



Re-activate workshop

# KU Leuven activities in the field of re-activation of abandoned mining sites and mining waste recycling

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KU Leuven SIM<sup>2</sup> <https://www.sim2.be>

Solvomet Industrial Service Centre <https://solvomet.eu>

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# KU Leuven SIM<sup>2</sup>? [www.sim2.be](http://www.sim2.be)

The screenshot shows the SIM2 KU Leuven website homepage. At the top, there is a navigation menu with links for HOME, ABOUT SIM<sup>2</sup>, SIM<sup>2</sup> RESEARCH LINES, SIM<sup>2</sup> EDUCATION, SIM<sup>2</sup> & H2020, SIM<sup>2</sup> PROJECTS, SIM<sup>2</sup> PAPERS, NEWS, BLOG, NEWSLETTERS, and CONTACT. The main content area features a large banner with the text "Welcome to SIM<sup>2</sup> KU Leuven" and "Secondary and primary European resources". Below this, there are several news articles and a "DOWNLOAD POLICY BRIEF" button. The footer contains a "Welcome to SIM<sup>2</sup> KU Leuven" section with a brief description of the research cluster's mission.

**Who we are?**  
An interdisciplinary research cluster uniting the research groups working on **Sustainable Inorganic Materials Management**

**Mission**  
Research and future-oriented education for the environmentally friendly production and recycling of metals, minerals and engineered materials, supporting the transition to a climate-friendly, circular economy

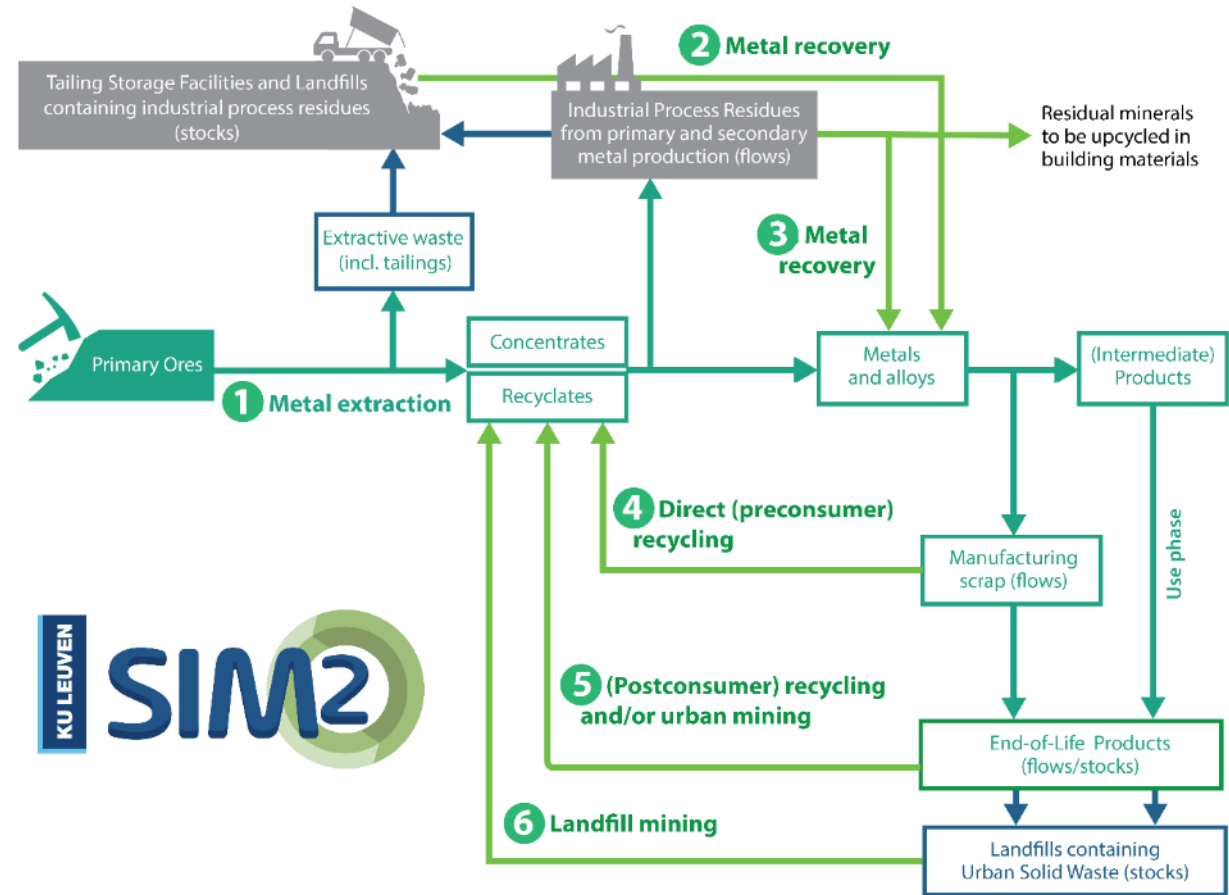
The screenshot shows the "News" section of the SIM2 KU Leuven website. It features four news items with images and titles: "Denis Gontcharov for president of EIT Raw", "How circular is the household metal", "Looking back on the DEMETER Concluding", and "SOCRATES Press Release on the importance of lead".



