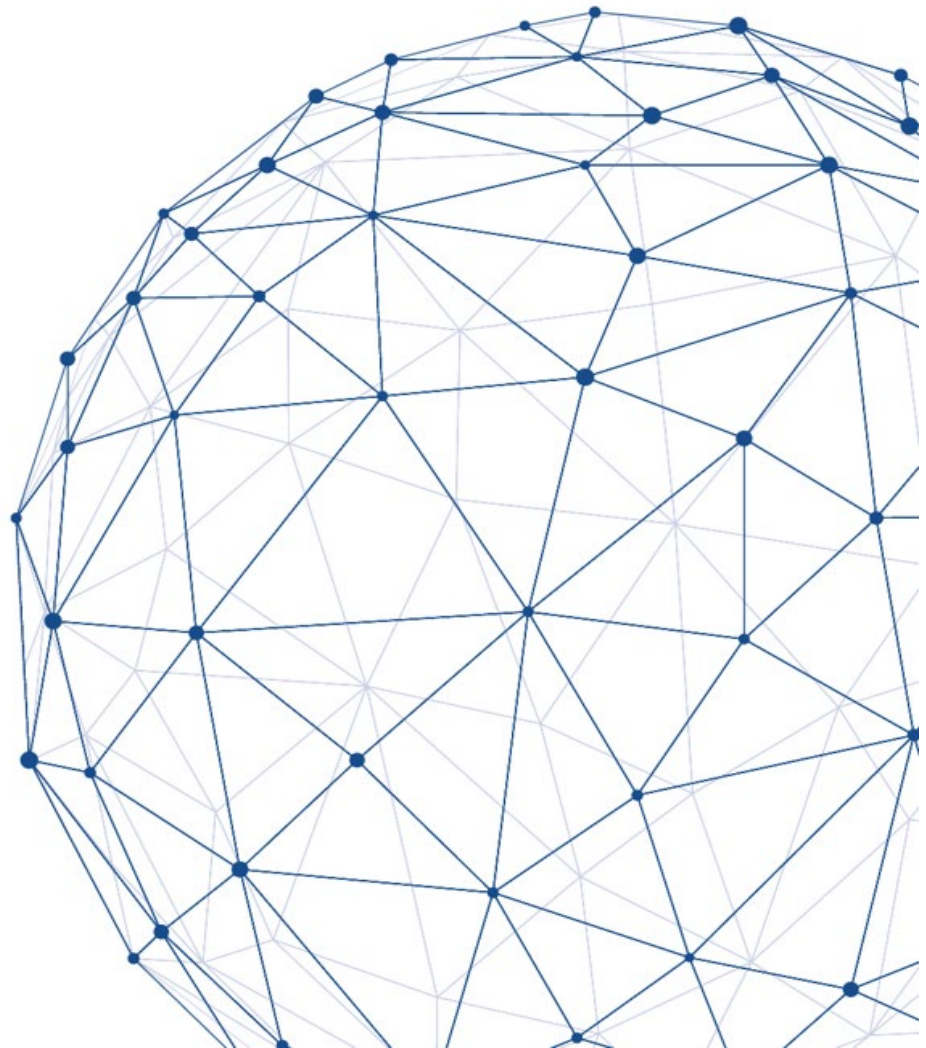


ESG Considerations for the Metals & Mining Industry

ESG factors are particularly relevant for credit quality in the metals & mining industry. Vast amounts of power, water and chemicals are used in the extraction and processing of ore, and the development of mining sites may disturb natural landscapes and ecosystems. Furthermore, mining operations can be hazardous and expose workers to significant health and safety risks. This document explains the ESG factors we consider relevant to credit ratings.

Scope Ratings GmbH, 23 April 2021



1. Scope's general ESG framework

Our ESG framework evaluates the extent to which ESG factors are credit-relevant for different industries. We also provide an overview of how ESG factors are integrated into our credit analysis. Our evaluations are not mutually exclusive or collectively exhaustive as these factors overlap and evolve. Reporting standards for these non-financial key performance indicators are undergoing major changes, shedding ever more light on stakeholders' understanding and expectations of ESG. We therefore aim to update the framework on a regular basis.

