

## Rare Earth Elements (REEs): Explanation of relationships and "criticality"



The Rare Earth Elements (known as REEs) are an example of Critical Raw Materials (CRMs) where the "criticality" of these materials can be well demonstrated and explained. These represent a group of raw materials that are key to many modern industries in Europe and around the world, often irreplaceable. At the same time, these are currently mostly produced in China, which entails that Europe is heavily dependent on their imports. Due to the fact that this raw material is currently in high demand, if new deposits are not found and its extraction is started elsewhere, there is a risk that it will be in short supply in the near future, which will subsequently have an impact on the use and development of the technologies for which it is used.

Presenting this "one example for all" can help participants better understand why they are participating in a Focus Group discussion and, more broadly, help society better understand the association of a given material or group of materials (e.g., REEs) with the contemporary concept of "criticality".

Demand and use of REEs in economic sectors	Current origin of REEs used in Europe
<p>They are necessary for many emerging and innovative technologies. These include:</p> <ul style="list-style-type: none"> <li>• Electrical and electronic components for smartphones, digital cameras, computer components, semiconductors, etc.</li> <li>• Technology of renewable energy sources</li> <li>• Military equipment</li> <li>• Glass production</li> <li>• Metallurgy</li> <li>• Lasers</li> <li>• Magnetic materials</li> </ul>	<ul style="list-style-type: none"> <li>• Main origin: China (95%);</li> <li>• Other countries of origin: USA (1,7%), Russia (1,3%), and Australia (1,2%)</li> </ul> <p>China is currently the largest supplier to Europe and the world for REEs materials. The dependence of the market for this strategic raw material on Chinese production leads to the search for new deposits, such as Greenland, Australia, or the seabed near the Japanese island of Minami-Torishima in the Pacific Ocean.</p>

**Current trend – Increased demand and growing concerns that the world may soon face a shortage of REEs**

- Within a few years, the worldwide demand for REEs is expected to exceed supply by tens of tons per year (currently, 135,650 tons are produced annually).
- The demand for REEs will increase due to the EU's dependence on these elements, as well as the fact that REEs cannot be easily replaced by other elements and have a low recycling rate.
- Concerns include the fact that, unless significant new resources are developed, the world may soon face shortages of these rare metal elements.



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