

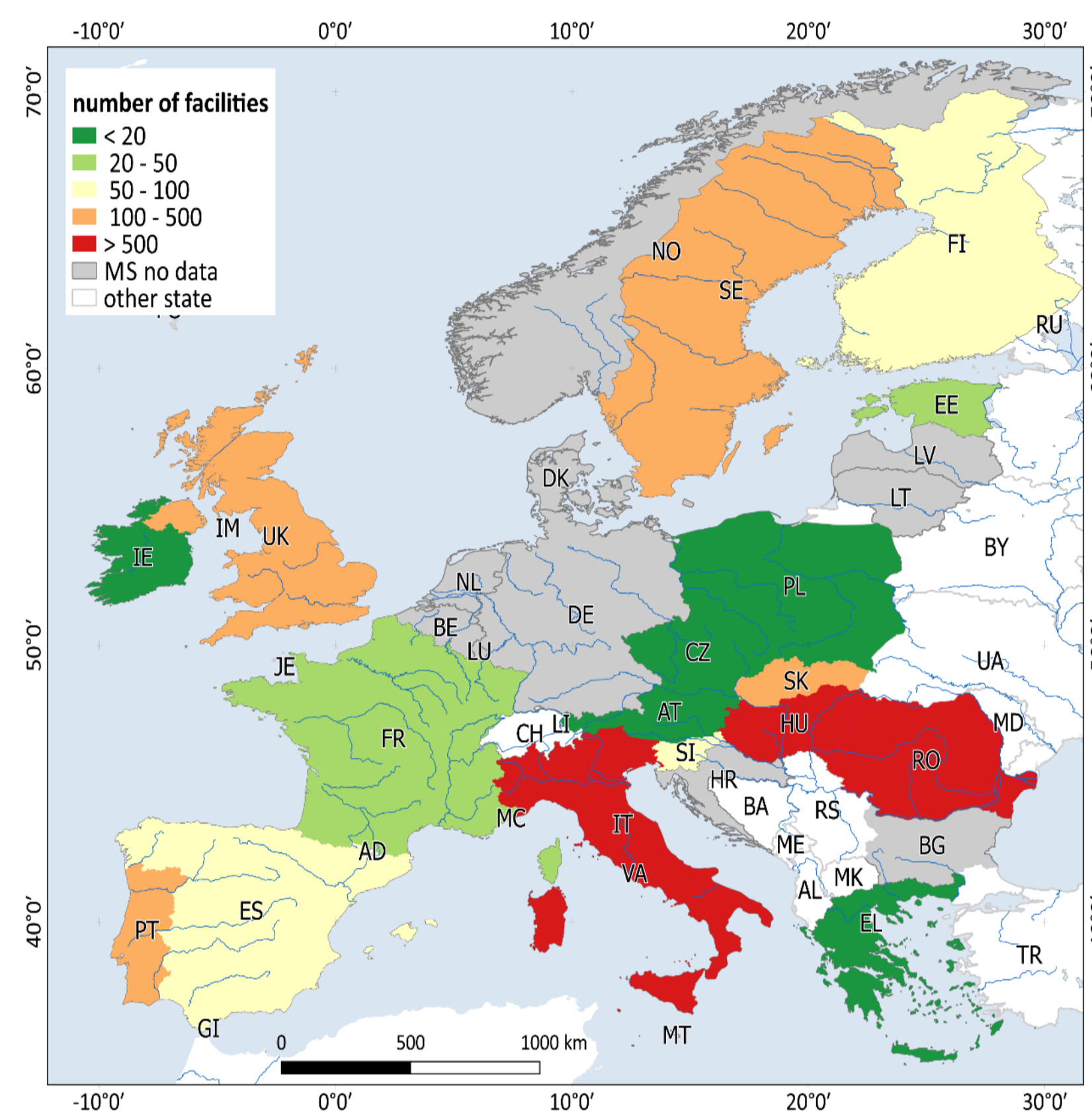
## Decreasing the environmental impact of abandoned mines on freshwater ecosystems: The LIFE DEMINE project

Merixell Abril  
Lidia Vendrell  
Carmen Espinosa  
Joan Colón  
Sergio Ponsá  
Laia Llenas



### Environmental problem targeted: abandoned mines and freshwater ecosystems

- Mining activities cause serious environmental damage to their surroundings, with considerable impacts on freshwater ecosystems.
- These impacts occur mainly through the unregulated 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.
- The unregulated loading of metals and salts hinders the achievement of good ecological status in surrounding water bodies, in accordance with the Water Framework Directive (2000/60/EC).
- Currently, no real solution exists for this environmental problem.



