

Deliverable 6.3

Local information and communication activities (1) Stakeholder mapping

Virginia del Río, At Clave
Juan Requejo, At Clave
Ramón Rodríguez, At Clave

23/12/2023



Funded by
the European Union

Local information and communication activities (1). Stakeholder mapping

Authors: Virginia del Río, Juan Requejo and Ramón Rodríguez (At Clave)

Technical References

Project Acronym	METALLICO
Project Title	Demonstration of battery metals recovery from primary and secondary resources through a sustainable processing methodology
Project Coordinator	IDENER
Project Duration	January 2023- December 2026 (48 months)

Deliverable No.	6.3
Dissemination level ¹	PU
Work Package	WP6 Social participation, stakeholder involvement and networking
Task	6.3 Stakeholder engagement
Lead beneficiary	At Clave
Contributing beneficiary(ies)	Idener
Due date of deliverable	31/12/2023
Actual submission date	23/12/2023

¹ PU = Public PP = Restricted to other programme participants (including the Commission Services) RE = Restricted to a group specified by the consortium (including the Commission Services) CO = Confidential, only for members of the consortium (including the Commission Services)

Document history

V	Date	Beneficiary	Authors
1	December 2023	At Clave	Virginia del Río Ramón Rodríguez Juan Requejo
2	December 2023	Idener	María González-Moya
3	December 2023	At Clave	Virginia del Río

Summary

This deliverable is aimed to describe the process undertaken to elaborate the “stakeholder mapping” within the METALLICO project, which represents the first step to build a robust stakeholder involvement or engagement strategy. “Stakeholder mapping” refers to the identification and graphical representation of all stakeholders who may be affected by the actions of the project. This can include individuals, groups, or a variety of organizations that may have an interest in the initiative.

In the context of raw materials and circular economy, understanding the diverse array of stakeholders is crucial. The final categories of stakeholders have been the following. These categories also include a list of subcategories.

- Industry.
- Clusters & Associations.
- Policy agents and public administration.
- Civil society.
- Academia and RTOs.
- NGOs.
- Media.

The main instruments used have been: an evolving stakeholder database (+200 entries up to date) and the detailed “stakeholder profile cards” which have provided a granular view of interests, influences, and expectations, enabling a strategic approach to a stakeholder engagement plan or strategy. They serve not just as repositories of information but as frameworks for dialogue, helping to pinpoint areas of common interest and potential conflict. The comprehensive stakeholder mapping has provided us with a better understanding of the ecosystem of actors around METALLICO and has provided tools to communicate and involve them in the project.

Disclaimer

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Acknowledgement

The project has received funding from the European Union's Horizon Europe- the Framework Programme for Research and Innovation (2021-2027) under grant agreement no 101091682.



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1. Introduction

This deliverable represents a foundational phase in Work Package 3.3's task of "Stakeholder engagement", specifically focusing on "Stakeholder identification and mapping". From the outset, the METALLICO project has been committed to incorporating the continuous participation of a diverse spectrum of stakeholders throughout the various stages of the project.

Social aspects and public participation are integrated into the project in a double sense:

- 1) To deepen the knowledge of the bases of the **gap between the demonstrable scientific facts and the social perception** of extractive activities and the transformation of mining resources. This will help to create communication and engagement instruments that improve their social awareness.
- 2) To integrate the **participation** of the local communities and relevant stakeholders, by providing transparent and early communication of planned activities.

This design is based on the premise that the Social Acceptance of an activity, and also of the project, has different scales of influence: from the most immediate local level (community acceptance), generally concerned with health, environmental, socio-economic and identity issues, to the more general scale of public opinion, in which the media and social networks play a fundamental role (societal acceptance). The METALLICO project works on these different scales and their interrelationships, as social agents are interconnected and a global and dynamic vision of the "stakeholder map" is necessary.

The **perception** and **opinion** of the different collectives and society, in general, will be taken into account in the project through various channels and by looking for attractive and innovative formats that address the different target audiences, in addition to the conventional and widely used ones.

*METALLICO aims to proceed with an exhaustive preliminary analysis of stakeholders at the different scales of influence of the project, in order to **design actions** to suit each typology.* Nowadays, society is often saturated with information and time demands for different activities, including participatory ones, so actions will be designed in following steps to be motivating and well received by the different social groups and stakeholders, and adapted to the needs of each target group.

1.1. Stakeholder mapping

The circular economy has significant implications for the mining sector, which has traditionally been viewed as linear and resource-intensive. As the industry transitions towards a more sustainable and circular model, stakeholder engagement emerges as a critical component to facilitate this shift.

Stakeholder engagement involves inclusive dialogues and collaborations with all parties affected by, or interested in, the mining operations. This includes not just mining companies and their employees, but also local communities, governments, environmental groups, investors, and others who have a stake in the mining sector's operations and impacts.

Engagement with stakeholders is vital for several reasons:

- Helps mining companies **understand** and **respond** to the expectations and concerns of the community and other groups. This can improve social acceptance and foster a more harmonious relationship between the company and the community, ultimately contributing to the social license to operate.
- Provides valuable insights into how mining operations can be made **more circular and sustainable**. Different stakeholders can bring different perspectives and ideas, which can lead to more innovative and effective solutions.
- Contributes to **better decision-making and planning**, by ensuring that a broad range of interests and potential impacts are considered. This can enhance the long-term sustainability and profitability of mining operations, as well as their acceptability and benefits to society.

The first step to build a robust stakeholder involvement or engagement strategy is to design a “stakeholder map”. Therefore, **stakeholder mapping** refers to the identification and graphical representation of all stakeholders who may be affected by the actions of an organization or project. This can include individuals, groups, or a variety of organizations that may have an interest in the initiative. The database of METALLICO project stakeholders so far is available as an annex to this document, although it must be considered that it is constantly evolving as the project moves forward.

The main objective of 'stakeholder mapping' is to understand who these stakeholders are, what their interests, expectations, and levels of influence are in the project or organization. This analysis can help to manage relationships with stakeholders more effectively, anticipate potential challenges, and make informed strategic decisions.

In practice, 'stakeholder mapping' is often carried out using visual tools such as maps or matrices that show the relationship between stakeholders, their interests, and their impact on the project or organization.

The purpose of **stakeholder mapping** in this report is to identify and categorize the key entities involved in the raw materials sector and specifically those related to the circular economy of CRM.

2. Methodology

The methodology section of this deliverable delineates the systematic approach undertaken to identify and map stakeholders integral to the mining and raw materials sector's shift towards a sustainable and circular model. The identification of stakeholders is not merely about cataloguing entities but understanding the intricate network of relationships, influences, and potential for collaboration within the industry.

Our approach has been methodical and multifaceted, involving the creation of a comprehensive database to capture and organize a vast array of data. This includes stakeholder categories, their roles, levels of influence, and their interconnectedness within the circular economy. The methodology is dynamic, accommodating the continuous evolution of stakeholder information as the project progresses.

We have emphasized the importance of a thorough and inclusive process that spans the identification of primary and secondary information sources, meticulous data collection, and the systematic organization of this information to facilitate easy access and analysis. By doing so, we ensure that our database is not only a repository of information but also a strategic tool for ongoing stakeholder engagement and the effective dissemination of project findings.

Through this methodology, METALLICO aims to provide a foundational understanding that informs all subsequent project activities, ensuring that stakeholder engagement is rooted in a deep and nuanced understanding of the diverse actors that comprise the mining sector. This introduction sets the stage for a detailed exposition of the methods employed in the stakeholder mapping process:

2.1. Construction of database structure

The first step has been creating a database to collate and organize our findings. This database consists of several fields including stakeholder category, subcategory, stakeholder name, stakeholder description, country, stakeholder URL, associated project or mine, and general references (urls). This structure allows for easy categorization and accessibility of information.

2.1.1. Identification of main stakeholder categories

In the context of raw materials and circular economy, understanding the diverse array of stakeholders is crucial. To identify the main categories of stakeholders this report has taken cues from the Tarantula sister EU project and added some own insights.

The final categories of stakeholders are:

- **Industry.** Entities within the industry category comprise organizations and corporations engaged in the extraction, processing, and production of mining resources. They are primarily profit-driven and contribute to the economic growth and employment in the regions they operate. This category is central to the mining sector, encompassing a range of operations from exploration to processing and recycling of minerals.
- **Clusters & Associations.** Groups of interconnected companies, specialized suppliers, service providers, and associated institutions in the mining sector, collaborating to improve competitiveness, innovation, and collective growth.
- **Policy agents and public administration.** Governmental and non-governmental entities that formulate, oversee, or influence policies and regulations affecting the mining sector.
- **Civil society.** Community-based groups, trade unions, media, and other non-governmental organizations interested in or affected by mining operations.
- **Academia and RTOs.** Educational, research, and technological institutions dedicated to advancing knowledge, technology, and innovation within the mining sector.
- **NGO.** Organizations working on environmental, social, and policy issues related to mining, advocating for responsible practices and community engagement.
- **Media.** Entities disseminating information and shaping public opinion regarding mining operations or related topics.

These categories also include a list of subcategories, they are presented on the following table and graph. The subcategories of key agents are distributed across different types that reflect their function and scope within the industry.

In the industry category, we can find from primary mining companies, which are the driving force behind exploration and extraction of mineral resources, to processing and recycling entities, which are responsible for recovering the different Raw Materials. Technology providers and research entities are constantly seeking to improve mining operations, while contractors, suppliers, and services offer the necessary support for the execution of mining operations. Investors and due diligence entities ensure the flow of capital and compliance with regulations, respectively.

Clusters and association groups interconnect companies, while specialized suppliers also collaborate to boost competitiveness and innovation. Technological platforms and public-private partnerships are examples of how collaboration between different actors is promoted for mutual benefit and advancement of the sector.

Policy agents range from government departments and regulatory bodies to local governments and international political organizations, all influencing the creation and application of policies and regulations affecting mining. Additionally, legislative bodies and research and advisory entities contribute to the creation and reform of laws and provide specialized knowledge that helps shape the sector's policies.

Civil society, composed of local associations, unions, media and other interest groups (and also individuals) plays a crucial role in representing the interests of citizens (and specifically workers) disseminating information and influencing public opinion on these topics (from mining operations to recovering different RM).

The academic realm and research and technology organizations (RTOs) focus on education, research and technological advancement, contributing significantly to knowledge and innovation in the whole lifecycle of minerals.

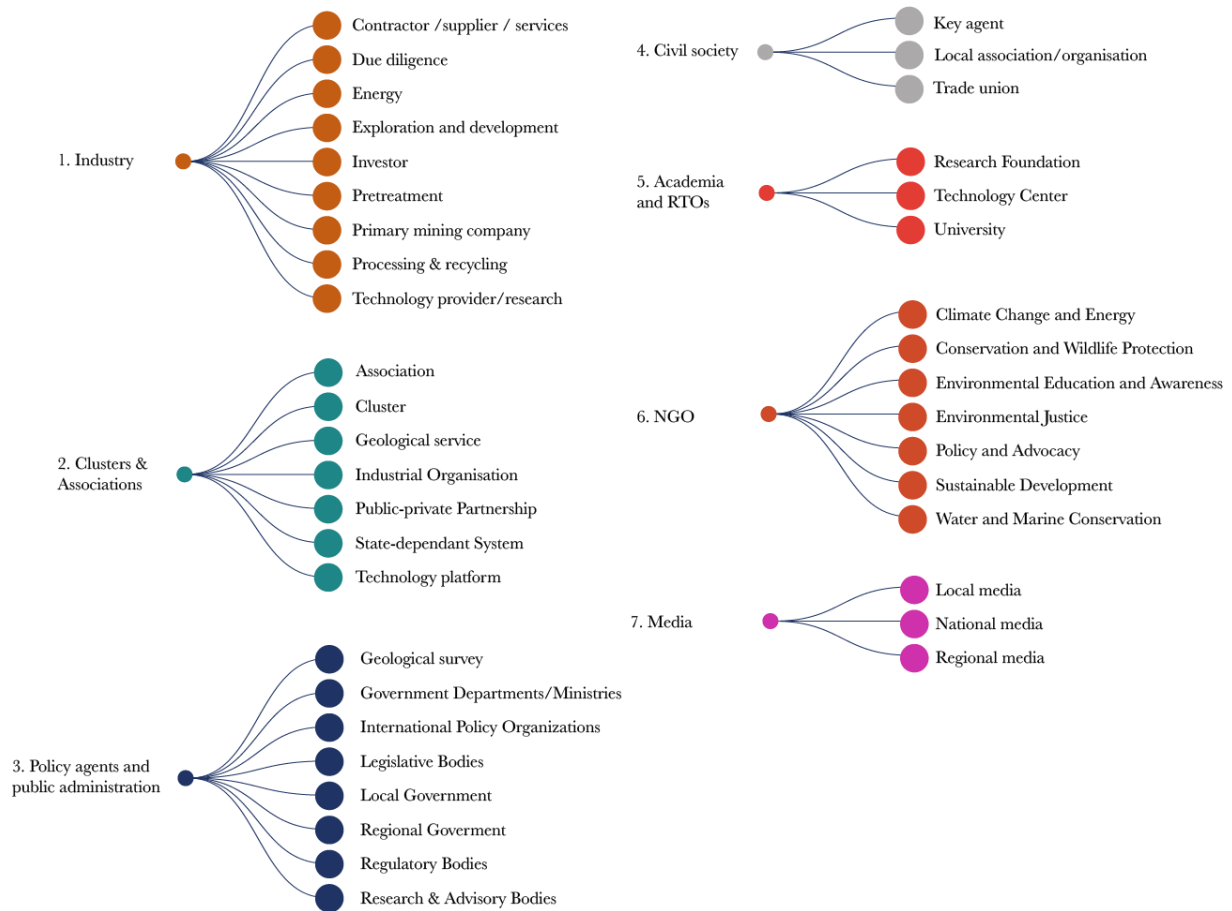
Lastly, media stakeholders in the mining sector encompass journalists, publishers, broadcasters, and digital content platforms that inform the public discourse on RM. These entities are instrumental in disseminating news and developments, influencing public and industry perspectives on this topic. They serve as a critical channel for both reflecting and shaping societal views on the industry's environmental and social impact.

