CHPM2030

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MORE INFORMATION

CHPM2030.EU

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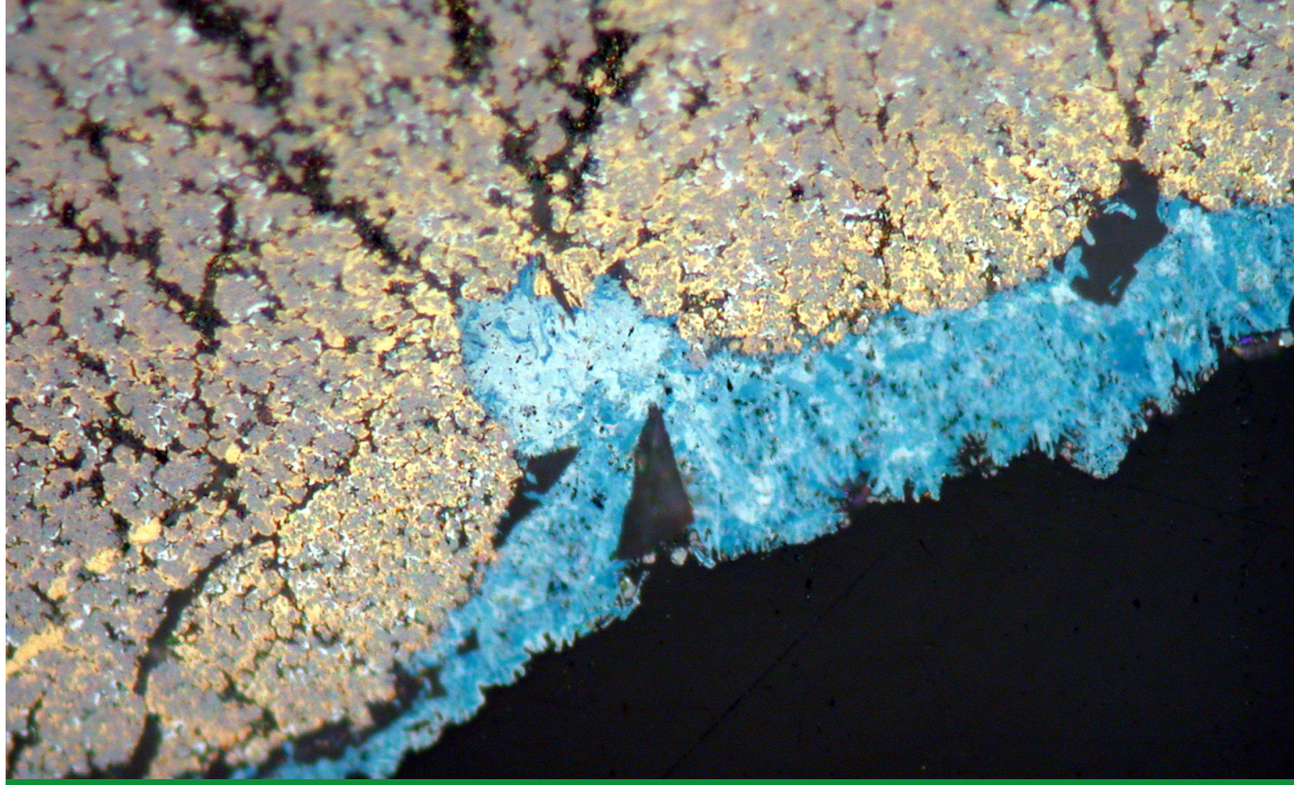
Project duration: 1 January 2016 – 30 June 2019

Cover photo: Courtesy Vigdís Harðardóttir, Iceland Geological Survey



CHPM2030

Combined Heat, Power and Metal Extraction

A HORIZON2020 FUNDED PROJECT

CHPM2030 is a 42-months H2020 project funded by the European Commission that started on 1 January 2016. CHPM2030 aims to develop a novel and potentially disruptive technology solution that can help satisfy the European needs for energy and strategic metals in a single interlinked process. **Working at the frontiers of geothermal resources development, minerals extraction and electro-metallurgy** the project aims at converting ultra-deep metallic mineral formations into an "orebody-Enhanced Geothermal Systems (EGS)" that will serve as a basis for the development of a new type of facility for "Combined Heat, Power and Metal Extraction" (CHPM). In the envisioned technology the metal-bearing geological formation will be manipulated in a way that the co-production of energy and metals will be possible, and may be optimised according to the market demands at any given moment in the future.