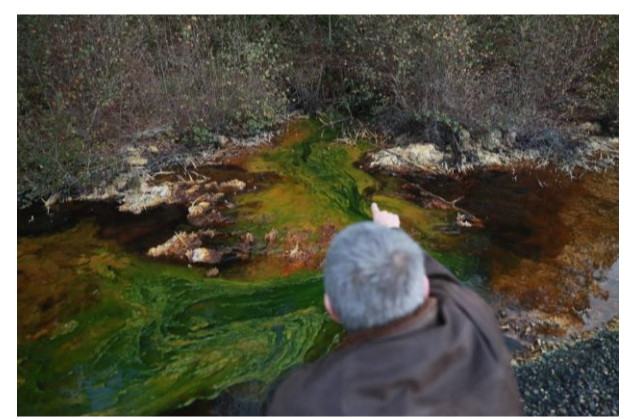
Closed and abandoned extractive waste facilities (June 2017). Source: European Commission



Paleena Valley, Wales



Werra river, Germany

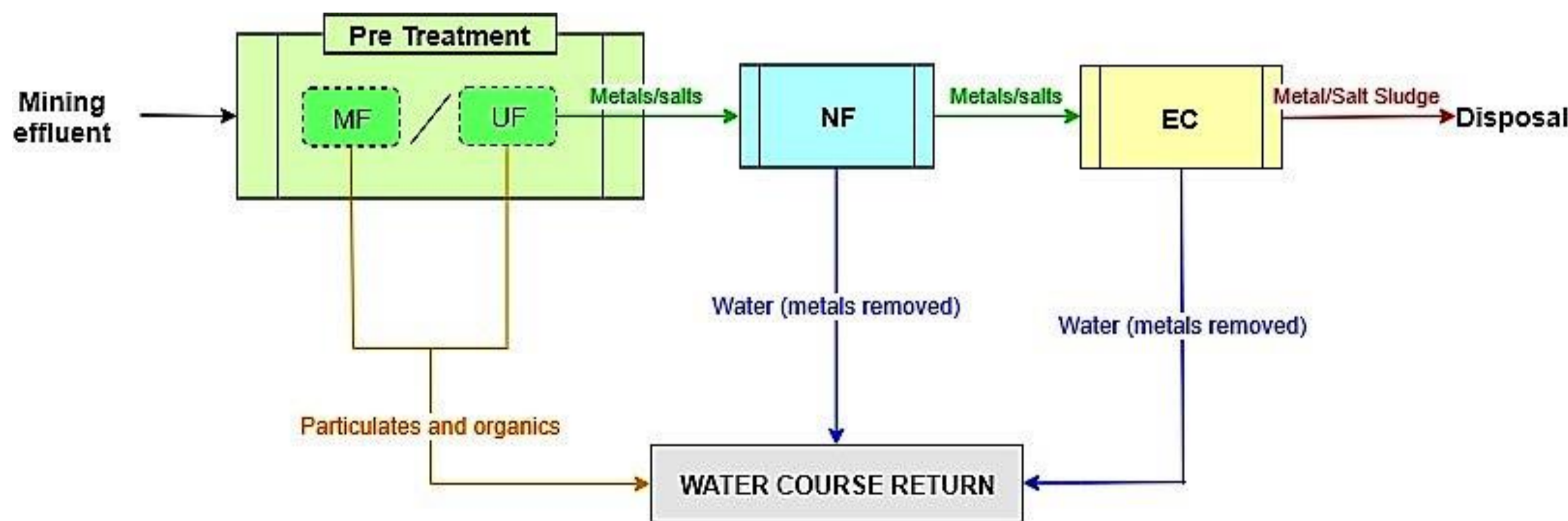


Touro, Spain

### The LIFE DEMINE project aims to

Demonstrate and disseminate the technical and economic feasibility of decreasing the environmental impact caused by abandoned mines in water bodies

By adopting an innovative and versatile treatment process based on membrane processes and electrocoagulation, obtaining a non-polluting final effluent.



Basic outline of the mining effluent treatment process proposed in the LIFE DEMINE project.