# Recycling of mining & metallurgical waste

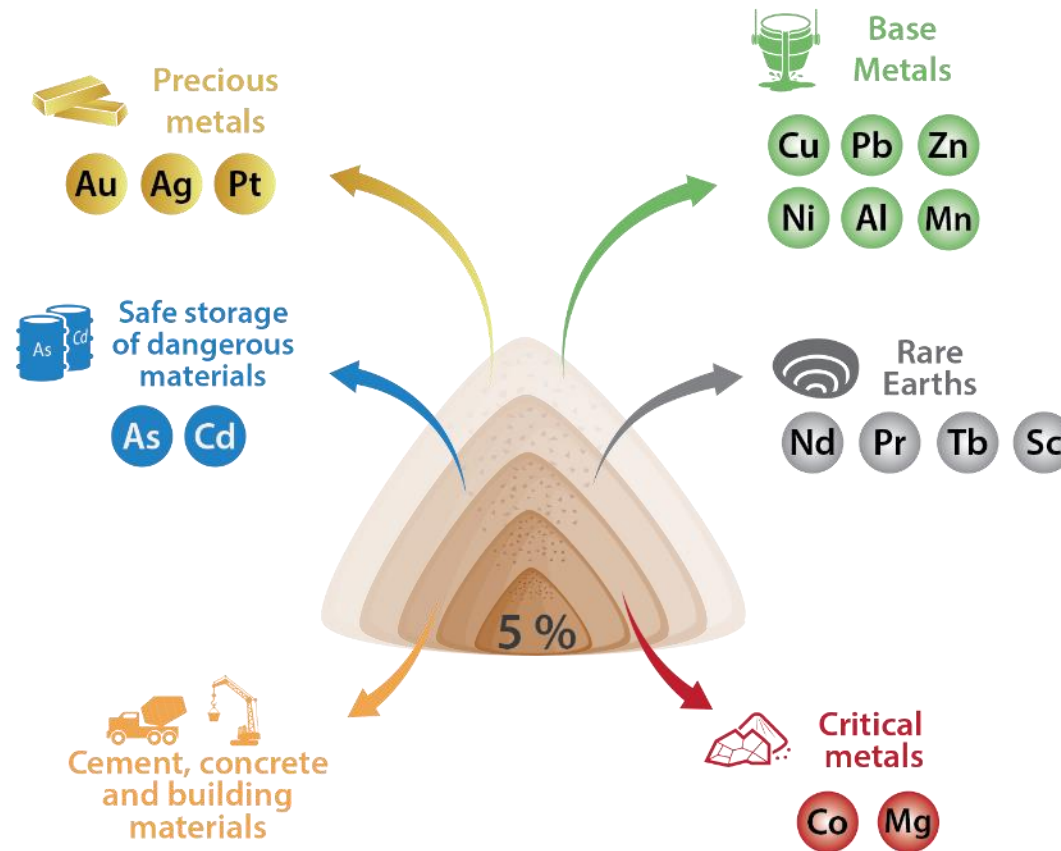
SIM<sup>2</sup> KU Leuven targets both primary ores, extractive waste, industrial process residues and urban solid waste. Key focus areas are

- (1) metal extraction from increasingly complex, polymetallic, low-grade ores;
- (2) metal recovery from stocks of extractive waste (incl. tailings) and landfilled industrial process residues (e.g. sludges, dusts, slags...);
- (3) metal recovery from flows of industrial process residues from primary and secondary metal production;
- (4) direct (preconsumer) recycling of metal scrap and swarf generated during the production of metal-based (intermediate) products;
- (5) (postconsumer) recycling and/or urban mining of, respectively, flows and stocks of complex, multi-material, metal-containing products (e.g. End-of-Life Hybrid Electric Vehicles) as well as construction and demolition waste);
- (6) landfill mining of historic urban solid waste.





