



## **D4.1 – Knowledge Plan in the Area of Sustainability, Circularity and Social assessment for Critical Raw Materials**

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# Table of Contents

|  |           |
|--|-----------|
| <b>EXECUTIVE SUMMARY .....</b>   | <b>6</b>  |
| <b>1. Introduction .....</b>   | <b>9</b>  |
| <b>1.1 Purpose and Objectives .....</b>  | <b>9</b>  |
| <b>1.2 Context: Sustainability, Circularity &amp; Social Assessment for Critical Raw Materials .....</b> | <b>9</b>  |
| <b>1.3 Methodology Overview .....</b>  | <b>11</b> |
| <b>2. CRM Sustainability and Circularity .....</b>   | <b>13</b> |
| <b>2.1 Knowledge Plan for LCA .....</b>  | <b>15</b> |
| <b>2.2 Knowledge Plan for LCC .....</b>  | <b>20</b> |
| <b>2.3 Knowledge Plan for CRMs' circularity .....</b>  | <b>21</b> |
| <b>2.4 Lab visit at MNL T' s premises .....</b>  | <b>22</b> |
| <b>3. Social Assessment and Social Licence to Operate (SLO) .....</b>                                    | <b>24</b> |
| <b>3.1 Methodology .....</b>   | <b>24</b> |
| <b>3.1.1 Literature review .....</b>   | <b>24</b> |
| <b>3.1.2 Dimensions and guiding questions .....</b>  | <b>25</b> |
| <b>3.1.3 Semi-Structured Interview Guide .....</b>   | <b>27</b> |
| <b>3.1.4 Expert Selection, Interview Process and Use of Findings .....</b>                               | <b>28</b> |
| <b>3.1.5 Framing and Insights on Social Licence to Operate: Literature and Expert Perspectives. 31</b>   |           |
| 3.2 From baseline principles: from transparency and honesty to risks and benefits to SLO strategy.....   | 31        |
| 3.3 Mapping, analysis and engagement of communities and stakeholders .....                               | 38        |
| 3.4. Participatory project design, implementation .....  | 42        |
| 3.5 Participation and negotiation processes and CSR Programme .....                                      | 48        |
| 3.6 Environmental and social (incl. employment) impacts: management and appraisal .....                  | 53        |
| 3.7 Risk and mitigation planning and conflict management .....   | 56        |
| 3.8 Anticipating site closure: sustainability and community transition beyond the investment/project...  | 58        |
| <b>4. Conclusion and Next Steps .....</b>  | <b>63</b> |
| <b>5. References .....</b>   | <b>65</b> |

## LIST OF FIGURES

|   |    |
|---|----|
| Figure 1: KT plan structure in the Area of Sustainability, Circularity and Social Assessment for CRMs .....   | 15 |
| Figure 2: The European Green deal .....   | 16 |
| Figure 3: The 4 key stages of LCA .....   | 17 |
| Figure 4: A graphical representation (network) of a simplified model in SimaPro.....  | 19 |
| Figure 5: Life cycle costs in the frame of LCC analysis .....   | 20 |
| Figure 6: CRMs use in the EVs sector and potential flows resulting from recycling of EVs deployed in the EU.....  | 21 |
| Figure 7: Levels of Social Licence with the Four Factors that Determine the Proportions of Stakeholders at Each Level (Boutilier & Thomson, 2011) ..... | 35 |

## LIST OF TABLES

|   |    |
|---|----|
| Table 1: Dimensions and guiding questions.....  | 25 |
| Table 2: Semi-structured interview questions based on 11 dimensions .....   | 27 |
| Table 3: Experts selected from both the Global North and Global South .....   | 28 |
| Table 4: Challenges and Barriers to Effective Community Engagement by Stakeholder Group (Adapted from Spiller, Htun, & Shah, 2025) .....          | 47 |
| Table 5: Summary of Environmental and Social Impacts of Mining adapted from Mononen, T., Kivinen, S., Kotilainen, J. M., & Leino, J. (2022) ..... | 55 |
| Table 6: Consolidated KT plan in the Area of Sustainability, Circularity and Social Assessment for CRMs .....                                     | 63 |

## EXECUTIVE SUMMARY

Deliverable D4.1 constitutes the Knowledge Transfer (KT) Plan developed under Work Package 4 (WP4) of the WIDEX project. It establishes the conceptual and methodological foundations for the project's sustainability and capacity-building activities, with a particular focus on critical raw materials (CRMs). The plan supports Work Packages 6 and 7 (WP6 and WP7) by detailing a structured training programme that encompasses Life Cycle thinking, circularity, and Social Assessment.

The KT Plan is divided into two main components, corresponding to Tasks 4.1 and 4.2, which form the basis of the project's training and capacity-building strategy for developing a resilient and responsible CRM value chain:

### **Task 4.1: Life Cycle Training and CRM Circularity**

This component features a comprehensive training course delivered to TUKE, combining theoretical and practical elements of Life Cycle Assessment (LCA), Life Cycle Costing (LCC), and CRM circularity. The LCA modules address regulatory frameworks, methodological foundations, and sector-specific applications. The LCC module introduces economic impact evaluation across the life cycle, with an emphasis on long-term costing methods relevant to sustainable procurement and resource efficiency. The CRM circularity module highlights the strategic role of CRMs in the EU's green transition and self-sufficiency goals. These modules are complemented by a hands-on laboratory tour at MNLT Innovations in Athens, providing direct exposure to CRM recovery processes.

### **Task 4.2: Social Assessment and Social Licence to Operate (SLO)**

This task delivers an integrated Knowledge Plan on social assessment, focusing on the concept and operationalization of the Social Licence to Operate (SLO). Developed using a mixed-methods approach, the Plan combines a literature review with 20 semi-structured interviews with experts from both the Global North and Global South. The analysis is structured along eleven thematic dimensions defined by CONSENTIA, addressing stakeholder engagement, participatory planning, risk mitigation, CSR, and long-term community development.

The Knowledge Plan brings together various regional and interdisciplinary visions and is based on internationally recognized frameworks and principles which lead best practice in social sustainability. Among them are the UN Global Compact, OECD Guidelines for Multinational Enterprises, IFC Performance Standards, and the FPIC principle very relevant within Indigenous rights and community consultation. European-specific contributions, particularly from the Horizon 2020 MIREU project, are also central, as they contextualise SLO within the EU's regulatory and governance landscape. Collectively, these frameworks provide the normative and operational foundation for the development of socially responsible and context-sensitive strategies in CRM projects across different regions.

## ABBREVIATIONS AND ACRONYMS

| Glossary |   |
|----------|---|
| Acronym  | Meaning   |
| BHP      | Broken Hill Proprietary   |
| CR       | Corporate Responsibility  |
| CRM      | Critical Raw Materials  |
| CSP      | Corporate Social Performance  |
| CSR      | Corporate Social Responsibility   |
| EHS      | Environmental, Health and Safety  |
| EIA      | Environmental Impact Assessment   |
| ESG      | Environmental, Social and Governance                                    |
| EU       | European Union  |
| FPIC     | Free, Prior and Informed Consent  |
| GMI      | Global Mining Initiative  |
| ICMM     | International Council on Mining and Metals                              |
| IRMA     | Initiative for Responsible Mining Assurance                             |
| IFC      | International Finance Corporation                                       |
| IPIECA   | International Petroleum Industry Environmental Conservation Association |
| ISO      | International Organisation for Standardisation                          |
| KT       | Knowledge Transfer  |
| LCA      | Life Cycle Assessment   |
| LCC      | Life Cycle Costing  |
| MAC      | Mining Association of Canada  |
| MIREU    | Mining and Metallurgy Regions of EU                                     |
| MMSD     | Mining, Minerals and Sustainable Development                            |
| NGO      | Non-Governmental Organisation   |
| OECD     | Organisation for Economic Co-operation and Development                  |
| PEST     | Political, Economic, Social and Technological (analysis)                |
| PGM      | Platinum Group Metals   |
| REA      | Regulatory Environmental Assessment                                     |
| REE      | Rare Earth Elements   |
| SA       | Sustainability Assessment   |
| SEA      | Strategic Environmental Assessment                                      |
| SLO      | Social Licence to Operate   |
| UN       | United Nations  |
| UNEP     | United Nations Environment Programme                                    |

# 1. Introduction

## 1.1 Purpose and Objectives

This deliverable provides a comprehensive and structured knowledge transfer plan that promotes sustainability, circularity and social assessment within Critical Raw Materials (CRM) projects. This report also gathers and consolidates findings from the WIDEX project, specifically Task 4.1 (Knowledge Transfer Plan for LCA and LCC) and Task 4.2 (Social Assessment & Social Licence to Operate), which ensure that insights, best practices, and methodologies are shared with stakeholders, policymakers and industry professionals.

## 1.2 Context: Sustainability, Circularity & Social Assessment for Critical Raw Materials

Sustainability is a key pillar of Europe's long-term vision for economic growth, social well-being, and environmental protection. Initiatives such as the European Green Deal have been conceived to strategically transition the continent towards climate neutrality by 2050, in response to challenges such as climate change, resource scarcity and biodiversity loss. In this manner, it can be stated that the European Union's commitment to making sustainability a key priority across all policy areas not only addresses ecological concerns, but also Europe's competitiveness and promotes better living conditions for future generations.

The EU has demonstrated a solid pledge to investing in green technologies through various initiatives and funding mechanisms aligned with the goals of the Green Deal. Indeed, a significant portion of the EU's budget is dedicated to climate-related spending. For instance, from 2021 to 2027, 32.6% of the total EU budget, standing at €578 billion<sup>1</sup>, is projected to contribute to climate spending. These investments target a wide array of green technologies expected to propel the EU towards a climate-neutral economy. Key areas include renewable energy sources and enabling technologies such as solar photovoltaics, battery and energy storage, heat pump technologies, and hydrogen technologies for sustainable mobility and the decarbonization of hard-to-abate industries. These are fields where the EU is already making considerable

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<sup>1</sup> European Commission (2023), Green Deal: Commission reports on the implementation of the 2023 climate policy package, Press release, Brussels, 24 October 2023

progress through growing investment, targeted policy support, and the expansion of clean energy manufacturing and innovation capacity<sup>2</sup>.

However, the successful deployment of these green technologies relies heavily on CRM that are scarce, geographically concentrated<sup>3</sup>, or subject to geopolitical risks. Materials which, in the current the current socio-economic and political landscape are not only essential to Europe's green transition and technological development, but also to its economic resilience. These materials are found across the globe and constitute the backbone of high-tech applications and green technologies, including electric vehicles, batteries, solar panels, and renewable energy systems. Key examples include lithium (used in batteries), rare earth elements such as neodymium and dysprosium (used in wind turbine magnets and electric motors), cobalt (for rechargeable batteries), and silicon metal (critical for solar photovoltaics). As the EU continues its pursuit of climate neutrality by 2050, securing a sustainable supply of critical raw materials has become an undeniable necessity<sup>4</sup>.

To secure a sustainable and resilient raw materials system, forward-looking strategies must be adopted. These include a comprehensive understanding and management of environmental, economic, and social impacts across the entire value chain, enabled by the following key tools and concepts:

### **1. Life Cycle Assessment (LCA, LCC)**

LCA is a tool and a standardized methodology (ISO 14040/44) that is used to assess the environmental aspects associated with a product, process, or service over its life cycle<sup>5</sup>. By adopting LCA, companies gain crucial insights into the environmental impact of their products and services, enabling more sustainable product development and strategic decision-making<sup>6,7</sup>. LCA quantifies environmental impacts, allowing companies to make credible sustainability claims, enhancing transparency with stakeholders and

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<sup>2</sup> European Commission (2025). Progress report on competitiveness of clean energy technologies (COM (2025) 74 final). European Union.

<sup>3</sup> European Commission (2023a). Study on the critical raw materials for the EU 2023 – Final report. Publications Office of the European Union.

<sup>4</sup> European Commission (2023b). European Critical Raw Materials Act [Factsheet]. Publications Office of the European Union: [https://ec.europa.eu/commission/presscorner/detail/en/fs\\_23\\_1663](https://ec.europa.eu/commission/presscorner/detail/en/fs_23_1663)

<sup>5</sup> UNEP et al. (2012). Towards a Life Cycle Sustainability Assessment – Making informed choices on products. [https://wedocs.unep.org/bitstream/handle/20.500.11822/8001/UNEP\\_LifecycleInit\\_Dec\\_FINAL.pdf?sequence=3&amp%3BisAllowed=](https://wedocs.unep.org/bitstream/handle/20.500.11822/8001/UNEP_LifecycleInit_Dec_FINAL.pdf?sequence=3&amp%3BisAllowed=)

<sup>6</sup> Pre Sustainability, LCA-basics, <https://pre-sustainability.com/articles/life-cycle-assessment-lca-basics/>

<sup>7</sup> Ecochain, Lca guide, Available at: <https://ecochain.com/blog/life-cycle-assessment-lca-guide/>

consumers. This credibility is crucial for building trust and demonstrating commitment to environmental responsibility.<sup>8</sup>

## 2. Life Cycle Costing (LCC)

LCC is a methodology used to evaluate the total cost of a product, process, or activity over its entire life span, from acquisition to disposal—including potential externalities such as environmental costs.

It encourages long-term thinking over short-term cost-cutting by identifying high-cost processes and promoting the efficient use of resources such as energy, water, and raw materials. LCC also supports sustainable procurement by enabling buyers to consider not just the initial purchase price, but also operational, maintenance, and end-of-life costs. By factoring in waste disposal and recycling, LCC aligns with circular economy principles, encouraging reuse, product life extension, and material recovery.<sup>9,10</sup>

## 3. Social Licence to Operate (SLO):

SLO refers to the ongoing acceptance, approval, and consent of a company's activities by stakeholders and local communities directly affected by the company's operations. This concept encompasses societal trust and legitimacy, extending beyond basic legal permission to operate. According to the UN Global Compact, social sustainability involves identifying and managing business impacts on people, emphasising that a company's relationships and engagement with stakeholders are critical. The UN notes that a business's social licence to operate significantly depends on its social sustainability<sup>11</sup> efforts, as neglecting social development issues like poverty and inequality can hinder business operations and growth.

# 1.3 Methodology Overview

This Knowledge Transfer (KT) Plan deliverable serves as the foundation for the training programme outlined within Work Packages 6 and 7. Its overarching objective is to deliver a comprehensive and coherent educational experience focused on key sustainability assessment methodologies—particularly **Life Cycle Assessment (LCA)**, **Life Cycle Costing (LCC)**, and the **value chain of Critical Raw Materials (CRMs)** from a life cycle perspective. In parallel, this report presents a **Social Assessment**

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<sup>8</sup>Sustainable Brand Platform, The benefits and limitations of product LCA-explained, Available at: <https://www.sustainablebrandplatform.com/articles/the-benefits-and-limitations-of-product-lca-explained>

<sup>9</sup> Pre Sustainability. "Five Crucial LCA Features in Simapro." Accessed June 11, 2025. <https://pre-sustainability.com/articles/five-crucial-lca-features-in-simapro/>.

<sup>10</sup> Fundsnet Services. "Life Cycle Costing." Accessed June 11, 2025. <https://fundsnet.com/life-cycle-costing>.

<sup>11</sup> United Nations Global Compact, "Social Sustainability"

**Knowledge Plan**, emphasizing the **Social Licence to Operate (SLO)** through expert-driven workshops, targeted stakeholder engagement, and integrated risk mitigation strategies.

The plan begins with an overview of its structure, aligned with the thematic pillars mentioned above. It includes a detailed breakdown of the individual training sessions, each designed to cover fundamental concepts, practical applications, and emerging trends within its specific domain. For each session, the analytical content is clearly presented alongside pedagogical elements such as estimated duration, instructional formats and tools (e.g., presentations, case studies, interactive exercises), and the profile of invited speakers or subject-matter experts.

The training programme has been carefully designed to strike a balance between theoretical grounding and practical implementation, ensuring that TUKE participants not only understand the frameworks but also develop the capacity to apply them in real-world contexts. The integration of both LCA and LCC enables participants to adopt an interdisciplinary perspective—bridging environmental and economic sustainability.

Following the environmental (LCA) and economic (LCC) components, the KT plan delves into the domain of Social Life Cycle Assessment (S-LCA) and the Social Licence to Operate (SLO). These modules address the social dimension of sustainability, with a focus on stakeholder inclusion, social equity, community well-being, and societal legitimacy across the life cycle of raw materials and derived technologies. Each module is framed around intended learning outcomes and is supported by curated educational materials.

To develop the SLCA and SLO components, a mixed-methods approach was employed, combining extensive literature review with expert consultation. The literature review encompassed academic publications, policy frameworks, and industry reports concerning CRMs, sustainability, and supply chain resilience.

To enrich and contextualise findings from the literature review, semi-structured interviews were conducted with over 20 experts, including researchers, policymakers, and industry professionals specialising in critical raw materials, mining, sustainable resource management, stakeholder engagement, and social acceptance. Participants were carefully selected based on their expertise, their key roles within relevant organisations, and their capacity to provide informed perspectives on the social, environmental, and governance dimensions of the Social Licence to Operate. Experts were

purposefully drawn from both the Global South and the Global North, with deliberate attention given to achieving gender balance, explicitly addressing the underrepresentation of women in the CRM sector. This approach ensured a diverse range of viewpoints and lived experiences informed the development of the knowledge plan.

