



Webinar 27 November 2020

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Social LCA in the European Union, a tool to measure the social impacts of technology implementation



This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No 776846

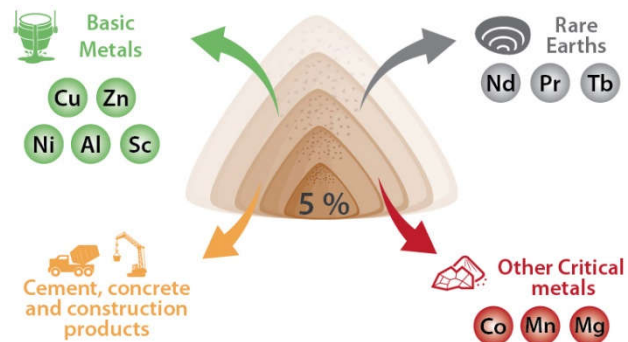
<https://h2020-nemo.eu/>

# Background



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**NEMO**  
“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/>

New processes for raw material recovery:

In addition to technical challenges:

- Are they sustainable (economic, environmental, social) -> Sustainability Assessment
- Will they be accepted by (local) society -> Social License to Operate





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- How do others deal with issues & questions?
- Can we share knowledge?



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NEAR-ZERO-WASTE RECYCLING OF LOW-GRA  
FOR CRITICAL-METAL, MINERAL AND CONSTRUCTION RAW-MATE



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## How to define the impact of new technologies?

December 5, 2019

"How to define the impact of new technologies?" was the title of a workshop on Sustainability Assessment (SA) organized on the 21st of November 2019 in Brussels by NEMO in collaboration with CHROMIC, METGROW+ and NEW-MINE, as a Satellite Event to the 4th Raw Materials Week. Approximately 20 participants from academia, research, industry and government discussed the challenges and future of sustainability assessment in the field of raw materials and beyond. The present article reports on the key lessons learned from the presentations and lively debate, and looks forward to the next events in this clustering track.

<https://h2020-nemo.eu/2019/12/05/how-to-define-the-impact-of-new-technologies/>



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Organized by:



With the participation of:



# Ensuring the SLO concept is adaptive and resilient (June 2019)

June 25, 2019



"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 »](#)



In collaboration with:



<https://h2020-nemo.eu/2019/06/25/ensuring-the-slo-concept-is-adaptive-and-resilient/>



## Gearing Extractive Industries Towards Sustainable Development – webinar report (July 2019)

July 23, 2019



Mineral resource governance in the 21<sup>st</sup> Century

Antonio Pedro of the UN International Resource Panel presented several key challenges for 'mineral resources governance in the 21st century' during a short webinar. Feedback from the workshop 'Ensuring the SLO concept is adaptive and resilient' complemented the debate.

[Read More »](#)

<https://h2020-nemo.eu/2019/07/23/gearing-extractive-industries-towards-sustainable-development-webinar-report/>



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# Public acceptance of mining and recycling in Europe: six recommendations

December 13, 2019



Public acceptance or th is widely acknowledged for the mining sector. 5 recommendations comi were debated during a Materials Week (22 Nov

[Read More »](#)

<https://h2020-nemo.eu/2019/12/13/public-acceptance-of-mining-and-recycling-in-europe-six-recommendations/>

<https://h2020-nemo.eu/2020/04/14/the-green-transition-challenged-by-the-metal-supply-chain/>



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NEAR-ZERO-WASTE RECYCLING OF LOW-GRAD  
FOR CRITICAL-METAL, MINERAL AND CONSTRUCTION RAW-MATERIALS



HOME PROJECT PARTNERS EVENTS NEWS COMMUNICATION AND DISSEMINATION

Home / Events / The green transition challenged by the metal supply chain (March 2020)

## The green transition challenged by the metal supply chain (March 2020)

21 days ago

The transition towards a climate neutral economy, as proposed by the European Green Deal, is highly resource intensive. Many challenges lie ahead to materialise this Green Deal. A broad cluster of EU Horizon 2020 projects, combined with several projects funded by development cooperation institutions, teamed up to analyse these challenges during an interactive seminar in the Flemish parliament in Brussels (March 12, 2020), just before the explosion of the Corona crisis. The organisers invited an inter- and transdisciplinary panel of experts to discuss several key issues across the metal supply chain. The policy recommendations put forward by these experts were further debated with the audience. A full report, including an executive summary, a link to all presentations and the Q&A with the participants, is now available.