## NEAR-ZERO-WASTE RECYCLING OF LOW-GRADE SULPHIDIC MINING WASTE FOR CRITICAL-METAL, MINERAL AND CONSTRUCTION RAW-MATERIAL PRODUCTION IN A CIRCULAR ECONOMY

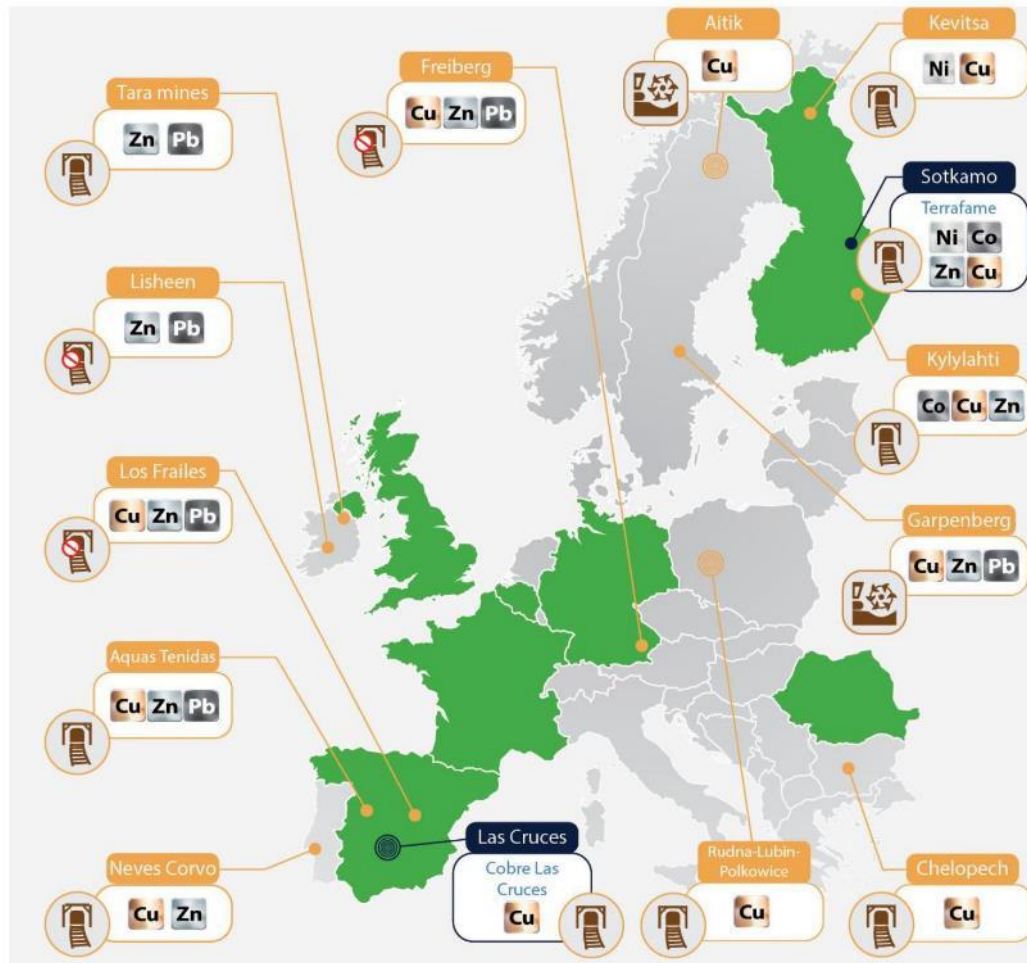


# Horizon2020 IA NEMO project

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



- [VTT]
- [VITO]
- [IDENER]
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- [Terrafame]
- [Thyssenkrupp]
- [Resourcefull]
- [BRGM]



- [Skyscape Oy]
- [Jacobs]
- [Cobre Las Cruces]
- [IMNR]
- [CATAPA]
- [UNEXE]
- [DMT]



