

CONSORTIUM



CONTACT US

PROJECT COORDINATOR



Dr. Sean E. Salazar
Senior Engineer
Norwegian Geotechnical Institute
Sean.Salazar@ngi.no



PROJECT SCIENTIFIC COORDINATOR
Dr. Mahdi Shabanimashcool
Senior Adviser
Norwegian Geotechnical Institute
Mahdi.Shabanimashcool@ngi.no



STAY IN TOUCH



#dinamine



@DinamineP



Co-funded by
the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement N° 101091541.



DINAMINE

DIGITAL AND INNOVATIVE MINE OF THE FUTURE



dinamine-project.eu

VISION

Raw materials are of strategic importance for the European economy in key value chains such as the green energy transition, where Europe should strengthen its resilience, independence, and competitiveness. However, European mining operations do not meet the demand today, due to low productivity, unsustainable waste management, resource-intensity and the consequent environmental impacts. To meet the ever-increasing demand for raw materials and to reduce negative market prospects, while mitigating environmental and societal impacts, the mining industry needs a digital transformation.

In this context, DINAMINE aims to demonstrate a holistic mine management approach, based on

- smart data analytics tools for real-time mine-to-port monitoring of the risks, performance, environmental footprint, maintenance needs, productivity and recovery rates,
- machine automation and robotization strategies to enhance safety and productivity, on-site studies to identify best practices for carbon neutral logistics/transportation, more energy-efficient processing, and waste/tailings handling and valorization.

The project further aims to develop tools that enable a more selective and more sustainable mining industry, with a specific focus on European SMEs. Technologies developed will be upscaled and tested, and studies performed in two small-medium scale European mining operations: one open-pit feldspar mine (Portugal), and one underground graphite mine (Norway) and their associated processing plants.

OBJECTIVES

To digitalise the value-chain from mine to port, DINAMINE will focus on the following objectives:

Objective 1

Develop and demonstrate in operating conditions a smart database for real-time integration of various types of information such as geological and geophysical data, mineral resources, geomechanics, mineral processing data, tailing and environmental data. The data system will be utilised in combination with the economical and practical factors for holistic mine planning, monitoring, and managing.

Objective 2

Deploy and test a machine vision-based technology for improving rock engineering-related activities such as rock mass mapping, optimising rock blasting, and suggesting relevant stabilising measures. This will be achieved by incorporating the technology in semi-autonomous mining equipment.

Objective 3

Demonstrate and quantify the actual sustainability, circularity and GHG emissions benefits of the DINAMINE approach by assessing and addressing the environmental, societal and resource impacts of mining activities.

THE PROJECT

The project is brought forward by a multi-disciplinary consortium comprised of mining businesses and geology experts, environmental scientists, data scientists and analysts, IoT and integrated digital solutions experts, all crucial competences to make mining operations both more digital and greener.

— Geologists and mining engineers will work hand-in-hand to characterize underground and open pit mines. Our equipment specialist will collaborate with them to retrieve data while drilling for further characterization and will work on automating operations to enhance safety and efficiency.

— The extracted rock will be characterized before and during processing, handled by our mining operators, chemical characterization experts and digital solution developers, to retrieve crucial data from the processing plant for further optimization.

— Waste and tailings will be monitored, and mitigation solutions developed by our environmental science specialists.

— The project team will also collaborate with IoT and sensors solution specialists to allow this knowledge to be collected and transferred to a common repository data centre, to be further analysed based on mathematical models and algorithms developed by our data scientists and mining engineers.

— LCA and impact assessment specialists will evaluate environmental impacts,

— Last, but not least, a well-designed dissemination and exploitation strategy will realize maximum impact on the mining sector and society at large.