These interviews were guided by a comprehensive interview framework developed by CONSENTIA, considering a broad scope of issues relevant to Social Licence to Operate (SLO). The framework ranged from foundational principles to detailed assessments of risks and benefits associated with SLO strategies. It explored issues from the mapping, analysis, and engagement of communities and stakeholders to participatory project design and implementation; from negotiation processes to consultation and participation techniques; and from the management and appraisal of environmental and social impacts, including employment, to risk assessment and mitigation planning.

Additionally, the framework expanded to include corporate social responsibility programmes, red lines, workforce perspectives and case examples, as well as conflict management, permitting and regulatory compliance, and finally, the anticipation of site closure, with an emphasis on sustainable transitions for communities beyond the lifetime of exploitation projects.

By structuring the training programme in this manner, the KT Plan aims to deliver an integrated, interdisciplinary understanding of sustainability assessments. It encourages critical thinking, active engagement, and practical competence, thereby enhancing TUKE's capacity to contribute to a more sustainable and resilient CRM system.

## 2. CRM Sustainability and Circularity

The Knowledge Transfer (KT) activities in the CRM sustainability sector are intrinsically linked to the Life Cycle Thinking approach and its associated tools: Life Cycle Assessment (LCA), Life Cycle Costing (LCC), Social Assessment (SA), and the Social Licence to Operate (SLO). A structured and purpose-driven KT plan has been designed to strengthen TUKE's capabilities in circularity, recyclability, and CRM valorization.

The KT plan is built around three main components:

The KT plan is built around three main components:

- A week-long series of on-site training sessions at MNLT;
- A set of four online training modules delivered by CONSENTIA;
- A one-day on-site lab tour at MNLT's premises.

Although the training seminar at MNLT is primarily structured for on-site participation, the number of attendees cannot be determined in advance. To ensure inclusiveness and broader reach, a hybrid format will be adopted, enabling remote participation in all sessions via online platforms. This approach provides flexibility while ensuring continuity and accessibility in the knowledge transfer process. A dedicated in-person session at MNLT will also offer hands-on exposure to reinforce practical understanding.

Each training day will be divided into two parts: the first part will focus on LCA and LCC, while the second part will cover SA and the SLO framework. This structure has been deliberately designed to maintain thematic coherence and variety, encouraging participants to explore interrelated topics within a single session and to engage with both technical and social dimensions of sustainability.

The full programme of on-site and online sessions is scheduled to take place between Month 19 and Month 30 of the WIDEX project.

The following sections provide a detailed overview of the KT strategy, covering the key components integral to any typical KT plan, including:

- ✓ The knowledge thematic areas related to LCA, LCC and SLO,
- ✓ The methods and channels to be employed for the knowledge exchange,
- ✓ A preliminary timeline for the knowledge transfer and
- ✓ The key individuals and experts profile expected to contribute to the training delivery.

While the core training team has already been identified, the final list of guest speakers and external contributors will be confirmed closer to the training dates, based on availability and alignment with thematic needs. This ensures consistency while also integrating the most current expert insights.

An overview of the designed structure is presented in Figure 1. The following sections provide a detailed presentation of the content for each training module.

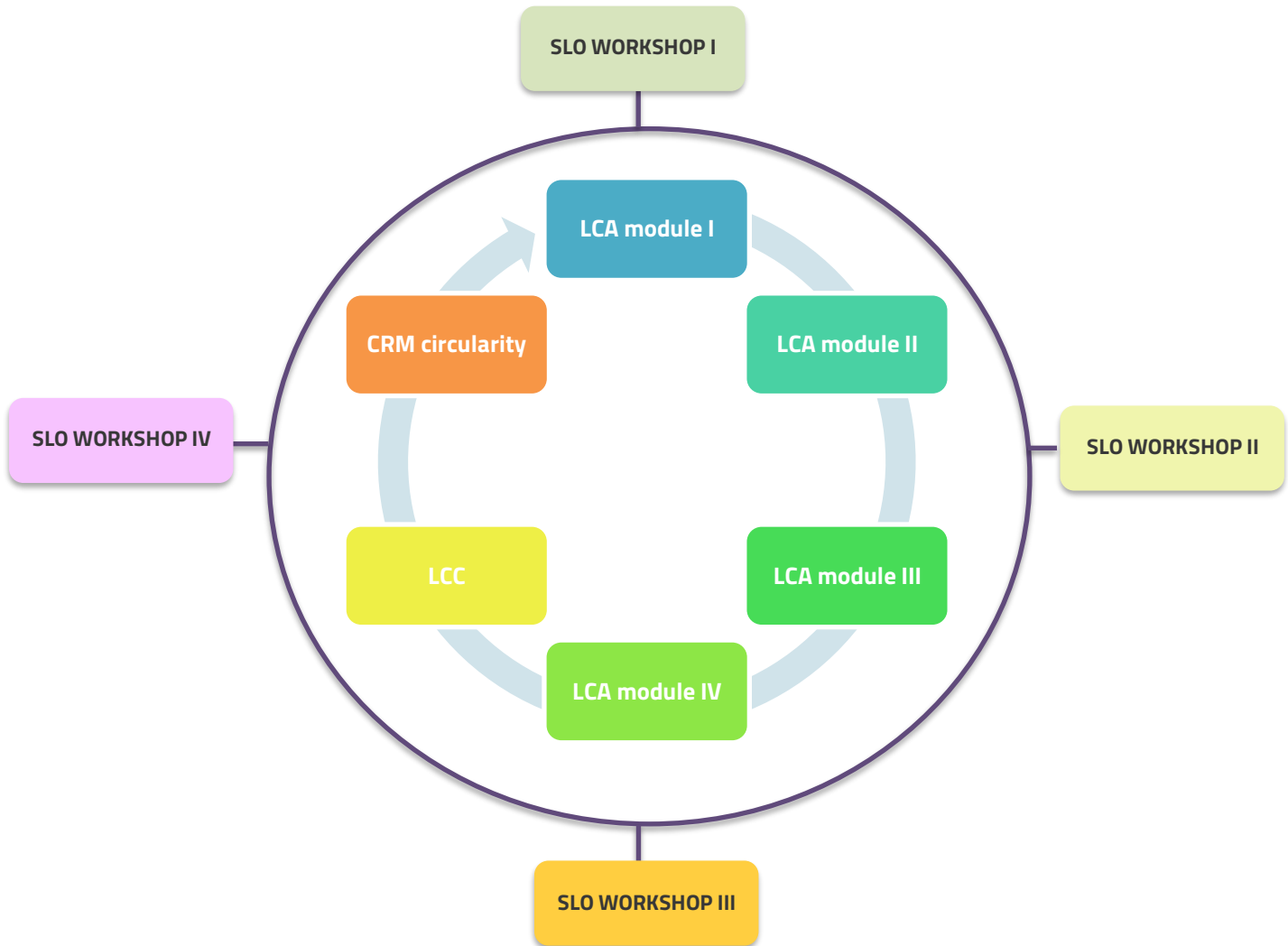


Figure 1: KT plan structure in the Area of Sustainability, Circularity and Social Assessment for CRMs

## 2.1 Knowledge Plan for LCA

The KT plan for LCA is structured into four training modules: one dedicated to legislative context (Module I), three focused on LCA methodology and applications (Modules II, III and IV). This structure is designed to ensure a progressive and applied learning journey, combining policy background, theoretical foundation, case-based analysis, and software training.

### LCA Module I: Legislation overview

The first module will introduce TUKE participants to the key European and international policies governing environmental protection and circular economy promotion. The session will explore initiatives such as the European Green Deal (Figure 2), the Circular Economy Action Plan, the EU Battery Regulation, and the Industrial Emissions Directive. It will also highlight the growing role of Environmental, Social, and Governance (ESG) frameworks, which require companies to measure, report, and manage their environmental performance with greater transparency and accountability. Participants will gain an integrated understanding of how policy trends are embedding sustainability into industrial systems and how LCA can support both compliance and the design of environmentally responsible practices.

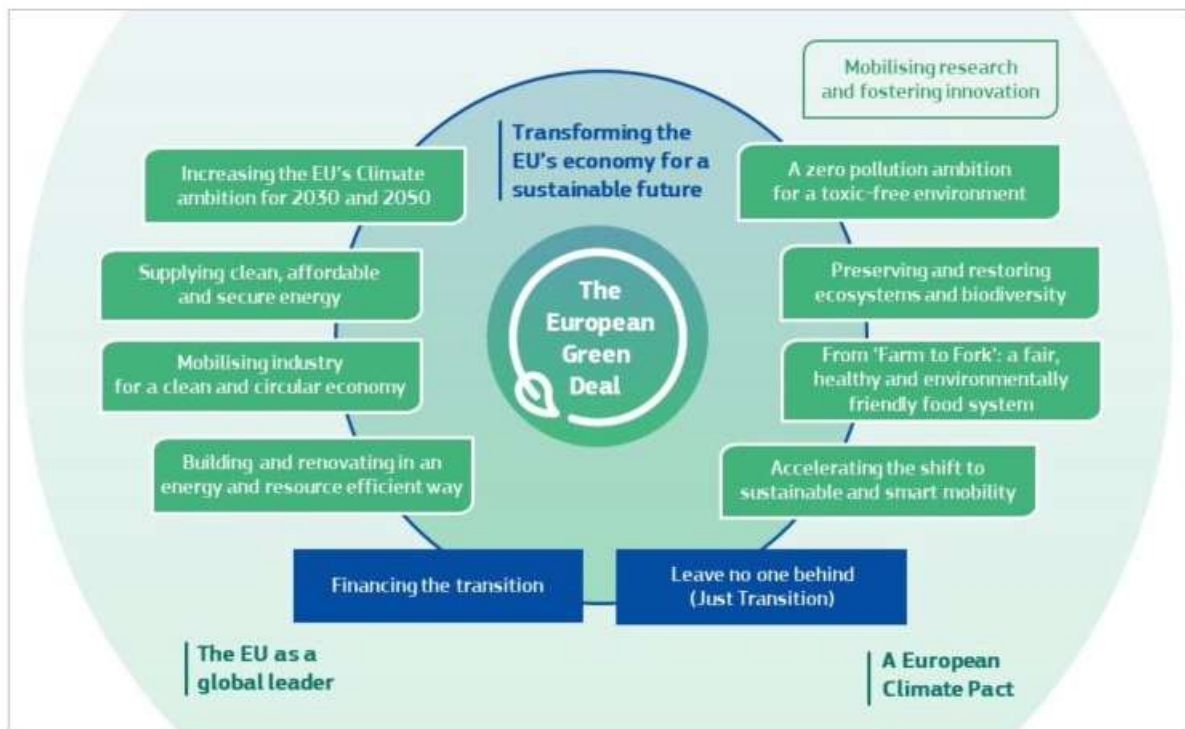


Figure 2: The European Green deal<sup>12</sup>

### LCA Module II: Fundamentals of LCA

The second module will provide a theoretical introduction to Life Cycle Assessment. Participants will become familiar with the ISO 14040:2006 standard, which forms the methodological basis of LCA. The four key stages (Figure 3) of LCA Goal and Scope Definition, Life Cycle Inventory (LCI), Impact Assessment, and Interpretation will be thoroughly explained.

<sup>12</sup> European Commission, *The European Green Deal*, COM (2019) 640 final, Brussels, 2019. [Online]. Available: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640>

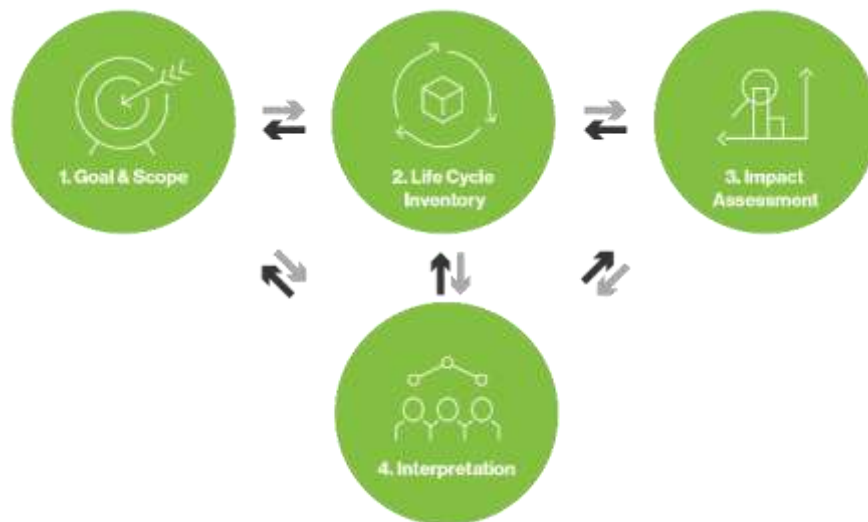


Figure 3: The 4 key stages of LCA<sup>13</sup>

By the end of this training session, TUKE's participants will be able to clearly define the goal and scope of their LCA, to identify the necessary data for each stage of their study and to provide a structured and consistent impact evaluation for each stage, allowing for comparability, which is essential between different products or processes.

### LCA module III: LCA in the CRM Sector

The third module will present real-world applications of LCA in the critical raw materials sector, highlighting MNL T's experience across various EU-funded projects. Through a selection of case studies, participants will explore the practical relevance of LCA in evaluating environmental performance across different CRM value chains, such as mining, processing, and recycling.

Key case studies include:

- **PGM Mining and Recovery:** Life cycle analysis of exploration, extraction, and recycling of platinum-group metals (PGMs) such as platinum (Pt), palladium (Pd), and rhodium (Rh), with a focus on energy use, emissions, and recycling potential.
- **Rare Earth Elements (REE) Supply Chain:** Environmental impacts of REE extraction and permanent magnet production, highlighting tailings management, chemical use, and resource depletion.

<sup>13</sup> Rochester Institute of Technology, *What is life cycle assessment?*  
<https://www.rit.edu/sustainabilityinstitute/blog/what-life-cycle-assessment-lca>

- **Recycling Methods for CRMs:** Comparative LCA of closed-loop systems for materials such as cobalt, lithium, and rare earths recovered from end-of-life batteries and magnets, focusing on material recovery efficiency and reduced dependency on primary resources.
- **Emerging Processes:** Application of LCA to innovative techniques, including:
  - Recycled vs. virgin neodymium magnets.
  - Pt leaching from spent MEAs in fuel cells/electrolyzes.
  - Extraction of rare earth oxides from ion-adsorption clays.

By the end of this module, participants will understand how LCA is used to evaluate sustainability trade-offs in the CRM value chain, be able to interpret LCA results in real-world industrial and policy contexts, as well as, recognize the challenges and benefits of applying LCA to materials critical for the green and digital transitions.

This session will deepen understanding of how LCA can inform material choices, process improvements, and sustainability decisions in the CRM field. Additionally, participants will be introduced to the benefits and challenges of LCA, equipping them with the knowledge to confidently apply LCA in real-world practice.

#### **LCA module IV: Introduction to SimaPro and Practical Modelling**

The fourth module offers a hands-on introduction to LCA modelling using SimaPro software. The session is structured into two parts: a brief theoretical overview (approximately 30% of the session) followed by an extended practical component (approximately 70%).

The theoretical section will provide an overview of the SimaPro environment, its structure, available databases, and key functionalities. Special emphasis will be placed on understanding how mass and energy balances form the backbone of reliable LCA modelling. Participants will explore how to translate material and energy flows into structured inventories aligned with LCA standards. This section will help participants understand how to structure data and translate real-world processes into measurable environmental impacts, which is essential for students preparing to evaluate sustainability in their own studies.

In the practical part, participants will work with a process flow diagram derived from a real-life case study. Through an interactive discussion, they will examine the definition of system boundaries and the functional unit critical elements that influence the validity and comparability of LCA results. Once this conceptual understanding is established, the Life Cycle Inventory (LCI) will be provided, and participants will build a simplified model in SimaPro (Figure 4).

