

Social sustainability and social impact assessment

Laura Kainiemi
LUT University

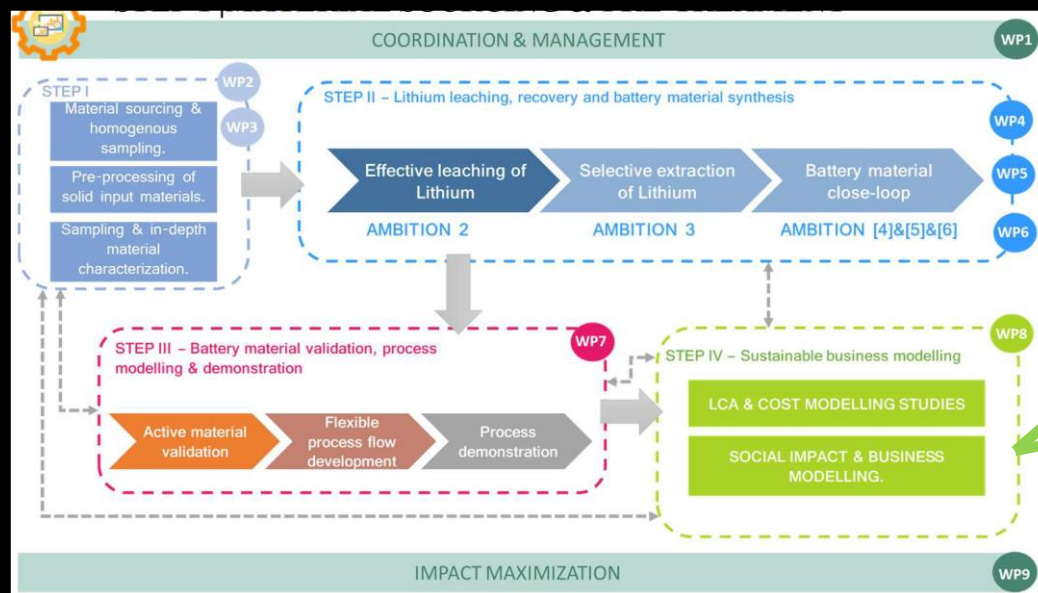


Recycling of Lithium from
Secondary Raw Materials and Further

 Lithium-relief.eu

SOCIAL IMPACT ASSESSMENT IN RELIEF

- Social LCA – What is our impact?
- Socio-economic assessment – What is the impact on us?



WHY SOCIAL IMPACT MATTERS?

Social LCA:

Negative social impacts can cause adverse attitudes towards the technology or process and lead to a lack of social acceptability.

- If we are sourcing secondary raw material from a mine, what are the social impacts; working conditions, loss of livelihood etc.?



Socio-economic assessment:

Averting potential obstacles caused by informal and formal institutions.

- The new EU battery regulation sets requirements for recycled content in batteries. Will this favor recycled battery materials to the detriment of secondary sources?





Laura.kainiemi@lut.fi



On Jan 2022, Serbian Prime Minister Ana Brnabic announced the cancellation of Rio Tinto's 2,400M€ Jadar project. At full capacity, the Jadar mine was expected to produce 58,000 tonnes of refined battery-grade lithium carbonate a year, making it Europe's biggest lithium mine by output. Jadar lithium project was planning to commence production in 2027. The Jadar mine would represent 1 per cent direct and 4 per cent indirect of Serbia's GDP. It would create 2,100 jobs during construction and 1,000 mining and processing jobs once in production.

"We have one clear demand - a law which should forbid exploring borate and lithium," said activist Savo Manojlovic of the Kreni-Promeni, or Go-Change movement.

"They allowed foreign companies to do whatever they want on our land. They put us on a platter for everyone who can just come and take whatever they want," said Vladislava Cvoric, a 56-year-old economist, during the protest.