Our corporate credit rating analysis remains focused on credit quality and credit assessment drivers. We only consider an ESG factor relevant to our credit rating process if it has a ubiquitously discernible and material impact on the rated entity's cash flow profile and, by extension, its overall credit quality. Contrary to ESG ratings, which are largely based on quantitative scores for different rating dimensions, credit-relevant ESG drivers are mostly of a qualitative nature. Hence, identified ESG rating factors are based on an opinion in a relative context.

The importance/relevance of certain ESG factors is specific to each rated entity, industry and region, except for the dimension of governance, which is universally applicable across all industries. For example, the risk of pollution and environmental damage is important in the utilities, chemicals and natural resources industries but less relevant to the retail sector, where governance and social factors are more relevant. The same applies to an assessment of ESG-related factors that might have a significant impact on a company located in western Europe but no effect on an eastern Europe corporate with a similar business model. A good example is the impact of regulatory risks, which may be significantly greater in some jurisdictions.

Governance is an indication of how well a corporation is controlled and directed and the extent to which the interests of different stakeholders are safeguarded, including the payment of all due amounts on time and in full. Governance is thus relevant to all rated entities. In contrast, environmental and social variables capture risks and opportunities that are often specific to the activities of a company and the industry in which it operates. All such factors may have a direct or indirect impact on a rated entity's market position and its financial performance.

ESG-related factors can directly or indirectly affect all the rating elements which make up our assessment of an issuer's business risk profile, financial risk profile and supplementary rating drivers. We provide a list of ESG factors that we normally consider for a given industry, although only some of the factors listed are likely to apply and be relevant to any given company.

ESG rating drivers are part of the rating framework that is outlined in our general corporate ratings approach.

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2. Important ESG themes in the metals & mining industry

The global energy sector's shift from fossil-based energy production – including oil, natural gas and coal – to renewable energy sources like wind and solar, as well as rechargeable batteries, is having a significant impact on the demand for different metals and minerals. The rapid phasing out of coal in the electricity industry for example, is reducing the demand for thermal coal, whereas the demand for copper, lithium, cobalt, and graphite is expected to rise significantly with growth in the production of electric vehicles and wind power plants.

Given the strong impact the metals & mining industry has on the environment, sustainability has long been a key industry focus. The major global metals & mining companies recognise the Paris Agreement climate targets and have adopted strategies, policies and procedures aligned with these targets and the UN Sustainable Development Goals. The International Council on Mining and Metals has published 10 Mining Principles and Performance Expectations regarding how its members should manage a broad range of sustainability issues, and the leading metal & mining companies now present their annual reports in line with the Global Reporting Initiative framework.

Although most elements of ESG are important to credit quality in the metals & mining industry, we see the following key themes as particularly important:

- Energy transition and the environment
- Employee health and safety
- Stakeholder engagement
- Bribery

In the following sections we explain the significance of these challenges to the industry, and why they are important to our analysis of creditworthiness.

2.1 Energy transition and the environment

With the energy transition well and truly underway, the large global metals & mining companies are responding by recalibrating portfolios away from thermal coal toward metals and mineral that are likely to be beneficiaries of the transition. The energy transition is most advanced in Europe, where over half the countries are already coal free or have pledged national coal phase-outs over the next decade. Size and diversity are advantageous here, as the largest miners have generally succeeded in shifting portfolios and capitalising on growing demand for copper, nickel, palladium and other metals and minerals for which demand has risen. Conversely, many smaller coal miners have had to scale down or close operations as European coal production has almost halved over the past decade.

The development of mines, processing plants, ports, and transportation infrastructure in sensitive areas has the potential to destroy natural landscapes and habitats, disrupt sensitive ecosystems, and divert scarce water resources to the detriment of local communities. The mining and processing of ore generates harmful gas emissions, air particle pollution and waste. Metals are often extracted from crushed ore using toxic chemicals. Tailings dams contain large amounts of toxic material that needs to be safely contained. At the same time, the metals & mining industry is playing a critical role in facilitating the energy transition, by producing the very metals and minerals that society needs to make the transition a reality.

Mine disasters like shaft or pit wall collapses, earthquakes, gas explosions or tailing dam breaches can cause enormous environmental destruction and result in punitive financial penalties, business interruption and ultimately the loss of a license to operate. This was exemplified by major dam disasters in Brazil in 2015 and 2019, which caused hundreds of fatalities, forced resettlements, widespread environmental destruction, contamination of land and waterways and disruption to ecosystems. They were followed by a major diesel spill into rivers and lakes in Russia's Arctic north in 2020, contaminating an area of 350 square kilometres. The reasons for mine disasters can be manifold and sometimes several different factors contribute to the event, including meteorological or seismic causes, poor management, a breach of safety protocols or a lack of investment in preventative measures.