# Social LCA at the crossroads

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- Introducing social aspects into sustainability assessment
- 2009 - Social LCA Guidelines published 2009 – the start but not the end
- 2013 - Methodological Sheets of S-LCA
- 2015 – JRC Technical report on S-LCA
- New update of Guidelines & methodological sheets foreseen for 2021
  
- What have we learned since 2009? Which questions remain? Can we answer them together?



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# Programme

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10.00 – 10.15: Welcome and introduction to topic by NEMO project

10.15 – 11.00: Case studies (15' pp)

- Assessing social impacts of novel technologies and their influence on local communities' perception about mining. The Neves Corvo case in Portugal (ITERAMS) (Claudia Di Noi, Greendelta)
- Applying social Life cycle assessment to the mining sector: a case study exploring the hotspots of small-scale mining in Bosnia and Herzegovina (IMPACT). (Stéphanie Muller, BRGM)
- Assessing social impacts of cobalt artisanal mining: the role of S-LCA (Lucia Mancini, JRC)

11.00 – 11.15: How to integrate results of S-LCA in a multicriteria sustainability assessment?

11.15 - 11.45: Debate

11.45-11.55: Closing statement by Bernard Mazijn (UGent, Institute for Sustainable Development, Head of Belgian cabinet Sustainable Development)

11.55: Wrap-up and end of the event



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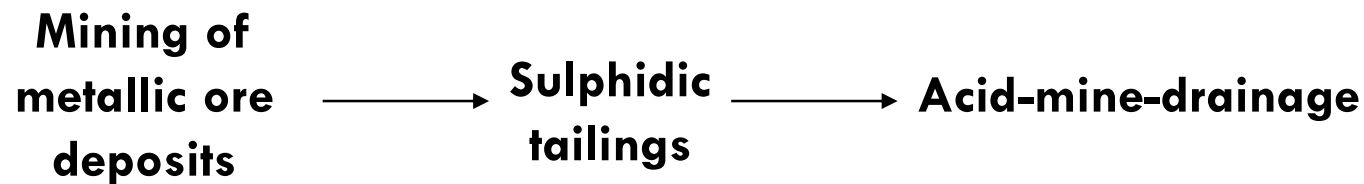
# Mine waste and tailings



The mining of non-ferrous metals and precious metals produces the largest volume of metal-containing, extractive waste in Europe

**Tailings** are the finely ground residuals that remain after the extraction processes have removed the valuable metals from the ore.

>28,000 Mt stock in EU!



# Mine waste ?



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## Tailings: Waste of Resource ?

- Metal extraction process cannot recover 100% of valuable metals from the mineral ores
- Tailings always contains small-to-medium amounts of valuable metals

→ **TAILINGS = storages of potentially valuable material of enormous volumes!**

## Recovery of valuable metals from tailings can reduce:

- Volumes of extractive waste
- European dependency to resources import

# The NEMO project



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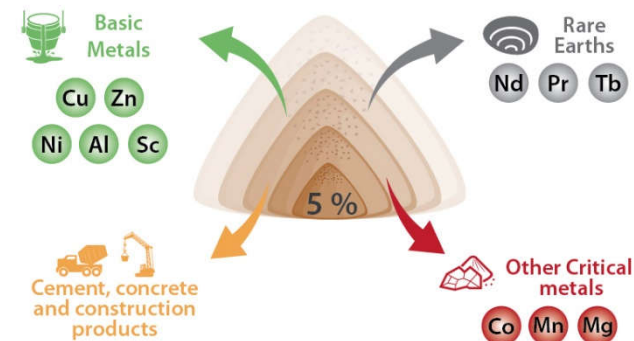
*“Near-zero-waste recycling of low-grade sulphidic mining waste for critical-metal, mineral and construction raw-material production in a circular economy”*

## Expected benefits:

### ➤ Recovery of:

- 1) critical raw materials (Co, REE, Sc and Mg),
- 2) base metals (Cu, Ni, Zn, Ag),
- 3) minerals (CaO and MgSO<sub>4</sub>),
- 4) construction raw materials for cement and concrete production.

- Reducing Europe’s dependence on imports.



