



*Sustainable EuroPean Rare-Earth Elements production  
value chain from priMary Ores*



**SUPREEMO**  
Co-funded by  
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## PRESS RELEASE

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### THE SUPREEMO PROJECT IN PURSUIT OF A MORE RESILIENT EUROPEAN RARE EARTH ELEMENTS (REEs) VALUE CHAIN

For the first time, the SUPREEMO consortium met in Brussels on 30<sup>th</sup> and 31<sup>st</sup> of January 2024 to start the collaborative work. The project has been granted €6.4 million from the European Union's [Horizon Europe](#) research and innovation programme and €659k from UKRI to bolster European industrial leadership and enhance autonomy in critical strategic value chain, ensuring a secure supply of raw materials.

Europe aims to become the first climate-neutral continent by 2050. In this context, Rare Earth Elements (REEs) play a key role in both Europe's economic landscape and its commitment to environmentally sustainable policies. Particularly, the demand for REEs is driven by the production of Permanent Magnets (PMs) containing *neodymium* (Nd), *praseodymium* (Pr), and *dysprosium* (Dy) for high energy-efficient electric motors, renewable energy technologies, robotics, as well as aerospace and defence applications. Nevertheless, a significant challenge in the REEs European value chain is the dependency on imports from third countries, notably China. Additionally, the recent European energy crisis has further raised tensions within the EU's high-tech and green industries.

Given these circumstances, the European Union has labelled REEs as critical raw materials (CRMs) and ranked them among the highest supply risk in all the four lists of CRMs released since 2011. In March 2024, the Council adopted the [European Critical Raw Materials Act](#) (CRMA) to ensure a sustainable green and digital transition by securing a stable and strategic supply of CRMs. The benchmarks set for domestic capacities are at least 10 % for extraction, 40 % for processing, and 25 % for recycling. Furthermore, according to the draft regulation, the Union's annual consumption of each strategic raw material at any relevant stage of processing should not exceed 65 % sourced from a single third country.

Faced with this situation, 11 European leading representatives from industry, research and technology organisations have joined forces in SUPREEMO to create a **sustainable and resilient pre-commercial European Rare-Earth Elements (REEs) value chain**. Considering this scenario, during the next four years the consortium will work towards achieving the following ambitious objectives:

1. Development and optimisation of effective beneficiation technologies capable of treating variable ores of different REE mineralogy to obtain >50-70 % gangue removal preventing from entering the downstream processes and reduce the cost of energy and reagents.
2. Development and demonstration of advanced froth floating process capable of producing high grade >35 % REE concentrate with recovery rate of >90 %.
3. Optimisation of a sustainable leaching process, operated at low temperature and pressure, to efficiently extract REEs from complex structures in an environmentally friendly way, while ensuring high recovery and acid reutilisation.
4. Develop a completely circular and low-cost process for selective recovery of REEs and removal of radioactive elements by using bio-based derived extractants and green diluents targeting near to zero waste with reduced number of processing steps.
5. Optimise and develop highly efficient electrolysis cell for Rare Earth Alloy (REA) production and manufacturing of NdPr-based permanent magnets.
6. Demonstrate the environmental, social, and economic sustainability of the SUPREEMO process value-chain.
7. Effectively communicate and disseminate the project's results towards society, scientific, and industry communities, and maximise the exploitation of the technologies towards market uptake.

The innovative solutions to be developed in the SUPREEMO project will set the foundations for an industrial leadership and a more resilient and secure raw materials value chain in Europe aiming to solve the technological, economical, and societal challenges we are facing today.

[SINTEF](#) (Norway) coordinates the implementation of the project. The involved partners will work collaboratively in the optimisation of technologies, construction, operation, and validation of the pilots, in the assessment of their sustainable performance, as well as in the communication, dissemination and exploitation of activities and results.

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