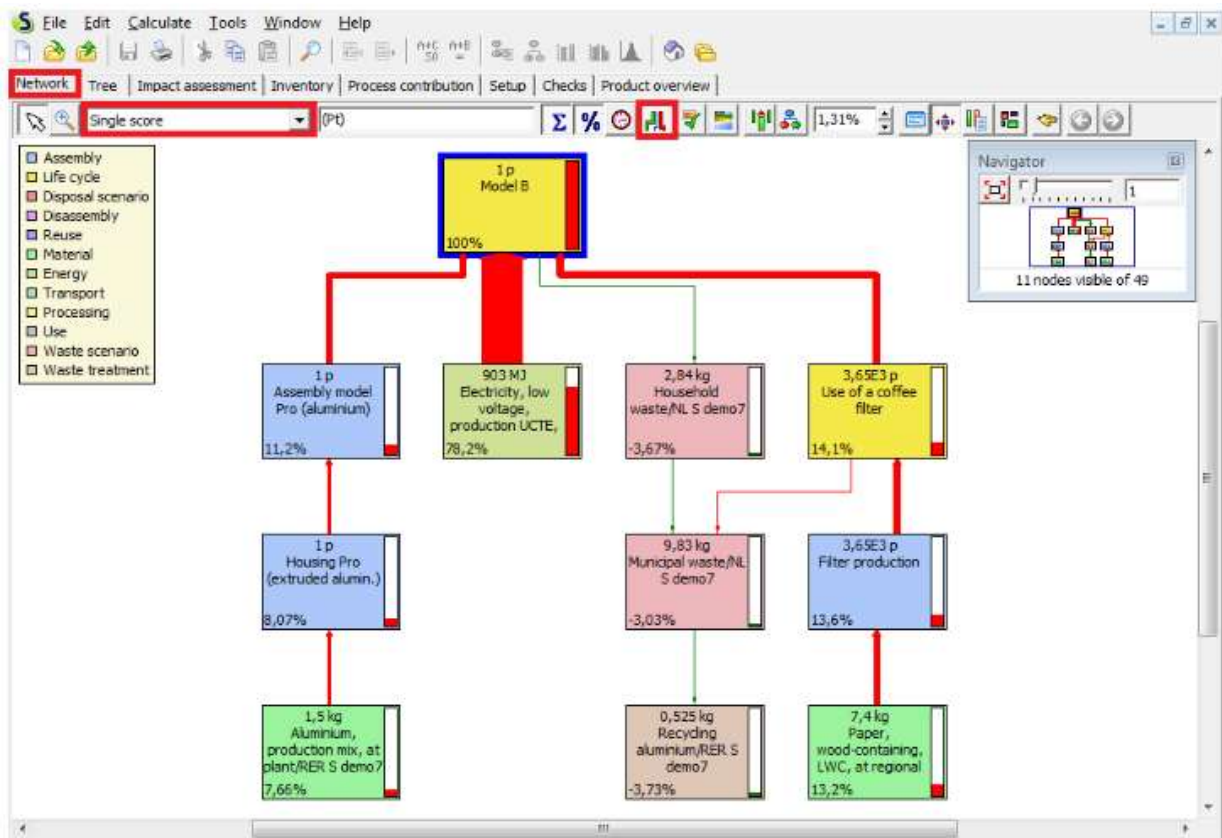


Figure 4: A graphical representation (network) of a simplified model in SimaPro<sup>14</sup>

The demonstration will include:

- Creating a new project and selecting appropriate databases.
- Inputting inventory data and navigating within the data libraries.
- Understanding the relevance of mass and energy balances in quantifying resource flows and emissions across life cycle stages.
- Performing basic calculations and interpreting environmental impact results.
- Exporting and reporting results in a clear and structured format.

By the end of the session, participants will be equipped with the practical knowledge to initiate and carry out LCA studies using SimaPro and will gain confidence in interpreting and communicating their findings effectively within their academic or early-stage professional work.

<sup>14</sup> Pre Sustainability, *Five crucial LCA features in SimaPro*. Available: <https://pre-sustainability.com/articles/five-crucial-lca-features-in-simapro/>

## 2.2 Knowledge Plan for LCC

The fifth training session will focus on Life Cycle Costing (LCC) as a complementary methodology to LCA, providing participants with the tools to assess economic impacts across the entire life cycle of products, systems, or services.

This session will begin with an overview of the theoretical foundations and principles of LCC, introducing participants to the various frameworks and methodologies commonly used in the field (e.g., ISO 15686-5, SETAC/UNEP approaches). Emphasis will be placed on how LCC enables informed decision-making by capturing not only direct costs but also indirect and external costs across all life cycle stages (Figure 5).

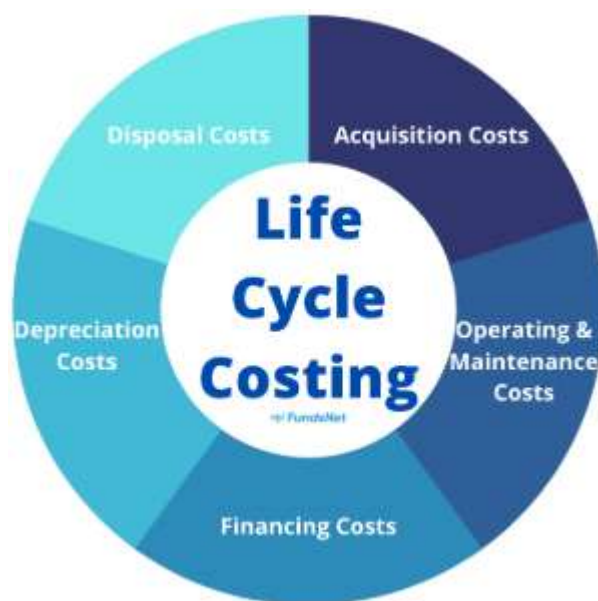


Figure 5: Life cycle costs in the frame of LCC analysis<sup>15</sup>

Participants will then explore the core phases of LCC:

- Goal and Scope Definition: Setting clear objectives and defining system boundaries for economic assessment.
- Life Cycle Inventory (LCI) of Costs: Identifying and compiling cost data (capital, operational, maintenance, and end-of-life).
- Cost Assessment: Applying discounting methods, comparing alternatives, and incorporating externalities if relevant.
- Interpretation of Results: Drawing actionable conclusions for sustainable investment, procurement, or design decisions.

<sup>15</sup> Fundsnetservices, Life Cycle Costing. Available: <https://fundsnetservices.com/life-cycle-costing>

Each stage will be examined in detail, with a focus on its interconnections with LCA practices and the importance of maintaining a consistent and comparable structure.

By the end of this module, TUKE participants will be able to define the scope and objectives of an LCC study, identify and collect relevant cost data across the product or system life cycle, perform structured and transparent cost assessments, and compare LCC results between alternatives to support robust decision-making in research or industrial contexts.

## 2.3 Knowledge Plan for CRMs' circularity

The sixth training session will be dedicated to the circularity of Critical Raw Materials (CRMs), highlighting how circular strategies can reduce environmental impact and improve supply resilience in the raw materials sector. This session will focus on key concepts that underline the growing importance of CRM circularity in Europe's sustainable and strategic autonomy goals (Figure 6).

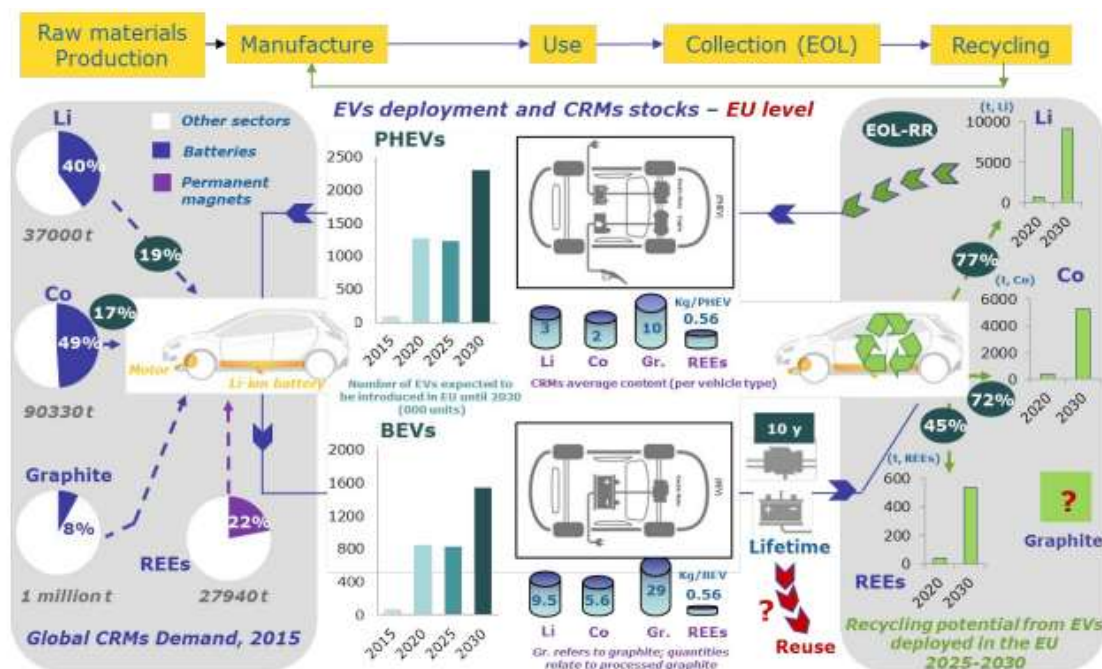


Figure 6: CRMs use in the EVs sector and potential flows resulting from recycling of EVs deployed in the EU<sup>16</sup>

Key Topics Covered:

- **The need for circularity in CRMs:** How circular approaches can reduce reliance on primary extraction and mitigate supply risks.
- **Circular Strategies:**
  - Reduction of environmental footprints across life cycles.

<sup>16</sup> European Commission (2018), Report on Critical Raw Materials in the Circular Economy. <https://op.europa.eu/en/publication-detail/-/publication/d1be1b43-e18f-11e8-b690-01aa75ed71a1>

- Enhancement of supply security through material recovery, reuse, and product life extension.
- **The role of CRMs in the green and digital transitions:** Circularity as an enabler for clean energy, mobility, and electronics.

Participants will be introduced to practical examples of circular CRM strategies through case-based learning. A featured case study will present sustainable recycling of permanent magnets, using a magnet-to-magnet circular model.

By the end of this module, TUKE's participants will be able to understand the principles and value of CRM circularity, identify key circular economy strategies relevant to CRMs, as well as, critically assess the opportunities and limitations of circular CRM flows in real-life industrial settings.

## 2.4 Lab visit at MNLТ' s premises

The training program will conclude with a full-day, on-site visit to the facilities of MNLТ Innovations in Athens. This visit will serve as a capstone to the Knowledge Transfer (KT) plan, offering participants an immersive, hands-on experience with real-life CRM recycling processes and industrial applications of sustainability assessment tools.

With extensive experience in hosting technical seminars, summer schools, and industry-focused training events under EU-funded projects, MNLТ will guide participants through a dynamic learning day tailored to bridge theory with practice. The company has a solid track record of engaging academic institutions, industry stakeholders, and early-stage researchers across Europe (Image 1).

MNLТ is actively involved in several Horizon Europe research and innovation projects focused on the secure, responsible, and sustainable exploitation of Critical Raw Materials (CRMs). These include initiatives spanning the entire CRM value chain—from exploration and extraction to processing, recycling, and circularity. The company brings strong capabilities in Life Cycle Assessment (LCA), Life Cycle Costing (LCC), and circularity evaluations, particularly in value chains such as permanent magnets, platinum group metals, and lithium-ion batteries.

As part of its broader sustainability work, MNLТ has delivered targeted training and educational activities under various EU initiatives. Notably, it contributed to the *ExpSkills-REM* project by delivering lectures on sustainable magnet recycling, and successfully hosted a technical summer school under the *VOT3D* project in July 2024. These experiences highlight MNLТ's capacity to host and deliver high-quality training sessions for both academic and industrial audiences.

During the lab visit, TUKE participants will:

- Tour the pilot-scale and lab-scale units used in hydrometallurgical recycling of critical raw materials (CRMs), including PGMs, rare earths, and battery materials.
- Observe advanced process flows and innovative technologies developed and validated in research projects.
- Understand practical implementation of LCA and LCC in a laboratory environment, gaining insights into data collection, system boundaries, and process optimization.
- Interact with multidisciplinary experts involved in research, scale-up, and environmental assessment of circular economy solutions.

The lab visit will offer participants direct exposure to best practices in CRM valorization, reinforcing their ability to apply sustainability principles in industrial contexts. This practical session will strengthen TUKE’s internal capacity for green innovation and support the broader goals of the WIDEX project by translating theoretical knowledge in real-world experience.



*Image 1: Laboratory demonstration of CRM recycling processes & CRM recovery pilot at MNLT Lab premises*

## 3. Social Assessment and Social Licence to Operate (SLO)

This section outlines the main objectives of the Knowledge Plan and its thematic focus areas, referred to as dimensions, which have been developed to support the Plan for Social Assessment with a particular focus on the Social Licence to Operate (SLO). These dimensions, defined by CONSENTIA, were used both to structure the literature review and to design semi-structured interviews with 20 experts from the Global North and Global South. The aim was to complement the documentary review with expert insights that reflect diverse geographical and sectoral perspectives.

### 3.1 Methodology

The methodology behind the Social Assessment Knowledge Plan for WIDEX brings together both conceptual depth and real-world experience. It is based on a mixed-methods approach that combines a structured review of the literature with qualitative insights gathered through expert interviews. This combination ensures that the Plan is grounded not only in well-established theoretical and normative frameworks related to the Social Licence to Operate (SLO), but also in practical knowledge from those directly engaged in CRM governance, mining, and community relations.

To guide this work, CONSENTIA developed a series of thematic areas referred to as dimensions which provided a common framework for both the literature review and the interviews. These dimensions helped shape the interview questions and allowed for a consistent approach across sources. 20 experts from both the Global North and Global South were interviewed, chosen for their knowledge and experience in fields such as sustainability, social impact, stakeholder engagement and extractive sector governance. Care was taken to ensure diversity across geography, institutional backgrounds, and gender. Together, these elements helped build a broad and inclusive understanding of how SLO is interpreted and applied in different settings.

#### 3.1.1 Literature review

The literature review forms the conceptual foundation of the Social Assessment Knowledge Plan, and it provides the central frameworks, definitions, and controversies underlying understanding and operationalisation of SLO. It draws on a carefully compiled collection of scholarly books, policy

documentation, papers, worldwide guidelines, and sectoral case studies that reflect historic development as well as modern practice in social sustainability.

Core intellectual contributions offer essential insight into the nature of SLO as a negotiation process between industry and society that is ongoing. Foundational early works, such as Joyce and Thomson's initial conceptualisation of SLO, set the stage for more formalised systems like Boutilier and Thomson's model, which established quantifiable metrics based on stakeholder perceptions of legitimacy, credibility, and trust. Franks and others offered an economic element by showing the cost of not being able to maintain public acceptance. These perspectives, among many others, have developed a body of knowledge that helps influence policy and practice.

At the same time, the review embraces international models such as the IFC Performance Standards, the OECD Guidelines for Multinational Enterprises, and the UN Global Compact, in addition to Free, Prior and Informed Consent (FPIC) as the core principle. These are also backed by European views, such as the Horizon 2020 MIREU project, where region-specific variables that decided the way SLO is implemented within EU governance frameworks were outlined. Collectively, the literature offers a strong basis for evaluating social performance in CRM initiatives and informing the development of focused training and assessment tools.

### 3.1.2 Dimensions and guiding questions

The Knowledge Plan is structured around eleven key dimensions that address critical aspects of the Social Licence to Operate (SLO) and stakeholder engagement. These dimensions include baseline principles such as transparency, honesty, and the risks and benefits of SLO strategies; mapping, analysis and engagement of communities and stakeholders; participatory project design and implementation; participation and negotiation processes; and consultation and participation techniques. Other dimensions focus on environmental and social impacts (including employment), risks and mitigation planning, corporate social responsibility (CSR) programmes, conflict management, permitting and regulatory compliance, and anticipating site closure with attention to community transition and sustainability. Each dimension is guided by targeted questions aimed at identifying effective practices, common challenges, and strategic responses, serving as the foundation for both the literature review and expert interviews. An overview of the dimensions and their associated guiding questions is provided in the table below.

*Table 1: Dimensions and guiding questions*

| Dimension | Guiding questions |
|-----------|-------------------|
|-----------|-------------------|

|  |   |
|--|---|
| <p>1. From baseline principles: from transparency and honesty to risks and benefits to SLO strategy</p>    | <ul style="list-style-type: none"> <li>▪ What are the most significant risks and benefits associated with obtaining an SLO?</li> <li>▪ What are some examples of effective SLO strategies used in the past?</li> </ul>  |
| <p>2. Mapping, analysis and engagement of communities and stakeholders</p>                                 | <ul style="list-style-type: none"> <li>▪ Who are the key stakeholders in mining operations projects?</li> <li>▪ What are the best practices for effectively engaging with communities and stakeholders?</li> </ul>  |
| <p>3. Participatory project design and implementation</p>  | <ul style="list-style-type: none"> <li>▪ What mechanisms have been effective for co-designing projects with stakeholders?</li> <li>▪ What are the biggest barriers to implementing participatory project approaches?</li> <li>▪ What consultation methods have been most effective in gathering community input?</li> <li>▪ How can meaningful participation be measured and ensured, rather than token involvement?</li> </ul> |
| <p>4. Participation, negotiation processes and CSR Programme</p>   | <ul style="list-style-type: none"> <li>▪ What CSR programmes have been most effective in obtaining and maintaining an SLO?</li> <li>▪ What key performance indicators (KPIs) are best for measuring CSR success?</li> <li>▪ What strategies have been most effective in ensuring inclusive participation?</li> <li>▪ What are some examples of successful participatory negotiations?</li> </ul>                                |
| <p>5. Environmental and social (including employment) impacts: management and appraisal</p>                | <ul style="list-style-type: none"> <li>▪ To what extent has CSR evolved beyond rhetoric to produce meaningful change in corporate behaviour?</li> <li>▪ Are ESG frameworks reinforcing superficial compliance at the expense of genuine accountability?</li> <li>▪ Can a Social License to Operate be sustained without rethinking the purpose and practice of CSR itself?</li> </ul>   |
| <p>6. Risk, mitigation planning and conflict management</p>  | <ul style="list-style-type: none"> <li>▪ What are the most common risks that threaten SLO?</li> <li>▪ What risk mitigation strategies have been most effective?</li> <li>▪ What common conflicts arise between stakeholders and communities?</li> <li>▪ What conflict resolution mechanisms have been most effective in practice?</li> </ul>  |
| <p>7. Anticipating site closure: sustainability and community transition beyond the investment/project</p> | <ul style="list-style-type: none"> <li>▪ What are the key regulatory challenges that impact SLO?</li> <li>▪ What are the key regulatory challenges that impact SLO?</li> </ul>  |

### 3.1.3 Semi-Structured Interview Guide

Based on the eleven dimensions outlined above, a semi-structured interview guide has been developed to facilitate expert input. Each dimension is accompanied by open-ended questions to explore practical experiences, identify recurring challenges, and uncover innovative or context-specific strategies for achieving and maintaining a Social Licence to Operate (SLO). The interview balanced consistency across interviews with flexibility, allowing interviewees to elaborate on issues most relevant to their expertise and context. The table below shows how the semi-structured interview questions were constructed based on each of the eleven dimensions presented above.