METALLICO stakeholder families

id	category 1	id2	subcategory
1	Industry	1.1.	Primary mining company
		1.2.	Pretreatment
		1.3.	Processing & recycling
		1.4.	Technology provider/research
		1.5.	Contractor /supplier / services
		1.6.	Investor
		1.7.	Due diligence
		1.8.	Exploration and development
		1.9.	Energy
2	Clusters & Associations	2.1.	Cluster
		2.2.	Association

id	category 1	id2	subcategory
		2.3.	Technology platform
		2.4.	Public-private Partnership
		2.5.	Industrial Organisation
		2.6.	Geological service
		2.7.	State-dependant System
3	Policy agents	3.1.	Government Departments/Ministries
		3.2.	Regulatory Bodies
		3.3.	Local Government
		3.4.	Regional Government
		3.5.	Legislative Bodies
		3.6.	International Policy Organizations
		3.7.	Research & Advisory Bodies
		3.8.	Geological survey
4	Civil society	4.1.	Local association/organisation
		4.2.	Trade union
		4.3.	Key agent
5	Academia and RTOs	5.1.	University
		5.2.	Technology Center
		5.3.	Research Foundation
6	NGO	6.1.	Conservation and Wildlife Protection
		6.2.	Climate Change and Energy
		6.3.	Environmental Education and Awareness
		6.4.	Sustainable Development
		6.5.	Environmental Justice
		6.6.	Policy and Advocacy
		6.7.	Water and Marine Conservation
7	Media	7.1.	National Media
		7.2.	Regional Media
		7.3.	Local Media

Distribution of subcategories in categories of stakeholders



Source: own elaboration

2.1.2. Fields of information on the database

The stakeholder database is designed to streamline our understanding of the diverse actors involved in RM lifecycle and their engagement with circular economy practices. This section outlines the specific fields of information included in the database, each chosen for its relevance to the project's objectives. The fields provide essential data, ranging from basic identification details to more complex insights into each stakeholder's experiences and communication preferences. With a focus on clarity and utility, this methodology ensures that every piece of information serves a clear purpose in enhancing our interaction with stakeholders and supporting the project's successful development. The following segments will detail these fields, their significance, and how they contribute to a comprehensive overview of our stakeholders' landscape.

The database is divided into 14 fields in which detailed information about stakeholders (STK) can be found. The fields are distributed as follows:

- **ID:** the ID is the identifying code with which each stk is located.
- **METALLICO partner:** that provides the information.
- **Stakeholders name:** is the name with which the stk is represented.
- **Stk category:** each stk is related to one of the 6 categories described above.
- **Subcategory:** each stk is associated with a subcategory within the assigned category.
- **Country:** country (if identified) of the stk.
- **Scope area:** stk influence area.
- **European project:** project to which the stk is associated.
- **Mine/facility:** in which the stk operates (if the case).
- **STK description:** analysis of the actions carried out by each stk.
- **Interest:** represents the interest of the stk in METALLICO project development and results. Two categories have been established (high and medium).
- **Comments:** space for open comments.
- **Urls:** Webpage or any other contact information.

For those stakeholders within a study case, two more categories are used:

- **C.E. Exp:** experiences of Circular Economy practices of the stakeholder (high, medium, low). The level depends on the relationship with the circular economy that the stakeholder has for its everyday vital processes. The experience with Circular Economy practices is a critical metric for understanding past engagement and potential for future collaboration.
- **Channel:** main channel used by the stk to communicate. Knowing the main communication channels helps tailor engagement strategies.

2.2. Data gathering and systematization

The data gathering and systematization phase focuses on the meticulous collection and organization of relevant information. This phase involves a strategic approach to identifying viable data sources, pinpointing key stakeholders within the European mining sector, and capturing pertinent details that form the substrate of our evolving database. Emphasizing thoroughness and precision, this process ensures that the information collected is both comprehensive and conducive to substantive analysis, laying the groundwork for insightful findings and strategic orientations.

2.2.1. Identification of sources of information

The process began with a thorough identification of potential data sources, including a range of secondary sources such as the European Commission's Joint Research Centre (JRC), CORDIS, and the European Federation of Waste Management and Environmental Services (FEAD), among others. These platforms provided a wealth of information on EU projects linked to circular economy practices in mining, as well as stakeholders involved in these initiatives.

The **secondary sources** of information are as follows:

- The Joint Research Centre (JRC) is the European Commission's science and knowledge service. The JRC employs scientists to carry out research in order to provide independent scientific advice and support to EU policy. https://joint-research-centre.ec.europa.eu/index_en
- CORDIS (Community Research and Development Information Service) is the European Commission's primary source of information on the results of the research projects funded by the European Union's main research framework programmes. <https://cordis.europa.eu/>
- European Federation of Waste Management and Environmental Services (FEAD) <https://fead.be/>
- Google. The most used search engine on the World Wide Web across all platforms.
- European Environment Agency (EEA). <https://www.eea.europa.eu/>
- European Raw Materials Alliance (ERMA). <https://erma.eu/>
- Eurostat. <https://ec.europa.eu/eurostat/data/database>
- Bureau of International Recycling (BIR). <https://bir.org/>
- International Solid Waste Association (ISWA): <https://www.iswa.org/>
- Mining watch. <https://miningwatch.ca/home>
- EJAtlas - Global Atlas of Environmental Justice: <https://ejatlas.org/>

These secondary sources helped us to gather information about:

- Major EU projects related to the mine waste processing linked to circular economy and then the main stakeholders associated with these projects.
- Projects and stakeholders websites, which were then revised to gather information.
- Relevant Mining Sites and TMF. We have identified mining sites where circular economy processes are currently taking place, such as mines, tailings facility management (TFM), waste management facilities (WMF), etc.

In addition to secondary sources, **primary information** gathering has been carried out enriching our database. To facilitate this, we have extended an invitation to all METALLICO partners to contribute

directly to an online version of the database. This collaborative approach leverages the unique insights and expertise of each partner.

To ensure the database remains current and reflective of the evolving landscape of the project, it has been designed with a dynamic approach. It is structured to allow for the continuous addition of new stakeholders and updated information throughout the duration of the project. This iterative process ensures that our database is a living instrument, adaptable and responsive to the project's progress and emerging developments. By maintaining an open channel for contributions and updates, we aim to foster a comprehensive and up-to-date repository that serves as a valuable tool for all METALLICO partners and stakeholders involved.

2.2.2. Data importation into the database

After systematization, the data have been imported into our database. This step involves the transfer of data from our systematized records into the database structure. Special attention has been paid to the data format and integrity during this step to prevent any errors or data loss.

2.2.3. Review of the database

Finally, the database has been reviewed and refined. This step involves checking for accuracy, filling in any gaps in the data, and ensuring that the information is up-to-date and relevant. The database will be updated periodically until the end of the project.

2.3. Stakeholder Cards

To complement the identification work of stakeholders, a **stakeholder card** has been designed for each stakeholder profile. This stakeholder card will aid in achieving a deeper understanding of each profile, thereby assisting in the development of future engagement and communication strategies with stakeholders. The methodology behind these cards ensures that every facet of stakeholder engagement is captured methodically and effectively.

The primary objectives of the stakeholder profile cards are to:

- Provide a clear and concise summary of each stakeholder's interests, influence, and expectations.
- Serve as a reference tool for engaging with and addressing the concerns of each stakeholder group.

The relevance of such an instrument lies in its capacity to distil complex stakeholder information into a format that is both accessible and actionable. By systematically organizing key data points — from contact information to historical interactions — the cards offer a comprehensive snapshot of stakeholder dynamics. This approach not only enhances the precision of our engagement efforts but also ensures that all strategic communications are underpinned by a robust understanding of the stakeholders' needs and perspectives.

In sum, the stakeholder profile cards are not just informational tools; they are strategic assets that enable us to navigate the complexities of stakeholder relationships within this sector.

2.3.1. Profile Card structure

Each field of the stakeholder card has been carefully defined to capture the most critical and relevant aspects of stakeholder profiles, ensuring that the data is strategically aligned to inform and shape future engagement and communication strategies effectively. Each stakeholder profile card comprises the following fields:

Field of information	Content
Description	Description of the Stakeholder and Relationship with the Circular Economy
Identification and contact	Names, affiliations, and contact information for primary representatives.
Interests and objectives	Central goals, initiatives, and areas of focus.
Influence and power	Capacity of stakeholders to influence change or decision-making.
Needs and expectations	Requirements for cooperation and anticipated outcomes.
Resources and capabilities	Available tools, expertise and attributes that enable the stakeholder to contribute to or influence the sector.
History of relationships	Past interactions with the mining sector and other stakeholders.
Communication and engagement	Preferred methods and channels of communication, and historical engagement with the sector.
Perspective and vision	Long-term outlook on the mining sector and sustainable practices.
Legal and regulatory aspects	Compliance obligations, regulatory impacts, and involvement in policy development.
Risks and challenges	Potential obstacles and concerns facing the stakeholder in relation to the mining sector.
Adjacency relations	Adjacency relations on stakeholder cards show who is directly connected to whom in a network. These connections highlight who influences whom, which helps to understand how stakeholders interact. By looking at these relationships, we can see the key actors and how information moves through the network, which is helpful for developing involvement strategies. This is especially important in complex situations where knowing how different people or groups interact is key to working effectively with them.

This basic and qualitative information from the stakeholder card will be complemented with procedures to transform the qualitative value of the most relevant indicators into a quantitative expression, allowing for subsequent analysis. The chosen indicators are:

- Interests and objectives
- Influence and Power
- Needs and expectations

- Resources and capabilities
- Risks and challenges
- Adjacency relations

Each of these indicators would receive a rating from 0 to 3, as follows:

- When the value is null (0)
- When the value is low (1)
- When the value is medium (2)
- When the value is high (3)

For the Adjacency indicator, these values will be used to construct adjacency relationships between a stakeholder (the reference one) with respect to the rest of the stakeholders with whom they share a social space. In this way, adjacency matrices will be developed as follows (example using stakeholder categories):

Stakeholder	1. Industry	2. Clusters & Associations	3. Policy Agents	4. Civil Society	5. Academia & RTO	6. NGO	7. Media
1. Industry							
2. Clusters & Associations							
3. Policy Agents							
4. Civil Society							
5. Academia & RTO							
6. NGO							
7. Media							

3. Results

This section focuses on a detailed analysis of the actors in the raw materials industry, focusing on their involvement in the circular economy within the European context. This analysis has been carried out using a dual approach, combining quantitative and qualitative methods to obtain a comprehensive view of the sector.

In the quantitative section, a data analysis was used to map the geographic distribution and categorize the stakeholders according to their type and the number of projects in which they are involved. Key patterns were identified in terms of distribution by country and by project category, as well as the most frequent words in the stakeholders' descriptions, revealing the focus areas and predominant skills in the sector.

