DEMINE | Decreasing the Impact of Abandoned Mines

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LIFE DEMINE

Decreasing the Impact of Abandoned Mines

Abandoned mines: an environmental time bomb

Mining activities cause serious environmental damage to **freshwater ecosystems** through the discharge of **polluted effluents**, which may contain high concentrations of **heavy metals** or **salts**, depending on the type of mine. This environmental problem is especially critical for **abandoned mines**, because there is no company in charge of treating these mining effluents, leaving a legacy of **local and global pollution**.

The LIFE DEMINE project: an innovative solution

The **LIFE DEMINE** project aims to demonstrate and disseminate the technical and economic feasibility of **decreasing** the overall **environmental impact caused by mining effluents from abandoned mines** in water bodies.

This will be done by adopting an **innovative and versatile treatment process** that will combine existing and widely known technologies based on **membrane processes (nano-filtration) and electrocoagulation**. The LIFE DEMINE project will obtain a **non-polluting final effluent** to be discharged in water bodies with the minimal environmental impact, in accordance with the European Water Framework Directive (2000/60/EC).

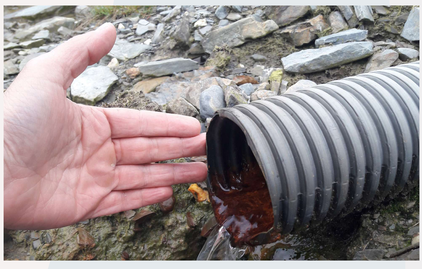
The role of UVIC in the LIFE DEMINE project

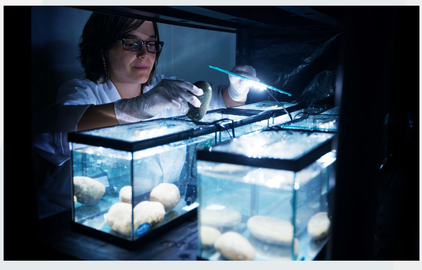
Will the LIFE DEMINE technology reduce the ecological impact caused by mining effluents?

The **efficiency** of the **new technology** proposed in the LIFE DEMINE project **in reducing the ecological impact** caused by mining effluents on water bodies will be assessed using stream **biofilm** and **macroinvertebrates** as **ecological indicators**. The **UVIC** will perform different experiments, in both **micro and mesocosm conditions**, to assess the response of these organisms to stream water containing mining effluents from abandoned mines **untreated** or **treated** by the **LIFE DEMINE technology**.

Environmental and economic impact of the LIFE DEMINE technology

To treat these mining effluents by running the LIFE DEMINE technology, it is necessary to consume energy (e.g. electricity), non-renewal resources (e.g. steel, fuel, etc.) and to manage the generated wastes (e.g. concentrated metal and salt effluents). All these activities are associated to several environmental burdens that must be considered and evaluated. Therefore, the whole **environmental impact of the LIFE DEMINE technology** will be assessed by UVIC using the **Life Cycle Assessment** (LCA), hotspots will be identified and mitigation measures will be proposed and implemented. LCA will be performed using the methodology and criteria established by the ISO 14040 and 14044. Moreover, it is important to ensure the economic feasibility of implementing the LIFE DEMINE technology at real scale, thus, its economic sustainability will be assessed by means of **Life Cycle Costing** (LCC) and **Cost-Benefit Analysis**, viable cost reduction measures will be evaluated if necessary.





Coordinated by

Beta Biodiversitat, Ecologia i Tecnologia Ambiental i Alimentària
UVIC Universitat de Vic Universitat Central de Catalunya

Partners

Swansea University Prifysgol Abertawe

elentec Geotechnical Environmental Technology

DGFZ e.V.

Gobierno del Principado de Asturias

This project has received funding from the European Union's LIFE programme under the grant Life 16 ENV/ES/000218.

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