ESG Research

# ESG Materiality Map
# Metals And Mining

May 18, 2022

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*This report does not constitute a rating action*


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In line with the research report "Materiality Mapping: Providing Insights Into The Relative Materiality Of ESG Factors," published on May 18, 2022, S&P Global Ratings is publishing research on the ESG materiality map for the metals and mining sector. We provide an illustration, at a point in time, of our findings on the relative materiality of certain environmental and social (E&S) factors, from both the stakeholder and credit perspectives, for the sector. The materiality map research does not represent any new analytical approach to the treatment of E&S factors in our credit ratings. See our ESG criteria for more information on how we incorporate the impact of ESG credit factors into our credit ratings analysis.

## Metals And Mining Sector

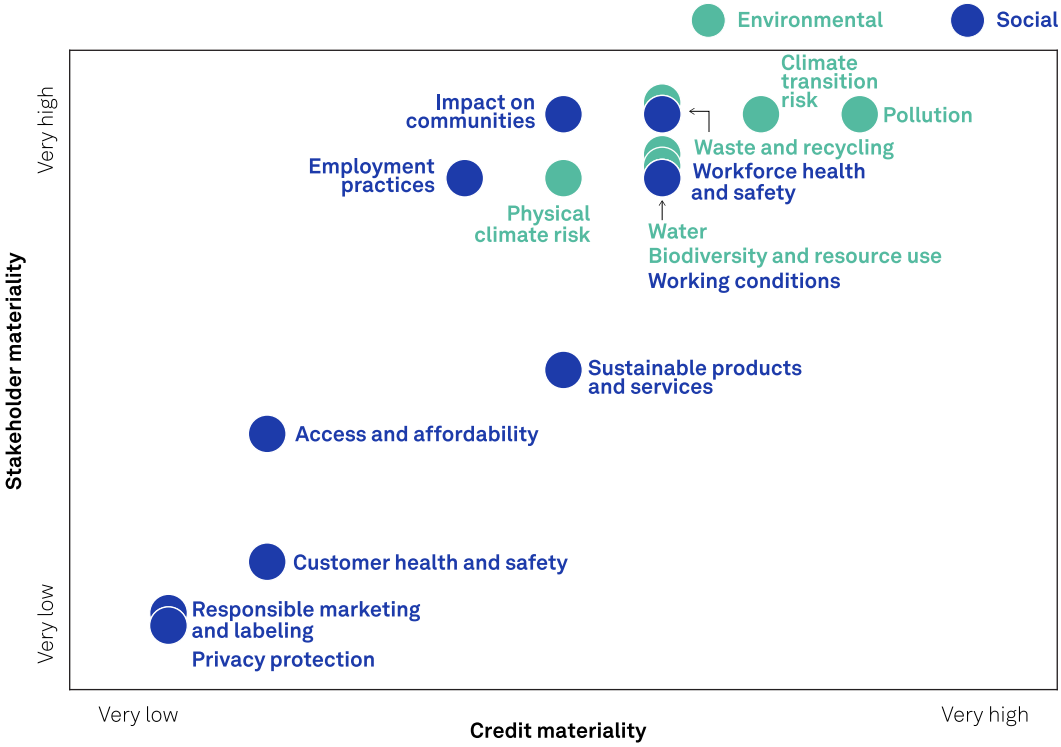
The industry's value chain extends from bulk mineral mining to advanced fabricated products. Mining companies extract, process, and refine ore-bearing rock to produce metals or minerals (e.g., copper, iron ore, coal). Metals companies manufacture products including steel, aluminum, recycled metals, and advanced alloyed materials, and often rely on a mined input.