On the other hand, the qualitative analysis focused on assessing the level of interest of the stakeholders and on identifying the main themes from the descriptions provided by them. This approach allowed for the identification of the motivations, interests, and areas of specialization of the different actors involved in European mining.

The combination of these methods provides a deep understanding of the dynamics and complexities of the mining sector in Europe, especially regarding its integration into the circular economy and sustainable development practices.

3.1. Stakeholder Profile Cards

Presented below are the profile cards for the various stakeholder categories. This information has been compiled after an in-depth study of the identified stakeholders, selecting data that they share and have in common. However, it is important to note that this information is dynamic and can be adapted as we learn more about the needs and behaviours of the stakeholders. This adaptive approach ensures that our stakeholder profiles remain relevant and reflective of current practices and insights.

1. INDUSTRY

Description	<p>Organizations and corporations engaged in the extraction, processing, and production of mining resources. They are primarily profit-driven and contribute to the economic growth and employment in the regions they operate.</p>	<table border="1"> <tr> <td>Interests and objectives</td> <td>● ○ ○</td> </tr> <tr> <td>Influence and power</td> <td>● ● ●</td> </tr> <tr> <td>Needs and expectations</td> <td>● ● ●</td> </tr> <tr> <td>Resources and capabilities</td> <td>● ● ○</td> </tr> <tr> <td>Risks and challenges</td> <td>● ○ ○</td> </tr> </table>	Interests and objectives	● ○ ○	Influence and power	● ● ●	Needs and expectations	● ● ●	Resources and capabilities	● ● ○	Risks and challenges	● ○ ○
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Influence and power	● ● ●											
Needs and expectations	● ● ●											
Resources and capabilities	● ● ○											
Risks and challenges	● ○ ○											

Category	Description
Identification and contact	Companies in this segment vary in size and specialization, but typically have dedicated sustainability departments or business units. Key contacts are usually Sustainability Directors or Environmental Managers tasked with integrating sustainable practices into mining operations.
Interests and objectives	They are interested in maximizing resource efficiency and reducing environmental impact. Their goals often involve implementing circular economy practices to minimize waste and reuse materials. They seek innovation in their processes and products to maintain long-term viability and comply with environmental regulations.
Influence and power	They typically wield significant influence in the supply chain and policy-making due to their economic impact. They may occupy a central position in influence networks, enabling them to be pivotal players in advocating for the circular economy.
Needs and expectations	They expect support in transitioning to more sustainable practices, both technically and in regulatory flexibility. They may have concerns about the economic feasibility of adopting certain circular economy practices and seek to balance sustainability with profitability.
Resources and capabilities	They have substantial financial, human, and technological resources to invest in sustainability projects. They hold relevant experience in research and development, and in implementing environmental management systems.
History of relationships	Their history may include previous collaborations with NGOs, government entities, and academic institutions on sustainability projects. They are typically active in sustainable initiatives and often seek partnerships for pilot projects or research.
Communication and engagement	They prefer formal and technical communication channels such as corporate reports or professional networks. They are open to dialogue and often participate in sustainability-related conferences and forums.
Perspective and vision	They maintain a long-term pro-sustainability vision and tend to favor policies that promote innovation and sustainability. They can be proactive in adopting clean technologies and in seeking new operational methods that are more environmentally friendly.
Legal and regulatory aspects	They must comply with a complex set of environmental regulations at both EU and global levels.
Risks and challenges	They perceive risks in transitioning to sustainable practices, particularly in terms of initial investment and return on investment. Challenges include adapting existing operations to circular economy principles and market uncertainty towards sustainable products and technologies.

Adjacency relations	<p>Industry has moderate to strong connections with all other stakeholders except for NGOs, where there is no direct connection indicated. This suggests that the industry is actively engaging with most of the stakeholders, such as clusters and associations, policy agents, and media, which could be for advocacy, regulation shaping, and public relations.</p>	<table border="1"> <tr> <td>Clusters and Associations</td> <td>● ○ ○</td> </tr> <tr> <td>Policy Agents</td> <td>● ● ○</td> </tr> <tr> <td>Civil Society</td> <td>○ ○ ○</td> </tr> <tr> <td>Academia and RTO</td> <td>● ○ ○</td> </tr> <tr> <td>NGO</td> <td>○ ○ ○</td> </tr> <tr> <td>Media</td> <td>● ● ○</td> </tr> </table>	Clusters and Associations	● ○ ○	Policy Agents	● ● ○	Civil Society	○ ○ ○	Academia and RTO	● ○ ○	NGO	○ ○ ○	Media	● ● ○
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Civil Society	○ ○ ○													
Academia and RTO	● ○ ○													
NGO	○ ○ ○													
Media	● ● ○													

2. CLUSTERS AND ASSOCIATIONS

Description	<p>Groups of interconnected companies, specialized suppliers, service providers, and associated institutions in the mining sector, collaborating to improve competitiveness, innovation, and collective growth.</p>	<table border="1"> <tr> <td>Interests and objectives</td> <td>● ● ●</td> </tr> <tr> <td>Influence and power</td> <td>● ● ●</td> </tr> <tr> <td>Needs and expectations</td> <td>● ● ○</td> </tr> <tr> <td>Resources and capabilities</td> <td>● ● ○</td> </tr> <tr> <td>Risks and challenges</td> <td>● ○ ○</td> </tr> </table>	Interests and objectives	● ● ●	Influence and power	● ● ●	Needs and expectations	● ● ○	Resources and capabilities	● ● ○	Risks and challenges	● ○ ○
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Category	Description
Identification and contact	These entities comprise networks of interconnected companies, specialized suppliers, service providers, and associated institutions within the mining sector. Contacts are often represented by cluster managers or association heads who facilitate collaboration among members.
Interests and objectives	Their primary interests lie in bolstering competitiveness, fostering innovation, and achieving collective growth. They aim to create synergy among members to advance technological development, share best practices, and enhance market access.
Influence and power	Clusters and associations have considerable power to influence regional and sector-specific policies. They act as a collective voice for their members, often holding a strong lobbying position.
Needs and expectations	They need frameworks and policies that support collaborative projects and innovation. They expect to be key partners in shaping sustainable practices within the industry and often seek recognition and support from governmental bodies.
Resources and capabilities	They bring together diverse resources and capabilities from their members, which can include research and development firepower, marketing intelligence, and collective bargaining power.
History of relationships	These clusters and associations typically have a history of working together on joint projects, often supported by public funding or private investment aimed at regional development and innovation.
Communication and engagement	They engage through structured networks and prefer collaborative platforms for communication. They value stakeholder meetings, workshops, and conferences as means for collective decision-making and networking.
Perspective and vision	They share a collective vision for sustainable and resilient growth in the mining sector. Their perspective often emphasizes the importance of transitioning to green technologies and embracing circular economy principles.
Legal and regulatory aspects	They are subject to regional and industry-specific regulations and often participate in the formulation of standards and norms that impact the mining sector, focusing on sustainability and innovation.
Risks and challenges	They face challenges in aligning the diverse interests of their members and in ensuring that collaboration translates into tangible benefits. They also have to navigate the complexities of funding and the sustainability of their initiatives in a dynamic market.

Adjacency relations	<p>Clusters & Associations have strong ties with the Industry, Academia & RTO, and Media, indicating a collaborative environment, potentially for innovation and research dissemination. The lack of connection with NGOs may suggest a more inward focus on industry development rather than social or environmental concerns.</p>	<table border="1"> <tr> <td>1. Industry</td> <td>● ● ● ○</td> </tr> <tr> <td>3. Policy Agents</td> <td>● ● ● ○</td> </tr> <tr> <td>4. Civil Society</td> <td>● ○ ○ ○</td> </tr> <tr> <td>5. Academia and RTO</td> <td>● ● ● ●</td> </tr> <tr> <td>6. NGO</td> <td>○ ○ ○ ○</td> </tr> <tr> <td>7. Media</td> <td>● ● ● ○</td> </tr> </table>	1. Industry	● ● ● ○	3. Policy Agents	● ● ● ○	4. Civil Society	● ○ ○ ○	5. Academia and RTO	● ● ● ●	6. NGO	○ ○ ○ ○	7. Media	● ● ● ○
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7. Media	● ● ● ○													

3. POLICY AGENTS AND PUBLIC ADMINISTRATION

Description	<p>Governmental and non-governmental entities that formulate, oversee, or influence policies and regulations affecting the mining sector.</p>	<table border="1"> <tr><td>Interests and objectives</td><td>● ● ●</td></tr> <tr><td>Influence and power</td><td>● ● ●</td></tr> <tr><td>Needs and expectations</td><td>● ● ○</td></tr> <tr><td>Resources and capabilities</td><td>● ● ●</td></tr> <tr><td>Risks and challenges</td><td>● ○ ○</td></tr> </table>	Interests and objectives	● ● ●	Influence and power	● ● ●	Needs and expectations	● ● ○	Resources and capabilities	● ● ●	Risks and challenges	● ○ ○
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Risks and challenges	● ○ ○											

Category	Description
Identification and contact	This category includes a range of governmental and non-governmental entities involved in creating, supervising, or influencing policy and regulations. Key contacts are often policymakers, regulatory officials, or administrative personnel at various levels of government.
Interests and objectives	Their interests are to ensure that the mining sector operates within the bounds of the law, adhering to environmental, safety, and labor standards. Their objectives include the development and enforcement of policies that promote sustainable mining practices and protect public interests.
Influence and power	As regulators and policy formulators, these entities wield significant power. They can affect the entire sector through legislation, enforcement actions, and the granting of licenses and permits.
Needs and expectations	They need compliance from the mining industry with existing regulations and expect cooperation when new policies are introduced. They may also expect the industry to engage with them in the policymaking process, providing expert insights and data.
Resources and capabilities	They have the authority to mobilize legal and administrative resources, and they have access to a wide range of data and research capabilities to inform policy decisions.
History of relationships	Their history with the mining sector can range from collaborative to adversarial, depending on the context and the compliance record of industry players.
Communication and engagement	They communicate through official channels, such as public consultations, policy announcements, and regulatory updates. Their engagement with the industry is often formal and structured around legislative and regulatory processes.
Perspective and vision	Their perspective is typically focused on the long-term public good, which includes economic stability, environmental sustainability, and social welfare. They envision a mining sector that contributes to the economy while minimizing negative impacts.
Legal and regulatory aspects	These entities are the authors and enforcers of the legal and regulatory framework. They are responsible for ensuring that the mining industry adheres to national and international laws and agreements.
Risks and challenges	They face the challenge of balancing industry growth with environmental and social considerations. They also must contend with the risk of policy being outpaced by technological advancements or market changes.

Adjacency relations	<p>Policy Agents show connections with all stakeholders, with particularly strong ties to the Media, implying that policy-making or advocacy efforts are likely being watched and influenced by public and media narratives. Their role as intermediaries is evident as they link various aspects of the sector from civil society to industry.</p>	<table border="1"> <tr><td>1. Industry</td><td>● ○ ○</td></tr> <tr><td>2. Clusters & Associations</td><td>● ● ○</td></tr> <tr><td>4. Civil Society</td><td>● ● ○</td></tr> <tr><td>5. Academia and RTO</td><td>● ● ●</td></tr> <tr><td>6. NGO</td><td>● ○ ○</td></tr> <tr><td>7. Media</td><td>● ● ○</td></tr> </table>	1. Industry	● ○ ○	2. Clusters & Associations	● ● ○	4. Civil Society	● ● ○	5. Academia and RTO	● ● ●	6. NGO	● ○ ○	7. Media	● ● ○
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4. CIVIL SOCIETY

Description	<p>Community-based groups, trade unions, media, and other non-governmental organizations interested in or affected by mining operations.</p>	<table border="1"> <tr> <td>Interests and objectives</td> <td>● ○ ○</td> </tr> <tr> <td>Influence and power</td> <td>● ● ○</td> </tr> <tr> <td>Needs and expectations</td> <td>● ● ●</td> </tr> <tr> <td>Resources and capabilities</td> <td>● ○ ○</td> </tr> <tr> <td>Risks and challenges</td> <td>● ● ●</td> </tr> </table>	Interests and objectives	● ○ ○	Influence and power	● ● ○	Needs and expectations	● ● ●	Resources and capabilities	● ○ ○	Risks and challenges	● ● ●
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Category	Description
Identification and contact	This category encompasses a diverse array of actors, including community groups, trade unions, media outlets, and non-governmental organizations. Contacts within these groups are typically community leaders, union representatives, journalists, or NGO activists.
Interests and objectives	They are primarily interested in the social and environmental impacts of mining. Objectives may include advocating for responsible mining practices, safeguarding workers' rights, ensuring environmental protection, and keeping the public informed.
Influence and power	While individually these groups might have limited influence, collectively they can exert considerable pressure on the mining industry through public opinion, advocacy campaigns, or legal action.
Needs and expectations	Civil society groups need transparency and accountability from mining companies. They expect to be engaged in dialogue and consultation processes, and they seek to influence the development and enforcement of sustainable practices in mining.
Resources and capabilities	Their resources include networks of community members, the ability to mobilize public opinion, and platforms for information dissemination. They may also have expertise in areas such as environmental law, community organizing, and labor rights.
History of relationships	Relationships between civil society and the mining industry can be complex, ranging from cooperative to confrontational, depending on past experiences and the approach taken by mining companies towards social and environmental responsibilities.
Communication and engagement	Communication methods include public forums, social media, press releases, and direct action. These groups are often involved in campaigns to raise awareness and promote their causes.
Perspective and vision	Civil society tends to advocate for a balanced approach to mining that considers the well-being of people and the planet. Their vision often involves sustainable development that does not compromise the needs of future generations.
Legal and regulatory aspects	They may be involved in pushing for stricter regulations on mining activities, and they often monitor compliance with environmental and social standards.
Risks and challenges	They often face challenges in having their voices heard and in impacting policy and practice. There is also a risk of backlash or marginalization by more powerful industry or political interests.