*Table 2: Semi-structured interview questions based on 11 dimensions*

#### **1. Beyond Transparency and Honesty: What Else Matters?**

**Dimension:** Baseline principles: risks and benefits to Social Licence to Operate strategy

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**Q:** Transparency, honesty, and accountability are often cited as key to achieving a Social Licence to Operate. Do you think we overlook any other fundamental principles?

#### **2. Giving a Voice to Marginalised Groups**

**Dimension:** Mapping, analysis and engagement of communities and stakeholders

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**Q:** One major challenge in SLO is ensuring that marginalised or less-represented groups are heard. How can we address this?

#### **3. Moving Beyond Consultation: True Community Participation**

**Dimension:** Participatory project design and implementation

**Dimension :** Consultation and participation techniques

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**Q:** Many companies hold community meetings, but affected communities rarely seem to have a real say in decision-making. How can we change that?

#### **4. Balancing Corporate and Community Interests**

**Dimension:** CSR Programme: red line, workforce perspective, KPI and case examples

**Dimension:** Participation and negotiation processes

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**Q:** How do you approach negotiations to balance corporate goals with community needs?

#### **5. The Role of Employment in Social Licence to Operate**

**Dimension:** Environmental and social (incl. employment) impacts: management and appraisal

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**Q:** How should employment integration be managed to effectively support SLO?

## 6. Risks Assessment, Mitigations Strategies and Conflict Management: Ensuring Fair and Transparent Grievance Mechanisms

**Dimension:** Risks and mitigation planning

**Dimension:** Conflict management

**Q:** How can complaint and feedback systems be designed to be fair and transparent while also incorporating proactive strategies to prevent conflicts rather than merely reacting to them?

## 7. Anticipating Site Closure: Ensuring Sustainability Beyond the project

**Dimension:** Permitting and Regulatory compliance

**Dimension:** Anticipating site closure: sustainability and community transition beyond the investment/project

**Q:** Many discussions focus on what happens during mining operations, but what about after? How can companies ensure a sustainable transition for communities?

## 3.1.4 Expert Selection, Interview Process and Use of Findings

To ensure a balanced and diverse perspective, 20 experts were selected from both the Global North and Global South. Participants were chosen based on their professional experience in fields related to SLO, including community engagement, environmental and social governance, corporate social responsibility, public policy, and extractive industries. The selection process aimed to include professionals from diverse institutional and regional backgrounds, while ensuring balanced representation of both men and women.

*Table 3: Experts selected from both the Global North and Global South*

| Expert             | Organisation                               | Country | Region       | Sector/Expertise  | Gender |
|--------------------|--|---------|--------------|---|--------|
| Bonnie Campbell    | Université du Québec à Montréal (UQAM)     | Canada  | Global North | Natural resource management and their impacts on populations                        | Female |
| Tony Hand          | TalTech - Tallinn University of Technology | Estonia | Global North | Mining technologies and sustainability  | Male   |
| Pamela Lesser      | Arctic Centre - University of Lapland      | Finland | Global North | Land use planning, Environmental impact assessment, Social licence to operate (SLO) | Female |
| Jukka Joutsenvaara | Lapland University of Applied Sciences     | Finland | Global North | Exploration, waste management, critical raw materials, LCA                          | Male   |

|                          |  |                         |                              |   |        |
|--------------------------|--|-------------------------|------------------------------|---|--------|
| Toni Eerola              | Geological Survey of Finland   GTK   | Finland                 | Global North                 | Geological mapping, SLO and environmental issues  | Male   |
| David Brereton           | Centre for Social Responsibility in Mining (CSR/M) at The University of Queensland | Australia               | Global North                 | Social science, particularly focusing on the mining and minerals sector in Australia                                      | Male   |
| Martha Macintyre         | University of Melbourne  | Australia               | Global North                 | Social anthropology, gender and mining, Pacific communities, colonial legacies  | Female |
| Sandra Pavon             | Fraunhofer IKTS  | Germany                 | Global North                 | Sustainable technology and CRM recycling processes  | Female |
| Virginia del Río Orduña  | At Clave   | Spain                   | Global North                 | Environmental Management and Sustainable Development  | Female |
| Juan Requejo Liberal     | At Clave   | Spain                   | Global North                 | Economic Sciences, Geography, Planning, Corporate Social Responsibility   | Male   |
| Stéphane Bourg           | French Observatory of Mineral Resources for Industrial Sectors (OFREMI) at BRGM    | France                  | Global North                 | Environmental impacts and material requirements associated with the energy transition                                     | Male   |
| DIALLO Mouhamadou Lamine | Université Cheikh Anta Diop de Dakar   | Senegal<br>South Africa | Global South<br>Global South | Political geography of natural resources, mining activities, resource governance, and environmental and social regulation | Male   |
| Davidzo Muchawaya        | IRMA - The Initiative for Responsible Mining Assurance                             |                         |                              | Responsible mining standards, certification, stakeholder engagement, and assurance systems                                | Female |
| Gabriel Vásquez          | Mining Shared Value  | Ecuador                 | Global South                 | Shared value in mining, sustainable development and community benefit strategies  | Male   |

|                           |   |           |              |   |        |
|---------------------------|---|-----------|--------------|---|--------|
| Hoai Nga Nguyen           | Hanoi University of Mining and Geology  | Vietnam   | Global South | Responsible mining, women's rights, sustainable mineral development in South Asia.  | Female |
| Cesar Reyna Ugarriza      | Consultant in economic, political, and social issues  | Peru      | Global South | Social management, community relations, conflict Resolution and Intercultural dialogue  | Male   |
| Esteban Manteca Melgarejo | Extractive Industries Transparency Initiative (EITI)  | Mexico    | Global South | Anti-corruption, beneficial ownership, commodity trading, contracts, energy transition, SOEs, systematic disclosure                   | Male   |
| Adeyinka Omotehinse       | Federal University of Technology Akure  | Nigeria   | Global South | Mine planning, mineral economics, community engagements, sustainable mining, artisanal & small-scale mining                           | Female |
| Ana Lúcia Santiago        | Independant consultant - Voconiq  | Brazil    | Global South | Mining social performance, community relations, stakeholder engagement, dialogue, humanitarian response, ESG                          | Female |
| Osmel Manzano             | Inter-American Development Ban  | Venezuela | Global South | Natural resource economics, energy policy, fiscal regimes in extractives, regional development, governance in oil-dependent economies | Male   |
| Aldin Ardian              | Universitas Pembangunan Nasional Veteran Yogyakarta and Ministry of Energy and Mineral resources of Indonesia | Indonesia | Global South | Mineral economics, mining project feasibility and valuation, artisanal & small-scale mining   | Male   |

## 3.1.5 Framing and Insights on Social Licence to Operate: Literature and Expert Perspectives

Understanding the concept of Social Licence to Operate (SLO) requires not only a review of its origins but also an examination of how it has evolved through academic research and practical experience. This section presents key perspectives from the literature and insights from experts in the field, highlighting the diversity of interpretations, definitions, and practical applications of SLO across both the Global North and Global South. These reflections serve to structure the knowledge plan under Task 4.2 and to support the development of the training session to be delivered during Year 2 of the WIDEX project.

## 3.2 From baseline principles: from transparency and honesty to risks and benefits to SLO strategy

The term Social Licence to Operate first emerged in 1997, coined by Jim Cooney, then Vice President of International Government Affairs at Placer Dome, a Canadian gold mining company that was facing severe backlash in the late 1990s over its questionable mining operations in the Philippines.

Cooney coined the term during a World Bank meeting on mining and sustainable development to highlight the need for corporations to obtain legal licences from governments to operate, but also the consent from local communities, whose trust and acceptance are essential for sustained operational success. In fact, without this informal but essential social approval, exploitation companies failing to secure the trust and acceptance of local communities and stakeholders are likely to risk operational disruptions leading to significant economic losses.

In January 1999, during the World Economic Forum in Davos, Switzerland, nine CEOs from some of the world's largest mining companies such as Rio Tinto, BHP and Anglo American convened to address concerns about the industry's declining public trust and the jeopardy of their social licence to operate. This meeting led to the launch of the Global Mining Initiative (GMI), aimed at examine and strengthen the mining sector's role in sustainable development. At the heart of the Global Mining Initiative (GMI) was the Mines, Minerals and Sustainable Development (MMSD) project, established to critically examine the mining sector's impact and to chart a path for its meaningful contribution to sustainable development<sup>17</sup>.

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<sup>17</sup> International Institute for Environment and Development. (n.d.). Mining, Minerals and Sustainable Development (MMSD). IIED.

Even though the MMSD project concluded in 2002, with the publication of its final report, *Breaking New Ground*,<sup>18</sup> its principles and objectives continue to influence the mining and minerals sectors through various organisations and initiatives dedicated to promoting sustainable development. Some European examples are: **Euromines**, created in 1996 to represent the collective interests of the European mining industry and address challenges faced by the extractive sector in Europe, including technological, environmental, and socio-economic aspects. In addition to Euromines, the International **Council on Mining and Metals (ICMM)**, headquartered in London and founded in 2001 as a direct outcome of the MMSD project, brings together 26 mining and metals companies and over 35 regional and commodity associations committed to advancing sustainable development performance.

The first formal attempt to define SLO was made by (Joyce and Thomson 2000)<sup>19</sup>, who proposed that a project holds a Social Licence when it gains approval and broad acceptance from society, particularly from local communities, highlighting that this acceptance must be built and maintained across multiple levels. Other early contributors, such as (Lassonde 2003)<sup>20</sup>, described SLO as the acceptance and belief by local communities in the value creation of a company's activities.

While the discourse on Social Licence to Operate was gaining prominence and organisations were simultaneously joining forces to address the challenges previously mentioned, cases from the late 1990s and early 2000s vividly illustrated the significant consequences faced by mining projects that lacked local community support at early stages:

In Tambogrande, Peru, Canadian mining company Manhattan Minerals proposed an open-pit gold and copper mine in a region critical to Peru's fruit agriculture. The project faced fierce opposition due to plans involving the displacement of half the town's residents, potential environmental degradation, and threats to local agriculture. In a 2002 referendum, more than 98% of voters rejected the project, ultimately leading to its cancellation<sup>21</sup>.

In Esquel (Argentina), Meridian Gold proposed a gold mining project in 2002, near Patagonia, a region highly valued for its pristine environment and tourism. Local residents were deeply concerned about

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<sup>18</sup> International Institute for Environment and Development. (2002). *Breaking new ground: Mining, minerals and sustainable development*.

<sup>19</sup> Susan A. Joyce and Paul W. Thomson, *Earning a Social Licence to Operate: Social Acceptability and Resource Development in Latin America* (Ottawa: CIM, 2000).

<sup>20</sup> Louise Lassonde, *Mining in Remote Areas: Issues and Impacts* (Ottawa: International Development Research Centre, 2003).

<sup>21</sup> Participedia, "Referendum on Mining in Tambogrande (Piura, Peru)"

environmental contamination and damage to tourism-based economies. A referendum in 2003 showed more than 80% opposition, resulting in the project's suspension<sup>22</sup>.

At Roşia Montană (Romania), the Roşia Montană Gold Corporation aimed to develop Europe's largest open-pit gold mine using cyanide extraction, threatening local communities and cultural heritage sites. The project sparked extensive nationwide protests and legal battles, culminating in mass demonstrations<sup>23</sup> across Romania in 2013, ultimately forcing the suspension of the mine's development.

In Yanacocha (Peru), one of the world's largest gold mines operated by Newmont Mining Corporation, faced significant opposition following a mercury spill<sup>24</sup> in 2000 that contaminated the environment and poisoned over 900 local residents. Continued community protests, particularly against the proposed expansion onto Cerro Quilish a mountain crucial for local water supply eventually halted the expansion plans in 2004.

By this period, both exploration and operating companies within the mining industry had become keenly aware of the critical importance of acquiring and maintaining a Social Licence to Operate to avoid significant operational, reputational, and economic repercussions.

Over time, the use of the term expanded beyond mining. Morrison (2014)<sup>25</sup> noted that governments, NGOs and other organisations are now increasingly expected to secure a social licence for their activities, while Raman and Mohr (2014)<sup>26</sup> identified similar trends even in scientific research fields, such as stem cell studies. Barreiro-Deymonnaz (2013)<sup>27</sup> pointed out how governments are increasingly requiring companies to demonstrate efforts to obtain a social licence as part of regulatory processes, effectively moving it closer to a legal requirement in some cases. According to Salim (2003)<sup>28</sup>, the Social Licence to Operate can be conceptualised as a rights-based framework, centred on the principle that Indigenous peoples and other impacted communities must be empowered to participate in decision-making

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<sup>22</sup> Meridian Gold Inc. "Meridian Gold Reports Results of the Local Esquel Non-Binding Referendum." March 24, 2003.

<sup>23</sup> Claudia Ciobanu, "Romanians Mobilise in Protest Against Gold Mine Plans," The Guardian, September 17, 2013.

<sup>24</sup> Noah Moeys, "The Village Still Suffering from Peru Mercury Spill Fallout – After 20 Years," The Guardian, April 2, 2020.

<sup>25</sup> John Morrison, *The Social License: How to Keep Your Organization Legitimate* (London: Palgrave Macmillan, 2014).

<sup>26</sup> Sujatha Raman and Alison Mohr, "A Social Licence for Science: Capturing the Public or Co-Constructing Research?," 2014

<sup>27</sup> Ricardo E. Barreiro-Deymonnaz, "Social Licensing in the Construction Industry: Community and Government Interests," *Construction Law International* 8, no. 1, 2013.

<sup>28</sup> Salim, E. (2003). *Striking a Better Balance: The World Bank Group and Extractive Industries*. World Bank Group.

processes and exercise their right to free, prior, and informed consent (FPIC) throughout all phases of a project.

The Social Licence to Operate (SLO) is widely understood not as a formal or written agreement, but as something intangible and informal (Bice et al., 2017<sup>29</sup>; Franks and Cohen<sup>30</sup>, 2012; Parsons and Moffat, 2014<sup>31</sup>). In reality, projects must deal with a wide variety of stakeholders, each with different values and expectations that need to be respected in order to achieve acceptance (Dare et al., 2014)<sup>32</sup>. Because of this complexity, it is not accurate to think of SLO as a single licence granted by one group. In addition, the degree of acceptance from stakeholders can vary greatly, ranging from outright rejection to strong trust and deep identification with the organisation or project (Boutilier and Thomson, 2011)<sup>33</sup>.

The financial and operational importance of SLO is also considerable. Henisz, Dorobantu and Narthey (2013)<sup>34</sup> demonstrated that up to 72% of the market discount on the net present value of mining assets could be linked to stakeholder conflicts. Franks et al. (2014)<sup>35</sup> estimated that major mining operations facing social opposition can incur costs of approximately USD \$20 million per week due to delays, with early-stage projects facing weekly losses of around USD \$10,000. Such findings reinforce the view that community conflict acts as a natural regulatory mechanism. Boutilier (2014)<sup>36</sup> further argued that the SLO concept rests on the real power of stakeholders to stop projects or impose significant costs when companies fail to maintain acceptance.

It has been over 20 years since the term *Social* Licence to Operate (SLO) emerged in the context of the extractive industries. Even though it is widely used, particularly in mining, there is still no globally accepted definition, agreed approach for companies and organisations to adopt, or clear understanding of what it should explicitly achieve. There is still ambiguity about how SLO should be approached or achieved, depending on whether one is in the Global North or the Global South. For instance, the existence of a

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<sup>29</sup> Sara Bice, Martin Brueckner, and Christof Pforr, “Putting Social License to Operate on the Map: A Social, Actuarial and Political Risk and Licensing Model (SAP Model),” *Resources Policy* 53 (2017).

<sup>30</sup> Daniel M. Franks and Tamar Cohen, “Social Licence in Design: Constructive Technology Assessment within a Mineral Research and Development Institution,” *Technological Forecasting and Social Change* 79, no. 7 (2012).

