



Near-zero-waste recycling of low-grade sulphidic mining waste for critical-metal, mineral and construction raw-material production in a circular economy

<https://h2020-nemo.eu/>

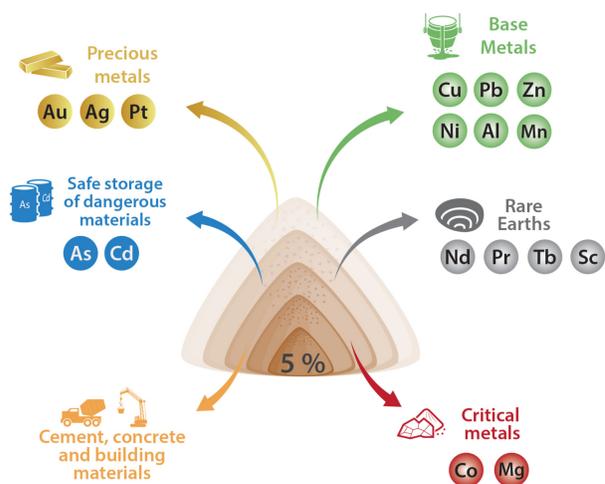
The NEMO Project

EU H2020 Innovation Action (SC5-14b) (TRL 5-8) with demonstration of the near-zero-waste processing of sulphidic ores and waste.

Aim: 95% waste reduction in metal production flowsheets from sulphidic ores.

⇒ Recovery of valuable and critical metals,

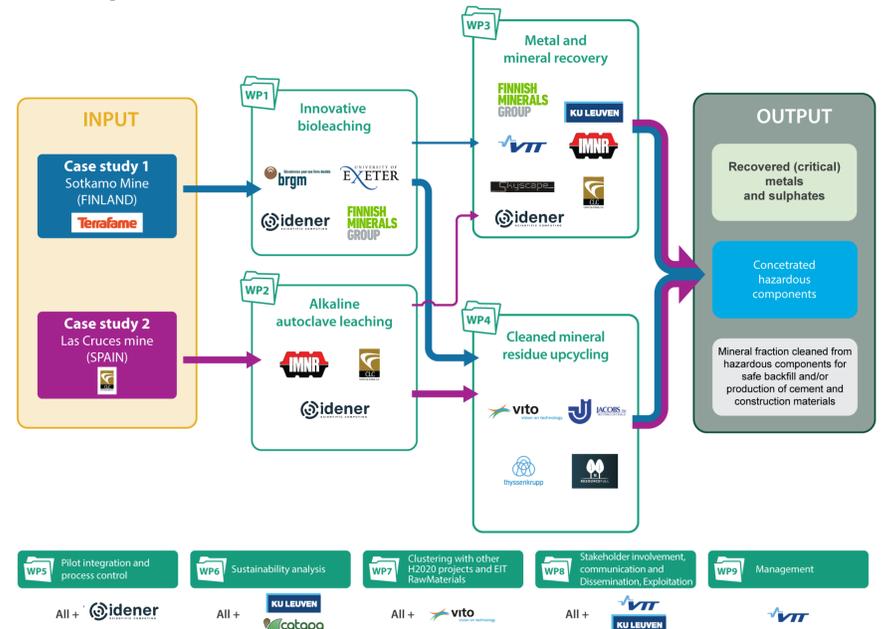
⇒ ‘Cleaning’ the residual mineral matrix: allowing safe final storage or application in cement, concrete and construction products.



Sulphidic mining waste?

- Residues from mining and processing of sulphidic ores for the production of Cu, Pb, Zn, Ni, Co, Au.
- Considered as one of the largest volumes of extractive waste in the EU: approx. 600 to 900 Mtonne produced in EU per year + historic stockpile 28 000 Mtonne.
- Deposited in tailings storage facilities/dry stacked/back-filled in mine.
- Represents a huge new stock of (critical) metals and minerals.
- When poorly managed (e.g. historical waste), sulphidic mining waste may cause environmental problems (e.g. acid mine drainage) or pose risk for accidents (dam failure). These bad practice examples may jeopardize the ‘social license to operate’ for mining.

Concept



Case studies



Terrafame mine
Co-Ni-Cu-Zn-mine
in Sotkamo (Finland)



Las Cruces Cu-mine
In Seville (Spain)

Civil Society Engagement

A special emphasis is placed on the so-called ‘Social License to Operate’ through an active involvement of local actors in an enhanced dialogue between industry and civil society. An international high-level multi-stakeholder expert panel discusses lessons learned and develops policy recommendations.

NEMO develops, demonstrates and exploits new ways to valorise sulphidic tailings using a ‘4 PILOTS – 2 case-studies’:

The **two cases** are the Terrafame Co-Ni-Cu-Zn mine in Sotkamo (Finland) and the Las Cruces Cu-mine near Seville (Spain).

The **4 PILOTS** are located at key points in the near-zero-waste flowsheet. The aim is to demonstrate enhanced bioleaching (Sotkamo) and alkali autoclave leaching (Las Cruces) to maximize conversion of sulphides to sulphates, hereby eliminating the risk for acid mine drainage posed by the residues, while sulphates are valorised as fertilizers. Through enhanced leaching of the ores/waste, it is also aimed to “clean” the residual matrix allowing its use in cement and construction applications. Metal recovery is improved and it is aimed to recover different metals additionally (Pb, Zn, Sb and Ag at the Las Cruces mine and REE, Sc, Mn, Mg, Al and Fe at the Sotkamo mine).

Consortium



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