

## TOOLS FOR SUSTAINABLE GOLD MINING IN EU – THE SUSMIN PROJECT

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**Abstract:** Although the gold demand has been constantly increasing in past years, the commodity findings have been decreasing and the extraction of gold has complicated due to increasing complexity and decreasing grade of the ores. Gold mining is a chance for Europe to increase economical development, but it has challenges in eco-efficiency and extraction methods (e.g. cyanide). Thus, the novel energy and resource-efficient methods and technologies for mineral processing should be developed to concentrate selectively different gold bearing minerals. Also technologies for efficient treatment of mine waters, sustainable management of wastes, and methods to diminish environmental and social impacts of mining are needed. These will be addressed by the three year long project SUSMIN.

The SUSMIN-project identifies and evaluates environmental impacts and economical challenges of gold mining in EU. The objective of the SUSMIN-project is to increase the transnational cooperation and to support environmentally, socially and economically sustainable gold production within EU to decrease import dependency. This research promotes sustainable and economically viable gold production within EU by developing and testing geophysical techniques for gold exploration and eco-efficient ore beneficiation methods and alternatives for cyanide leaching. Additionally, the research will improve treatment methods for mine waters by the development and testing of advanced adsorbents. The research on socio-economic issues pursues to develop tools for enhancing the mechanisms of the corporate social responsibility as well as community engagement and management of the relations with the stakeholders. With the environmental risk assessment and better knowledge of the geochemistry and long-term transformation of the contaminants in mining wastes and mine waters, the mining companies are able to predict and prevent the impacts to the surrounding environment.

The SUSMIN consortium led by Geological Survey of Finland (GTK) includes seven research partners from six EU member states Finland, Sweden, Portugal, Romania, Poland and Ireland. Additionally eight globally on mining industry working industry partners will contribute in the SUSMIN consortium, so implementation of results from the project will translate into direct and significant economic benefits.

**Key words:** Mining, mineral processing, water treatment, waste management, environmental assessment, social assessment