BIO SHALE is a European project that aims at developing the potential of biotechnology for a sustainable exploitation of “black shale - Kupferschiefer” ores for base and rare metals production.

This project is divided in 6 Work-Packages:

- **WP1**: Resources assessment (biological and geological);
- **WP2**: Black Shale Ore Preparation (from crushing to flotation);
- **WP3**: Biotechnology process development, new processing routes;
- **WP4**: Hydrometallurgy, Metal recovery & process design;
- **WP5**: Process products characterisation, environmental impact;
- **WP6**: Technico-economic pre-feasibility integrating process simulation, social and environmental modelling.

The black shale ores are typically poly-metallic ores with a variable proportion of sulphidic components. Three black shale deposits, under natural conditions (Talvivaara - Finland), during mining (Lubin - Poland) and after mining (Mansfeld - Germany) have been chosen as targets for the project in order to evaluate all potential impacts of a mining project treating with black shale ores.

The different topics taken into account by the project should help to demonstrate the reliability of biotechnology for a cleaner, safer and more eco-efficient production of strategic metals for Europe.

The project ambition is also to reinforce the participation of the mining industry to the European policy of sustainable development and to have a long-term impact with regard to the challenge of creating knowledge-based industries.

Thirteen partners will collaborate and create scientific links in the following fields: geology, ecology, chemistry, microbiology, chemical engineering, hydrometallurgy, mineral processing, biotechnology.

The total budget of the project is 3,4 M€ on which EC contribution is 2,3 M€.

**WEB SITE:** http://bioshale.brgm.fr