This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020



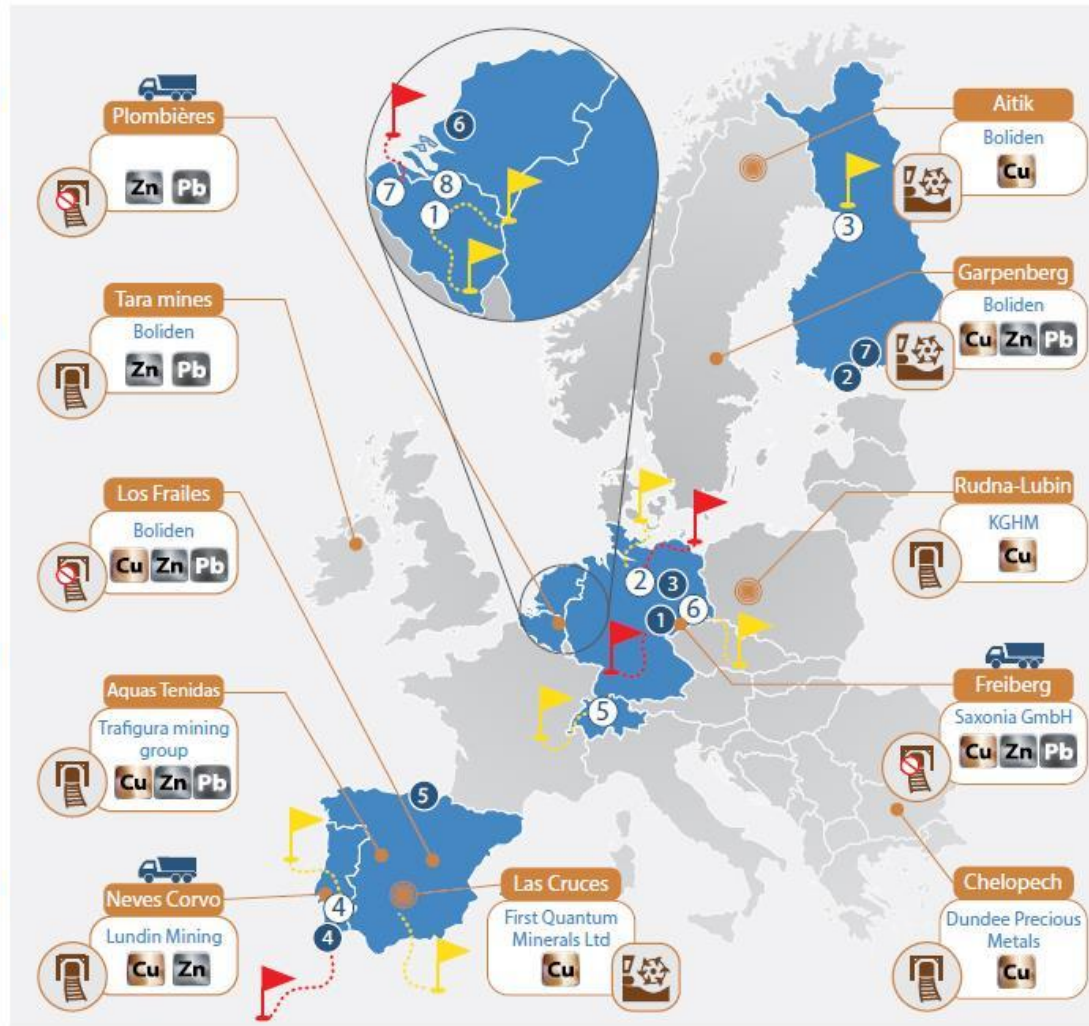


# Horizon2020 MSCA SULTAN project

<https://etn-sultan.eu/>



- ① **KU LEUVEN**  
[KU Leuven]
- ② **TU Clausthal**  
[TUC]
- ③ **UNIVERSITY OF DULU**  
[UOULU]
- ④ **Ciências ULisboa**  
[FFCUL]
- ⑤ **ETH zürich**  
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- ⑥ **HELMHOLTZ ZENTRUM DRESDEN ROSSENDORF**  
[HZDR]
- ⑦ **Wienerberger**  
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- ⑧ **vito**  
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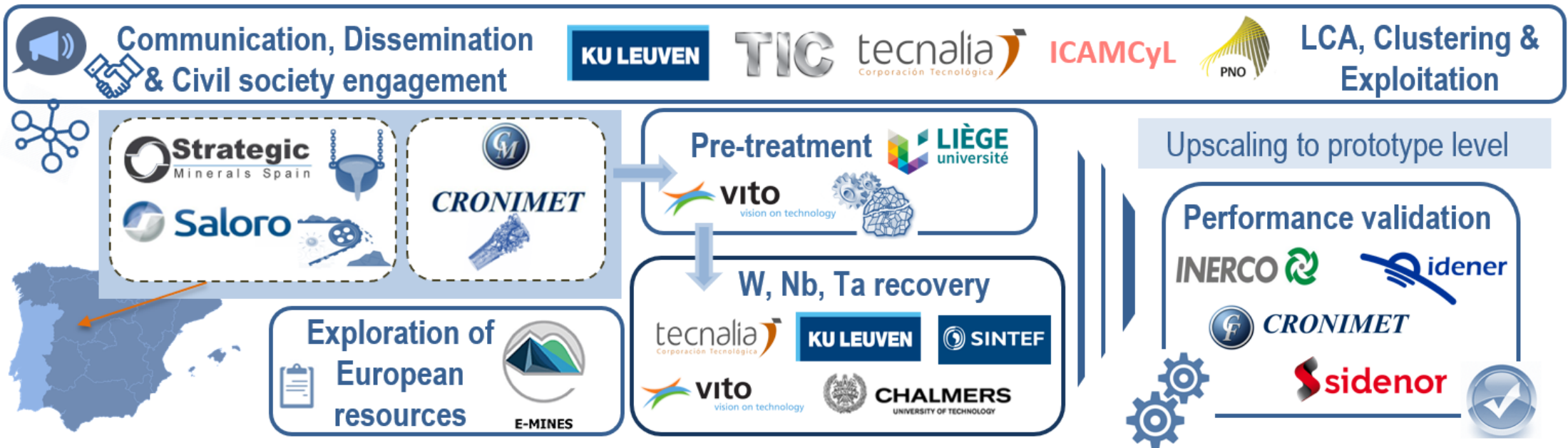