Adjacency relations	<p>Civil Society is most strongly connected to NGOs and Media, which is typical given their role in advocacy, public engagement, and information dissemination. The strong ties to Academia & RTO may also reflect an interest in evidence-based approaches to mining-related social issues.</p>	<table border="1"> <tr> <td>1. Industry</td> <td>● ○ ○</td> </tr> <tr> <td>2. Clusters & Associations</td> <td>○ ○ ○</td> </tr> <tr> <td>3. Policy Agents</td> <td>● ● ○</td> </tr> <tr> <td>5. Academia and RTO</td> <td>● ● ○</td> </tr> <tr> <td>6. NGO</td> <td>● ● ●</td> </tr> <tr> <td>7. Media</td> <td>● ○ ○</td> </tr> </table>	1. Industry	● ○ ○	2. Clusters & Associations	○ ○ ○	3. Policy Agents	● ● ○	5. Academia and RTO	● ● ○	6. NGO	● ● ●	7. Media	● ○ ○
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5. ACADEMIA AND RTOS

Description	<p>Interests and objectives</p> <p>Influence and power</p> <p>Needs and expectations</p> <p>Resources and capabilities</p> <p>Risks and challenges</p>	
<p>Educational, research, and technological institutions dedicated to advancing knowledge, technology, and innovation within the mining sector.</p>		

Category	Description
Identification and contact	This group includes universities, colleges, technical institutes, and research and technology organizations (RTOs) involved in mining sector education and research. Key contacts are academic researchers, professors, and institutional leaders.
Interests and objectives	Their interests are in developing and disseminating knowledge, fostering innovation, and contributing to technological advancements in mining. Their objectives often include conducting research, influencing industry practices through new findings, and educating future professionals.
Influence and power	While they may not directly influence policy or industrial practices, their research and educational outputs can have significant long-term impacts on the industry's direction and the development of new technologies.
Needs and expectations	Academia and RTOs need access to funding for research, partnerships with industry for practical applications, and engagement with policymakers to ensure the relevance and impact of their work. They expect to contribute to the body of knowledge and to be consulted as experts in their fields.
Resources and capabilities	They bring intellectual resources, state-of-the-art research facilities, and a drive for innovation. They are capable of complex analysis and can provide evidence-based recommendations for industry practices.
History of relationships	These institutions often have a history of collaboration with industry partners on research projects and initiatives to develop new technologies and solutions for the mining sector.
Communication and engagement	They communicate through academic publications, conferences, and symposia. They engage with industry and policymakers through advisory roles, consultancy, and collaborative projects.
Perspective and vision	The perspective of academia and RTOs is typically future-oriented, focusing on sustainability, innovation, and the responsible advancement of the mining sector through science and technology.
Legal and regulatory aspects	They are often involved in developing new industry standards and can influence regulatory changes through research findings and technological breakthroughs.
Risks and challenges	They face challenges in securing funding and in translating theoretical research into practical, commercially viable solutions. There is also the risk of their work being underutilized or misunderstood by the industry and policymakers.

Adjacency relations	<p>1. Industry</p> <p>2. Clusters & Associations</p> <p>3. Policy Agents</p> <p>4. Civil Society</p> <p>6. NGO</p> <p>7. Media</p>	
<p>Academia & RTO are well-connected with Clusters & Associations and Policy Agents, suggesting a strong influence on industry innovation and policy development with a research and technology focus. Their connection to Civil Society and NGOs might reflect collaborative efforts in sustainability and social impact research.</p>		

6. NGO

Description	<p>Organizations working on environmental, social, and policy issues related to mining, advocating for responsible practices and community engagement.</p>	<table border="1"> <tr> <td>Interests and objectives</td> <td>● ○ ○</td> </tr> <tr> <td>Influence and power</td> <td>● ● ○</td> </tr> <tr> <td>Needs and expectations</td> <td>● ● ●</td> </tr> <tr> <td>Resources and capabilities</td> <td>● ○ ○</td> </tr> <tr> <td>Risks and challenges</td> <td>● ● ●</td> </tr> </table>	Interests and objectives	● ○ ○	Influence and power	● ● ○	Needs and expectations	● ● ●	Resources and capabilities	● ○ ○	Risks and challenges	● ● ●
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Category	Description
Identification and contact	Non-Governmental Organizations (NGOs) in this context are entities that focus on environmental, social justice, and policy advocacy related to mining. Contacts often include program directors, campaign managers, and policy advocates.
Interests and objectives	NGOs are interested in promoting sustainable and responsible mining practices. Their objectives typically involve advocating for the rights and well-being of affected communities, protecting the environment, and influencing public policy and industry standards.
Influence and power	NGOs can be influential through their advocacy, public campaigns, and ability to mobilize public opinion. They may not have direct power to enforce changes but can pressure businesses and governments to adopt more responsible practices.
Needs and expectations	NGOs need cooperation from industry and government to achieve their goals. They expect transparency, ethical conduct in operations, and active community engagement from mining companies. They also expect to participate in discussions about policy and practice changes.
Resources and capabilities	These organizations often have expertise in environmental science, social policy, and community development. They might have limited financial resources but possess strong networks and capabilities in grassroots mobilization and advocacy.
History of relationships	The relationships between NGOs and the mining sector can be contentious if past operations have led to environmental or social harm. However, there can also be collaborative efforts when goals align, such as in the development of sustainability projects.
Communication and engagement	NGOs typically engage with their audience and stakeholders through media campaigns, reports, public demonstrations, and lobbying efforts. They also often seek to engage directly with companies and governments through roundtable discussions and public hearings.
Perspective and vision	The perspective of NGOs is typically centered around sustainable development and the long-term health of ecosystems and communities. Their vision often includes a mining sector that fully integrates environmental and social governance (ESG) principles.
Legal and regulatory aspects	NGOs may play a role in shaping legal and regulatory frameworks by advocating for laws and regulations that promote responsible mining practices and by monitoring compliance with such regulations.
Risks and challenges	They face the challenge of influencing powerful industrial and political entities, often with limited resources. They also risk pushback or negative campaigning from those who may view their advocacy as hindering economic development.

Adjacency relations	<p>NGOs have strong connections with Civil Society and Media, which is expected as they often work together to raise awareness and influence policy through public campaigns. Their connection to Policy Agents and Academia & RTO suggests that they are engaged in advocacy and research to influence policy and industry practices.</p>	<table border="1"> <tr> <td>1. Industry</td> <td>○ ○ ○</td> </tr> <tr> <td>2. Clusters & Associations</td> <td>● ○ ○</td> </tr> <tr> <td>3. Policy Agents</td> <td>● ● ○</td> </tr> <tr> <td>4. Civil Society</td> <td>● ● ●</td> </tr> <tr> <td>5. Academia & RTO</td> <td>● ● ○</td> </tr> <tr> <td>7. Media</td> <td>● ● ●</td> </tr> </table>	1. Industry	○ ○ ○	2. Clusters & Associations	● ○ ○	3. Policy Agents	● ● ○	4. Civil Society	● ● ●	5. Academia & RTO	● ● ○	7. Media	● ● ●
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7. MEDIA

Description	<p>Entities disseminating information and shaping public opinion regarding mining operations or related topics</p>	<table border="1"> <tr> <td>Interests and objectives</td> <td>● ○ ○</td> </tr> <tr> <td>Influence and power</td> <td>● ● ○</td> </tr> <tr> <td>Needs and expectations</td> <td>● ● ●</td> </tr> <tr> <td>Resources and capabilities</td> <td>● ○ ○</td> </tr> <tr> <td>Risks and challenges</td> <td>● ● ●</td> </tr> </table>	Interests and objectives	● ○ ○	Influence and power	● ● ○	Needs and expectations	● ● ●	Resources and capabilities	● ○ ○	Risks and challenges	● ● ●
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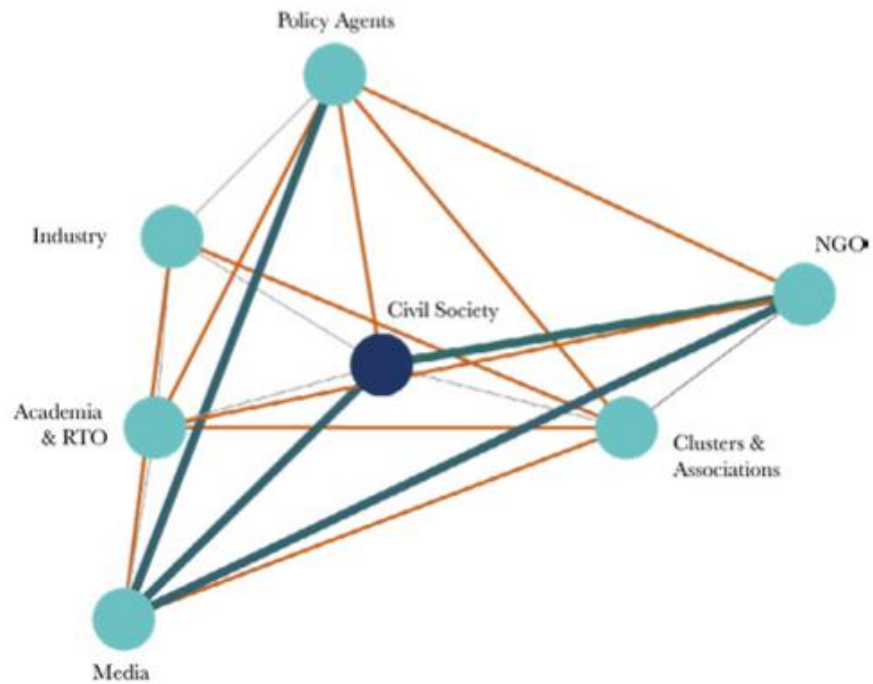
Category	Description
Identification and contact	The Media encompasses a broad range of entities including news outlets, journalism organizations, industry publications, and independent content creators. Key contacts are journalists, editors, and producers with a focus on industry, environmental issues, or investigative reporting.
Interests and objectives	Media entities are interested in reporting on aspects of the mining sector that are relevant to the public interest. Their objectives include uncovering the truth, reporting on developments, trends, and incidents, and shaping public opinion through their coverage.
Influence and power	Media has a powerful influence on public perception and can sway public opinion regarding mining operations. They can spotlight issues, hold companies to account, and influence the agenda on industry practices.
Needs and expectations	The Media needs access to accurate information and relies on transparency from mining companies and regulatory bodies. They expect timely responses to inquiries and access to experts for commentary and analysis.
Resources and capabilities	Media entities have the capability to research, investigate, and disseminate information widely. They have platforms that can reach large audiences and the resources to conduct in-depth journalism.
History of relationships	Relationships between the media and the mining sector can be symbiotic when the flow of information is open and transparent but can become adversarial if the media uncover wrongdoing or negligence.
Communication and engagement	The media communicates through articles, reports, documentaries, and increasingly through digital media platforms. They engage with their audience and with stakeholders through storytelling, interviews, and analysis.
Perspective and vision	The media's perspective is to inform the public and to provide oversight by investigating and reporting on industry practices. Their vision often includes a well-informed public that can engage in dialogue and make decisions based on reliable information.
Legal and regulatory aspects	Media entities must navigate laws regarding freedom of speech, libel, and slander. They also work within the boundaries of press regulations and ethical standards of journalism.
Risks and challenges	The media face the challenge of maintaining objectivity and credibility. They also risk legal challenges and pushback from powerful industry stakeholders when reporting on contentious issues.