### Key Takeaways

- The metals and mining sector faces significant environmental issues material for both stakeholders and credit, with primary exposures to the climate transition and pollution. The sector has high direct and indirect carbon intensity, emits pollutants, and sometimes causes pollution incidents that can harm people and natural ecosystems. The sector also supports the energy transition, which could benefit both stakeholders and credit for companies producing a few essential metals like copper, lithium, cobalt, or nickel.
- Safety considerations can have a widespread impact on both stakeholders and credit. Extractive and transformation processes expose individuals to heavy machinery and high temperatures (among other hazards), necessitating ongoing investment in safety and training, often with stringent regulatory scrutiny.
- Additional material factors for stakeholders but with more limited credit impact include impact on communities and employee-related factors beyond safety. Community and employee relations have always been key to operations and credit quality and could become acute as companies expand into increasingly difficult ore bodies or untested jurisdictions.

See materiality map on the following page.

# ESG Materiality Map For The Metals And Mining Sector




The materiality map provides an illustration at a point in time, of our findings on the relative materiality of certain environmental and social (E&S) factors, from both the stakeholder and credit perspectives, for the sector. It does not represent any new analytical approach to the treatment of E&S factors in our credit ratings. See our ESG Criteria for more information on how we incorporate the impact of ESG credit factors into our credit ratings analysis. Source: S&P Global Ratings.

## How To Read The ESG Materiality Map

The stakeholder materiality (Y axis) reflects our assessment of the relative level of impacts and dependencies of the sector on the environment, society, and economy.

The credit materiality (X axis) reflects our assessment of the relative level of potential and actual credit impact for the sector. The credit implications for the factors positioned on the left side to the middle of the X-axis would be more limited and absorbable. On the right side, there is higher potential for these implications to be more disruptive. We assess credit implications for an entity based on its individual characteristics.

Assessing E&S factors' materiality: We consider both the likelihood of the impact from a given factor, as well as the magnitude of the impact. The materiality of the factors varies depending on the perspective (stakeholder or credit) as well as the evolving and dynamic interactions between these two dimensions.

The main areas of the map:

- The upper-right quadrant displays the most material, on a relative basis, E&S factors identified for the sector from both a stakeholder and credit perspective.
- The upper-left quadrant presents factors that are more material from a stakeholder than credit perspective. These factors have the potential to become more material from a credit perspective.
- The bottom-left quadrant shows factors that are less material for both stakeholders and credit. Their materiality may evolve over time and this dynamic may not be linear.

# Examples Of Material Factors

Below we provide the rationale of some of the material factors to illustrate the above findings.

## Pollution

Pollution is highly material for both stakeholders and credit. Mining disrupts ecosystems as it releases toxic elements into the air, water, or soil. Downstream metals production is less invasive owing to a smaller footprint, but exposure exists up the value chain as these companies often rely on mined inputs. Many substances used to process ores are hazardous and can be damaging if leaked. Pollution can also harm human health through land or water contamination. The management of waste and pollution is embedded within the operating plans for any assets in the metals and mining industry, albeit with varying degrees of quality management, scrutiny, and risk. As such, different cost requirements will affect an asset's profitability and risk exposure. Pollution explicitly affects credit to a lesser degree and infrequently, because small breaches are usually managed through established legal or regulatory frameworks. On the other hand, incidents at Imperial Metals' Mount Polley mine in Canada (2014) and Samarco (2015) and Brumadinho (2019) in Brazil demonstrate that large-scale incidents such as a tailing dam collapse can take a severe toll on operations and creditworthiness due to high remediation costs and reputational damage.

## Climate transition risks

The mining of minerals and processing of metals are both energy intensive, particularly primary metals versus recycled metals. Moreover, the energy intensity of mining is increasing in many cases as ore grades decline and generally require more processing. So far, the public's and policymakers' awareness have focused on the massive greenhouse gas (GHG) emissions from the industry’s end products, especially during the combustion of coal. Phasing out coal affects stakeholders by potentially raising electricity prices (as coal is a cheaper, globally abundant fuel source), and because the coal industry is a significant economic contributor in many localities. The push for an accelerated energy transition translates to weaker demand and greater credit risk for coal companies and is spilling into the most energy-intensive segments of the wider industry. For example, most of the world's steel is produced with coal-fired blast furnaces. Aluminum, by comparison, has attractive lightweight and recyclability properties for numerous manufactured goods from autos to beverage cans, but the production of primary aluminum uses carbon anodes, which also emit significant GHGs. While the energy transition presents significant challenges for both credit and stakeholders, it relies on the use of metals like copper, lithium, cobalt, and nickel, which are essential for electrification and battery deployment.

