



Explanatory note on Critical Raw Materials and Rare Earth Minerals- Geological Survey Ireland

Critical Raw Materials

Critical Raw Materials are those elements which are important for society but whose supply chain is vulnerable or overly reliant on another country.

Most global economies have their own individual list of these materials which can vary slightly by country. The European Commission publishes an updated list approximately every 4 years of Critical Raw Materials for the EU. This includes;

- Lithium – used extensively in rechargeable batteries, lithium in Europe mostly occurs in granite like rocks in contrast to the South American brine deposits.
- Rare Earth Elements – Also referred to as REEs, these minerals are not particularly rare within the Earth's crust but it is unusual to find them in concentrations where they can be extracted easily. These elements are mostly used to create extremely strong permanent magnets. There are 17 REE minerals used in applications such as catalysts, lasers and magnets and examples include the minerals scandium, yttrium and neodymium.
- Copper – All electricity travels along copper wires and every generator and electric motor contains large coils of copper. It is one of the most indispensable elements in modern life.
- Battery Minerals – This is a term used to group certain minerals vital for the production of rechargeable batteries including lithium, nickel, cobalt, graphite, manganese, aluminium, tin, tantalum, magnesium and vanadium.

In 2024, The European Union published the Critical Raw Materials Act (CRMA) to help reduce Europe's over reliance on imports of these elements. The Act aims to increase production of raw materials in Europe by increasing recycling rates and opening new mines within Europe, while also reducing over reliance on individual non-EU countries for mineral supply. Each EU member state is also required to set up a national Exploration Programme and evaluate the potential for CRMs in mine waste. The implementation of the CRMA in Ireland rests with Department of the Environment, Climate and Communication while the National Exploration Programme is to be carried out by Geological Survey Ireland.

Geological Survey Ireland is a leading survey within Europe on Raw Materials. The Survey has representatives on several European expert groups providing data and advice to the European Parliament and the European Commission. Geological Survey Ireland also chairs the European Expert Group focused on National Exploration Programmes.

Ireland has known deposits of Critical Raw Materials and has potential for more to be discovered including copper, lithium, gallium, germanium and antimony. Ireland is currently a leading EU producer of zinc, which is on the CRM list for the USA and Canada.



Selected raw materials terms

Exploration – the process of searching for raw materials to mine. This can include sampling, surveying and drilling. Less than 1 in 1000 exploration projects will become a mine.

Resource – an occurrence of raw materials with reasonable prospects for eventual economic extraction. “Resource” is a specific term within exploration and mining that is controlled by legally binding reporting standards.

Reserve – the economically mineable part of a mineral resource. “Reserve” is a specific term within exploration and mining that is controlled by legally binding reporting standards.

Further information on minerals and Critical Raw Materials related work at Geological Survey Ireland

<https://www.gsi.ie/en-ie/programmes-and-projects/minerals/Pages/default.aspx>

To contact Geological Survey Ireland with any queries, please email duty.geologist@gsi.ie