The workplan has been set up in a way to provide proof-of-concept for the following hypotheses:

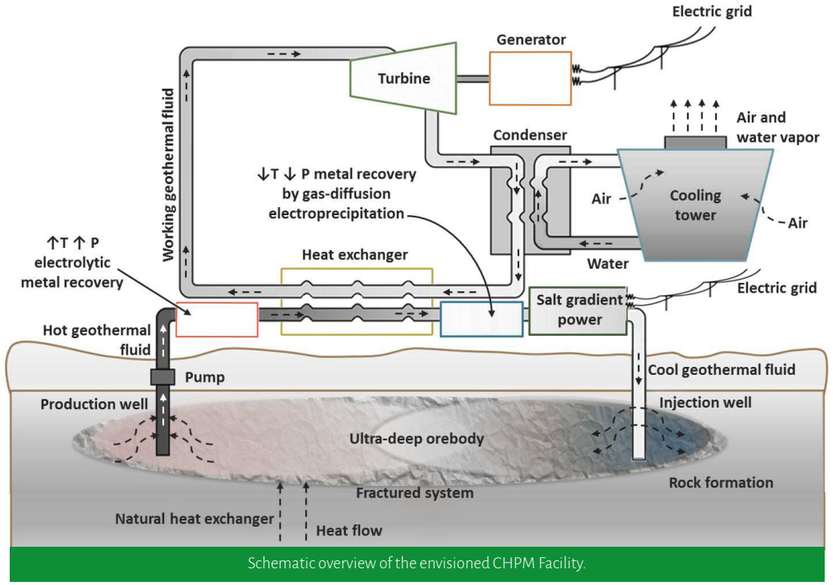
- The composition and structure of orebodies have certain advantages that could be used to our advantage when developing an Enhanced Geothermal Systems (EGS);
- Metals can be leached from the orebodies in high concentrations over a prolonged period of time and may substantially influence the economics of EGS;
- The continuous leaching of metals will increase system's performance over time in a controlled way and without having to use high-pressure reservoir stimulation, minimising potential detrimental impacts of both heat and metal extraction.

As a final outcome the project aims at delivering blueprints and detailed specifications of a new type of future facility that is designed and operated from the very beginning as a combined heat, power and metal extraction system. The horizontal aim is to **provide new impetus to geothermal development in Europe by investigating previously unexplored pathways at low-Technology Readiness Levels (TRL)**.

This will be achieved by developing a Roadmap in support of the pilot implementation of such system before 2030, and full-scale commercial implementation before 2050.

EXPECTED IMPACTS

- Creating the scientific basis for the future CHPM facilities where novel concepts in electro-geochemistry and geological engineering will enhance a new generation of geothermal development in Europe;
- Merging two, so far unconnected, technology areas (renewable energy and minerals extraction) changing the landscape for geothermal development in Europe, and satisfying Europe's need for critical minerals;
- Addressing the energy challenge by investigating novel technology pathways for geothermal energy and also by the expected improvement of the economic feasibility of geothermal investments;
- Supporting other objectives of the EU Raw Materials Initiative (RMI) and its Strategic Implementation Plan beyond critical raw materials providing input for local, regional and national decision makers in charge of development planning;
- Helping decision makers in Europe to frame strategic choices concerning future energy technologies and integration to the future energy system through research roadmapping combined with economic feasibility modelling ;
- Increasing the number of potentially viable geothermal resources, not just in Europe, but all over the world, with the help of the co-production of valuable metals;
- Investigating alternative pathways to hydraulic fracturing through the development of the "leaching" approach;
- Increasing the attractiveness of geothermal technologies by improving cost-efficiency, technology performance, and environmental performance of the system "
- Connecting thousands of interested scientists, engineers, and decision-makers by establishing co-operative links to already running projects on critical raw materials, geothermal energy and other technology-driven projects.



Schematic overview of the envisioned CHPM Facility.