Cluster Hub “Production of raw materials for batteries from European resources”



CLUSTER HUB

PRODUCTION OF RAW MATERIALS FOR
BATTERIES FROM EUROPEAN RESOURCES



Social acceptance in mining

Prof. Konstantinos Komnitsas



ΠΟΛΥΤΕΧΝΕΙΟ ΚΡΗΤΗΣ
TECHNICAL UNIVERSITY
OF CRETE

The 8th edition of the Raw Materials Week, 13-17 November 2023, Brussels

Objective

- ✓ Present some facts
- ✓ Share some (personal) views – think out loud
 - ✓ Trigger discussion

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Introduction_1

- The **transition to a climate-neutral society** by 2050 is a **critical challenge** and **can be (?)** an **opportunity** for a **better future** (with today's standards for "western" countries)
- As an example, if forecasts are correct, the demand for **nickel (Ni)**, **cobalt (Co)** and **lithium (Li)**, is expected to increase **21**, **19** and **42** times respectively, within the next 20 years
- **Europe** has a minor role in global **Li value chain** for mining and refining and is **100% reliant on its import**; the picture⁸ is slightly better for the other energy transition metals

Introduction_2

- The rising **world population** and **economic growth**, as well as the **development of new technologies** in the frame of **green and circular economy** will increase the demand for several other metals.
- We will also need in the future **durable** materials for **off-shore, space and other demanding applications** (withstand abrasion, corrosion, fatigue, etc)
- **Recycling** can cover only **a tiny share** of the **demand for CRMs/SRMs**
- Which is the role of the **mine of the future?** (**deep sea / urban mining** etc). It may be much more **eco-efficient** in terms of the **overall footprint** including **waste management**

What we know

- **Mining has benefits but often causes health and environmental impacts** (occupation of land, use of large volumes of water, disposal of waste, generation of dust and noise etc).
- **Benefits and drawbacks** resulting from mining activities **are** often **contradicting** (from continent to continent, from north to south Europe, from north to south Greece etc.)
- Mining companies (should) implement **corporate social responsibility (CSR) strategies**, by taking into account **societal, environmental and economic issues**, in order to minimize their production footprint and improve interactions and relationships with local communities.

Social License to Operate / Social Acceptance

- It is an **informal social contract**, which does not have the form of a legal agreement
- It was **first developed in the late 1990s**
- It follows the principles of the **Global Mining Initiative** (1998) to advance the industry's role in the transition towards sustainable development
- It aims to **bridge the gap** among the views of the most important stakeholders¹¹
- It has been **widely accepted** (in most cases) by the industry

Interesting aspects

- Most studies so far on **social acceptance** in mining were carried out outside Europe, mainly in developing countries of **Latin America, Africa and Asia**.
- However, most of the **researchers** involved came from **Western institutions**.
- **Various approaches** were used to assess **socio-economic and environmental aspects** as well as **citizens' perceptions** pertinent to mining projects in different cultural settings and thus the **outcomes vary widely**.
- In some third world countries, **artisanal and small scale mining** has been recently **banned** and this has caused **social unrest**

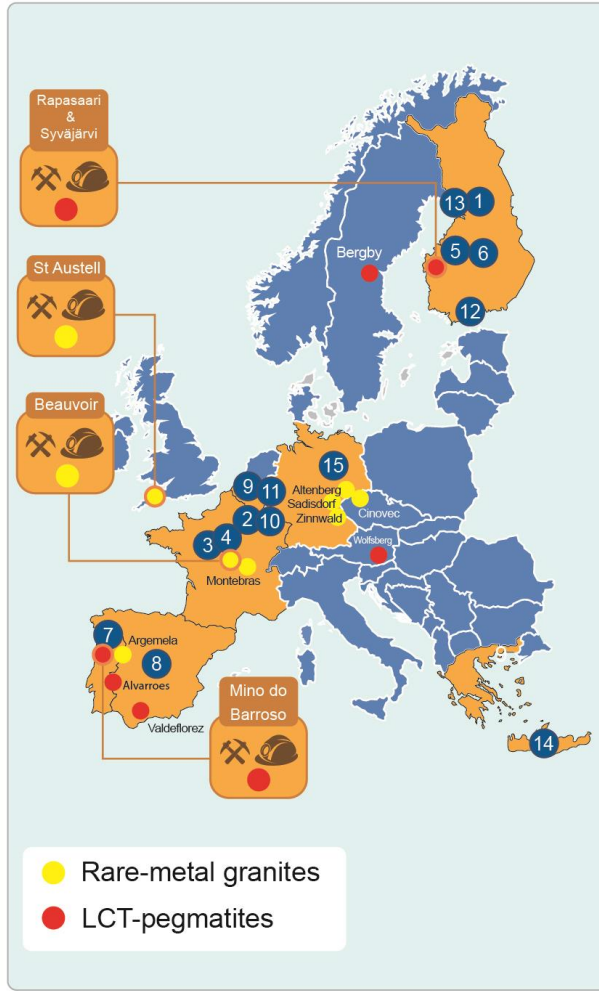
Is social acceptance utopic?