- TECHNISCHE UNIVERSITÄT BERGAKADEMIE FREIBERG** ①  
[TU BAF]
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- Shell** ⑥  
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- GTK** ⑦  
[GTK]
- SULTAN**



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Recovery of Tungsten, Niobium and Tantalum occurring as by-products in mining and processing waste streams





# Research exploitation

- Replication of technologies & solutions to other sites in the E.U. and beyond
- Patenting/spin-off
- Contract research through industrial service centres

## HiTemp Centre



## SOLVOMET Service Centre



SOLVOMET offers lab-scale and mini-pilot infrastructure for solvometallurgical leaching and solvent extraction process development and testing. Concurrently, SOLVOMET offers analytical services as well.

<https://solvomet.eu/>

# Service 1: Exploration, Sampling and Sample Analysis // Estimation of Secondary Resources and Reserves

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## RESEARCH LINE 1

Geological exploration and advanced  
resource characterisation



**Contact:** Pof. Philippe Muchez

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[Contact details](#)

[More info on research line](#)

### Flagship topics:

- Geometallurgical characterisation of tailings for extraction and recovery
- Characterisation of low concentrations of (critical) metals in ores, residues or End-of-Life products by FEG-EPMA-WDS

# Service 2: Metallurgical Flow Sheet Development and Process Implementation

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## RESEARCH LINE 2

Pyro- and electrometallurgical processes



**Contact:** [bart.blanpain@kuleuven.be](mailto:bart.blanpain@kuleuven.be)

[More info on research line](#)

Topics: recycling of metal slags and sludges (residues of aluminium, zinc, copper, .., (stainless) steel industry)

## RESEARCH LINE 3

Hydro- and solvometallurgical processes



**Contact:** [Koen.binnemans@kuleuven.be](mailto:Koen.binnemans@kuleuven.be)

[More info on research line](#)

Topics: leaching of mining & metallurgical residues, solvent extraction, metal recovery & refining

## RESEARCH LINE 4

Upcycling processes for primary and secondary resources



**Contact:** [Yiannis.pontikes@kuleuven.be](mailto:Yiannis.pontikes@kuleuven.be)

[More info on research line](#)

Topics: valorisation of mining & metallurgical residues in cement, novel binders and construction applications

## RESEARCH LINE 6

Process intensification and digitalisation



**Contact:** [tom.vangerven@kuleuven.be](mailto:tom.vangerven@kuleuven.be)

[More info on research line](#)

Topics: Process intensifications for reduction of energy and chemical needs



# Service 3: Environmental Impact Assessment

RESEARCH LINE 5

Sustainability Assessment and Policy  
Research



Contact: [karel.vanacker@kuleuven.be](mailto:karel.vanacker@kuleuven.be)  
[More info on research line](#)

Topics:

- Multi-criteria analysis: combination of LCA, economic analysis and social LCA.
- Policy research and Impact assessment studies
- Social licence to operate. Key in re-activation of old mining sites!



## Ensuring the SLO concept is adaptive and resilient

"Ensuring that 'Social License to Operate' (SLO) is Adaptive and Resilient" was the topic of a recent workshop organized by EU MIREU (supported by NEMO, CROCODILE & TARANTULA). This article reflects upon the key lessons learned.

[READ MORE »](#)



## Dr. Lieven MACHIELS

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Sustainable Inorganic Materials Management