

# REESOURCE

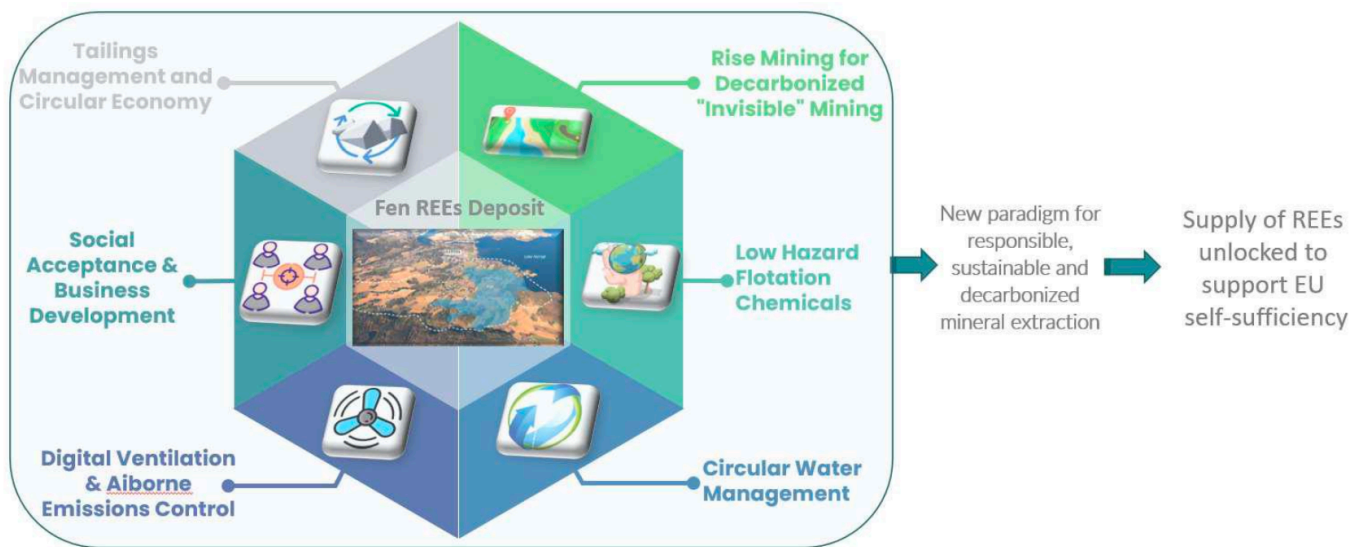
**Welcome to Project REESOURCE: "Unlocking the supply of rare earth elements in Europe through responsible, sustainable and decarbonised innovative technologies"**

Project REESOURCE is a pioneering initiative aimed at transforming the mining and supply of Rare Earth Elements (REEs) in Europe. Focused on a **multi-generational deposit in Norway**, the project seeks to establish a **stable and sustainable source** of these critical materials, which are essential for green technologies and the low-carbon transition.

The primary objective of REESOURCE is to create a **sustainable, decarbonised value chain** for the **mine-to-permanent magnets industry** in Europe. This ambitious goal will be achieved through a series of coordinated actions (**Figure 1**), encompassing scientific, technical, social, and financial strategies that will **set the foundation for the future of European mining sites**:

- **Enhancing Rare Mining technologies** to advance the concept of “**Invisible Mining**”, minimising socio-environmental impact and significantly reducing CO<sub>2</sub> emissions compared to conventional extraction methods.
- **Developing environmentally friendly chemical formulations** for both:
  - i) The beneficiation of REE minerals.
  - ii) The detoxification and quality improvement of process water to enable its recirculation within the mining site.
- **Introducing an innovative tailings stabilisation technique** to make them suitable for **backfilling**, thereby enhancing mine stability and eliminating the need for tailing ponds.
- **Implementing a Circular Economy approach** to **valorise a portion of the tailings**, repurposing them into **geopolymers for construction** and **composite materials for catalytic and CO<sub>2</sub> capture applications**.
- **Evaluating the social dimension of the project** to maximise **early awareness, stakeholder engagement, and public acceptance**.
- **Expanding the project's impact through cross-sector collaboration**, fostering synergies with **EU projects and key networks**, while also supporting the **widespread adoption of UNFC and UNRMS frameworks in the raw materials sector**.

Figure 1 – Overall concept for Project REESOURCE.



At the core of the project lies the **innovative Raise Mining method**, a fundamental pillar of the **"Invisible Mining"** approach. This cutting-edge technique **minimises socio-environmental disturbances** while enabling efficient and responsible REE extraction. When integrated with **advanced mining technologies**, Raise Mining **substantially reduces carbon emissions, preserves biodiversity, and aligns with Europe's long-term sustainability objectives**.

## Our Vision

Project REESOURCE reflects Europe's commitment to resource independence and sustainable mining. Through innovation and a strong focus on environmental and social responsibility, the project aims to set new standards for REE mining. Its methodologies and technological advancements are designed to drive sustainable mining practices both in Europe and globally.

## Our Work

Project REESOURCE tackles challenges associated with radioactive minerals found in REE deposits, such as thorium and uranium, which pose safety risks to mining personnel. Advanced ventilation systems are critical to maintaining radiation levels below regulatory thresholds by diluting radioactive isotopes in the mine atmosphere, ensuring worker safety and compliance.

### Advanced Mining Technologies (AMT)

The Advanced Mining Technologies (AMT) team addresses these challenges through two key objectives:

#### 1. Developing Ventilation Guidelines:

- Crafting energy-efficient ventilation strategies tailored to Raise Mining to \_\_\_\_\_

#### 2. Hybrid Simulation Model Integrating CFD and Network Simulations:

- Using Computational Fluid Dynamics (CFD) and VentSim, the AMT team \_\_\_\_\_

## Join Us on Our Journey

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