6%) and nickel (6%) that must be reused in new batteries.

IFPEN's objective: to provide eco-efficient rare earth production and recycling technologies that support the development of new energy transition sectors.

Our solutions Our networks Our strengths

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News March 2021

Nickel in the energy transition: why is it called the devil’s metal?

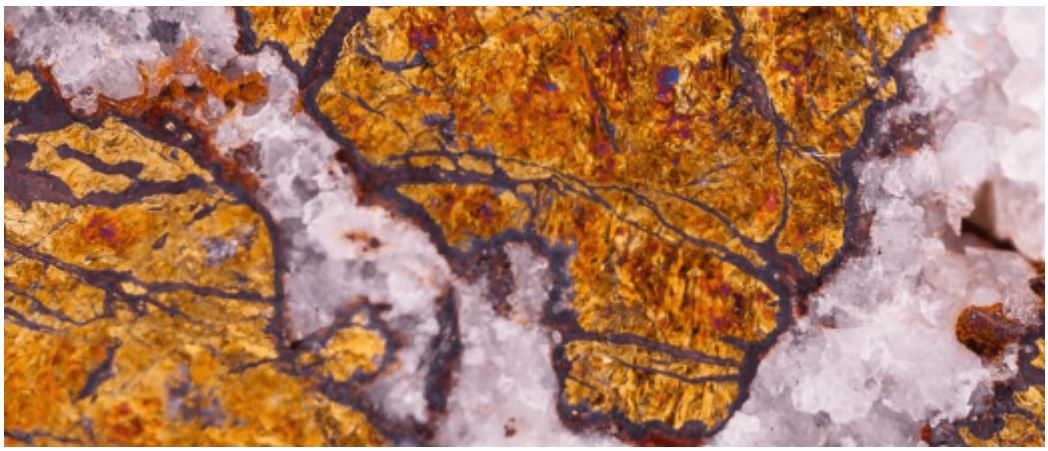
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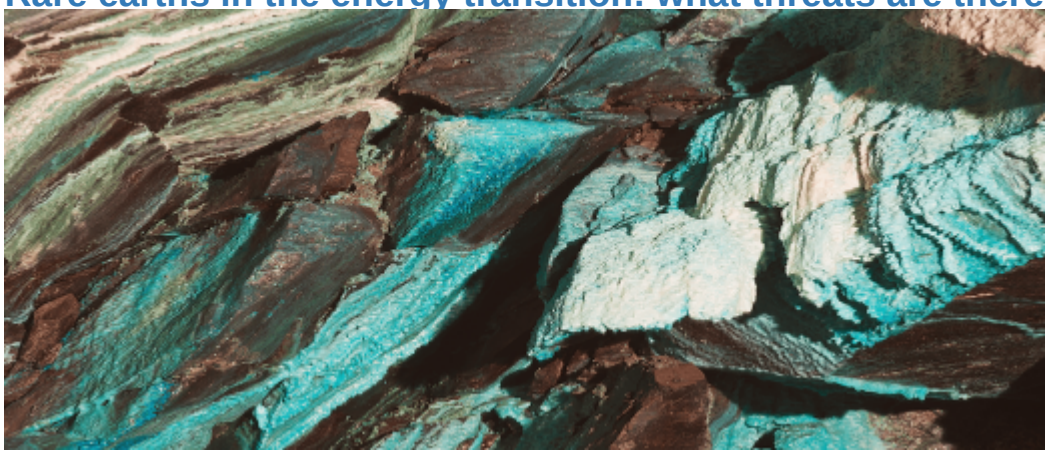
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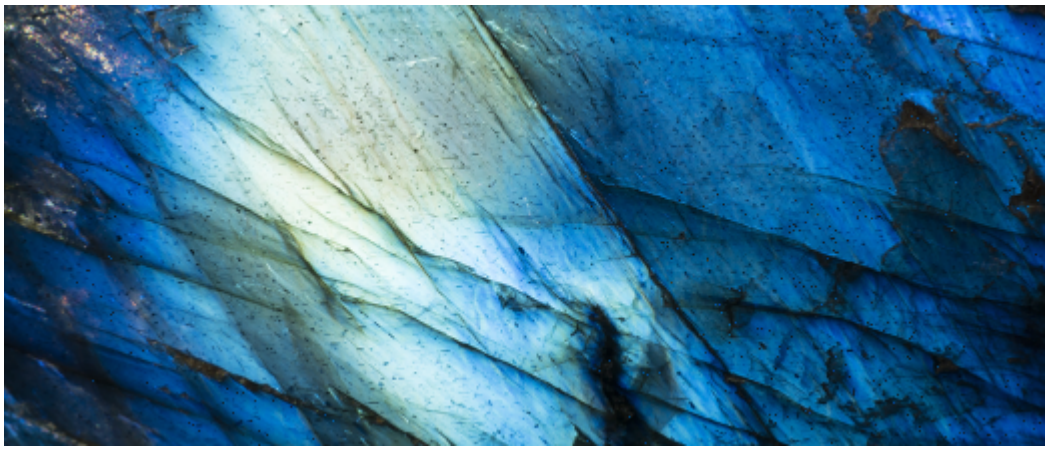
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