New technologies, digitalisation and mine mechanisation are bringing productivity and efficiency gains to the mining process, including a reduction in the consumption of power, water and chemicals, as well as safety improvements (e.g. dry tailings backfill technology).

Relevance to our rating approach:

Commercial success and high credit quality in the mining industry is typically synonymous with a low cost position, large size and diversity. Achieving this requires a constant reassessment of the asset portfolio and ensuring that capital is invested in the right projects at the right time. The energy transition is a key factor in the supply demand equation for metals and minerals and therefore has a big impact on investment decisions. Failure to take account of these megatrends can result in poor investment decisions, failed projects, stranded assets and significant monetary loss. Decisions by authorities to advance the phase out of coal, for example, have led to market price declines, forcing producers to ship products to more remote markets at greater expense, as well as stranded assets and mine closures. The premature closure of mines also results in the acceleration of asset retirement obligations, such as mine area rehabilitation expenditures.

Air, water and land pollution may threaten the livelihoods and quality of life of nearby communities and wildlife, which in turn may result in negative public opinion, regulatory intervention or fines and ultimately the loss of the license to operate. The tailings dam incidents in Brazil triggered fines and compensation claims of over USD 10bn and the mines in question are yet to recommence operation. The diesel spill in Russia last year resulted in a USD 2bn fine, the largest ever environmental penalty imposed by the country.

Minimising the environmental footprint of a mine or processing plant is also important since many buyers of metals measure their indirect environmental footprint (Scope 3) and may be unwilling to procure products that are produced in an environmentally harmful way. Similarly, investors and financiers may shun companies with questionable environmental credentials.

2.2 Employee health and safety

Mining operations can be hazardous, involving heavy equipment and machinery, the handling of large quantities of bulk materials and toxic chemicals, as well as dangerous underground operating conditions that expose workers to significant health and safety risks. Breaches of safety protocols can cause serious injuries and fatalities. The mining industry has the highest level of work-related physical health problems, according to European Commission statistics.

Health and safety is a greater concern in developing countries than in developed countries. The EU has passed several directives directly related to health and safety in the mining industry, which has helped to improve and harmonise health and safety laws and provisions in the member states. Most mining companies also spend a lot of resources on training staff in health and safety matters and preventing health and safety incidents. These initiatives have significantly improved the level of fatalities and employee health problems over time.

Health and safety legislation is generally comprehensive around the world, but the level of compliance, supervision, and control may vary greatly from one country to another. In some countries, it is up to the mining companies themselves to maintain high standards since the host nation may have a limited capacity to effectively monitor and enforce compliance with laws and regulations.

Relevance to our rating approach:

Most regulatory authorities have the power to impose fines and halt mining operations if health and safety protocols are violated. This is a common occurrence in the South African mining industry for example, where fatalities are relatively frequent.

Failure to address health and safety issues may also result in strikes or class action lawsuits, such as the silicosis class action lawsuits in the South African gold mining industry.

2.3 Stakeholder engagement

Stakeholder management is particularly important to the industry, given the significant impact a large mining or metals processing site can have on a local community, its environment, economy and inhabitants. This is particularly important in developing markets, where new mine developments can have a highly positive economic and developmental impact through job creation and other community benefits.

Good relations with regulators and local utilities are also important to success for a mining operation. For example, miners often have a critical dependency on local utilities for the stable and affordable supply of electricity and water, without which operations are not viable. Regulators normally have powers to fine, halt operations, or revoke licenses, in the case of serious or repeated violations of licensing requirements.

Labour, union and local community relations are particularly important, since mining operations can be labour intensive and employee disputes can result in strikes or other forms of disruption to operations. A lack of employee engagement may also result in poor workforce morale, productivity, and high staff turnover. Conversely, an investment in workforce training, development and health as well as in social infrastructure can foster strong and productive partnerships with employees, unions and local communities.