Adjacency relations	<p>Media shows strong connections with nearly all stakeholders, highlighting its role in shaping public perception and discourse around the mining industry. The strong ties to Policy Agents and Civil Society suggest a narrative that is closely tied to regulatory and social concerns.</p>	<table border="1"> <tr> <td>1. Industry</td> <td>● ● ○</td> </tr> <tr> <td>2. Clusters & Associations</td> <td>● ● ○</td> </tr> <tr> <td>3. Policy Agents</td> <td>● ● ●</td> </tr> <tr> <td>4. Civil Society</td> <td>● ● ●</td> </tr> <tr> <td>5. Academia & RTO</td> <td>● ○ ○</td> </tr> <tr> <td>7. Media</td> <td>● ● ○</td> </tr> </table>	1. Industry	● ● ○	2. Clusters & Associations	● ● ○	3. Policy Agents	● ● ●	4. Civil Society	● ● ●	5. Academia & RTO	● ○ ○	7. Media	● ● ○
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ADJACENCY MATRIX

	1. Industry	2. Clusters & Associations	3. Policy Agents	4. Civil Society	5. Academia & RTO	6. NGO	7. Media
1. Industry		1	2	0	1	0	2
2. Clusters & Associations	2		2	1	3	0	2
3. Policy Agents	1	2		2	2	1	2
4. Civil Society	1	0	2		2	3	1
5. Academia & RTO	1	2	2	1		1	2
6. NGO	0	1	2	3	2		3
7. Media	2	2	3	3	1	2	

Stakeholder profile
Adjacency matrix visual representation



3.2. Stakeholder database

3.2.1. Distribution by category

At present the stakeholders' database includes a total of 202 stakeholders distributed into categories as follows:

- Industry: 85 stakeholders
- Clusters and Associations: 29 stakeholders
- Policy agents: 10 stakeholders
- Civil society: 16 stakeholders
- Academia and Research and Technology, and Transfer Organizations (RTOs): 51 stakeholders
- NGOs: 5 stakeholders
- Media: 6 stakeholders

The distribution of stakeholders according to the established subcategories, in Europe and in case studies, is as follows:

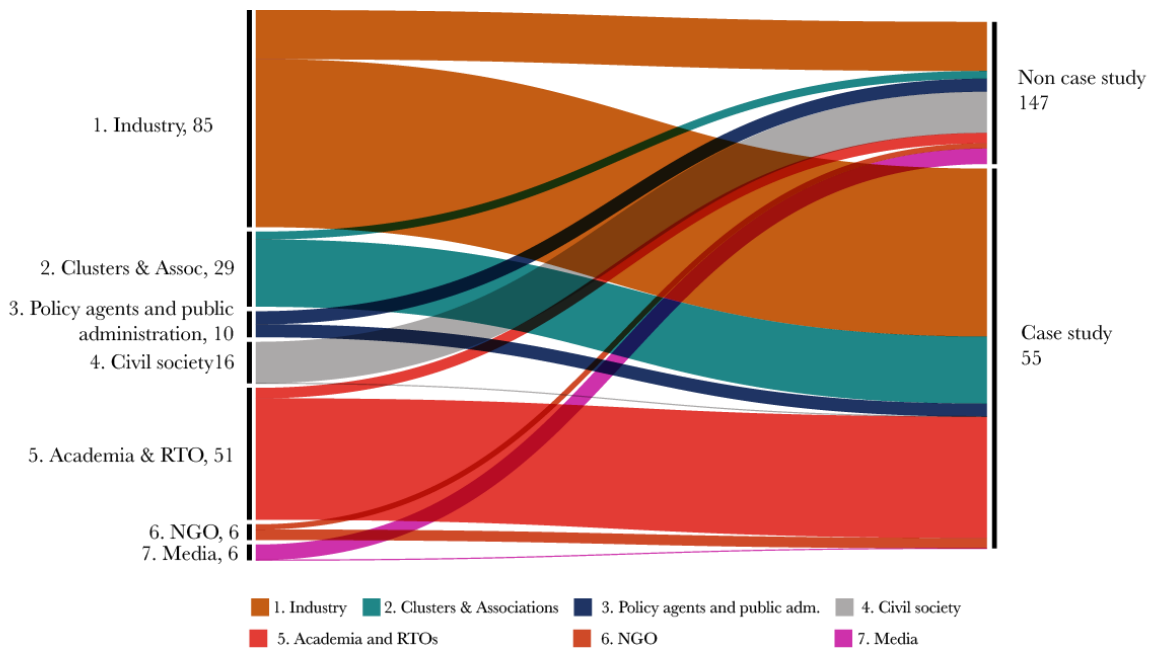
- In the Industry category, both in general (65) and the study cases (20) show a relevant number of stakeholders, as a result of their weight in the raw materials landscape.
- Clusters & Associations are also relevant (26, 3). This means there's likely a stronger network of groups working together in Europe, possibly due to support from European Union initiatives, but they are also influential at the regional level.
- Policy Agents have more relevance in the study cases due to the complexity of considering European/national level public administrations.
- Civil Society has a large number in the case study (16) but none in Europe. This due suggests the study cases focus more on involving the community, which seems a logical approach.
- Academia & RTO show more involvement in non-case study (47) than in the case studies (4), indicating that academic and research institutions are active in both scopes, with a greater emphasis at European level.
- NGOs have a small presence, with 2 in the study cases and 4 in Europe, suggesting more efforts should be done to include them and make their presence more balanced compared to other groups.
- Media has a large number in the case studies (6) but none in Europe. This is because stakeholders from this group are being identified in the first instance at the case study level..

Distribution of stakeholders by category in the study cases and European level

Category	Case Study	General
1. Industry	19	66
2. Clusters & Associations	3	26
3. Policy Agents	5	5
4. Civil Society	16	0
5. Academia & RTO	4	47
6. NGO	2	3
7. Media	6	0

Source: own elaboration

Distribution of stakeholders by category in the database (case study and non case study)



Source: own elaboration

3.2.2. Distribution of subcategories

3.2.2.1. General database

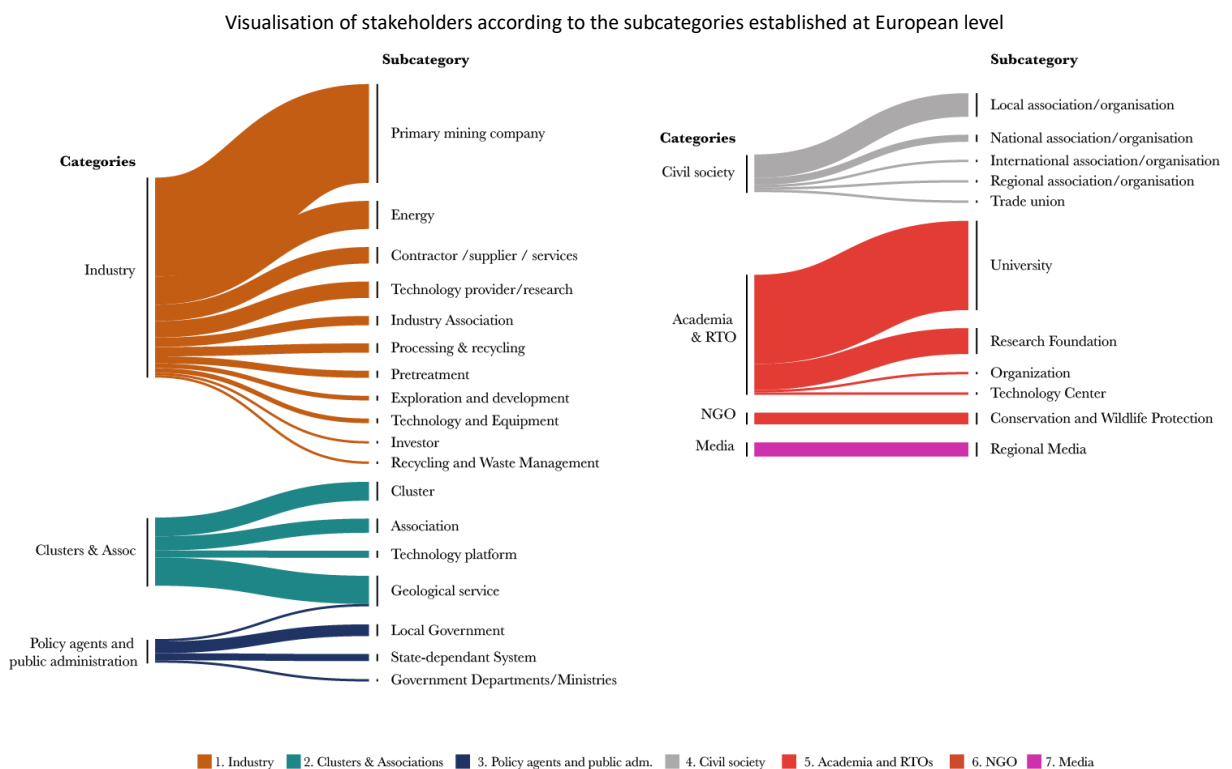
In the Industry category, there are a total of 66 stakeholders. The most numerous are primary mining companies with 26 representatives, followed by the energy sector with 12. Other subcategories such as technology providers and research, as well as contractors and service suppliers, also have a notable presence.

In Clusters and Associations, this category has 26 stakeholders. The majority are distributed between Clusters and Geological Services, each with 7 and 12 representatives. This indicates the relevance of geological services and the cluster-based approaches.

Policy Agents are less represented with 5 stakeholders, where the State-Dependant System is the most prominent subcategory.

In Academia and RTO, with 47 stakeholders, this category is significant and dominated by Universities with 34 representatives. Research Foundations also have a considerable presence.

NGOs are the least represented category with only 3 stakeholders, both in Conservation and Wildlife Protection.