## Workforce health and safety

This factor is highly material for stakeholders and material for credit, given heavy ongoing investments in health, safety, and education to bolster safe operations. According to the International Labor Organization, the mining industry is one of the most hazardous in the world. Downstream metals production may also be dangerous because plants operate large machinery and processes at high temperatures. The impact on stakeholders may be extensive because safety incidents can involve significant operational disruption or human casualties, potentially creating community friction or regulatory penalties. Low-probability events like mine collapses or fugitive emissions can harm employees and communities, while disrupting production and prompting costly remediation, which could affect credit.

## Impact on communities

The sector's impact on communities is typically more pronounced for stakeholders than for credit, considering the investments associated with large, disruptive assets. Mine plans incorporate sizable investments that can affect local living conditions, such as infrastructure. Even these modern advancements can engender dissent, not least because they may occur in remote areas or conflict zones and because mining concessions encroach on natural or agricultural land. While metals fabricators are less acutely exposed to this, they often have a significant footprint and presence in the communities where they operate, necessitating long-standing relations with employees, pensioners, and their families. Constantly depleting deposits require exploring vast, new areas, potentially increasing friction with small communities, especially Indigenous groups.

## Working conditions And Employment practices

Employment practices and working conditions have high stakeholder impacts, especially in remote areas because of employees and their families' economic dependence on a few work providers. Some employees or contractors might not be protected by the oversight and enforcement of robust mining or labor codes, or they might lack awareness of their rights, and can be exploited with limited capacity for recourse. Other employment issues could include fair wages with appropriate benefits for often dangerous or difficult work, and ongoing training, especially on safety. The credit materiality of working conditions and employment practices in mining can vary by operation but is still relatively high. The costs and management-intensity reflect the often-limited availability of skilled labor nearby. For example, housing or transportation for workers in remote operations can magnify considerations like integrating women into a largely male-dominated industry, health support for demanding work in isolated locations, and potential employee interactions with small communities and Indigenous people. Human rights at work are important considerations in the informal mining industry, which remains a small subsector of the global industry and is usually not authorized.

## What is our approach to research on the ESG materiality map?

Referring to the research report "Materiality Mapping: Providing Insights Into The Relative Materiality Of ESG Factors," published on May 18, 2022, this research is built on the ESG materiality concept that considers ESG issues as material when they could affect stakeholders, potentially leading to material direct or indirect credit impact on entities. It considers that all businesses, through their activities and interactions, impact and depend, directly or indirectly, on stakeholders such as the environment (natural capital), society (human and social capital), and economy (financial capital). Using this ESG materiality concept, S&P Global Ratings has worked toward identifying a common, global, cross-sector set of E&S factors that we believe are material to stakeholders, and either are already, or have the potential to become, credit material for entities. The materiality map we propose provides an illustration at a point in time, of our findings on the relative materiality of those factors, from both the stakeholder and credit perspectives.

## How does the sector ESG materiality map relate to credit ratings or ESG evaluations?

The sector materiality map is a visual representation of the factors that we consider impactful to the sector from a stakeholder and credit perspective for the purposes of this research. It does not represent any new analytical approach to the E&S factors in our credit ratings.

The relative materiality of the factors indicated on the materiality maps may inform the E&S Risk Atlas scores and the weights of the E&S factors used in ESG evaluations.

They may also inform our discussions with issuers on those factors' existing or potential credit materiality.

## Related Research

- Materiality Mapping: Providing Insights Into The Relative Materiality Of ESG Factors, May 18, 2022
- Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021
- ESG Evaluation Analytical Approach, Dec. 15, 2020