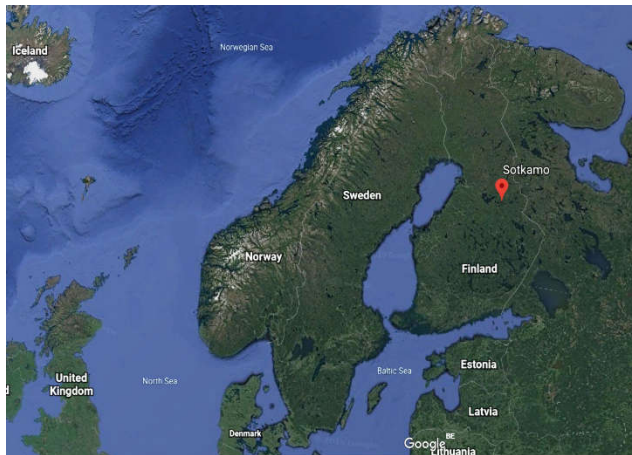
\* Output products might be different depending on the case study

# The NEMO project



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## Case study: Sotkamo mine (Finland)

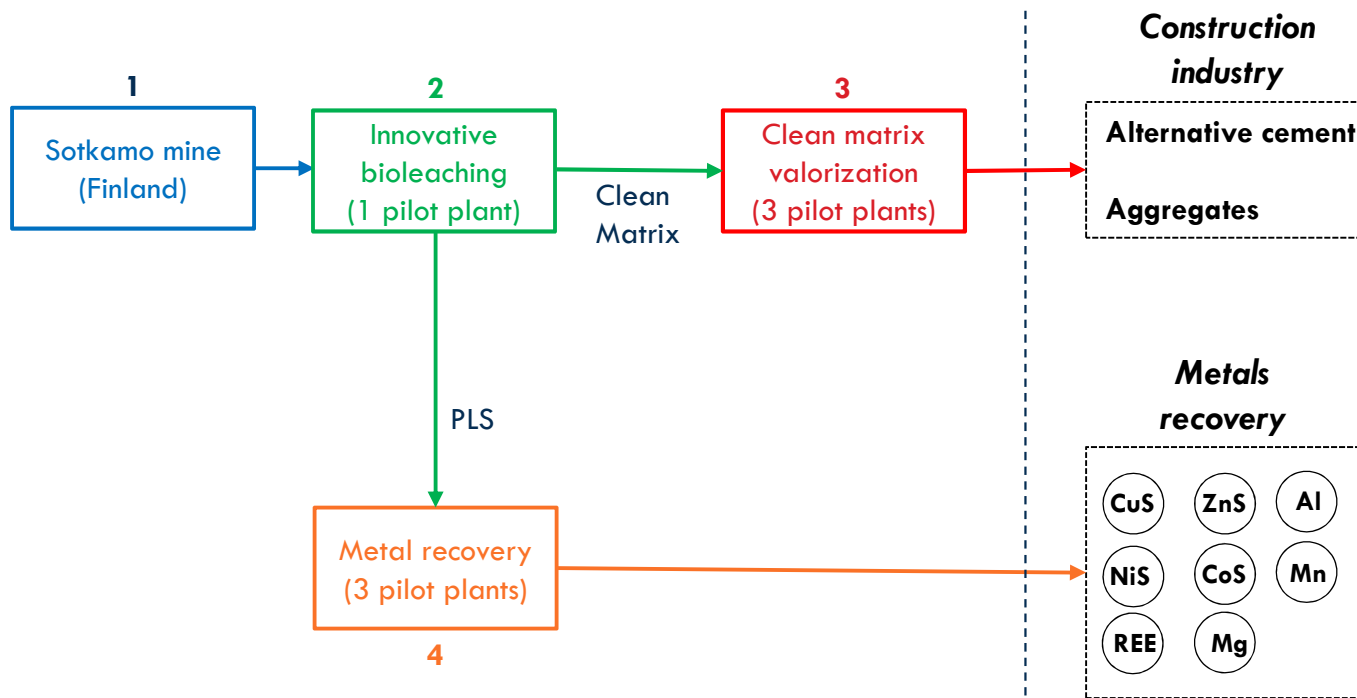


**Ni-Cu-Zn-Co mine**

# The NEMO Framework



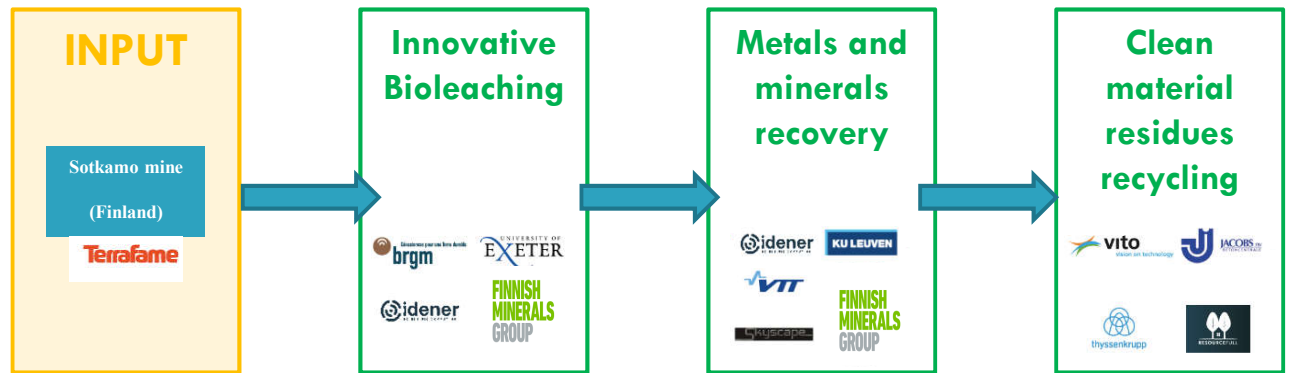
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# The NEMO Partners



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## Sustainability analysis