- The answer is **very difficult**
- Every **case** is different in every country , the **priorities** of the people, the **living standards** and **cultural issues** are different
- We (in Europe) should not **judge** people / policies / practices in other countries using “**our standards**” and “**our way of thinking**”
- Being **negative** is always **easy**; we should be **constructive** and propose **viable alternatives**
- We cannot always **export responsibility** (mining in other countries is OK)
- Study carefully **the Nordic example**

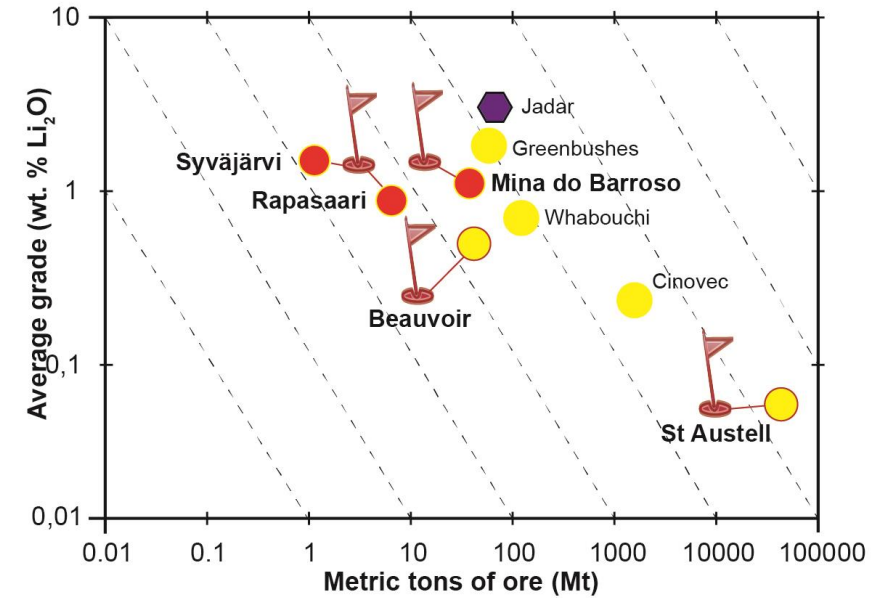
Other factors that “determine” social acceptance

- **Financial instability**
- **On going conflicts** in various parts of the world
- **The world is turning conservative** (very obvious in some EU countries)
- **Stakeholders’** views in almost every case depend on “**personal interests**”, and are often **biased**
- **Corrupt politicians – No charismatic leadership / politicians** (Europe is a typical example). Most of them behave (act) as **accountants**
- All these factors affect **negatively the views of normal people** (not only in mining but also in many other important issues (social security, education etc) requiring **social acceptance**)

EXCEED's Overview



1 [VTT]		Teknologian Tutkimuskeskus VTT OY	
2 [Imerys]		Imerys SA	
3 [Caspeo]		CASPEO SARL	
4 [IID-SII]		Sustainable Innovation Institute	
5 [Keliber]		Keliber Technology OY	
6 [Betolar]		Betolar OY	
7 [Savannah]		Savannah Lithium Limitada	
8 [DSC]		Dynamic & Security Computations SL	
9 [Wienerberger]		Wienerberger NV	
10 [UL]		Universite de Lorraine	
11 [KUL]		KU Leuven	
12 [GTK]		Geologian Tutkimuskeskus	
13 [UOULU]		Oulun Yliopisto	
14 [TUC]		Polytechnio Kristis	
15 [MEAB]		Meab Chemie Technik GmbH	