Relevance to our rating approach:

Mining operations often have a critical dependency on many stakeholders, including local utilities and the labour force, any of which can threaten the viability of a mining operation. Failure to address social risk factors can trigger adverse publicity around a company, which in turn may result in important stakeholders, including customers, suppliers, investors, and financiers, distancing themselves from the company.

2.4 Bribery

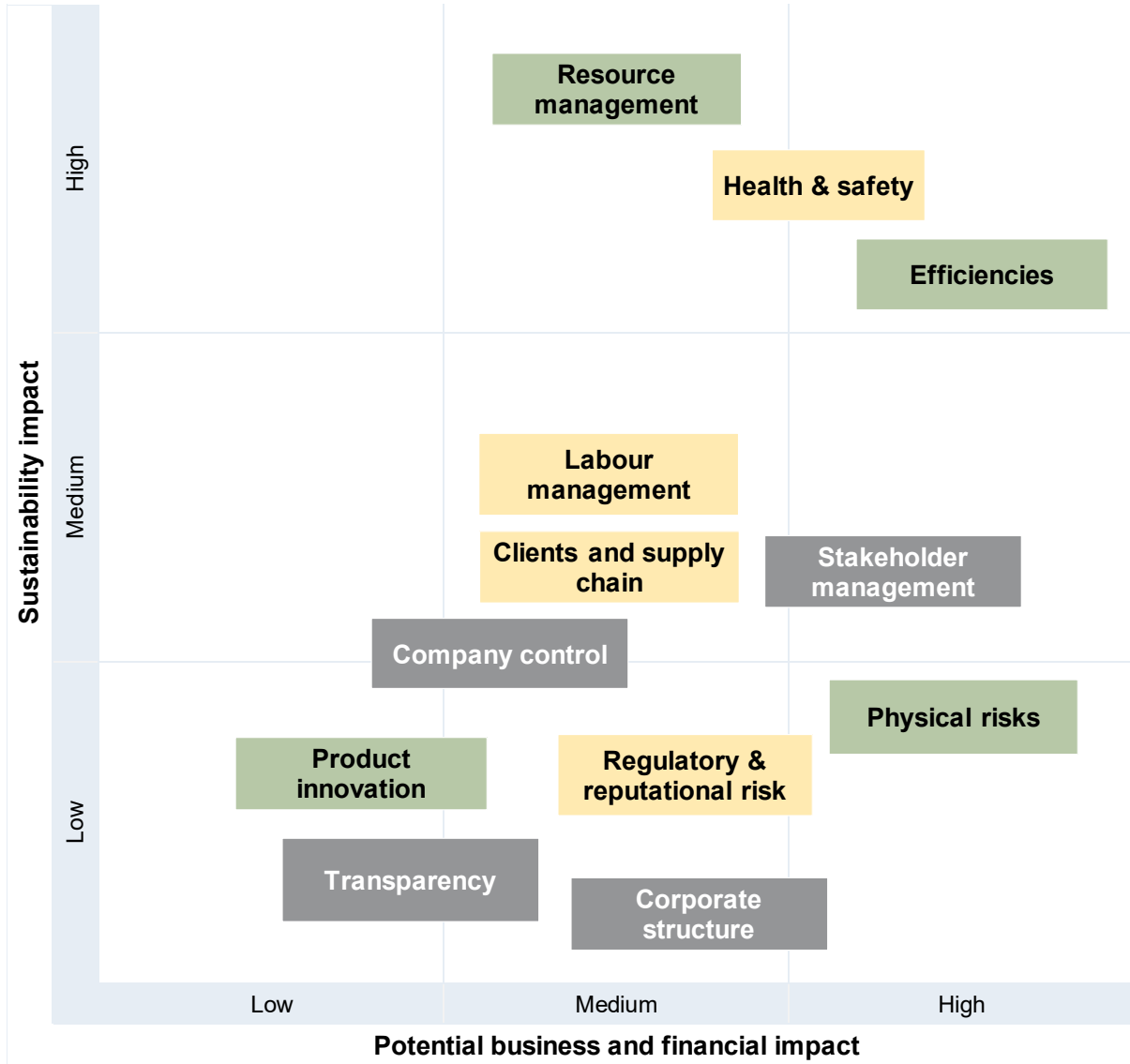
Given that mine reserves are often located in remote locations in developing countries, with less developed political, legal and regulatory systems and institutions, the industry is often exposed to facilitation payments and bribery. The industry has responded to this risk by adopting policies to prevent bribery and corruption and to publicly disclose facilitation payments and political donations. It is often up to the mining companies themselves to uphold high governance and sustainability standards however, since the host nation may have a limited capacity to effectively monitor and enforce compliance with acceptable industry norms.

