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## **Research and Innovation Action (RIA)**

# **BioMOre**

Project title: **New Mining Concept for Extracting Metals from Deep Ore Deposits using Biotechnology**

Project coordinator: **KGHM Polska Miedz SA, Lubin, Poland**

HZDR participant: **Institute of Resource Ecology**

Starting date: **01.02.2015**

Duration (months): **36**

### **Summary**

BioMOre describes a “New Mining Concept for Extracting Metals from Deep Ore Deposits using Biotechnology”. The concept is to use hydrofracturing for stimulation and bioleaching for winning of ores. The final process will consist of a so-called doublet, which is two deviated and parallel wells.

In order to avoid high costs for drilling from the surface, the BioMOre approach is divided into two phases. Phase 1 will be research on the intended bioleaching process whereas phase 2 will aim at a pilot installation

to demonstrate the applicability of the process in large scale including hydro-fracturing and access of the deposit from surface.

The first phase should cover the intended work of the current BioMOre approach without drilling from surface. The BioMOre project aims at extracting metals from deep mineralized zones in Europe (Poland-Germany, Kupferschiefer deposit as a test case) by coupling solution mining and bioleaching. Selected sustainability indicators based on regulatory requirements of the European Commission will be applied for feasibility considerations.

The main objective of the BioMOre first phase is to design and build an underground test facility for testing the concept of combined hydro-fracturing and bioleaching. The test facility will comprise a 100 m<sup>2</sup> ore block, where boreholes will be drilled horizontally using standard equipment. All necessary equipment for testing different parameters of the intended bioleaching process will be established underground.

The intention is to test the bioleaching process in high detail in an in-situ environment at the same time avoiding time consuming and risky permission procedures. On the other hand, the application for the permission of underground test operation must contain detailed information about monitoring of tests and all material controls. No harmful substances will remain in the mine after the tests are completed. Further to that, predictive numerical modelling of a pilot installation should be done.