<sup>31</sup> Richard Parsons, Justine Lacey, and Kieren Moffat, “Maintaining Legitimacy of a Contested Practice: How the Minerals Industry Understands Its ‘Social Licence to Operate’,” *Resources Policy* 41 (2014).

<sup>32</sup> Melanie Dare, Jacki Schirmer, and Frank Vanclay, “Community Engagement and Social Licence to Operate,” *Impact Assessment and Project Appraisal* 32, no. 3 (2014)

<sup>33</sup> Ian Thomson and Robert G. Boutilier, “Social License to Operate,” in *SME Mining Engineering Handbook*, 3rd ed., ed. Peter Darling (Englewood, CO: Society for Mining, Metallurgy, and Exploration. (2011).

<sup>34</sup> Witold J. Henisz, Sinziana Dorobantu, and Lite J. Narthey, “Spinning Gold: The Financial Returns to Stakeholder Engagement,” *Strategic Management Journal* 35, no. 12 (2014).

<sup>35</sup> Daniel M. Franks, Sinziana Dorobantu, and Lite J. Narthey, “Spinning Gold: The Financial Returns to Stakeholder Engagement,” *Strategic Management Journal* 35, no. 12 (2014).

<sup>36</sup> Robert G. Boutilier, “Frequently Asked Questions About the Social Licence to Operate,” *Impact Assessment and Project Appraisal* 32, no. 4 (2014).

conceptual gap in the understanding of SLO from a European perspective became increasingly apparent during the Horizon 2020 MIREU project (2018-2020)<sup>37</sup>. Over the course of the project, it became evident that Europe's strong governance framework anchored in EU institution set Europe apart from countries such as Canada, Australia and Chile that have historically shaped the SLO discourse, pointing to the need for a tailored approach.

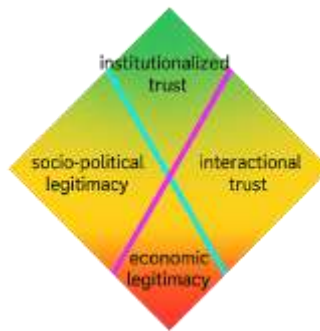


Figure 7: Levels of Social Licence with the Four Factors that Determine the Proportions of Stakeholders at Each Level (Boutilier & Thomson, 2011)

Given these high stakes, there is a clear need for tools to measure the level of social licence that projects hold. Since SLO is dynamic and varies across different cultural and geographic contexts, a robust, reliable, and valid measurement framework is essential.

Following methods used in psychological research, Thomson and Boutilier (2011)<sup>38</sup> proposed a model for developing SLO indicators based on defining the construct clearly, generating measurable items, collecting data, applying statistical selection methods, and validating results against external benchmarks.

This approach enables companies to track changes in community acceptance over time and across different regions, helping them proactively manage their social risks. Thomson and Boutilier’s model conceptualises the Social Licence to Operate as a dynamic and evolving relationship between companies and stakeholders, structured across four progressive levels:

- **Withdrawal**
- **Acceptance**

<sup>37</sup> Pamela Lesser, Katharina Gugerell, Greg Poelzer, Michael Hitch, and Michael Tost, “European Mining and the Social License to Operate,” *The Extractive Industries and Society* 7, no. 3 (2020).

<sup>38</sup> Ian Thomson and Robert G. Boutilier, “Social License to Operate,” in *SME Mining Engineering Handbook*, 3rd ed., ed. Peter Darling (Englewood, CO: Society for Mining, Metallurgy, and Exploration. (2011).

- **Approval and Psychological identification.**

Each level reflects an increasing degree of community support, gradually progressing from basic tolerance, where stakeholders merely accept the project's presence, to active partnership, where they are engaged and supportive, and ultimately reaching a strong sense of shared identity and commitment with the project. Advancement through these levels depends on satisfying three key perceptions among stakeholders:

- **legitimacy (alignment with local values and norms)**
- **Credibility (consistency and truthfulness in actions and communication)**
- **Trust (a genuine demonstration of concern for stakeholder well-being).**

Systematic assessment of these perceptions through surveys and continuous monitoring enables companies to turn the intangible idea of social licence into a practical management tool, helping them identify risks early and strengthen community acceptance throughout the development of a project.

Thomson and Boutilier's model provides a structured approach that begins by recognising the following essential steps:

1. **Understanding our starting point:** recognising that Social Licence is not automatic, but rather something that must be earned and continually maintained through legitimacy, credibility, and trust.
2. **Mapping stakeholders:** identifying all key groups that may be affected by or have an interest in the project, including local communities, Indigenous peoples, government authorities, NGOs, and other relevant stakeholder. A thorough stakeholder mapping exercise ensures that the exploitation company understands the diversity of perspectives and expectations that must be addressed to build and sustain a strong Social Licence.
3. **Assessing our current level of Social Licence:** evaluating our relationship with stakeholders by asking whether we are facing active resistance (Withdrawal), are merely tolerated (Acceptance), are receiving active support (Approval), or have achieved a strong sense of co-ownership and identification (Psychological Identification).
4. **Measuring stakeholder perceptions:** gathering data through surveys, interviews, or focus groups that specifically explore the three key dimensions of Social Licence: legitimacy (whether we are seen as respectful and aligned with local values), credibility (whether we are perceived as truthful and reliable), and trust (whether we are considered genuinely concerned for stakeholder well-being).

5. **Analysing the data:** examining the results to determine our current standing along the four levels of Social Licence, while also identifying any gaps or weaknesses that must be addressed to strengthen stakeholder relationships.
6. **Designing targeted actions:** developing and implementing strategies to improve legitimacy (such as aligning operations with community values), reinforce credibility (by maintaining consistent and transparent communication), and deepen trust (through genuine engagement and the sharing of benefits with stakeholders).
7. **Monitoring and adjusting:** conducting regular reassessments of community perceptions to track progress, measure improvements in our Social Licence, and adapt our engagement strategies based on evolving stakeholder expectations and feedback.

### Expert perspectives

#### 1. Beyond Transparency and Honesty: What Else Matters?

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**Q:** Transparency, honesty, and accountability are often cited as key to achieving a Social Licence to Operate. Do you think we overlook any other fundamental principles?

- **12/20** interviewees emphasised that transparency alone is insufficient. They argued that unless information is tailored to local realities, communicated in accessible ways, and made culturally meaningful, it does not contribute to legitimacy and risks becoming a symbolic gesture.
- **14/20** interviewees explicitly stated that trust cannot be assumed or manufactured through single consultations or data disclosure. They stressed that trust must be earned preferably before operations start through consistent presence, responsiveness to concerns, and demonstrable commitment to shared decision-making.
- **9/10** interviewees from the Global South argued that essential needs such as water, healthcare, education, and jobs, must be addressed as part of any legitimate SLO strategy. They were critical of corporate practices that treat these needs as separate from the core relationship between company and community.
- **7/10** interviewees from the Global North stressed out the need for enforceable standards and institutional clarity. They challenged the reliance on voluntary frameworks and argued that accountability mechanisms are essential for building a credible and sustainable SLO. Especially within the European context.

The interviews reveal a clear divide: among the **10** Global South experts, **8** viewed SLO as a pathway equitable development where the state is often absent or weak. In contrast, among the **10** Global North

experts, **6** saw SLO as a procedural framework operating within strong institutional environments, exposing fundamentally different assumptions about who carries the burden of legitimacy and why.

### **3.3 Mapping, analysis and engagement of communities and stakeholders**

Projects that rely on stakeholder engagement for their success need to carefully assess and define their target groups and develop strategies for involving them. The social licence to operate is often used by companies to safeguard their own interests, but it is also increasingly applied as a tool to promote adherence to norms and values, especially when businesses expand into developing countries.

The term Global South has emerged in recent decades as a replacement for earlier expressions such as underdeveloped countries or third world. This group of nations, primarily located in Africa, Latin America, and South Asia, shares a range of political, geopolitical, and economic characteristics. Common features among these countries include a history of colonisation in recent centuries, lower income levels, greater economic inequality, and more complex challenges related to development and quality of life when compared to the Global North, which is mainly composed of countries in North America and Europe<sup>39</sup>.

Mineral exploitation in Global South countries has historically been highly beneficial for multinational corporations. Companies operating in these regions have often profited from abundant natural resources<sup>40</sup> and less stringent labour and environmental regulations, allowing them to lower production costs and maximise profits<sup>41</sup>.

In contrast to the dynamics often observed in the Global South, the HORIZON 2020 MIREU project (Mining and Metallurgy Regions of Europe) focuses on the concept of Social Licence to Operate (SLO) within a European context. Europe presents a different setting, characterised by strong regulatory frameworks, high public expectations regarding environmental and social responsibility, and an established tradition of civic engagement.

The MIREU project identified a non-exhaustive list of stakeholder groups across Europe that are relevant to mining operations. These include:

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<sup>39</sup> Global South Studies Center, University of Cologne, Concepts of the Global South – Voices from around the World (Cologne: GSSC, 2015).

<sup>40</sup>W. S. Freslon and Paul Cooney, “Transnational Mining and Accumulation by Dispossession,” in Environmental Impacts of Transnational Corporations in the Global South, vol. 33 of Research in Political Economy, ed. Paul Cooney and William Sacher (Leeds: Emerald Publishing Limited, 2018).

<sup>41</sup> Arif Dirlik, “Global South: Predicament and Promise,” *The Global South* 1, no. 1 (2005).

- **Local communities:** landowners, interest groups, local politicians, nearby industries such as tourism, agriculture and manufacturing, second homeowners, reindeer herders, local sports clubs, religious organisations, parish councils, and local media.
- **Regional and national levels stakeholders:** environmental authorities, ministries, members of parliament, political parties, professional associations, unions, national parks, environmental trusts, national heritage organisations, and national media.
- **International stakeholders:** environmental and social NGOs, investors, religious organisations, and international media outlets. This wide range of actors reflects the complex and multi-layered nature of stakeholder engagement required for achieving and maintaining a Social Licence to Operate (SLO) in Europe<sup>42</sup>.

Effective stakeholder engagement of the stakeholders identified above is crucial for the success of projects that impact local communities, particularly in the extractive sector. However, beyond identifying and involving target groups, careful planning must prioritise the early and meaningful participation of communities whose lives and livelihoods are directly affected. When such participation is overlooked or poorly managed, the consequences can be severe.

As demonstrated in recent research, failures in planning community engagement often lead to power imbalances, information asymmetries, and a breakdown of trust between stakeholders. Moffat and Zhang (2014)<sup>43</sup> show that perceptions of procedural fairness, trust, and the quality of community engagement significantly affect the social licence to operate, and that inadequate engagement strategies can exacerbate power disparities and erode trust. Additionally, Kemp and Owen (2013)<sup>44</sup> highlight that neglecting community perspectives and failing to address structural power imbalances can provoke social conflicts and project delays. Their work emphasises the need for proactive, inclusive engagement that genuinely incorporates community voices into decision-making processes from the earliest stages of project development.

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<sup>42</sup> Michael Tost, Pamela Lesser, Greg Poelzer, Utkarsh Akhouri, and Katharina Gugerell, Social Licence to Operate (SLO) Guidelines for Europe, Deliverable D4.3, Horizon 2020 MIREU Project (Leoben: Montanuniversität Leoben, 2021).

<sup>43</sup> Kieren Moffat and Airong Zhang, "The Paths to Social Licence to Operate: An Integrative Model Explaining Community Acceptance of Mining," *Resources Policy* 39 (2014).

<sup>44</sup> John R. Owen and Deanna Kemp, "Social Licence and Mining: A Critical Perspective," *Resources Policy* 38, no. 1 (2013).

A detailed study by Zanini, Migueles, Gambirage and Silva (2023) explored these dynamics through an empirical investigation in Macacos, a small village in Brazil's Iron Quadrangle, located near the sites of two of the country's most devastating mining disasters: Mariana in 2015 and Brumadinho in 2019. Employing extensive document analysis and 209 interviews with residents, authorities, public prosecutors, and mining experts, the study revealed how systematic power imbalances, combined with severe information asymmetries, undermined any real possibility of local community participation in decision-making<sup>45</sup>. Despite the formal existence of participatory mechanisms, the community of Macacos was largely excluded from critical decisions related to mining operations and emergency planning. Most residents were unaware of the risks posed by the seven surrounding tailings dams, and no comprehensive risk communication or effective emergency preparedness measures were implemented.

The findings showed that the governance structures created for community participation were not designed to empower local voices, but often served to legitimise company actions<sup>46</sup>. Public agencies, whose role should have been to mediate and guarantee fairness, frequently lacked the capacity, independence, or willingness to counterbalance corporate power.

Furthermore, economic dependency on the mining company, combined with selective compensation strategies, fragmented the social fabric of Macacos. Some community leaders were perceived to have been co-opted, compensation criteria were opaque and unequal, and the general sense of procedural and distributional injustice deeply eroded trust within the community. Instead of strengthening community agency, the post-disaster arrangements exacerbated divisions, increased social vulnerability, and diminished the community's ability to organise collective action.

The study also contextualised these dynamics within Brazil's broader socio-political culture, characterised by a high tolerance for hierarchical power structures and low levels of institutional trust. In such settings, without strong and transparent frameworks for community engagement, corporate actions tend to reproduce and deepen historical patterns of exclusion and inequality. The Macacos case thus illustrates that tokenistic participation, superficial consultation, or mere compliance with formal rules are insufficient. Genuine, meaningful participation requires intentional strategies to reduce power imbalances, open access to critical information, guarantee procedural and distributional fairness, and build long-term trust.

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<sup>45</sup> Marco Tulio Fundão Zanini, Carmen Pires Migueles, Cinara Gambirage, and Jaison Silva, "Barriers to Local Community Participation in Mining Projects: The Eroding Role of Power Imbalance and Information Asymmetry," *Resources Policy* 86 (2023).

<sup>46</sup> Cristiana Losekann and Bruno Milanez, "The Institutionalization of Participation in the Aftermath of Mining Dam Disasters: The Cases of Mariana and Brumadinho, Brazil," *The Extractive Industries and Society* 8, no. 3 (2021).

The authors conclude that without these conditions, any Social Licence to Operate remains fragile and easily reversible, particularly when future disasters or conflicts expose the underlying inequalities. The lessons from Macacos stress the necessity for extractive industries to embed participatory justice not only as a risk management tool but as an ethical and operational cornerstone of project development from its earliest stages.

## Expert perspectives

### 2. Giving a Voice to Marginalised Groups

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**Q:** One major challenge in SLO is ensuring that marginalised or less-represented groups are heard. How can we address this?

- **13** out of **20** interviewees highlighted that traditional stakeholder engagement often reproduces existing hierarchies, enabling only already-influential actors to speak, while marginalised voices such as women, youth, Indigenous people, informal workers, or migrants are systematically overlooked.
- **10 out of 20** interviewees called for deliberate inclusion mechanisms to ensure marginalised groups are not just invited but actively enabled to participate. They recommended methods such as separate forums, dedicated facilitators, or targeted outreach processes adapted to linguistic, cultural, or gender realities.
- **8** out of **10** Global South experts stressed that marginalisation in their regions is not only social but often structural and institutional, linked to weak governance, lack of legal recognition, and historical exclusion. They emphasised that engagement strategies must address this deeper asymmetry, not just the surface-level visibility of groups.
- **5** out of **10** Global North experts focused more on process design, recommending formal frameworks, transparency standards, and independent monitoring to ensure that participation is inclusive and auditable.
- **7** out of **20** interviewees noted that gender is rarely taken seriously in SLO practice. They pointed out that consultation spaces are often male-dominated, with no measures to identify or support women's priorities, particularly in patriarchal rural or extractive contexts.
- **4** out of **20** interviewees warned that companies often rely on community leaders or local elites who do not represent the broader population and may themselves exclude dissenting or vulnerable voices. These experts called for multi-layered mapping and validation of who actually speaks for whom.

- Only **2** out of **20** interviewees addressed intersectionality explicitly, noting that marginalization is not a single axis but a layered experience shaped by race, gender, age, class, and geography, yet current frameworks rarely account for these complexities.

A clear divide emerged in how inclusion is framed: **8** out of **10** Global South experts viewed marginalization as deeply embedded in historical, structural, and material inequalities, requiring context-sensitive strategies to empower excluded groups. In contrast, **6** out of **10** Global North experts focused on the design and standardization of participatory processes, emphasizing procedural fairness and transparency mechanisms over addressing root causes of exclusion. This reveals a fundamental difference: for the South, inclusion is a justice issue; for the North, it is often a matter of governance quality and stakeholder management.

### **3.4. Participatory project design, implementation**

Building on the work conducted within the Horizon 2020 MIREU project and drawing from the Social Licence to Operate (SLO) Guidelines for Europe, the following section summarizes the key findings and recommendations on how to appropriately identify, understand, and engage stakeholders in the European context. It provides an integrated approach that reflects the specific institutional, cultural, and governance characteristics of Europe, while aligning with internationally recognised standards of responsible stakeholder engagement.

#### **1. Early identification and direct engagement**

Stakeholders should be identified and engaged directly from the earliest stages, even prior to the start of exploration activities. Companies are expected to initiate face-to-face engagement early in order to foster genuine and lasting relationships with communities. Mapping tools such as the PEST analysis should be employed to understand the political, economic, social, and technological context of the area. It is crucial to move beyond merely listing stakeholder categories, and instead to grasp the real relationships, power structures, and broader social dynamics within the community.