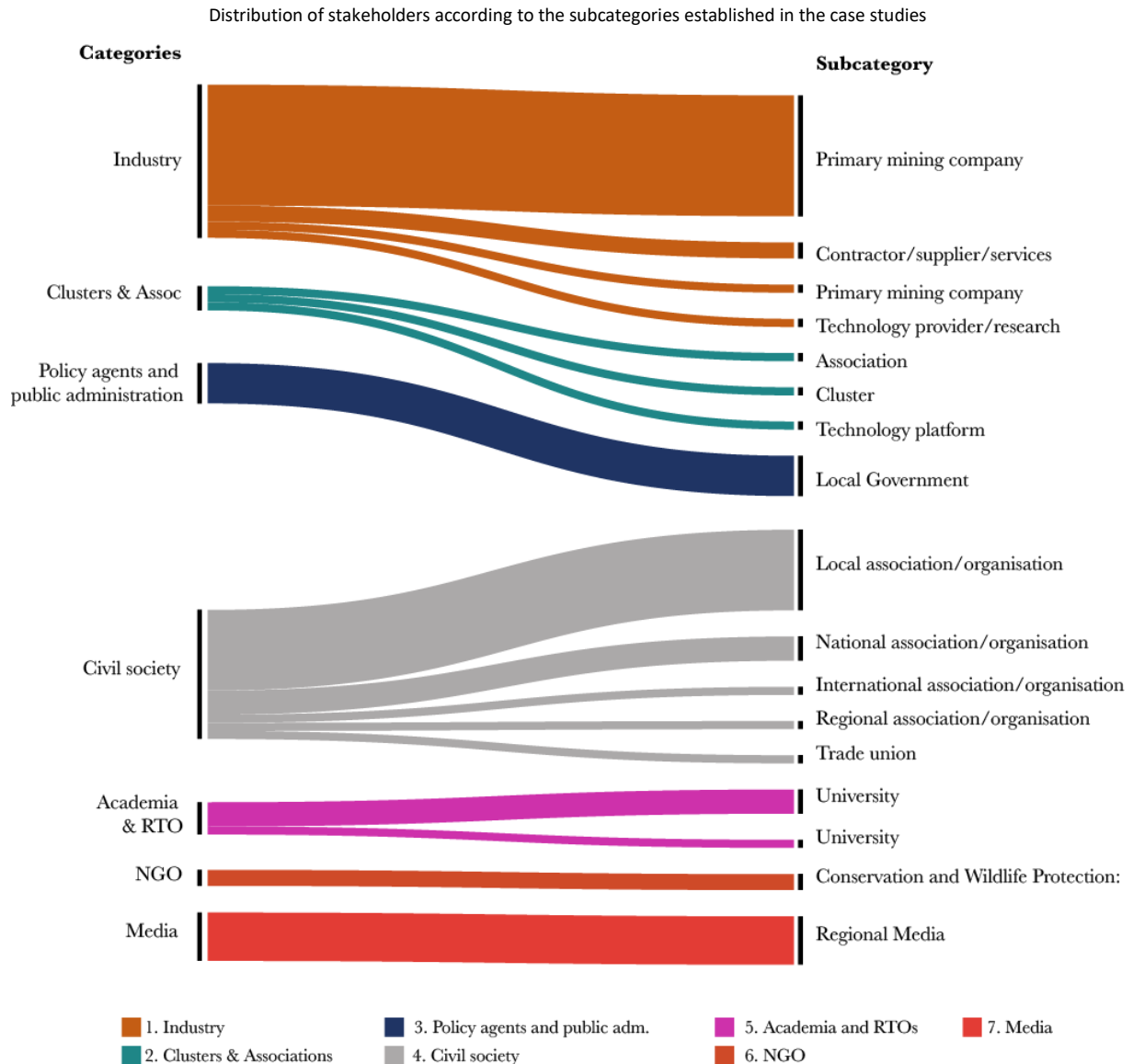
Source: own elaboration

3.2.2.2. Case studies

The stakeholder analysis within the case studies presents a detailed overview of entities involved, segmented into specific categories. The 'Industry' category has the most stakeholders, totalling 19, with 'Primary mining companies' constituting the majority at 16. This indicates a strong focus on the core activities of mining. The category also includes 2 'Contractor/supplier/services' and a single 'Technology provider/research', pointing towards the necessary support and innovation infrastructure within the industry.

The 'Clusters & Assoc' category comprises 3 stakeholders, with one each under 'Association', 'Cluster', and 'Technology platform', suggesting an even spread across various collaborative and technological initiatives.

In the 'Policy agents and public administration' category, there are 5 stakeholders, all of which are 'Local Government' bodies, reflecting the localized nature of mining governance and the importance of municipal involvement.



Source: own elaboration

The 'Civil society' category is well-represented with 16 stakeholders, dominated by 10 'Local association/organisation'. The presence of 3 'National association/organisation', 1 'International association/organisation', 1 'Regional association/organisation', and 1 'Trade union' suggests a multi-layered approach to civil engagement and oversight.

The 'Academia & RTO' segment has 4 stakeholders, all 'University' entities, which underscores the role of academic research and education in the sector.

The 'NGO' category, although smaller with only 2 stakeholders, is specific to 'Conservation and Wildlife Protection', highlighting targeted environmental concerns related to mining.

Lastly, the 'Media' is represented by 6 'Regional Media' stakeholders, suggesting an interest in the local impacts and developments within the mining sector.

In total, these figures culminate in a general count of 55 stakeholders, with the quantitative distribution reflecting the varying degrees of influence and interest each category holds within the mining sector.

3.3. Case studies results

The Soónica mine, with 12 stakeholders, is recognized as a relevant player in the industry, implying its connection with both the industrial and academic sectors, albeit to a lesser extent compared to other sites. This suggests its participation in potentially significant projects, but perhaps with a more regional or specialized focus.

The Tharsis Mine, with 21 stakeholders, demonstrates a deeper integration into industry and research, which may indicate its involvement in innovative projects or the adoption of sustainable mining practices. This number reflects an active and well-established role in the mining community, with potential significant contributions to the development of mining technologies and processes.

On the other hand, Cobre Las Cruces, with 18 stakeholders, also plays an important role in the stakeholder network and the mining economy. Although its number of connections is intermediate, it suggests a balanced both commercial and research and development activities.

Stakeholders by region in the study cases

Mine/facility	Count
Soónica mine (Silesia, SL)	12
Tharsis Mine (Huelva, SP)	21
Cobre Las Cruces (Seville, SP)	21

Source: own elaboration

The stakeholders identified for each case study are described as follows:

Study case: Silesia, Poland. Sósńca Mine

STK category	Subcategory	Stakeholders name	STK description	Interest	CE EXP	Channels
3. Policy agents and public administration	Local Government	Gliwice City Council	The City Council is elected for a 5-year term. The Gliwice City Council is composed of 25 councilors.	high	high	mail
1. Industry	Primary mining company	KGHM Polska Miedź	Polish mining and metallurgical company. The Rudna copper project is expected to begin production in 2025.	high	high	mail
1. Industry	Primary mining company	KWK Mysłowice-Wesoła	The main task of the mine is to extract and enrich coal, as well as obtain and sell methane. The KWK Mysłowice-Wesoła iron project is expected to begin production in 2026.	high	high	mail
1. Industry	Primary mining company	Polska Grupa Górnicza S.A.	Polish Mining Group S.A.	high	high	mail
1. Industry	Primary mining company	Polskie Górnictwo Naftowe i Gazownictwo (PGNiG)	A Polish company engaged in the exploration and extraction of natural gas and crude oil, gas imports, as well as the storage, sale, distribution of gas, and liquid fuels.	high	high	mail
1. Industry	Primary mining company	Górnnicze Koncern Węglowy S.A.	A Polish state-owned company dedicated to coal mining.	high	high	mail
2. Clusters & Assoc	Cluster	Katowice Special Economic Zone	A space where companies receive preferential conditions such as tax exemptions. It was established in 1996 with the aim of supporting restructuring processes and generating new employment in the region.	high	high	digital workshop
4. Civil society	National association/organisation	Katowicki Alarm Smogowy	Citizen association aiming to raise awareness about environmental risks associated with coal.	high	high	mail
4. Civil society	International association/organisation	ClientEarth in Polonia	They have filed lawsuits in cases related to air quality.	high	medium	mail
4. Civil society	Local association/organisation	Zabrze Coal Mining Museum	Museum dedicated to the history of mining in Silesia.	high	high	mail
5. Academia & RTO	University	Faculty of Mining and Geology at the	The faculty, being specialized in mining and geology, is dedicated to academic training, research and development	high	high	digital workshop

STK category	Subcategory	Stakeholders name	STK description	Interest	CE EXP	Channels
		Silesian University of Technology (Politechnika Slaska) in Gliwice.	in areas related to mineral extraction, applied geology and mining technologies.			
5. Academia & RTO	University	Silesian University of Technology.	Silesian Polytechnic University has 18 units, including faculties, colleges and centers. Among these units is the Faculty of Mining and Geology. This faculty is dedicated to academic training, research and development in areas related to mineral extraction, applied geology and mining technologies.	high	high	digital workshop

Study case: Gerena (Seville, Spain). Cobre Las Cruces Mine

STK category	Subcategory	Stakeholders name	STK description	Interest	CE EXP	Channels
1. Industry	Primary mining company	Cobre Las Cruces, S.A	A subsidiary of First Quantum Minerals, a Canadian-based mining and metals company	high	high	mail
1. Industry	Primary mining company	Cobre Las Cruces Copper Mine.	Hydrometallurgical mining complex dedicated to copper extraction, located in the municipal terms of Gerena, Salteras, and Guillena, with supporting infrastructure in La Algaba. In 2023, the Cobre Las Cruces company received authorization from the Guadalquivir Hydrographic Confederation to expand its operations. The authorization has been criticized by environmental organizations	high	high	mail
1. Industry	Primary mining company	Cobre Las Cruces S. A.	In September 2016, the Environmental Prosecutor's Office sentenced three executives of Cobre Las Cruces to one year and three months in prison, along with corresponding fines, after they admitted to deliberately contaminating the aquifer that supplies water to the population with arsenic by extracting more water than allowed.	high	high	mail
1. Industry	Primary mining company	First Quantum Minerals Ltd	Owner of 85% of Cobre Las Cruces since 2013.	high	high	mail
1. Industry	Contractor/supplier/services	Ingedemo	Subcontractor responsible for the comprehensive technical maintenance of the Cobre las Cruces mining operation. Their workers went on strike in July 2023 due to unpaid salaries.	high	high	mail
1. Industry	Contractor/supplier/services	Lantania	Water treatment company for the Cobre Las Cruces mining complex.	high	high	mail
1. Industry	Primary mining company	PMR (Poly Metallurgical Refinery)	New underground mine and polymetallic refinery project.	high	high	mail
3. Policy agents and public administration	Local Government	Municipal Administration of Gerena	In the current legislature 2023-2027, the political groups with representation in the Plenary are: PSOE, Con Andalucía (Izquierda Unida Gerena) and PP. They opened a file against Cobre Las Cruces when 20 unauthorized perforations were discovered in the Niebla-Posadas aquifer in 2008	medium	medium	digital workshop

STK category	Subcategory	Stakeholders name	STK description	Interest	CE EXP	Channels
3. Policy agents and public administration	Local association/organisation	Municipal Administration of Salteras	In 2023, it requested the suspension of the land preparation works at the Cobre las Cruces mining complex to carry out the PMR project in response to the demands of Ecologistas en Acción	medium	medium	digital workshop
4. Civil society	Trade union	Federación de Empresarios del Metal (Fedeme)	Metal Entrepreneurs Federation (Fedeme). A professional organization representing metal industry companies in the province of Seville.	high	medium	digital workshop
4. Civil society	Regional association/organisation	Confederación Hidrográfica del Guadalquivir	Guadalquivir Hydrographic Confederation. The organization responsible for water management in the Guadalquivir River basin.	high	high	mail
4. Civil society	National association/organisation	Observatorio Ibérico de la Minería	Iberian Mining Observatory. Provides georeferenced observations of violations of social and environmental rights. Active in denouncing the lack of control over mining operations by local and regional authorities. Many environmental associations and others collaborate with it.	high	high	mail
5. Academia & RTO	Research organisation	CSIC (Consejo Superior de Investigaciones Científicas)	Spanish National Research Council. In 2012, experts from the CSIC conducted research and provided advice on the environmental performance of the Cobre Las Cruces facilities.	high	high	digital workshop
5. Academia & RTO	University	Universidad de Sevilla	The University of Seville together with AMINER seeks to promote research and teaching in mining.	medium	high	mail
6. NGO	Conservation and Wildlife Protection:	Ecologistas en Acción	Environmental group with a firm opposition voice against several mining projects, including this one	high	high	personal contact
6. NGO	Conservation and Wildlife Protection:	Amigos de la Tierra	Environmental group with a firm opposition voice against several mining projects, including this one	high	high	personal contact
2. Clusters & Assoc	Association	Colegio Oficial de Ingenieros de Minas del Sur	The Official College of Mining Engineers of Southern Spain is a professional organization that represents mining engineers in the autonomous community of Andalusia. The college aims to promote the profession of mining engineer, defend the interests of its members and contribute to the sustainable development of mining.	high	high	digital workshop
7. Media	Regional Media	Canal Sur	A major television network based in Seville, offering coverage of local news and events in Andalusia	medium	medium	personal contact

STK category	Subcategory	Stakeholders name	STK description	Interest	CE EXP	Channels
7. Media	Regional Media	Correo de Andalucía	A digital newspaper based in Seville, which is one of the longest-lived media outlets in Andalusia.	medium	medium	personal contact
7. Media	Regional Media	Sevilla Actualidad	A digital newspaper with daily news from Seville and Andalusia	medium	medium	personal contact