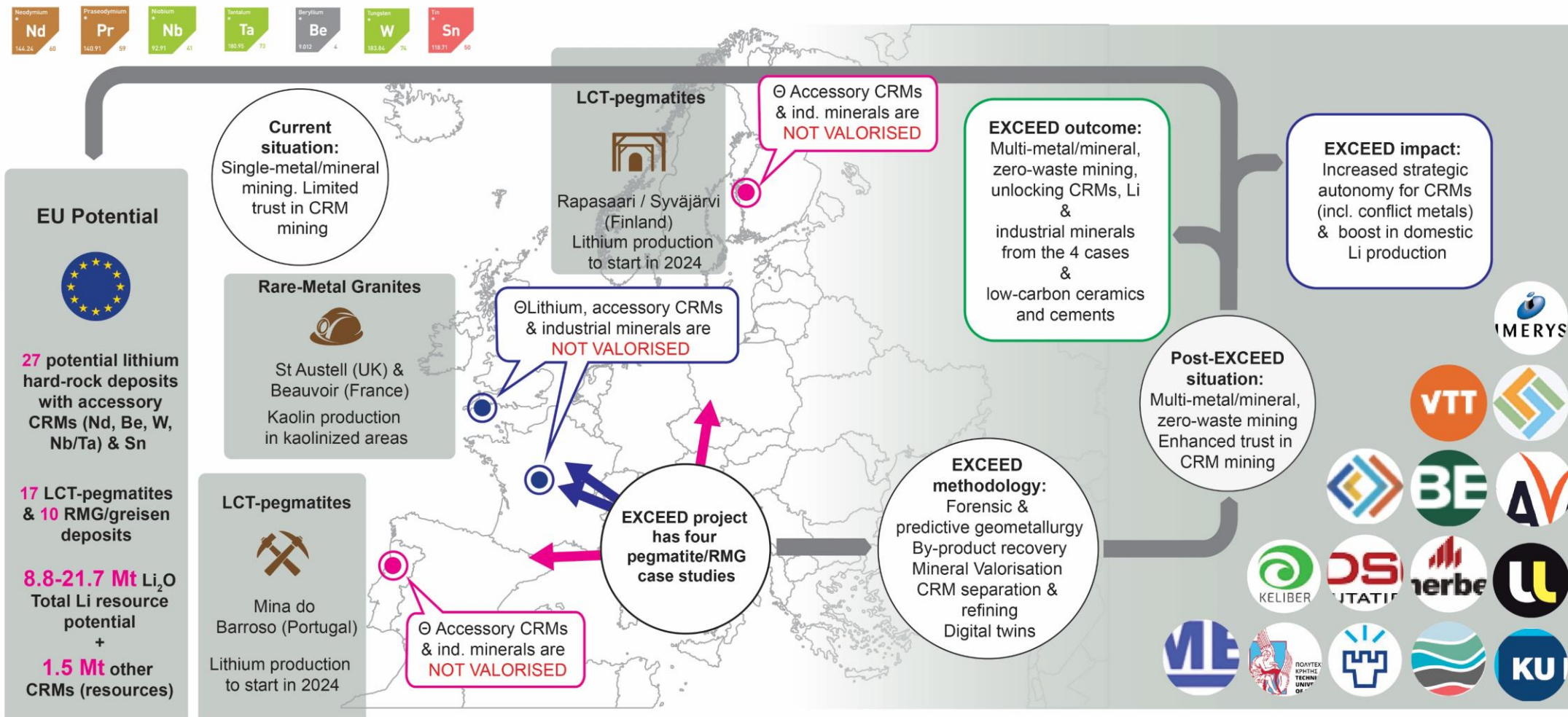


- Rare-metal Granites /Greisen (RMG)
- LCT pegmatites
- ◆ Sedimentary deposit
- Case studies

By-product CRMs

Neodymium Nd 144.24 40	Praseodymium Pr 140.91 59	Niobium Nb 92.91 41
Tantalum Ta 180.95 73	Beryllium Be 9.012 4	Tungsten W 183.84 74
		Tin Sn 118.71 50

EXCEED's Graphical Abstract



How can EXCEED contribute to this objective?

- In **EXCEED's** we follow a **zero-waste mining-and-refining** approach via the application of a **predictive and forensic geometallurgy** and the development of **digital twins**.
- **CRMs** are **extracted and refined**, while wastes are **valorised in low-carbon building materials**
- The **EXCEED solutions** can be **replicated** for **other European LCT-pegmatite and RMG deposits**
- We will carry out **a novel, integrated Life-Cycle, Techno-Economic and Human Impact Assessment**, which will incorporate **Social Acceptance** principles
- Emphasis is given to **raising public awareness** by (1) organising **open days at mines for local communities and companies**, (2) **public lectures in municipalities, schools and village associations** and (3) **workshops for other stakeholders**.
- We hope that we will **have some success** – we can discuss it again **in 2-3 years**

Made in Europe: from mine to electric vehicle

Please watch the documentary film

"Made in Europe: from mine to electric vehicle"

Avant-premiere was earlier today

(Le Plaza Hotel – Theatre Room – EU Raw Materials Week 2023)

The trailer can be seen here, [¹⁸https://lnkd.in/g/e6Sm5aNS](https://lnkd.in/g/e6Sm5aNS)

Some issues pertinent to Social Acceptance in Mining will be definitely clarified.