Relevance to our rating approach:

Bribery can have adverse reputational consequences, lead to regulatory reprimands or fines, or ultimately the loss of assets and the license to operate. Incidents of bribery and corruption can signal ineffective corporate governance and weak controls, which in turn can result in the misappropriation of company assets, poor decision making and the failure to achieve strategic goals.

3. Materiality of ESG factors to the metals & mining industry

Within our ESG framework we look at various broader categories related to E, S and G. We seek to differentiate the sustainability impact of the companies' internalities and externalities, between what is considered sustainable (sustainability impact) and the potential business and financial (credit) impact of ESG factors. Not all ESG factors influence an issuer's creditworthiness to the same extent.



4. Typical ESG factors in metals & mining

Governance is generic to all industries and is therefore more important in terms of how it is measured. The E and the S are meant to depict a realistic image on the risks and opportunities that a metals & mining company might face. The list is therefore non-exhaustive and expected to evolve over the next years.

| Environment | | | |
|----------------------------|----------------------------------|--|---|
| | Sub-Indicator | Measurement/indicator | Credit impact |
| Resource management | Consumption of natural resources | <ul style="list-style-type: none"> Energy and water consumption by unit of production Air particle pollution by unit of production Track record of soil or waterway contamination | <ul style="list-style-type: none"> Poor environmental credentials may result in regulatory intervention or fines, weaker earnings and ultimately the loss of the license to operate |
| | Circular economy | <ul style="list-style-type: none"> Use of recycled raw materials, such as steel or aluminium scrap, in metals production | <ul style="list-style-type: none"> Production of metals from scrap requires less energy, is less capital intensive and cheaper than production from virgin ore |
| | GHG emissions | <ul style="list-style-type: none"> Harmful gas emissions by unit of production (Scope 1 and 2) | <ul style="list-style-type: none"> Cost of procuring emission rights negatively affects cost position and profitability Buyers of metals may measure their indirect environmental footprint (Scope 3) and be unwilling to procure products that are made in an environmentally harmful way |
| Efficiencies | Production process | <ul style="list-style-type: none"> Age and technology of plant and equipment Capacity utilisation Level of mine mechanisation | <ul style="list-style-type: none"> Older plants and equipment are generally less efficient and productive, reflected in higher power, water and chemicals consumption and in lower recovery rates Low capacity utilisation results in low absorption of fixed costs and is a sign of general inefficiency |
| Product innovation | Research and development | <ul style="list-style-type: none"> Technological sophistication R&D as a % of revenues | <ul style="list-style-type: none"> New technologies can provide significant productivity and efficiency gains and improve profitability |
| Physical risks | Force majeure risks | <ul style="list-style-type: none"> Assets that can be negatively affected by extreme weather/natural disasters such as storms, wildfires, flooding, and earthquakes Assets located in regions suffering from extreme poverty, violence, and weak rule of law | <ul style="list-style-type: none"> A high exposure to regions that suffer from extreme weather events or natural disasters leads to higher insurance premiums, a greater likelihood of asset non-performance and increased capex Risk of stranded assets/asset impairments |