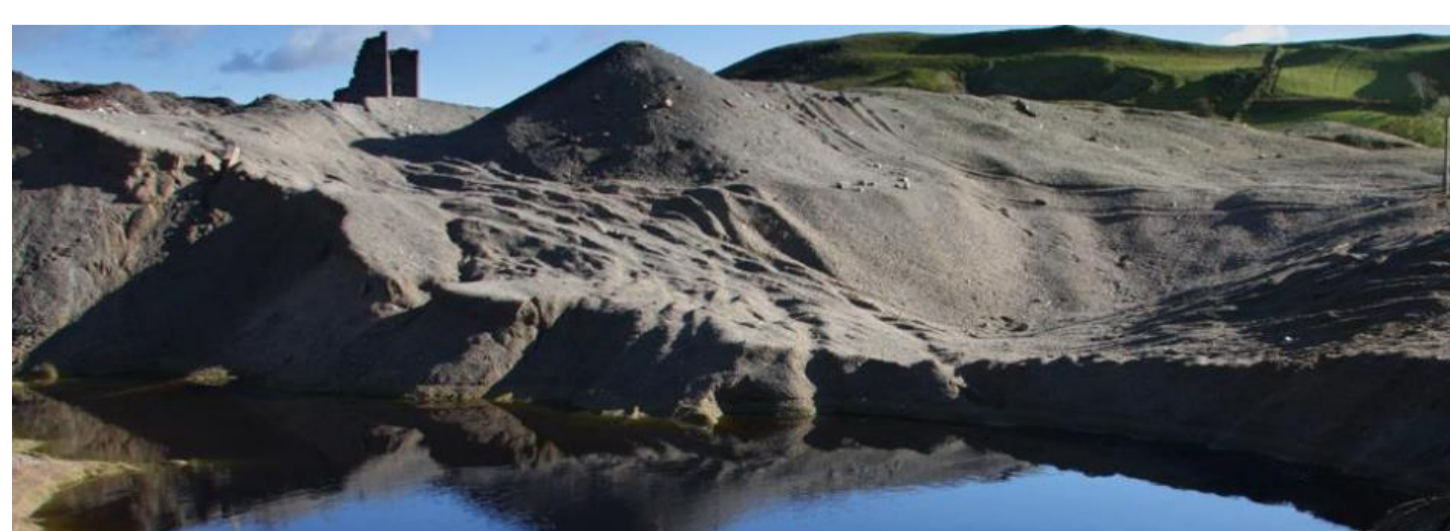
### The LIFE DEMINE project will

- Develop and test the proposed treatment process, first at bench scale and then in two pilot plants installed in our demonstration sites.
- Characterize the composition of several mining effluents.
- Review the current legislation applicable to mining wastewater at European, German, British and Spanish level.
- Review the current state of knowledge regarding the ecological impact of abandoned mines on freshwaters.
- Assess the efficiency of the new technology in reducing the ecological impact in waterbodies, using the aquatic biofilm as biological indicator.
- Increase awareness of this environmental problem.

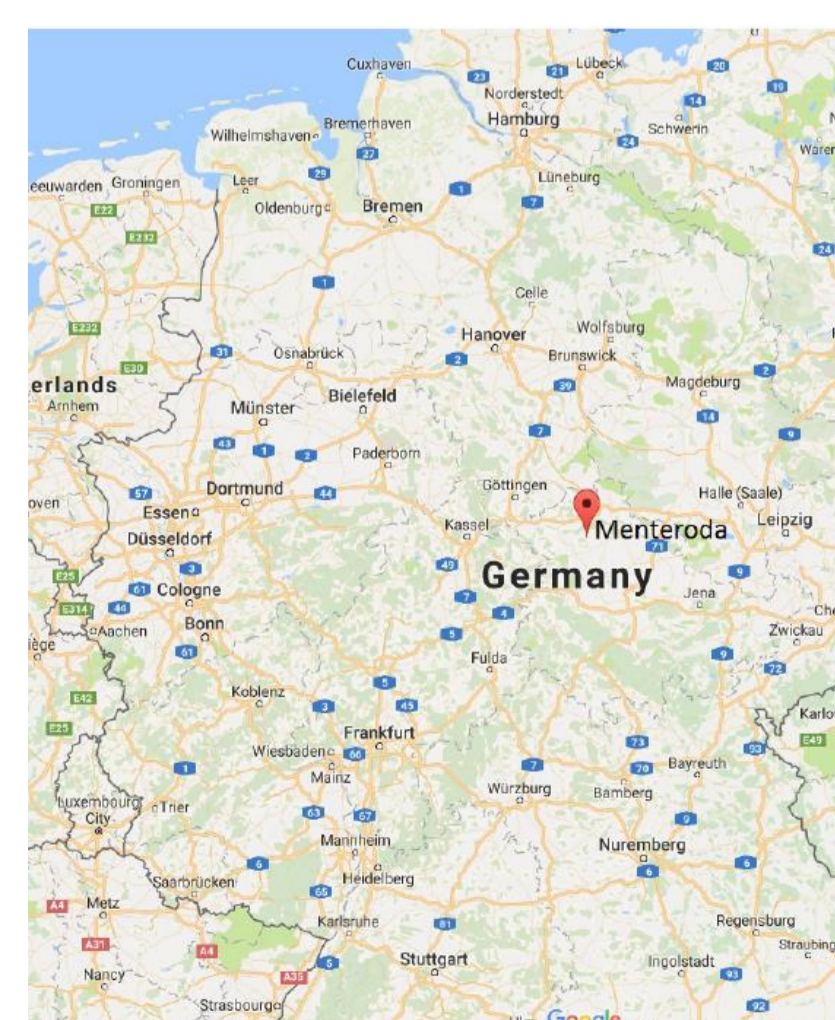
### Demonstration sites



#### Frongoch mine (Wales) – Metal effluent



- Abandoned lead and zinc mine.
- The pilot plant will be operating in Wales from May 2019 to April 2020.



#### Menteroda (Germany) – Salt effluent



- Abandoned potash mine.
- The pilot plant will be operating in Germany from May 2020 to April 2021.