Acknowledgments

EXCEED

Cost-effective, sustainable and responsible extraction routes for recovering distinct critical metals and industrial minerals as by-products from key European hard-rock lithium projects



This project has received funding from the European Union's Framework Programme for Research and Innovation Horizon Europe under Grant Agreement No. 101091543

Thank you for your attention

Info:

Prof. Kostas Komnitsas, kkomnitsas@tuc.gr

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EXCEED website: <https://exceed-horizon.eu/>

Cluster Hub “Production of raw materials for batteries from European resources”,
<https://www.materialsforbatterieshub.eu/>



Gian Andrea Blengini (WP5 lead)



Politecnico
di Torino

María González-Moya Jiménez
(coord.)



Funded by
the European Union

METALLICO – General data

Project name	<i>“Demonstration of battery metals recovery from primary and secondary resources through a sustainable processing methodology”</i>
Total budget	13, 033, 408.00 €
European contribution	11, 798, 783.25 €
Start and end date	1 JANUARY 2023 – 31 DECEMBER 2026
Funding programme	HORIZON EUROPE– HORIZON-CL4-2022-RESILIENCE-01
Project coordinator	IDENER RESEARCH & DEVELOPMENT AIE
Contact of coordinators	María González-Moya Jiménez & Ana Lara Quijano (maria.gonzalez@idener.es – ana.lara@idener.es)

METALLICO – Main objective

The main objective of METALLICO is to develop **SUSTAINABLE** strategies for processing **PRIMARY AND SECONDARY RESOURCES** to obtain **CRITICAL RAW MATERIALS** mainly for battery manufacturing but also other uses.



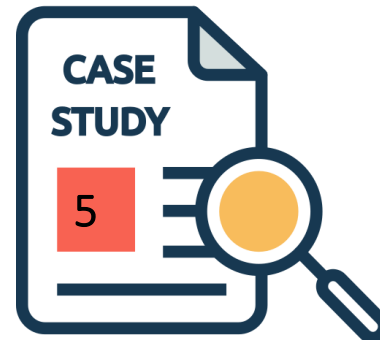
Socially accepted



Tecno-economically viable



Environmentally friendly



+ Replication case studies



METALLICO – Partners

DEHEMA
 Gesellschaft für Chemische Technik und Biotechnologie e.V.
GEOS | INGENIEUR-GESELLSCHAFT MBH
Fraunhofer IKTS

NIKKELVERK
 A GLENCORE COMPANY

VTT



idener SCIENTIFIC COMPUTING
THARSIS MINING
CETAQUA WATER TECHNOLOGY CENTRE
UPC UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH
CIC energIGUNE MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
EuroAtomizado Grupo
CEMENTOS CRUZ
CLAVE
CLC



Łukasiewicz
 Instytut Metali Nieżelaznych

Politecnico di Torino
 1859

CETAQUA CHILE

BARBOT

LARCO

21 PARTNERS

9 COUNTRIES

METALLICO – A lot of interesting public reports!

WP5. Sustainability analysis (M1-M48)



Deliverable 5.2. Carbon footprint guidelines and Concept of Net Zero Carbon - Guidelines on the calculation of the estimation of the carbon footprint reduction achievable through the project. **(31 December 2024)**



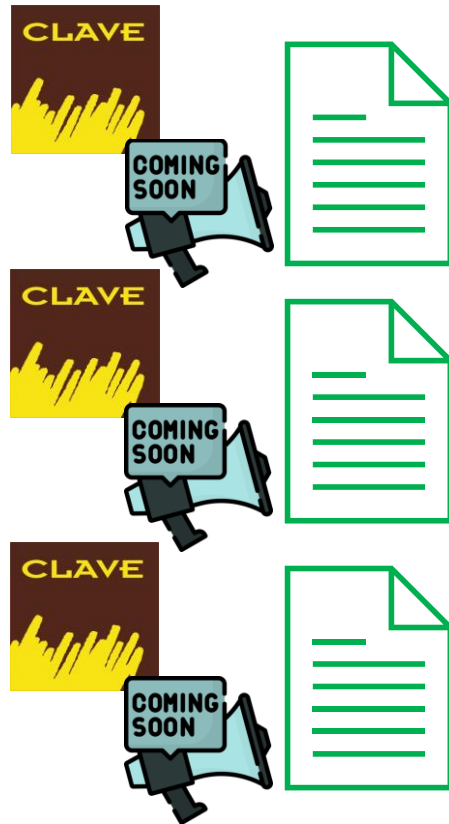
Deliverable 5.3. Circular Economy and Criticality indicators - Report on the determination of the circularity performance of the processes applying the Material Circularity Indicators (MCI) tool based on the results of the LCA. **(31 December 2025)**



Deliverable 5.5. Social Impact Assessment and concept of Net Zero Social Impact- Social assessment containing the context, the identification and qualification of the social actors, a list of risks and impacts and a strategic proposal of management. **(31 October 2026)**

METALLICO – A lot of interesting public reports!