#### **2. Understanding stakeholders beyond categories**

Effective engagement requires a deeper understanding of stakeholders than traditional classifications such as landowner, NGO representative, or local authority might suggest. It is essential to recognise the values that stakeholders prioritise, including cultural identity, environmental protection, trust in institutions, and financial security. The use of Stakeholder SLO Frames, as recommended by the MIREU

project, enables a more nuanced understanding of attitudes and beliefs, thus facilitating more meaningful and context-sensitive engagement strategies.

### **3. Building long-term, trust-based relationships**

Stakeholder engagement must not be restricted to formal consultation processes linked to regulatory requirements. Rather, it should be conceived as a continuous and evolving effort that spans the entire life cycle of the project. Companies must prioritise the consistent building and maintenance of trust through transparency, fairness, and responsiveness. Engagement strategies must be designed to endure over time, even as company personnel and project phases change, embedding communication structures that ensure continuity.

### **4. Creating real avenues for two-way dialogue**

Successful engagement depends on the creation of genuine, timely, and accessible two-way dialogue. Companies must establish mechanisms that allow for active public participation, including regular community meetings, participatory environmental monitoring, and effective grievance procedures. Communication must be clear, culturally appropriate, and accessible in the relevant national languages, with all information directed at local stakeholders rather than international audiences or investors.

### **5. Meaningful participation throughout the mining life cycle**

Stakeholder engagement should be maintained consistently across all phases of the mining life cycle, from exploration through to closure and post-closure. Early and ongoing communication is vital to manage both positive expectations and negative concerns that may arise during exploration. Companies must proactively address evolving stakeholder concerns at each stage, recognising that unmanaged expectations can escalate into significant challenges later in the project's development.

### **6. Designing engagement around community values and expectations**

It is essential that engagement processes are carefully aligned with the values and expectations of local communities and wider society. Companies must address a broad spectrum of concerns, including economic benefits, environmental management, cultural heritage, and the fair distribution of both burdens and benefits. Particular sensitivity is required in cases where commodities or project locations are likely to provoke significant societal controversy.

### **7. Ensuring equity and fairness in influence**

Stakeholder engagement must be supported by the principles of equity and fairness. Those most directly affected by a mining project should have greater influence over its design, implementation, and outcomes. Engagement processes must ensure that all interested and affected parties are given a meaningful voice,

with particular attention paid to including vulnerable groups. Ensuring procedural fairness and empowering local voices is fundamental to building legitimate and resilient relationships.

### **8. Respect for Indigenous Peoples and Free, Prior and Informed Consent (FPIC)**

Where Indigenous Peoples are concerned, such as the Sámi communities in northern Europe, companies must fully respect their cultural, political, and land rights. Engagement must be based on the principles of Free, Prior and Informed Consent, ensuring that Indigenous communities have a genuine opportunity to influence decisions that affect them. Special cultural and legal considerations must be integrated into all project planning and engagement activities.

### **9. Managing and resolving conflicts voluntarily**

Anticipating and addressing potential conflict is a core element of responsible engagement. Companies must adopt proactive and voluntary approaches to dispute management, relying on open communication and trust-building rather than legal or regulatory enforcement. Where appropriate, governments can play a mediating role between companies and communities. Negotiated agreements, covering areas such as local employment, environmental protection, and benefit-sharing, are recommended as effective tools for promoting mutual understanding and reducing the risk of conflict.

### **10. Achieving broad-based consensus**

The aim of engagement should be to secure broad-based consensus rather than striving for complete unanimity. A Social Licence to Operate can be considered to exist when a critical mass of stakeholders perceives the engagement process to have been fair, transparent, and inclusive. Trust in both regulatory authorities and company conduct is central to achieving consensus. Attention must be given not only to project outcomes but also to the fairness and legitimacy of the decision-making processes.

### **11. Integration with international standards**

Stakeholder engagement practices should be aligned with internationally recognised standards and frameworks. These include the United Nations Sustainable Development Goals<sup>47</sup>, the OECD Guidelines for Meaningful Stakeholder Engagement<sup>48</sup>, the IFC Performance Standards<sup>49</sup>, and the principles of Free, Prior

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<sup>47</sup> United Nations, *Transforming Our World: The 2030 Agenda for Sustainable Development* (New York: United Nations, 2015).

<sup>48</sup> Organisation for Economic Co-operation and Development (OECD), *OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector* (2017).

<sup>49</sup> International Finance Corporation (IFC), *Performance Standards on Environmental and Social Sustainability* (Washington, DC: IFC, 2012).

and Informed Consent. Alignment with such standards strengthens the credibility of engagement efforts and helps to build trust among stakeholders.

The MIREU project has developed a comprehensive tool box<sup>50</sup> to support the operationalisation of responsible stakeholder engagement. These tools include templates for stakeholder mapping, frameworks for understanding community values, models for grievance mechanisms, and guidance for establishing community-company vision statements. Designed to build relationships based on trust, the MIREU tools provide practical support for implementing the engagement strategies outlined in the SLO Guidelines.

**Practical example: Building trust with Sámi communities and contributing to local development - Boliden's approach:**

Some of the principles outlined above are being put into practice by companies such as Boliden in northern Sweden. Their engagement with Sámi communities and their broader contribution to local development illustrate how early dialogue, respect for Indigenous rights, and socio-economic responsibility can help mitigate the negative impact of mining activities on local people and the environment.

At Laver, within the Semisjaur-Njarg Sámi village, one can find one of Boliden's mine development projects. Boliden has engaged stakeholders from the outset. Meetings with Sámi communities, local authorities, and the public have addressed potential impacts such as the loss of pasture, noise disturbance, and traffic risks involving reindeer. Several large public information meetings were held, involving around 200 people, alongside smaller meetings with specific stakeholder groups. Proposed solutions include building a reindeer collection paddock, installing roadside fencing, and offering compensation for lost grazing areas. Boliden is also applying innovative techniques to reduce the project's environmental footprint by limiting the tailings area by up to 600 hectares<sup>51</sup>.

In addition to stakeholder engagement, Boliden's Aitik mine demonstrates how mining activities can contribute positively to local socio-economic development. Located in the municipality of Gällivare, Aitik has helped reverse negative demographic and economic trends typically found in inland areas of northern Sweden, such as shrinking populations and high unemployment. As a result of the mining industry, Gällivare today has one of the lowest unemployment rates and highest employment rates in Sweden, along with a high average income level.

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<sup>50</sup> Pamela Lesser, Deliverable 4.4: Social License to Operate (SLO) Toolbox and Guidelines. MIREU Project (2021).

<sup>51</sup> Boliden, "Building Trust with Sámi Communities: Boliden's Approach," Boliden, n.d.

Aitik directly employs around 900 people, of whom 93% are local residents, and supports an estimated 1,477 indirect jobs<sup>52</sup>. Women make up over 30% of Aitik's workforce, strengthening gender equality in the local job market. Beyond employment and taxes, Boliden Aitik contributes to the social sustainability of the area through active support for local organisations and initiatives, further enhancing the municipality's resilience. Northern Sweden's long tradition of mining has fostered a level of acceptance towards the industry's impacts. In Aitik, this includes sensitive management of relocations, with Boliden facilitating the re-location of households affected by mining-related subsidence in nearby villages.

### **Practical example: Failure in community trust and governance - The Barroso lithium mine conflict**

In Portugal, the Barroso lithium mine project illustrates the serious risks of failing to engage effectively with local communities. Residents took legal action<sup>53</sup> against Savannah Lithium, arguing that the company violated agreed land boundaries and that the environmental impact assessment overlooked threats to their livelihoods. The legal investigation also exposed corruption linked to mining project approvals, leading to the resignation of Prime Minister António Costa after his Chief of Staff was arrested for involvement in irregularities surrounding lithium and hydrogen projects<sup>54</sup>.

### **Why does effective and equitable community engagement remain so difficult to implement in practice?**

The two examples above show how critical it is to engage with communities in a meaningful and lasting way. Boliden's approach shows that early dialogue, respect for Indigenous rights, and efforts to share benefits can help build trust and secure the social licence to operate. On the other hand, the Barroso conflict highlights what can happen when companies rush the process, ignore local concerns, or fail to be transparent.

The lessons learned tell us that exploitation companies need to take the time to fully understand the communities they work near, not only listening to concerns early on, but also being willing to adjust their plans when needed. At the same time, governments have a key role to play, by setting clear rules, making sure companies follow them, and helping create the conditions for real community participation in decisions that affect their lives.

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<sup>52</sup> Boliden, Resources and Reserves Aitik 2024-12-31 (Stockholm: Boliden, 2025).

<sup>53</sup> Catarina Demony, "Portuguese Municipality to File Lawsuit to Stop Lithium Mine Amid Corruption Scandal," Reuters, (2023).

<sup>54</sup> Catarina Demony, and Sergio Goncalves. "Portuguese PM Quits Over Lithium, Hydrogen Corruption Probe." Reuters, (2023).

The challenges are not experienced equally, companies, governments, and communities each face different barriers when it comes to meaningful engagement. The table below outlines some of the most common challenges for each group.

*Table 4: Challenges and Barriers to Effective Community Engagement by Stakeholder Group (Adapted from Spiller, Htun, & Shah, 2025)*

| Stakeholders | Challenges and Barriers  |
|--------------|--|
| Companies    | <ul style="list-style-type: none"> <li>▪ Few market incentives to community interests</li> <li>▪ Long project lead times discourage deeper engagement</li> <li>▪ Risk of losing control over operations if communities influence decisions- Internal company silos between departments (e.g. HR, environment)</li> <li>▪ Cultural barriers (language, communication styles)</li> <li>▪ Pre-existing distrust in regions with mining history</li> </ul> |
| Governments  | <ul style="list-style-type: none"> <li>▪ Prioritizing economic development over community rights</li> <li>▪ Pressure to fast-track mining permits</li> <li>▪ Capacity constraints for enforcement and oversight</li> <li>▪ Corruption risks in permitting and revenue distribution</li> <li>▪ Investor-State Dispute Settlement (ISDS) pressures limiting action</li> <li>▪ Weak redistribution of mining revenues to local communities.</li> </ul>    |
| Communities  | <ul style="list-style-type: none"> <li>▪ Power imbalances compared to mining companies</li> <li>▪ Legal and physical risks (e.g. criminalization, SLAPP lawsuits)</li> <li>▪ Internal divisions and differing views within the community</li> <li>▪ Lack of negotiation skills and preparation- Limited access to legal advice, technical expertise, and technology</li> </ul>   |

### Expert perspectives

#### 3. Moving Beyond Consultation: True Community Participation

**Q:** Many companies hold community meetings, but affected communities rarely seem to have a real say in decision-making. How can we change that?

- **15** out of **20** interviewees agreed that current consultation practices are largely procedural, extractive, or symbolic, often designed to meet legal or reputational requirements rather than to genuinely share power or shift decisions in response to community input.
- **9** out of **10** Global South experts described consultation as often pre-scripted or pre-decided, where communities are informed of decisions after the fact or are asked to legitimise choices already made. They emphasised that real participation would require early engagement, continuous dialogue, and shared ownership of outcomes.

- **6** out of **10** Global North experts focused on the design of participatory frameworks, recommending stronger guidelines, third-party facilitation, and transparent feedback loops to ensure that consultation results actually influence decisions.
- **7** out of **20** interviewees proposed creating co-governance or joint decision-making mechanisms, such as oversight committees, participatory monitoring groups, or community liaison boards with formal authority. They argued that companies must institutionalise community voice, not just consult it.
- **6** out of **20** interviewees stressed the need for capacity building, noting that meaningful participation is not possible if communities lack access to information, negotiation tools, technical knowledge, or legal support.
- **5** out of **20** interviewees expressed concern about the assumption that formal leaders or local elites adequately represent community interests. They cautioned that relying on these figures as default interlocutors often conceals internal divisions, reinforces existing power hierarchies, and excludes dissenting or marginalised voices from meaningful participation.

A clear contrast emerged: Global South experts tended to see community participation as a matter of redistributive justice, voice, and survival in asymmetrical contexts, while Global North experts framed it more as a question of process quality, risk mitigation, and institutional credibility.

### 3.5 Participation and negotiation processes and CSR Programme

- The modern era of Corporate Social Responsibility (CSR) formally began with Howard R. Bowen's *Social Responsibilities of the Businessman* (1953)<sup>55</sup>, often seen as the cornerstone that introduced CSR as a serious academic subject. Bowen posed questions that still resonate today, such as: "What responsibilities to society may businessmen reasonably be expected to assume?" His work framed business not just as economic actors but as societal agents whose decisions could generate broad social impacts.

Since Bowen's early formulation, the concept of CSR has undergone significant evolution, shaped by decades of theoretical development and practical application. What began as an ethical reflection on the responsibilities of business has progressively shifted towards a strategic necessity, where isolated

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<sup>55</sup> Howard R. Bowen, *Social Responsibilities of the Businessman* (New York: Harper & Brothers, 1953).

philanthropic acts have been replaced by integrated business models aimed at achieving sustainable and inclusive growth (Hillenbrand, Money, & Ghobadian, 2013)<sup>56</sup>.

During the 1950-1970 era, controversies expanded to include economic responsibilities (Friedman, 1962<sup>57</sup>; Hayek, 1944<sup>58</sup>; Levitt, 1958<sup>59</sup>), moral responsibilities (Eells & Walton, 1961)<sup>60</sup>, and voluntary contributions (Manne & Wallich, 1972)<sup>61</sup>. Two basic assumptions emerged: a "social contract" between business and society (Eells & Walton, 1961; Elbing & Elbing, 1964)<sup>62</sup> and firms as "moral agents" (French, 1979; Ozar, 1979)<sup>63</sup>.

During the 1970s and 1980s, researchers took CSR a step ahead by developing corporate social performance (CSP) as a conceptual framework that synthesized economic, legal, ethical, and discretionary elements (Carroll, 1979<sup>64</sup>; Wartick & Cochran, 1985<sup>65</sup>; Wood, 1991<sup>66</sup>). Although CSP brought greater conceptual sophistication, empirical verification remained challenging (Aupperle<sup>67</sup>, 1984; Clarkson, 1995<sup>68</sup>).

From 1990 onwards, the stakeholder school of thought emerged to the forefront. (Wood and Jones 1995)<sup>69</sup> put center stage that previous models failed to make a differentiation between the requirements and perceptions of different stakeholders. By way of reaction, words such as corporate citizenship (Matten &

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<sup>56</sup>Carola Hillenbrand, Kate Money, and Abby Ghobadian, "Unpacking the Mechanism by Which Corporate Responsibility Impacts Stakeholder Relationships," *British Journal of Management* 24, no. 1 (2013).

<sup>57</sup> Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 1962).

<sup>58</sup> F. A. Hayek, "Scientism and the Study of Society," *Economica*, New Series, 11, no. 41 (1944).

<sup>59</sup> Theodore Levitt, "The Danger of Social Responsibility," *Harvard Business Review* 36, no. 5 (1958): 41-50.

<sup>60</sup> Richard Eells and Clarence Walton, *Conceptual Foundations of Business* (Homewood, IL: Richard D. Irwin, 1961).

<sup>61</sup> Henry G. Manne and Henry C. Wallich, *The Modern Corporation and Social Responsibility* (Washington, DC: American Enterprise Institute for Public Policy Research, 1972).

<sup>62</sup> A. O. Elbing and C. J. Elbing, *The Value Issue in Business* (New York: McGraw-Hill, 1964).

<sup>63</sup> David T. Ozar, "The Moral Responsibility of Corporations," in *Ethical Issues in Business: A Philosophical Approach*, ed. Thomas Donaldson and Patricia Werhane (Englewood Cliffs, NJ: Prentice Hall, 1979).

<sup>64</sup> Archie B. Carroll, "A Three-Dimensional Conceptual Model of Corporate Performance," *Academy of Management Review* 4, no. 4 (1979).

<sup>65</sup> Steven L. Wartick and Philip L. Cochran, "The Evolution of the Corporate Social Performance Model," *Academy of Management Review* 10, no. 4 (1985).

<sup>66</sup> Donna J. Wood, "Corporate Social Performance Revisited," *Academy of Management Review* 16, no. 4 (1991).

<sup>67</sup> K. E. Aupperle, "An Empirical Measure of Corporate Social Orientation," in *Research in Corporate Social Performance and Policy*, vol. 6, ed. L. E. Preston (Greenwich, CT: JAI Press, 1984).

<sup>68</sup> Max B. E. Clarkson, "A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance," *Academy of Management Review* 20, no. 1 (1995).

<sup>69</sup> Donna J. Wood and Ronald E. Jones, "Stakeholder Mismatching: A Theoretical Problem in Empirical Research on Corporate Social Performance," *The International Journal of Organizational Analysis* 3, no. 3 (1995).

Crane, 2005<sup>70</sup>), sustainability (Hart, 1997<sup>71</sup>; Zadek, 2002<sup>72</sup>), and inclusive capitalism (London & Hart, 2011)<sup>73</sup> emerged to prominence in the literature.