Study case: Tharsis, (Huelva, Spain). Tharsis Mine

STK category	Subcategory	Stakeholders name	STK description	Interest	CE EXP	Channels
2. Clusters & Assoc	Association	AMINER	The Association of Mining, Extracting, Metal-Processing, and Service Companies, Aminer. Currently formed by 54 members representing the majority of entities related to metallic mining in Andalusia.	high	high	digital workshop
6. NGO	Conservation and Wildlife Protection:	Equo Verdes	Environmental group with a firm voice in opposition to various mining projects, due to its concern for environmental impacts and sustainability in relation to mining activity.	high	high	personal contact
3. Policy agents and public administration	Local Government	Municipal Administration of Tharsis (Alosno)	Until 2023, the PSOE had won all the municipal elections held since 1977. Currently, the most voted political party is Ahora Independientes (Tharsis).	medium	medium	digital workshop
4. Civil society	Local association/organisation	Municipal Children and Adolescents Council	Composed of representatives from educational institutions, youth associations, and the children and adolescents of the municipality. An advisory and participatory body for children and adolescents.	medium	medium	mail
3. Policy agents and public administration	Local Government	Department of Employment and Business Development of the Tharsis Town Hall	Dedicated to the socio-occupational integration of unemployed individuals and the promotion of entrepreneurial initiatives.	high	medium	mail
1. Industry	Primary mining company	Tharsis Mining, S.L.	It uses an open-pit mining method to extract minerals from the stockwork.	high	high	mail

STK category	Subcategory	Stakeholders name	STK description	Interest	CE EXP	Channels
1. Industry	Technology provider/research	ALS (Australian Laboratory Services)	Offers technical laboratory analysis solutions. In addition to analysis, the company provides diverse technical services that support mining and mineral exploration, product certification, environmental monitoring, quality assurance for food and pharmaceutical products, and industrial operations.	high	high	mail
1. Industry	Primary mining company	Industrias Químicas del Andévalo, S.A.	Chemical Industries of Andévalo, S.A. Produces chemicals from pyrite.	high	medium	mail
1. Industry	Primary mining company	La Zarza Minería Metalica SL.	La Zarza Metallic Mining, S.L. Company dedicated to the exploration and exploitation of mineral deposits and other geological resources.	high	high	mail
1. Industry	Primary mining company	Tharsis Nuevas Exploraciones Sl.	Tharsis New Explorations, S.L.	high	high	mail
4. Civil society	Local association/organisation	Historical Archive of the Mines of Tharsis.	Archive responsible for the custody and preservation of the documentary collection produced by the various companies that operated in the Tharsis-La Zarza mining basin.	high	high	personal contact
4. Civil society	Local association/organisation	Tharsis Mining Museum.	Puts forward initiatives aimed at the preservation and recovery of historical heritage related to mining and the railway.	high	medium	personal contact
4. Civil society	Local association/organisation	Círculo Recreativo Minero	Mining Recreational Center. Social club established in 1880.	high	medium	digital workshop
4. Civil society	Local association/organisation	Asociación Cultural Tharsis	Tharsis Cultural Association.	high	medium	personal contact
4. Civil society	Local association/organisation	Residential Area "Pueblo Nuevo"	Built in the late 19th century by the Rio Tinto Company Limited for its English workers. Currently inhabited by a mix of Spanish and English residents.	high	high	personal contact
4. Civil society	Local association/organisation	"Las Mineras" Women's Association	The "Tharsis Miners" Women's Association was created for equality between men and women in the municipalities. They hold exhibitions and conferences.	high	high	digital workshop
4. Civil society	Local association/organisation	Thersae Youth Association.	Youth organization that organizes meetings, events. They mobilize through the RRSS	medium	medium	personal contact

STK category	Subcategory	Stakeholders name	STK description	Interest	CE EXP	Channels
5. Academia & RTO	University	Cátedra de Estudios Mineros de la Universidad de Sevilla / AMINER	The AMINER Chair of Mining Studies at the University of Seville promotes research and teaching in mining, collaborating in R&D&i activities and organizing specialized forums and courses.	high	high	mail
4. Civil society	Research	Women in Mining Spain	Is an association whose objective is to promote the employment, permanence and progress of women in the mining and industrial sector. The association emerged from the union of a group of women linked by the mining and industrial sector. Its main motivation is to promote equal opportunities between women and men in this sector.	high	high	digital workshop
2. Clusters & Assoc	Technology platform	Fundación Minería y Vida	At the Mining and Minerals Hall (MMH) congress it presented its program of 35 actions aimed at promoting the values of modern mining in Spain	high	high	personal contact
7. Media	Regional Media	ABC de Sevilla	It is a newspaper from Seville and its province, which provides daily news in this area.	medium	medium	personal contact
7. Media	Regional Media	Diario de Sevilla	It is a newspaper from Seville and its province, which provides daily news in this area.	medium	medium	personal contact
7. Media	Regional Media	COPE Sevilla	It is a radio station that focuses its content on Seville and its province	medium	medium	personal contact

3.3.1. Stakeholders description

3.3.1.1. Sośnica mine area of influence (Gliwice in Silesia province, Poland)

The mining industry in the region is represented by large companies such as KGHM Polska Miedź, a mining and metallurgy company that expects to start production at the Rudna copper project in 2025, and KWK Mysłowice-Wesoła, which focuses on coal extraction and methane sales, with an iron project expected to begin in 2026. Polska Grupa Górnicza S.A. and Polskie Górnictwo Naftowe i Gazownictwo (PGNiG) are other primary mining companies, the former dedicated to coal mining and the latter to the exploration and extraction of natural gas and crude oil.

The Katowice Special Economic Zone offers preferential conditions such as tax exemptions to support restructuring and employment generation in Silesia.

Organizations such as EkoRozwoju and Katowicki Alarm Smogowy focus on sustainable development and the environmental risks associated with coal, respectively. ClientEarth in Poland has filed lawsuits related to air quality, and the Zabrze Coal Mining Museum preserves the mining history of Silesia.

The Faculty of Mining and Geology at the Silesian University of Technology in Gliwice specializes in academic training, research, and development in areas related to mineral extraction, applied geology, and mining technologies, reflecting the importance of academia in supporting and advancing the mining industry in local development.

Altogether, Gliwice presents a stakeholder ecosystem that includes local government, the mining industry, unions, academia, and civil organizations, all interacting in the context of the Sośnica mine case, with a focus on economic development, employment protection, technological innovation and environmental sustainability.

3.3.1.2. Tharsis Mine area (Tharsis, Alosno, Huelva province, Spain)

In Tharsis (Alosno, Huelva, Andalusia), the environment of key stakeholders in relation to the Tharsis mine shows a community with a rich mining heritage and active participation in the management and development of its future. The municipal administration has undergone a significant political change, with the Ahora Independientes (Tharsis) party gaining a prominent presence, which could influence local governance and policy-making related to mining.

The mining industry remains an economic pillar with companies such as Tharsis Mining, S.L., which employs about 200 people and uses open-pit mining methods, and Industrias Químicas del Andévalo, S.A., which is dedicated to the production of chemicals from pyrite. The presence of associations like AMINER at regional level, which groups a majority of entities related to metallic mining in Andalusia, and the participation of specialized technical services such as ALS (Australian Laboratory Services), reflect a well-established and connected sector that supports innovation and maintains high standards of quality and environmental monitoring.

Organizations ranging from municipal councils for youth to cultural and women's associations, demonstrate a commitment to social inclusion, gender equality and the preservation of historical heritage. The historical archive of the Tharsis mines and the mining museum are testimonies to the effort to preserve the history and cultural identity of the region, strongly linked to mining.

The residential area "Pueblo Nuevo," dating back to the 19th century, reflects the historical international influence and the diverse demographic composition of the region. In addition, youth

participation through the Thersae youth association shows a focus on future sustainability and youth involvement in community life.

In summary, Tharsis is characterized by a dynamic and multifaceted key stakeholder environment, with a solid mining industry, an active civil society, and a commitment to cultural preservation and sustainable development. The recent political changes and the active participation of various associations and organizations may suggest a community at a turning point, although local identity is strongly and positively related to mining activity, which is generally considered as one their main assets and guarantee of a prosperous future.

3.3.1.3. Cobre Las Cruces mine area of influence (Gerena, Seville province, Spain)

In Gerena (Seville, Andalusia), the local governance and civil society show a complex interplay of interests and responsibilities surrounding the Cobre Las Cruces mining case. The municipal administration of Salteras has also taken a proactive stance by responding to environmental concerns, requesting the suspension of land preparation works at the mining complex.

Cobre Las Cruces S.A. has faced environmental and legal challenges (mainly linked to aquifer contamination). The mine's ownership by First Quantum Minerals Ltd since 2013 suggests a significant international investment and influence in the region's mining activities.

Contractors like Ingedemo and Lantania are integral to the mining operation's maintenance and environmental management, with Ingedemo's workers highlighting labour issues through strikes. The PMR project represents an expansion into new mining and refining ventures, which may bring additional economic opportunities and environmental considerations.

The involvement of organizations like Federación de Empresarios del Metal (Fedeme) and Ecologistas en Acción reflects the broader industry and environmental perspectives, with the latter actively challenging the mine's water usage and management. The Confederación Hidrográfica del Guadalquivir, public body responsible for water management, has granted concessions amidst this controversy.

The Observatorio Ibérico de la Minería and CSIC provide external oversight and research, contributing to the understanding and scrutiny of the mining operations' social and environmental impacts. The Regional Mining Administration (Dirección General de Minas of the Regional Government) holds a key position in the regulatory framework affecting the mining sector.

In summary, this area presents a dynamic scenario where local government, industry, and civil society engage in a delicate balance of economic development, environmental stewardship and social responsibility. The diverse array of stakeholders, from political figures to environmental activists, reflects the multifaceted challenges and opportunities that come with mining in this area of Andalusia, still a region that that is firmly promoting a sustainable mining development strategy.

3.3.2. Interest interpretation of stakeholders in case studies

The 'interest' column contains three levels of interest: high, medium, and low. Here is the distribution of stakeholders according to these levels of interest:

- High: 42 stakeholders
- Medium: 12 stakeholders

Distribution of stakeholder interest according to the subcategories established in the study cases



Source: own elaboration

The majority of stakeholders, including mining companies, professional associations, cultural organizations, educational institutions, and research centres, exhibit a "high" interest. This reflects significant involvement with the project's outcomes, stemming from their direct participation or the potential impact on their operations.

On the other hand, local government entities and media outlets show a "medium" interest. This could indicate that the project, while relevant, is not a top priority. Their involvement might be primarily observational or less active, possibly awaiting further developments before deciding to increase their level of interest.

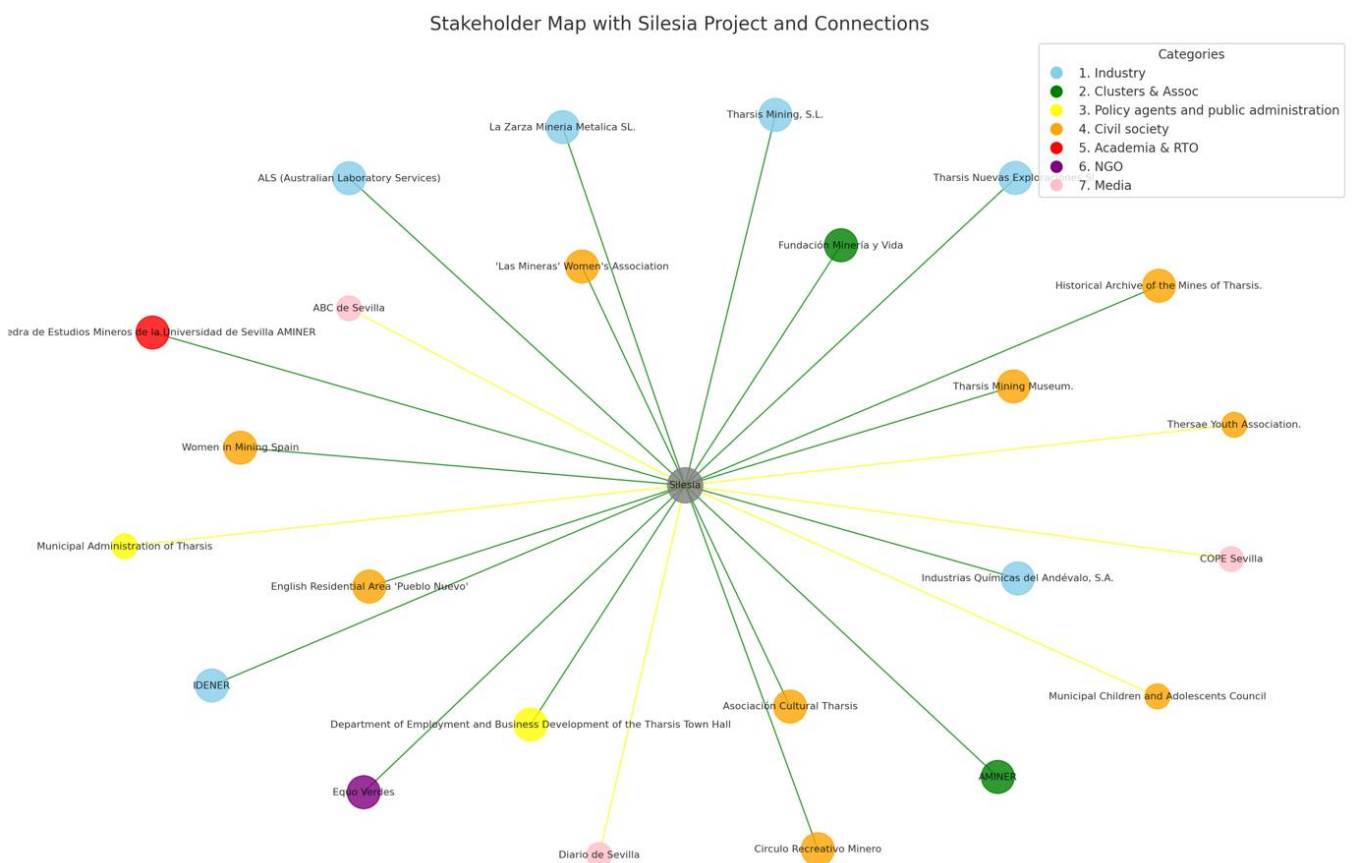
The widespread presence of stakeholders with a "high" interest suggests a marked commitment and likely active collaboration or oversight, whereas those with a "medium" interest seem to take on a more passive role. These data point to a project that has captured considerable attention and is surely in the midst of active debate among those involved, with implications for local administration, community activities, and the broader industrial and academic landscape.