Environment



Society

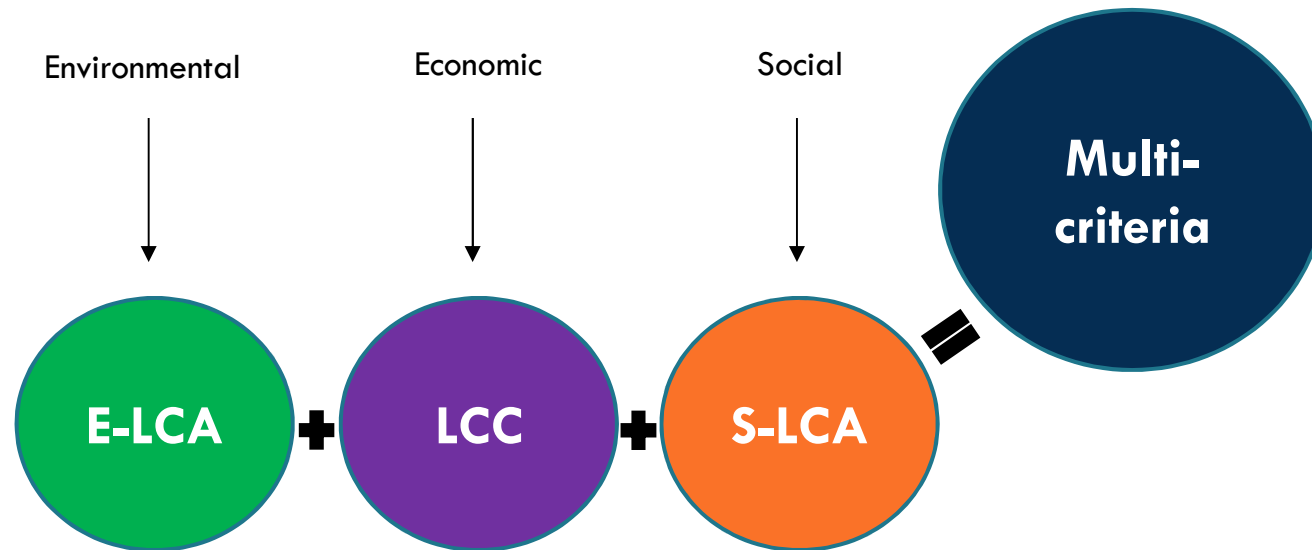


Economy

# WP6 framework



## Parallel analysis



# Social LCA in the mining sector



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## Stakeholder: Worker

quality

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Freedom of Association and Collective Bargaining • Child Labour • Fair Salary • Hours of Work • Forced Labour • Equal Opportunities / Discrimination • Health and Safety • Social Benefit / Social Security