Since post-2010, the CSR thought changed again to include significant world issues. New ideas such as: shared value (Porter & Kramer, 2011)<sup>74</sup> proposed that companies can create economic value by tackling social problems in ways that also benefit society. (Billis, 2010)<sup>75</sup>, proposed ways of working from business, government and charity so they can make money while also doing good for society. The Base of the Pyramid (BoP) projects (Kolk et al., 2014)<sup>76</sup> demonstrated how firms can develop useful and affordable products for low-income populations through inclusive business models that aim to improve the livelihoods while also opening new markets.

At the same time, more mature concepts like corporate responsibility (CR), corporate citizenship, and sustainability have become progressively more important to business and academic agendas (Matten & Crane, 2005)<sup>77</sup>. Such paradigms have expanded the CSR scope by emphasizing more on ethical governance, stakeholder inclusion, and long-term value creation. Practitioners and scholars alike now share a common interest in addressing complex societal problems and re-defining the business role in a globalised world. This evolution is reflected in global discourse. Ban Ki-moon, past Secretary-General of the United Nations, represented sustainable development as a path towards the future in which economic growth, social justice, environmental stewardship, and effective governance are mutually aligned (United Nations, 2013). In academia, CR has increasingly been used broadly as an all-encompassing term to articulate the multi-dimensional obligations of corporations (Hillenbrand, Money, & Ghobadian, 2013)<sup>78</sup>. (Waddock 2004)<sup>79</sup> describes CR as the extent to which responsibility is embedded in a company's strategies and everyday practices, particularly regarding stakeholders and the environment. This view

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<sup>70</sup> Dirk Matten and Andrew Crane, "Corporate Citizenship: Toward an Extended Theoretical Conceptualization," *Academy of Management Review* 30, no. 1 (2005).

<sup>71</sup> Stuart Hart, "Beyond Greening: Strategies for a Sustainable World," *Harvard Business Review* 75, no. 1 (1997).

<sup>72</sup> Simon Zadek, *The Civil Corporation: The New Economy of Corporate Citizenship* (London: Earthscan, 2002).

<sup>73</sup> Ted London and Stuart L. Hart, *Next Generation Business Strategies for the Base of the Pyramid: New Approaches for Building Mutual Value* (Upper Saddle River, NJ: Pearson Education, 2011).

<sup>74</sup> Michael E. Porter and Mark R. Kramer, "Creating Shared Value," *Harvard Business Review* 89, no. 1–2 (2011).

<sup>75</sup> David Billis, *Hybrid Organizations and the Third Sector* (Basingstoke, UK: Palgrave Macmillan, 2010).

<sup>76</sup> Ans Kolk, Miguel Rivera-Santos, and Carlos Rufin, "Reviewing a Decade of Research on the 'Base/Bottom of the Pyramid' (BOP) Concept," *Business & Society* 53, no. 3 (2014).

<sup>77</sup> Dirk Matten and Andrew Crane, "Corporate Citizenship: Toward an Extended Theoretical Conceptualization," *Academy of Management Review* 30, no. 1 (2005).

<sup>78</sup> Carola Hillenbrand, Kate Money, and Abby Ghobadian, "Unpacking the Mechanism by Which Corporate Responsibility Impacts Stakeholder Relationships," *British Journal of Management* 24, no. 2 (2013).

<sup>79</sup> Sandra Waddock, *Leading Corporate Citizens: Vision, Values, Value Added* (Boston, MA: McGraw-Hill, 2002).

situates CR not as an end point but as a process, a view shared by (Bhattacharya, Korschun, and Sen 2009)<sup>80</sup>, who highlight the need to consider how responsibility is lived out and practiced over time.

While the ideals of corporate responsibility and sustainability have gained much traction, the realities of implementation remain narrower and more technical. Mining, for instance, often practices CSR within the dominant "audit culture" which focuses on compliance and risk management rather than true stakeholder engagement or introspection (Kemp, Owen, & van de Graaff, 2012)<sup>81</sup>.

This approach has serious limitations. Rather than stimulating learning and innovation, audit processes actually work to stifle critical thinking and replicate dominant power relationships within organisations. As such, accountability becomes transactional rather than relational, with external reputation privileged over internal change. Contemporary literature demands a shift towards more dialogical forms of accountability that promote internal conversation, cross-functional collaboration, and adaptive learning (Kemp, Owen, & van de Graaff, 2012). These approaches seek to operationalise CSR not as a preconceived outcome but as a dynamic, context-dependent practice embedded in local realities.

A parallel criticism is beginning to be leveled against the widespread adoption of Environmental, Social, and Governance (ESG) frameworks as well (Passas, 2024)<sup>82</sup>. While ESG was initially developed to bring non-financial risks and impacts into mainstream corporate strategy, its widespread institutionalisation has served to diminish it to a compliance exercise based on performance ratings, disclosure checklists, and investor-oriented metrics (Berg et al., 2022)<sup>83</sup>. Under these circumstances, ESG reporting may reinforce the very same audit culture that limits CSR's transformative potential, privileging measurable outputs over the more profound processes of ethical deliberation and stakeholder engagement (Thompson & Raworth, 2024)<sup>84</sup>. Where ESG is deployed only as a reputational management or investor signaling device, it risks undercutting its own legitimacy by ignoring the subtle, relational processes upon which genuine corporate accountability depends (Jackson, 2018)<sup>85</sup>.

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<sup>80</sup> C. B. Bhattacharya, Daniel Korschun, and Sankar Sen, "Strengthening Stakeholder-Company Relationships Through Mutually Beneficial Corporate Social Responsibility Initiatives," *Journal of Business Ethics* 85, no. 2 (2009).

<sup>81</sup> Deanna Kemp, John R. Owen, and Sarah van de Graaff, "Corporate Social Responsibility, Mining and 'Audit Culture'," *Journal of Cleaner Production* 24 (2012).

<sup>82</sup> Ioannis Passas, "The Evolution of ESG: From CSR to ESG 2.0," *Encyclopedia* 4, no. 4 (2024).

<sup>83</sup> Florian Berg, Julian F. Kölbl, and Roberto Rigobon, "Aggregate Confusion: The Divergence of ESG Ratings," *Review of Finance* 26, no. 6 (2022).

<sup>84</sup> Michael Thompson and Kate Raworth, "Beyond Sustainability Reporting: A Theoretical Framework for Ethical Sustainability Governance," *Corporate Governance and Sustainability Review* 8, no. 3 (2024).

<sup>85</sup> Robert Jackson, *Stakeholder Engagement and Sustainability Reporting*, 1st ed. (Abingdon, UK: Routledge, 2018).

One concrete way of operationalising dialogical accountability is the concept of a Social License to Operate (SLO), which shifts the focus away from formal compliance to community acceptance. Unlike legal permits, SLO is given by local stakeholders whose lives and livelihoods are affected by a company's presence. It reflects the growing recognition that corporate legitimacy is not only a question of regulatory approval but of social consent. However SLO is difficult to apply in practice, with the community definition, representation, and what constitutes adequate consent being particularly problematic (Wilburn and Wilburn 2011)<sup>86</sup>.

### Expert perspectives

#### 4. Balancing Corporate and Community Interests

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**Q:** How do you approach negotiations to balance corporate goals with community needs?

- **12** out of **20** interviewees stated that balancing interests begins with recognising the asymmetry of power and information. They stressed that companies often control resources, legal expertise, and timelines, while communities enter negotiations with limited leverage unless mechanisms are in place to address the imbalance.
- **9** out of **10** Global South experts emphasised the need for companies to move from a mindset of trade-offs to one of co-development. They argued that community wellbeing should not be viewed as a cost or concession but as a condition for long-term viability and legitimacy.
- **7** out of **10** Global North experts focused on formal negotiation frameworks that define roles, responsibilities, and escalation paths. They recommended multi-party agreements, benefit-sharing arrangements, and binding commitments as ways to prevent extractive, one-sided deals.
- **6** out of **20** interviewees noted that communities often negotiate from a place of necessity, not equality. They warned that deals made under economic pressure or lacking legal support can reinforce dependency or long-term disadvantage.
- **5** out of **20** interviewees recommended third-party facilitation or mediation in negotiations, particularly in contexts where mistrust is high or histories of conflict exist. Independent facilitators were seen as essential for levelling the playing field and managing conflict dynamics.

A strong contrast emerged: Global South experts framed negotiation as a space for rebalancing systemic inequities, requiring trust-building, capacity development, and redistribution. Global North experts,

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<sup>86</sup> Kathleen M. Wilburn and Ralph Wilburn, "Achieving Social License to Operate Using Stakeholder Theory," *Journal of International Business Ethics* 4, no. 2 (2011).

meanwhile, focused on governance tools and legal architecture to ensure predictability, transparency, and compliance.

### **3.6 Environmental and social (incl. employment) impacts: management and appraisal**

Building upon the work commissioned by the European Parliament to assess the social and environmental impacts of mining in the EU<sup>87</sup>, there is substantial evidence showing that mining activities in the European Union create a complex mix of social, environmental, and economic impacts that are strongly place-dependent but also connected to global supply chains and economic flows<sup>88</sup>. These impacts are strongly differentiated by operation type, stage of the mining life cycle, and host environment and community characteristics. The need to manage and monetise these effects in a holistic manner is particularly urgent under the context of increasing demand for critical raw materials under the EU Green Deal<sup>89</sup> and related transition policies.

At the EU level, the main instruments for the environmental appraisal of mining projects include the Environmental Impact Assessment (EIA) Directive<sup>90</sup>, the Strategic Environmental Assessment (SEA) Directive<sup>91</sup>, the Mining Waste Directive<sup>92</sup>, the Water Framework Directive<sup>93</sup>, and the Industrial Emissions

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<sup>87</sup> Timo Mononen, Simo Kivinen, Jukka M. Kotilainen, and Jukka Leino, "Social and Environmental Impacts of Mining Activities in the EU," *Resources Policy* 76 (2022).

<sup>88</sup> European Commission, *Critical Raw Materials Act*, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, n.d.

<sup>89</sup> European Commission. (n.d.). *A European Green Deal*.

<sup>90</sup> European Union. Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the Assessment of the Effects of Certain Public and Private Projects on the Environment (Environmental Impact Assessment Directive). *Official Journal of the European Union L 26*, January 28, 2012: 1–21.

<sup>91</sup> European Union. Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the Assessment of the Effects of Certain Plans and Programmes on the Environment (Strategic Environmental Assessment Directive). *Official Journal of the European Union L 197*, July 21, 2001: 30–37.

<sup>92</sup> European Union. Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the Management of Waste from Extractive Industries (Mining Waste Directive). *Official Journal of the European Union L 102*, April 11, 2006: 15–34.

<sup>93</sup> European Union. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy (Water Framework Directive). *Official Journal of the European Union L 327*, December 22, 2000: 1–73

Directive Directive<sup>94</sup>, instruments aiming to minimise negative environmental consequences by requiring assessments of likely impacts and establishing permitting conditions based on best available techniques.

Despite the existence of a comprehensive regulatory framework for environmental appraisal, social impacts including those linked to employment, health, community cohesion, and land use remain insufficiently integrated into mining project evaluation and permitting processes across the European Union. Social Impact Assessments (SIAs) are not uniformly required, and their inclusion is currently limited to a small number of Member States. Where implemented, SIAs offer critical views into potential disruptions to local livelihoods, increased pressure on public services, socio-economic inequalities, and other dimensions of community wellbeing.

Mining activities have the potential to contribute positively to regional economies by generating employment<sup>95</sup>, attracting infrastructure investment, and increasing public revenues. However, these benefits are often uneven and cannot be assumed<sup>96</sup>. Automation, the relatively short operational lifespan of many mines, and fluctuations in global commodity markets can undermine the long-term stability of local economies. In certain cases, mining operations have displaced pre-existing forms of employment, particularly in agriculture, tourism, or traditional livelihoods such as reindeer herding<sup>97</sup>. Moreover, a strong dependency on mining may increase socio-economic vulnerability, particularly in regions where there is insufficient planning for mine closure or a lack of strategies to promote economic diversification<sup>98</sup>.

According to the European Parliament report, the mitigation of adverse impacts remains inconsistent across different projects and regions. Although many companies engage in corporate social responsibility (CSR) initiatives, the effectiveness and transparency of these efforts are often limited by the absence of independent oversight or systematic evaluation. To strengthen impact management, the study recommends the establishment of an open, EU-wide database on mining activities, enhanced public

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<sup>94</sup> European Union. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on Industrial Emissions (Industrial Emissions Directive). Official Journal of the European Union L 334, December 17, 2010: 17–119.

<sup>95</sup> Vidal-Legaz, B., Mancini, L., Latunussa, C. E. L., Nuss, P., & Pennington, D. (2021). Raw materials for the transition to a sustainable society: A review of the environmental, social, economic and governance dimensions. *Environmental Science & Policy*, 121, 79–91.

<sup>96</sup> Kauppila, P., Räisänen, M. L., & Mroueh, U.-M. (2015). Best environmental practices in metal ore mining: Lessons from Finnish operations. *Geological Survey of Finland, Special Paper 79*.

<sup>97</sup> Suopajärvi, L., & Sairinen, R. (2016). Social impact assessment in mining projects in Northern Finland: Comparing practice to theory. *Environmental Impact Assessment Review*, 62, 30–39

<sup>98</sup> Bainton, N., & Holcombe, S. (2018). A critical review of the social aspects of mine closure. *Resources Policy*, 59, 468–478

participation mechanisms, and clearer regulatory requirements for post-closure planning and ecological restoration.

*Table 5: Summary of Environmental and Social Impacts of Mining adapted from Mononen, T., Kivinen, S., Kotilainen, J. M., & Leino, J. (2022)*

| Category                           | Positive Impacts  | Negative Impacts   |
|------------------------------------|---|--|
| Employment opportunities           | Opportunities Direct and indirect job creation; short-term employment boosts; opportunities in related sectors (e.g. logistics, services, construction) | Job instability due to automation and digitalisation; temporary nature of jobs; decline in employment post-closure                                 |
| Local and Regional Economic Impact | Increase in local procurement; rise in public revenues through taxes and royalties; potential multiplier effects  | Economic dependence on mining; vulnerability to global commodity price volatility; insufficient integration with broader local economic strategies |
| Infrastructure and Services        | Investment in local infrastructure (roads, energy, water); improved access to services  | Strain on public infrastructure; unequal access to benefits  |
| Community and Social Cohesion      | Potential for community development projects and local partnerships   | Disruption to social cohesion; cultural displacement; loss of traditional practices  |
| Environmental Quality              | Potential for land rehabilitation if restoration is properly planned and executed   | Soil, air, and water pollution; long-term environmental degradation; biodiversity loss   |
| Land Use and Livelihoods           | Temporary increase in land value and economic activity  | Displacement of agriculture, tourism, and traditional livelihoods (e.g. reindeer herding)  |
| Governance and Participation       | Opportunities for local consultation and inclusion in planning if properly implemented  | Limited or superficial public participation; inconsistent application of Social Impact Assessments (SIAs)  |

### Expert perspectives

#### 5. The Role of Employment in Social Licence to Operate

**Q:** How should employment integration be managed to effectively support SLO?

- **14** out of **20** interviewees identified employment as a core pillar of legitimacy, especially in contexts where economic alternatives are limited. They emphasised that hiring practices shape how communities perceive fairness, inclusion, and tangible benefit from projects.

- **9** out of **10** Global South experts stressed that local employment is often the most visible and immediate indicator of corporate commitment. They argued that failure to employ locally can quickly erode trust, inflame tensions, and trigger resistance, especially where expectations are high and unemployment is endemic.
- **6** out of **10** Global North experts supported employment integration but framed it more in terms of long-term skills development, workforce planning, and alignment with labour regulations or union standards.
- **8** out of **20** interviewees warned that companies often overpromise or miscommunicate job expectations, leading to frustration when few or temporary roles materialise. They urged companies to be transparent about what jobs are realistic, for how long, and under what conditions.
- **5** out of **20** interviewees noted that local hiring must be linked to education and training investments, especially where skill gaps exist. Without this, locals are often passed over for technical roles, fuelling perceptions of exclusion despite proximity to operations.
- **4** out of **20** interviewees raised concerns that employment benefits are often unevenly distributed, favouring men, younger workers, or politically connected individuals. They stressed the need for inclusive hiring strategies that address gender, age, and social inequality.

A strong contrast emerged: **9** out of **10** Global South experts viewed employment as a non-negotiable and immediate indicator of legitimacy, often tied to basic survival, social stability, and visible benefit. In contrast, **6** out of **10** Global North experts framed employment more as a strategic element within broader workforce development plans, focusing on skills training, regulatory alignment, and long-term labour planning. This reflects a deeper divide: for the South, employment is an urgent socio-economic demand; for the North, it is a structured component of responsible operations.