3.4. Case studies stakeholder Network Graph

In this section, the representation of networks of agent maps has been carried out. The purpose of this representation is to visualize the relationship of stakeholders with the project. The relationship of the stakeholders with the project corresponds to the level of interest assigned to each stakeholder (high: green, medium: yellow). The stakeholders appear according to their categories, which have been previously assigned.

3.4.1. Case study: Silesia. Stakeholder Network Graph

Stakeholder Network Graph Silesia (PL)

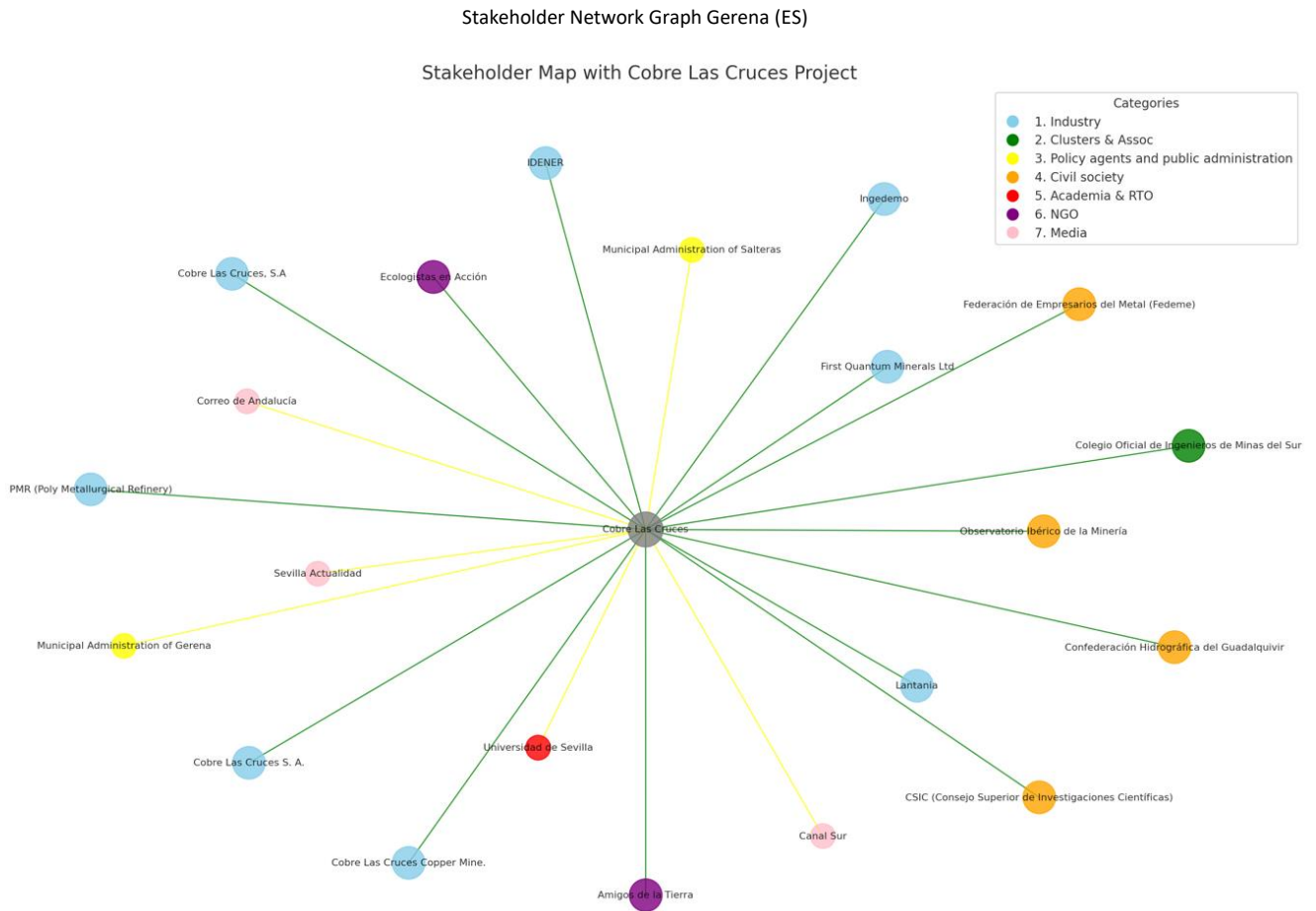


Source: own elaboration

Silesia presents a scenario where industry and innovation play crucial roles. Here, the agent network includes a mix of technology companies, educational institutions and government entities, all focused

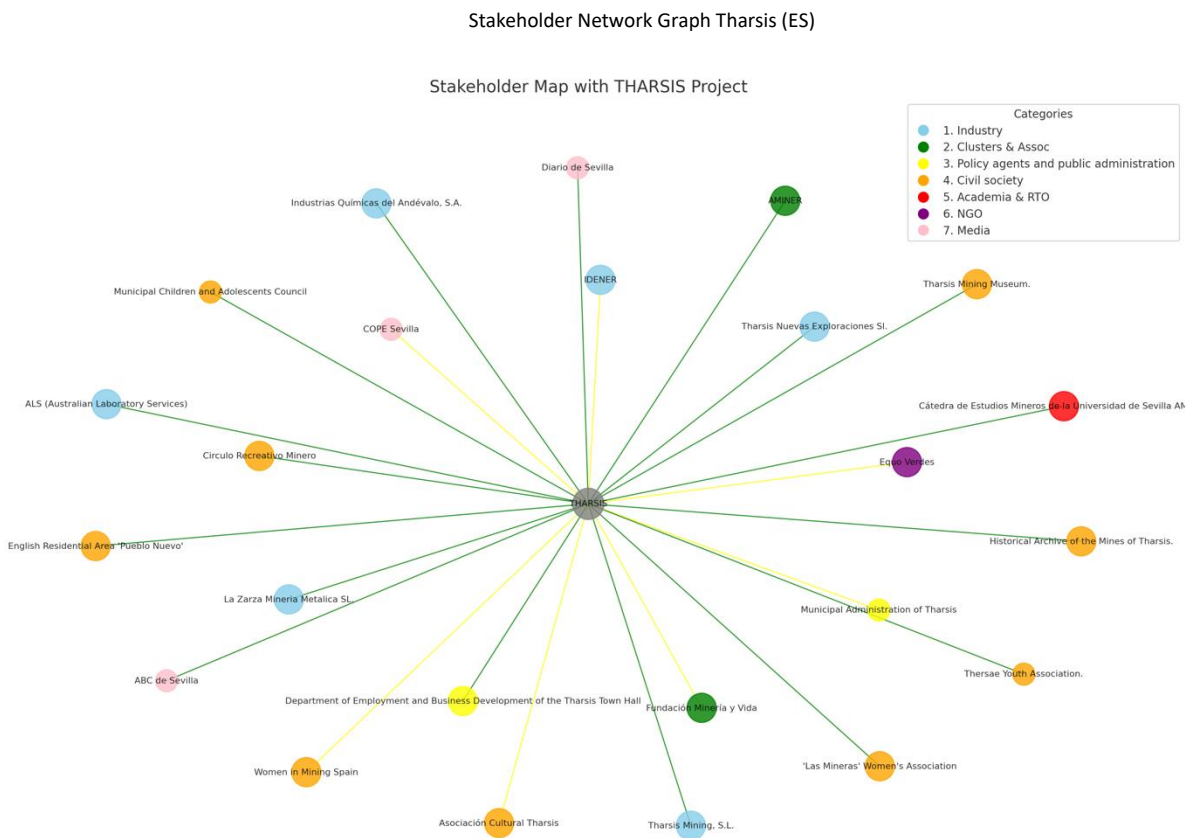
on fostering innovation and the transition towards more sustainable practices in mining and heavy industry.

3.4.2. Case study. Gerena. Stakeholder Network Graph



Source: own elaboration

3.4.3. Case study. Tharsis. Stakeholder Network Graph



Source: own elaboration

In Tharsis and Gerena, agent networks mainly revolve around the mining industry and its impact on local communities. These studies highlight the interaction between mining companies, municipal administrations and various civil society organizations. Collaborative efforts and challenges are observed in the balance between economic development, environmental sustainability and social responsibility.

4. Conclusion

The stakeholder mapping within the METALLICO project has been an intricate undertaking that has highlighted the essential complex nature and the need for collaboration across multiple actor categories in the raw materials sector. The evolving stakeholder database and the detailed stakeholder profile cards have provided a granular view of interests, influences, and expectations, enabling a strategic approach to a stakeholder engagement plan or strategy. It underscores the importance of a

multidimensional engagement strategy that accommodates the diverse objectives and capabilities of industry players, academia, policy agents, NGOs, and civil society.

Each category of stakeholders mapped in this project—from the core industry players to the influencers in academia and media—carries a unique set of interests, expectations, and capacities to engage in the transition towards more sustainable and circular practices.

The industry stakeholder, the most numerous in the database, are not just key drivers of economic growth; they also embody the potential for innovation and setting new standards in sustainability. Results indicate a significant presence of these stakeholders in Europe, suggesting a robust platform for industry-led initiatives in circular economy practices. Their influence is paramount in shaping the future of the sector, and their engagement is critical for industry-wide transformation.

Clusters and associations have revealed themselves as vital for fostering collaborative efforts that can lead to greater innovation and competitive advantage. This collaborative ethos is essential for the circular economy, where shared resources and information can catalyse more efficient and sustainable industry practices.

The policy agents (mostly regarding the study cases), reflect the pivotal role of governance in facilitating or constraining the project sustainability. Their engagement is crucial for creating an enabling environment that balances economic ambitions with regulatory compliance and societal expectations.

Civil society's strong representation in the study cases underlines the significance of community-level engagement and the role of local associations, unions, and media in advocating for responsible practices. Their voices are integral to maintaining a check on industry operations and ensuring that community welfare is not side-lined in the pursuit of economic gains.

The academic and research institutions highlight the sector's reliance on scientific research and technological innovation for advancing towards circular economy. Their deep involvement is indicative of a sector that is keen on evidence-based practices and continuous learning.

NGOs, although fewer in number, represent a focused lens on the sector's environmental and social justice aspects. Their stake in the sector's operations is a reminder that the activities related to raw materials lifecycle are not isolated from broader societal concerns.

Finally, the media's role, particularly highlighted at regional – local scale, underscores the power of information dissemination and public opinion shaping. The media's involvement is crucial for transparency and accountability within the sector, and for the broader societal understanding and acceptance of the different activities.

The stakeholder profile cards have emerged as a useful tool for understanding and providing the basis for engaging with these diverse groups. They serve not just as repositories of information but as frameworks for dialogue, helping to pinpoint areas of common interest and potential conflict. These cards facilitate a more nuanced approach to stakeholder engagement, where the diverse needs and contributions of each stakeholder are acknowledged and integrated into the project's strategy. In sum, the comprehensive stakeholder mapping has provided us with a better understanding of the ecosystem of actors around METALLICO.



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