| Social | | | |
|---|----------------------------|---|---|
| | Sub-Indicator | Measurement/indicator | Credit impact |
| Labour management | Workforce metrics | <ul style="list-style-type: none"> Nature and state of relationship with unions Employee engagement measures Female participation in the workforce | <ul style="list-style-type: none"> Poor union relations and employee engagement may result in low workforce morale and productivity, high staff turnover and ultimately strike action |
| | Health and safety | <ul style="list-style-type: none"> Lost time injury rate Fatalities Prevalence of occupational diseases Frequency of health and safety-related regulatory interventions and fines Frequency and scale of mine disasters (e.g. mine shaft or pit wall collapse, earthquake, gas explosion, tailings dam breach) | <ul style="list-style-type: none"> Mine disasters can cause fatalities, significant reconstruction and restitution costs, business interruption, and reputational damage Safety violations can lead to injuries, fatalities, regulatory interventions, and financial and reputational damage Failure to address health and safety issues may result in strikes or class action lawsuits |
| Clients and supply chain | Local economic development | <ul style="list-style-type: none"> Share of local, indigenous workforce participation Nature and state of relationship with local government and local community groups | <ul style="list-style-type: none"> New mine developments often have positive economic and developmental impact through job creation and other community benefits Investment in adequate social infrastructure can foster strong and productive partnerships with local communities Conversely, disputes with local community groups may result in strikes, or other forms of interruption to business operations |
| | Procurement | <ul style="list-style-type: none"> Nature and state of relationship with critical suppliers, notably local power and water utilities | <ul style="list-style-type: none"> Miners often have a critical dependency on local utilities for stable and affordable supply of electricity and water; a breakdown in this relationship may be detrimental to the business |
| Regulatory and reputational risk | Regulation | <ul style="list-style-type: none"> Track record of compliance with laws and regulations | <ul style="list-style-type: none"> Compliance failures may result in financial penalties or ultimately the loss of the license to operate and confiscation of assets |
| | Reputation | <ul style="list-style-type: none"> Press sentiment | <ul style="list-style-type: none"> Adverse publicity around a company may cause it to be shunned by important stakeholders, including customers, suppliers, investors, and financiers |

| Governance | | | |
|-------------------------------|-----------------------------------|--|---|
| | Sub-Indicator | Measurement/indicator | Credit impact |
| Company control | Board structure and effectiveness | <ul style="list-style-type: none"> Board independence Competency and diversity of board members Effectiveness of oversight, risk management and internal control mechanisms Sustainability targets at board and executive management level | <ul style="list-style-type: none"> Ineffective board or lack of controls can result in poor decision making and failure to achieve strategic goals Tight controls are vital to minimise fraud, theft, or misapplication of company resources |
| | Risk management | <ul style="list-style-type: none"> Risk management framework and culture Risk adjusted return/performance measures | <ul style="list-style-type: none"> Risk awareness at all levels of an organisation is crucial for effective strategic, operational and financial risk mitigation |
| | Bribery and corruption | <ul style="list-style-type: none"> Frequency and magnitude of bribery and corruption incidents | <ul style="list-style-type: none"> Adverse reputational consequences include regulatory reprimands or fines, loss of assets, and/or operating licenses |
| Clarity/transparency | Financial disclosure | <ul style="list-style-type: none"> Timeliness and quality (GAAP) of disclosures Comprehensiveness of disclosure (e.g. terms of loan agreements, contingent liabilities, related party transactions, ownership structure etc) Consistency in reporting formats | <ul style="list-style-type: none"> Rapid and comprehensive financial reporting instils confidence and signals strong and effective internal controls Conversely, slow and incomplete reporting may signal weak controls, incompetence or an attempt to hide something (creative accounting) |
| | Transparency of communication | <ul style="list-style-type: none"> Earnings call and investor presentations that help stakeholders understand the drivers of company performance, its strategy and direction Risk factor (incl. ESG-related risks) and sensitivity analysis | <ul style="list-style-type: none"> Transparency is often associated with a strong governance culture Understanding and openness about risk factors allows a company to hedge against risks and prepare mitigation strategies |
| Corporate structure | Complexity | <ul style="list-style-type: none"> Complex and opaque ownership structure (nominee holdings hiding true owners) Complex group structure Complex debt structure Significant related party transactions Aggressive tax optimisation strategies History of frequent legal or regulatory infractions | <ul style="list-style-type: none"> Opaque company ownership, cross holdings, and significant minority interests may hide conflicts of interest Complex debt structures can result in unexpected events of default and cross acceleration Related party transactions may disguise inappropriate diversion of company assets Aggressive tax strategies can backfire and result in unexpected tax penalties, negative publicity, and reputational damage |
| Stakeholder management | Stakeholder relations | <ul style="list-style-type: none"> Respect for and balancing of all stakeholder interests | <ul style="list-style-type: none"> Stakeholder disputes may have negative reputational and financial consequences |
| | Shareholder distributions | <ul style="list-style-type: none"> Financial policy clarity, consistency, credibility, and track record Board level endorsement of financial policy | <ul style="list-style-type: none"> A clear and credible financial policy helps steer a company towards its strategic targets and manage stakeholder expectations |



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