mpacts



# Social LCA framework



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Stakeholder categories	Subcategories
<b>Stakeholder “worker”</b>	<ul style="list-style-type: none"> <li>Freedom of Association and Collective Bargaining</li> <li>Child Labour</li> <li>Fair Salary</li> <li>Working Hours</li> <li>Forced Labour</li> <li>Equal opportunities/Discrimination</li> <li>Health and Safety</li> <li>Social Benefits/Social Security</li> </ul>
<b>Stakeholder “consumer”</b>	<ul style="list-style-type: none"> <li>Health &amp; Safety</li> <li>Feedback Mechanism</li> <li>Consumer Privacy</li> <li>Transparency</li> <li>End of life responsibility</li> </ul>
<b>Stakeholder “local community”</b>	<ul style="list-style-type: none"> <li>Access to material resources</li> <li>Access to immaterial resources</li> <li>Delocalization and Migration</li> <li>Cultural Heritage</li> <li>Safe &amp; healthy living conditions</li> <li>Respect of indigenous rights</li> <li>Community engagement</li> <li>Local employment</li> <li>Secure living conditions</li> </ul>

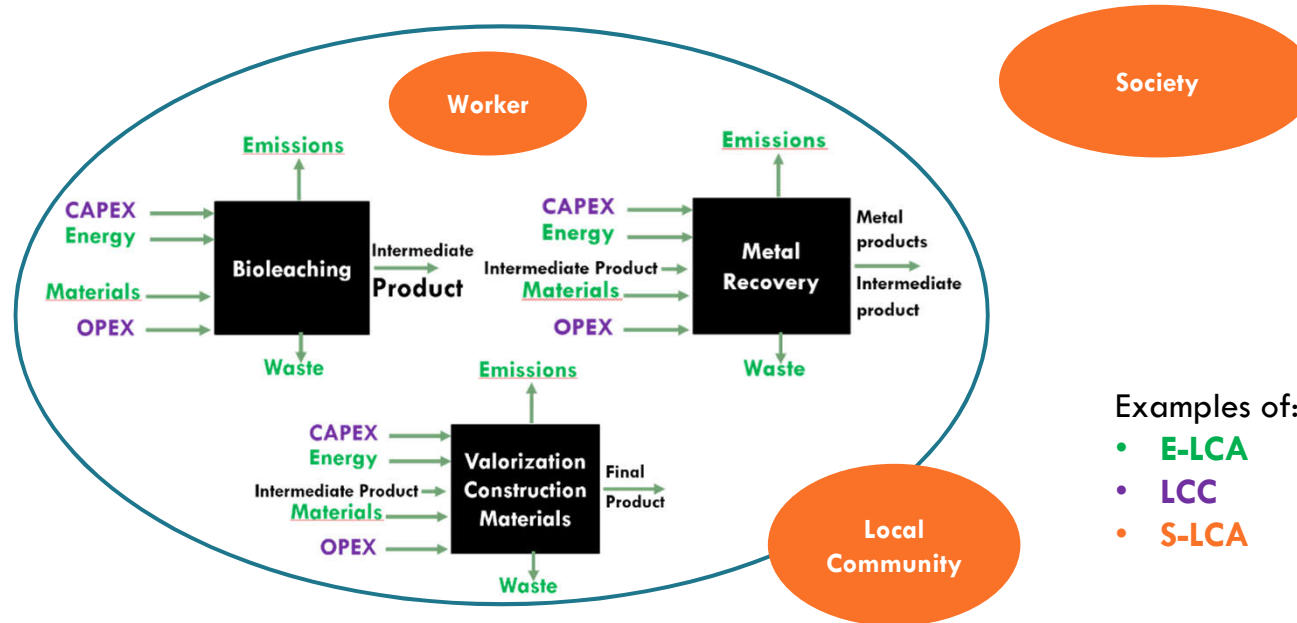
UNEP (2009), Guidelines for social life cycle assessment of products