### 3.7 Risk and mitigation planning and conflict management

In line with widely recognised international frameworks such as the Sustainable Development Goals (SDGs)<sup>99</sup> and the Paris Agreement<sup>100</sup>, as well as evolving societal expectations like ICMM's Mining

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<sup>99</sup> United Nations, Transforming Our World: The 2030 Agenda for Sustainable Development (New York: United Nations, 2015)

<sup>100</sup> United Nations Framework Convention on Climate Change (UNFCCC), Paris Agreement (Bonn: UNFCCC, 2015)

Principles<sup>101</sup>, companies are expected to take greater responsibility in contributing to social responsibility. This was reinforced in 2011 with the United Nations Guiding Principles on Business and Human Rights (UNGPs)<sup>102</sup>, which established a clear set of principles that all companies should follow to ensure respect for human rights. Among these, the UNGPs call for both states and the private sector to set up grievance mechanisms (GMs) for individuals and communities who are, or could be, adversely affected by a project. Over the past decade, several organisations have produced practical and thoughtful resources to help companies design and implement effective GMs. Among the most relevant are:

- **ICMM’s Handling and Resolving Local Level Concerns & Grievances**<sup>103</sup>, which focuses on helping mining companies respond to community concerns in a timely, respectful, and culturally appropriate way. It highlights the value of early dialogue and local-level resolution to prevent escalation and strengthen trust.
- **IFC’s Addressing Grievances from Project-Affected Communities**<sup>104</sup>, a comprehensive reference that outlines core principles such as legitimacy, accessibility, predictability, and transparency. It also offers step-by-step guidance for integrating GMs into broader project management systems.
- **IPIECA’s Operational Level Grievance Mechanisms**<sup>105</sup>: shares lessons from oil and gas companies on how grievance mechanisms are being used in practice. The document highlights challenges, successful strategies, and areas for improvement, with a focus on ensuring that mechanisms are trusted, fair, and able to deliver meaningful outcomes. These resources are widely used across sectors and provide a strong foundation for building grievance mechanisms that are effective, credible, and aligned with international standards.

### Expert perspectives

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<sup>101</sup> International Council on Mining and Metals (ICMM), *ICMM’s Mining Principles: Performance Expectations* (London: ICMM, 2020).

<sup>102</sup> United Nations Human Rights Council, *Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy” Framework (A/HRC/17/31)* (New York: United Nations, 2011).

<sup>103</sup> International Council on Mining and Metals (ICMM), *Handling and Resolving Local-Level Concerns and Grievances: Human Rights in the Mining and Metals Sector* (London: ICMM, 2019).

<sup>104</sup> International Finance Corporation (IFC), *Addressing Grievances from Project-Affected Communities: Guidance for Projects and Companies on Designing Grievance Mechanisms* (Good Practice Note No. 7) (Washington, DC: IFC, 2009).

<sup>105</sup> International Petroleum Industry Environmental Conservation Association (IPIECA), *Operational Level Grievance Mechanisms: IPIECA Good Practice Survey* (London: IPIECA, 2012).

## 6. Risks Assessment, Mitigations Strategies and Conflict Management: Ensuring Fair and Transparent Grievance Mechanisms

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**Q:** How can complaint and feedback systems be designed to be fair and transparent while also incorporating proactive strategies to prevent conflicts rather than merely reacting to them?

- **13 out of 20** interviewees stated that grievance mechanisms are often formalistic and underused because communities distrust them, see them as ineffective, or fear retaliation. They stressed that unless these systems are designed with input from affected people, they are unlikely to be perceived as legitimate.
- **9** out of **10** Global South experts emphasised that conflict prevention requires early, ongoing relationship-building, not just complaint boxes or legal pathways. They described grievance mechanisms as reactive tools that cannot replace dialogue, trust, or co-creation of solutions.
- **6** out of **10** Global North experts focused on compliance, accessibility, and traceability. They supported independent oversight and audit trails to ensure grievance processes are transparent, timely, and accountable to external standards.
- **6** out of **20** interviewees advocated for community-led grievance channels, such as trusted local intermediaries, dialogue platforms, or joint resolution panels that reflect community norms and governance practices rather than imported procedural models.
- **5** out of **20** interviewees recommended integrating grievance mechanisms into a broader conflict prevention strategy, including early warning indicators, joint risk assessments, and regular feedback loops to identify tensions before they escalate.
- Only **2** out of **20** interviewees addressed the need to ensure grievance mechanisms are gender-sensitive or inclusive, revealing a gap in how vulnerability, power, and risk are conceptualised in these systems.

A clear contrast emerged: **9** out of **10** Global South experts viewed grievance mechanisms as part of a wider strategy to address power imbalances, build trust, and repair harm, while **6** out of **10** Global North experts saw them as tools to ensure compliance, transparency, and procedural fairness. This reflects a fundamental divergence between relational and institutional models of legitimacy and accountability.

### 3.8 Anticipating site closure: sustainability and community transition beyond the investment/project

The preceding sections demonstrate that mine closure is not merely a managerial, technical, or engineering phase within the mine life cycle. Rather, it represents a significant social episode that affects individuals, families, communities, and local institutions. In this way, from a social standpoint, the after mine can be understood as a complex and context-specific transition, that generates significant

transformations in livelihoods around the mining operation. Just as mining activities require a Social Licence to Operate, granted by those affected, it is these same stakeholders who must be engaged in shaping the closure process.

Throughout the life of a project, many stakeholders emerge with overlapping and sometimes conflicting interests. Each has their own role, stake, and expectations regarding what should follow after mining ceases. As closure circumstances differ considerably from one context to another, so do the associated social challenges and opportunities, which intersect with broader development trajectories, socio-economic vulnerabilities, and legal and institutional frameworks.

The social dimensions of extractive activities continue to present significant challenges for the sector, including both large-scale mining and the oil and gas industries. These dimensions include socio-economic impacts, human rights issues, gender relations, cultural heritage, and broader questions of human development. Such issues are increasingly subject to scrutiny by an organised civil society and by local communities who are not always very welcoming of mining operations and frequently question whether mining constitutes the most appropriate use of land<sup>106</sup>. This growing scepticism is compounded by two persistent challenges. First, the full costs associated with mine closure are often poorly understood, not only by companies but also by host governments and other key actors<sup>107</sup>. Second, as various commentators have noted, parts of the industry continue to delay closure planning or attempt to externalise the financial and social responsibilities linked to closure<sup>108</sup>.

As stated in *The Social Aspects of Mine Closure: A Global Literature Review* by the Centre for Social Responsibility in Mining<sup>109</sup> at the University of Queensland, the language used to describe mine closure, particularly its social dimensions, varies widely across academic and industry contexts. This variability has important implications for how the social aspects of closure are understood and managed.

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<sup>106</sup> Gavin Hilson and Roy Maconachie, "Community Resistance and the Politics of Mining in the Global South," *The Extractive Industries and Society* 17 (2024).

<sup>107</sup> Jessica Edwards and Ashleigh Maritz, "Social Aspects of Mine Closure: The Elephant in the Room," in *Mine Closure 2019: Proceedings of the 13th International Conference on Mine Closure*, ed. A. Fourie and M. Tibbett (Perth: Australian Centre for Geomechanics, 2019).

<sup>108</sup> Jessica Edwards and Ashleigh Maritz, "Social Aspects of Mine Closure: The Elephant in the Room," in *Mine Closure 2019: Proceedings of the 13th International Conference on Mine Closure*, ed. A. B. Fourie and M. Tibbett (Perth: Australian Centre for Geomechanics, 2019).

<sup>109</sup> Nicholas A. Bainton and Sarah Holcombe, *The Social Aspects of Mine Closure: A Global Literature Review* (Brisbane: Centre for Social Responsibility in Mining, Sustainable Minerals Institute, The University of Queensland, 2018).

The review highlights the increasing use of terms such as ‘social closure’ and ‘social mine closure’ to refer to the societal impacts and community-level processes involved in mine closure. These terms have been in circulation for over a decade and are becoming part of mainstream discourse within the global mining sector. The International Council on Mining and Metals (ICMM) was one of the first to adopt the term, using it in a paper presented at the inaugural Mine Closure Conference in 2006. There, it was introduced as part of an integrated approach to closure planning<sup>110</sup>.

By 2016, the term had gained further definition, as demonstrated in a case study<sup>111</sup> presented by Anglo American at the same conference. This study, focused on a coal mine in South Africa, outlined a structured method for social closure planning and treated it as a distinct and rigorous process rather than a subsidiary to environmental concerns. Other documented examples, such as review of practices in South Africa and Costa’s study on New Gold’s operations in Mexico<sup>112</sup>, illustrate how the concept of social closure is being refined and increasingly treated as a distinct aspect of mine closure planning.

In parallel with the growing recognition of the social dimensions of closure planning, the evolving terminology reflects a broader shift in how mine closure is being conceptualised not only as an end-of-life technical task, but as a multidimensional transition encompassing social, environmental, and economic considerations. In response to this shift, a range of international organisations and government bodies have developed comprehensive guidelines to support the design and implementation of responsible mine closure. These resources provide practical tools for integrating technical, environmental, and social aspects and emphasise stakeholder engagement, planning, and post-closure management. The following are among the most widely referenced and influential guidelines currently shaping closure practices across jurisdictions in both the global North and South:

- **International Council on Mining and Metals (ICMM) - Integrated Mine Closure:** Good Practice Guide<sup>113</sup> (2nd edition, 2019): Provides a comprehensive framework for closure planning as a continuous and iterative process beginning early in the mine life. Emphasises stakeholder

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<sup>110</sup> Anne-Marie Fleury and Anne S. Parsons, “Integrated Mine Closure Planning,” in Proceedings of the First International Conference on Mine Closure, ed. A. Fourie and M. Tibbett (Perth: Australian Centre for Geomechanics, 2006).

<sup>111</sup> Ernst F. Heymann and Peter R. Botha, “Social Closure Planning: Scoping, Developing and Implementing – A Case Study,” in Proceedings of the 11th International Conference on Mine Closure, ed. A. B. Fourie and M. Tibbett (Perth: Australian Centre for Geomechanics, 2016).

<sup>112</sup> Janis Stacey, André Naude, Michelle Hermanus, and Philip Frankel, The Socio-Economic Aspects of Mine Closure and Sustainable Development: Literature Overview and Lessons for the Socio-Economic Aspects of Closure (Report 1 of 2) (Johannesburg: Centre for Sustainability in Mining and Industry, 2010).

<sup>113</sup> International Council on Mining and Metals. (2019). Integrated mine closure: Good practice guide (2nd ed.)

engagement, risk-based decision-making, financial provision, and clear closure objectives aligned with post-mining land use.

- **Australian Government - Leading Practice Sustainable Development Program for the Mining Industry:** Mine Closure (2016)<sup>114</sup> Recognised for its practical orientation, this guide outlines best practices in mine closure planning, implementation, and relinquishment. It addresses technical, environmental, economic, and social considerations, including progressive rehabilitation and transparent stakeholder communication.

- **Canadian Mine Closure Frameworks (e.g. MAC's Towards Sustainable Mining)**<sup>115</sup>  
The Mining Association of Canada's TSM initiative includes detailed protocols for closure and reclamation, with a strong focus on Indigenous engagement, environmental monitoring, and accountability. Promotes closure as a shared responsibility, supported by transparent reporting and third-party verification.

- **World Bank / International Finance Corporation (IFC) Guidelines**<sup>116</sup>: Used particularly in internationally financed projects, these guidelines establish standards for closure planning, environmental rehabilitation, financial assurance, and stakeholder consultation. The IFC's Environmental, Health and Safety (EHS) Guidelines for Mining provide baseline expectations across jurisdictions.

### Expert perspectives

#### 7. Anticipating Site Closure: Ensuring Sustainability Beyond the project

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**Q:** Many discussions focus on what happens during mining operations, but what about after?  
How can companies ensure a sustainable transition for communities?

- **11** out of **20** interviewees stated that site closure is rarely addressed meaningfully during project planning. They warned that communities are often left with environmental degradation, social dislocation, and no economic alternatives when operations cease.

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<sup>114</sup> Australian Government, Department of Industry, Innovation and Science. (2016). Mine closure: Leading practice sustainable development program for the mining industry.

<sup>115</sup> Mining Association of Canada – TSM Closure and Reclamation Protocol: Mining Association of Canada. (2021).

<sup>116</sup> International Finance Corporation. (2007). Environmental, health, and safety guidelines for mining. Washington, DC: World Bank Group.

- **8** out of **10** Global South experts emphasised the need for closure planning from the outset, integrated into project design and stakeholder engagement. They argued that sustainability is not a final-phase issue but a long-term process that must include skills training, infrastructure handover, and economic diversification.
- **7** out of **10** Global North experts focused on institutional and regulatory frameworks for closure, including mandatory closure plans, financial sureties, and post-closure monitoring. They viewed oversight and enforceability as key to ensuring long-term accountability.
- **9** out of **20** interviewees called for community-driven transition plans, where affected populations participate in defining post-mining futures. They stressed that communities should not be passive recipients of CSR investments but co-owners of the exit strategy.
- **6** out of **20** interviewees pointed out that closure often intensifies existing inequalities, especially where short-term jobs disappear and infrastructure deteriorates. They warned that women, youth, and informal workers are typically left most vulnerable.
- **5** out of **20** interviewees recommended that companies invest in alternative livelihood development, such as local enterprises, agriculture, tourism, or service economies, to mitigate dependency and reduce post-closure shock.
- Only **3** out of **20** interviewees mentioned psychosocial or cultural impacts of closure, such as loss of identity, community dislocation, or intergenerational trauma in areas long shaped by extractive industry presence.

A clear contrast emerged: Global South experts framed closure as a social and economic justice challenge, requiring redistribution, capacity-building, and participatory planning. Global North experts prioritized compliance and regulatory instruments to enforce environmental and financial obligations after closure.

## 4. Conclusion and Next Steps

The WIDEX Knowledge Plan outlined in this deliverable presents a coherent, interdisciplinary, and forward-looking framework for capacity-building in the field of critical raw materials (CRMs). Anchored in Life Cycle Thinking, the plan addresses the environmental, economic, and social pillars of sustainability by combining theoretical knowledge with practical application. Through its two core components—Task 4.1, focusing on Life Cycle Assessment (LCA), Life Cycle Costing (LCC), and CRM circularity, and Task 4.2, addressing Social Assessment and the Social License to Operate (SLO)—the Plan provides a structured foundation to foster responsible innovation and evidence-based decision-making.

The environmental and economic modules under Task 4.1 will equip TUKE participants with analytical tools and methodologies to assess and reduce the environmental impacts and costs across the life cycle of materials and technologies. These capabilities are essential for promoting resource efficiency and sustainable procurement practices within the CRM sector. Task 4.2 complements this by tackling the social dimension of sustainability, emphasizing the importance of stakeholder engagement, community acceptance, and ethical governance. Through a harmonized literature review and expert interviews, the task operationalizes the concept of SLO and aligns it with global standards and regional realities.

Table 6: Consolidated KT plan in the Area of Sustainability, Circularity and Social Assessment for CRMs

| Responsible      | Day 1   | Day 2   | Day 3  | Day 4  |
|------------------|---|---|--|--|
| <b>MNLT</b>      | <ul style="list-style-type: none"> <li>▪ LCA module I: Legislation overview</li> <li>▪ LCA module II: LCA fundamentals</li> <li>▪ LCC module</li> </ul> | <ul style="list-style-type: none"> <li>▪ LCA module III: LCA in the CRM sector</li> <li>▪ CRM circularity module</li> </ul> | <ul style="list-style-type: none"> <li>▪ LCA module IV: Practical showcase of SimaPro</li> </ul> | <ul style="list-style-type: none"> <li>Lab tour guide: Physical demonstration of recycling process</li> </ul>  |
| <b>CONSENTIA</b> | <ul style="list-style-type: none"> <li>▪ 1<sup>st</sup> SLO workshop: Social Acceptance vs Social license to operate</li> </ul>                         | <ul style="list-style-type: none"> <li>▪ 2<sup>nd</sup> SLO: Balancing Corporate and Community Interests</li> </ul>         | <ul style="list-style-type: none"> <li>▪ 3<sup>rd</sup> SLO: MIREU SLO toolbox</li> </ul>        | <ul style="list-style-type: none"> <li>▪ 4<sup>th</sup> SLO: The after mine: How can a sustainable transition for communities be ensured?</li> </ul> |

The Knowledge Plan will now transition into the implementation phase, consisting of intensive on-site and online training sessions. TUKE participants will engage in structured theoretical modules and practical demonstrations, including the application of LCA using SimaPro software, hands-on exploration of circularity strategies, and CRM valorization processes demonstrated in MNL T's facilities. Parallel to this, CONSENTIA will deliver four in-depth workshops addressing key societal themes, with a strong focus on how to integrate social responsibility in raw materials projects through participatory governance, conflict sensitivity and post-extraction community resilience.

These training activities are not only a mechanism for knowledge transfer but also an opportunity to establish a shared language around sustainability, promote cross-sectoral dialogue, and reflect critically on the intersection of technology, economy, and society. By embedding the three dimensions of sustainability into a unified training experience, the programme strengthens TUKE's ability to contribute to a greener, more ethical CRM sector.

Immediate next steps include the finalization of the workshop content, confirmation of external speakers and domain experts, and the commencement of training sessions in alignment with the outlined timeline. Participant feedback will be systematically collected to adjust and refine the programme throughout its delivery, ensuring continuous improvement and maximum impact.

Ultimately, this activity contributes directly to the overarching goals of the WIDEX project: enabling more sustainable and socially accepted value chains, enhancing regional innovation capacity, and reinforcing Europe's strategic autonomy in the supply and management of critical raw materials.

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