WP6. Social participation, stakeholders engagement and networking (M1-M48)



Deliverable 6.1. Comparative experience worldwide to analyse secondary resources extraction-treatment and their social acceptance - Analysis of the mismatch between demonstrable scientific facts and the perception of mining activities **(30th June 2023)**

Deliverable 6.2. Review of national and regional mining policies-strategies and their integration of the circular economy - Critical review of national and regional mining policies-strategies and their integration of the circular economy, taking Andalusia as a reference mining region **(30th September 2023)**

Deliverable 6.3. Local information and communications activities: stakeholder mapping, informative campaigns and explanatory resources to different target audiences - Report including the identification of stakeholders and the description and creation of the communication mechanisms and resources **(31 December 2023)**

METALLICO – A lot of interesting public reports!

WP6. Social participation, stakeholders engagement and networking (M1-M48)



Deliverable 6.4. Showcase of the innovative tools and materials to raise social awareness of the need for responsible mining and the development of an ethic of circularity - Main description of the tools and materials as well as the source where they can be found **(31 December 2024)**



Deliverable 6.5. Launching event of Andalusian Metallic Mining Forum: video and proceedings document- Agenda, description, video and main notes of the event. **(30th June 2024)**



Deliverable 6.6. Advisory Board conclusions and networking activities - Report gathering the meeting minutes of the networking activities performed with the Advisory Board. **(31 December 2023)**

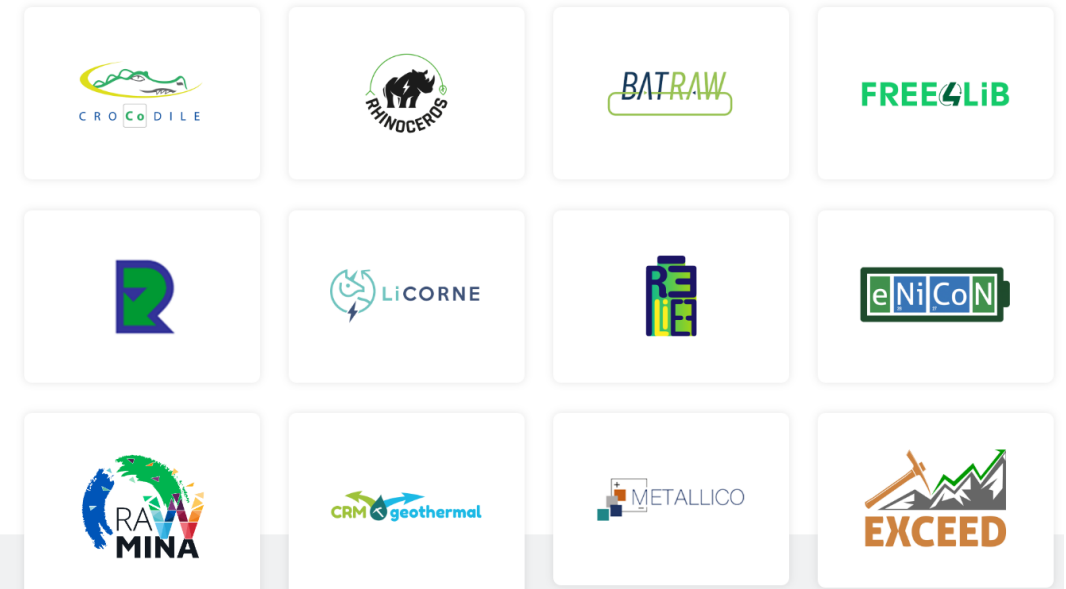
METALLICO – A new member of the Cluster Hub on battery raw materials!

MISSION: To produce the needed knowledge to foster a more sustainable and circular production of raw materials for battery Industry in Europe.



<https://www.materialsforbatterieshub.eu/>

THE CLUSTER





Stay in contact



**Funded by
the European Union**

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Contact:

Maria González-Moya Jiménez

Maria.gonzalez@idener.es



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