# Social LCA framework



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## NEMO's case study



# Social LCA framework

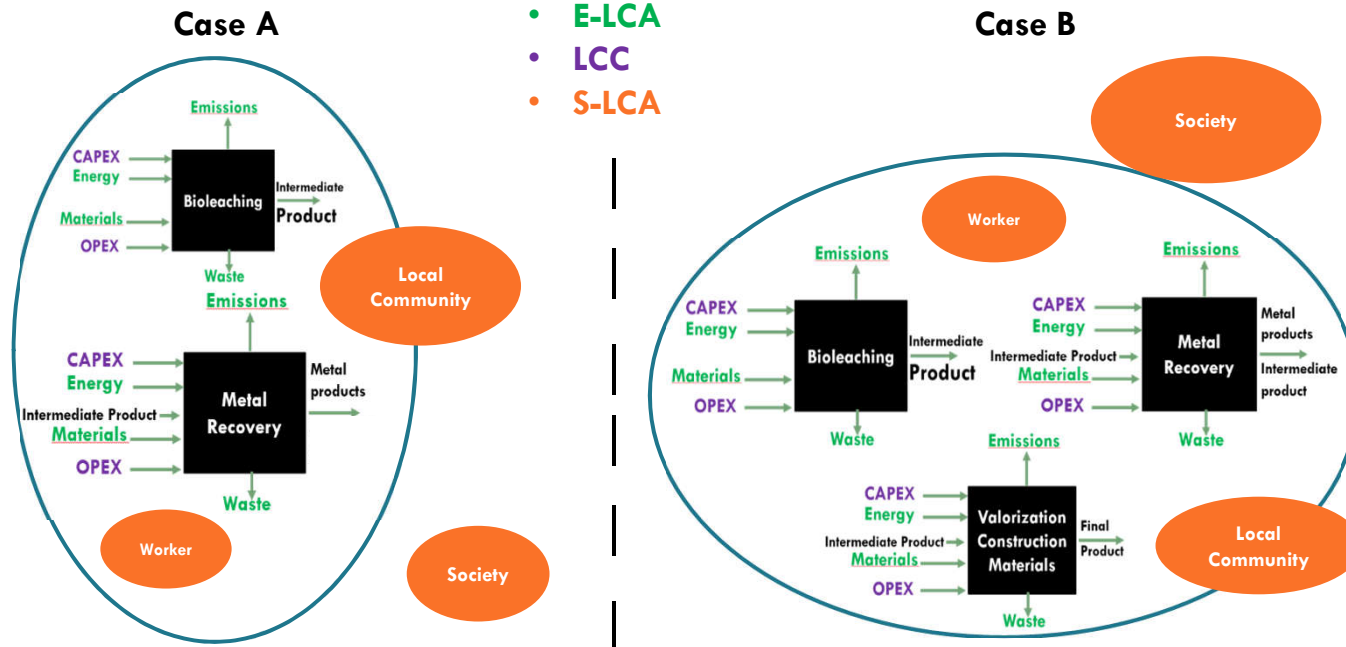


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## NEMO's framework – Comparative study

Examples of:

- E-LCA
- LCC
- S-LCA





# Social LCA in the mining sector



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## How NEMO can contribute to the development of S-LCA to assess the mining sector ?

- Social LCA Guidelines were thought for end consumer products, so we aim **developing it for mineral extraction**
- Direct collaboration with the NEMO **mining partners**
- Follow-up of the case study with local **stakeholders**
- Adding a **case study** to the picture

# Expected outcomes of NEMO



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## *Industrial perspective:*

- Maximising revenues
- Finding more sustainable means of Production
- Designing more sustainable products.

## *Societal perspective:*

- Reducing mining tailings and their **negative impact**
- Importance of the NEMO processes in the context of critical raw materials **recovery**.
- Role of NEMO processes in a **sustainable** supply of critical metals in the EU markets.



# S-LCA: joint paper



**Proposed title:** Social analysis in a multicriteria assessment for sustainable mining:

**Research question:** how to account and integrate social impacts into sustainability (environmental & economic) assessment (focus: mining sector)

**Structure:** problem statement → case studies → general conclusions

Please indicate your interest in the chat or via email to [andrea.dimaria@kuleuven.be](mailto:andrea.dimaria@kuleuven.be)





# Upcoming event March 2021

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- Recycling mining waste, a new business?
  - ▣ What makes mining waste recycling economic?
  - ▣ Does it (help to) make mining socially responsible?
  - ▣ And many other questions...
  
- More information will follow!



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- Thank you for listening and contributing!
  
- Contact us for more information
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