

1. Applicability

This sector profile is designed to help fund managers quickly familiarise themselves with the most frequent and important environmental, social and governance (ESG) aspects of investments in the infrastructure sector. It aims to be a starting point for thinking about ESG risks and opportunities, and not a detailed technical guidance document.

- [Using this sector profile](#)

A company can be affected by non-sector specific issues such as impacts on Indigenous Peoples and cultural heritage. Therefore, each company must be carefully considered based on its specific characteristics and circumstances including scale of operation, location, technology utilised, management capacity, commitment and track record, and supply chains. Additionally, environmental and social (E&S) impacts, risks and opportunities in a particular company or sector can change over time for a number of reasons (e.g. changes in the applicable laws, or expansion of a company’s activities or assets). Fund managers should have systems in place to identify such changes and manage any associated risks and impacts and, where possible, capitalise on new opportunities.

The sector profile draws on internationally recognised good practice standards and guidance, particularly the [International Finance Corporation \(IFC\) 2012 Environmental and Social Performance Standards](#) and the [World Bank Group Environmental, Health and Safety \(EHS\) Guidelines](#). The profile indicates key standards that are generally applicable to the sector (refer to the Standards, guidelines and other resources section below); it does not substitute for such standards, which should take precedence as authoritative sources and basic technical references. National standards must also be taken into account. Compliance with applicable national laws and regulations should always be regarded as the minimum acceptable performance standard.

All mining Projects are likely to have required detailed Environmental and Social Impact Assessments (ESIA) at initial design and construction (refer also to [Sector profile: Project design and construction guide](#)). Based on the outcome of the ESIA, operators should have developed and implemented management systems and plans in accordance with a mitigation hierarchy to anticipate and avoid (or where avoidance is not possible, minimise) and, where residual impacts remain, compensate/offset for, risks and impacts to the environment. These operational systems and plans should cover all E&S matters.

See also the [Environmental and social checklist](#) and [Governance and business integrity checklist](#), which provides questions that fund managers should consider when evaluating a mining investment from an ESG perspective.

2. [Scope of this sector profile](#)

This profile covers the following activities in the mining process:

- Prospecting
- Exploration
- Development
- Operation (mining and first separation of ore and gangue at the mine)
- Decommissioning

Business activities that fall within the scope of this sector profile include:

- Underground and open-pit mining
- Alluvial mining
- Solution mining
- Extraction of raw materials for construction products
- Marine dredging
- Deep-sea mining

The extraction and distribution of oil and gas products are covered in [Sector profile: Oil and gas](#). Base metal refining and smelting activities are covered in [Sector profile: Manufacturing](#).

2. Key environmental and social aspects

This section outlines some of the specific risks and impacts that emerge from poor ESG practices. Weak management of these aspects may lead to reputational damage, have an impact on a company's capacity to raise funding (debt and equity) and, more broadly, negatively impact a company's financial performance. Conversely, sound E&S practices are likely to improve the company's reputation, access to investors and economic performance.

- [Management commitment, capacity and track record \(CCTR\)](#)
Companies need management's commitment and sufficient capacity to ensure that the necessary resources are available for sound E&S management. Refer to [CDC guidance: Assessing commitment, capacity and track record](#).
- [Environmental and social management system \(ESMS\)](#)
Companies should develop and implement an ESMS commensurate with the level of risks and impacts associated with its activities. For further advice refer to [E&S topic: Environmental and social management systems \(company-level\)](#).

Closure planning:

All mine design, construction and operation should include provision and planning for decommissioning and closure. In many countries, mine licences are not issued/renewed if closure planning has not been undertaken or provided for. Providing for mine closure includes not only long-term planning of the mining process and infrastructure layout, but also financial and manpower provision during the life of the mine as well as post closure.

A company's ESMS should focus on managing and mitigating E&S risks and impacts with the ultimate goal of leaving the post-closure mining site in a physically and chemically stable state so that it is available for safe and sustainable future land use. Future public health and safety should be secured, ecological regeneration encouraged, and chemical stability addressed to allow future alternative land use and adverse socioeconomic impacts should be minimised.

For short-life mines, a fully detailed Mine Reclamation and Closure Plan (with guaranteed funding) should be prepared prior to the start of operations, while longer-life mines typically develop a detailed closure plan within at least the last five years of operation. Attention should be given to the management of residual liabilities (e.g. acid

mine drainage, tailings stability), evolving national mining regulations and global good practices concerning ongoing, long-term monitoring and management requirements.

A key element of closure planning is progressive rehabilitation (i.e. implementation of operational practices that incorporate measures to ensure the mining site is safe after closure, thus reducing final closure costs or activities). However, companies should be aware that it is very rare that an entire mine can be left in a ‘walk away’ state and some form of post-closure care may be required. Ongoing rehabilitation and monitoring work should typically include:

- Demolishing infrastructure as it becomes redundant.
 - Closing open pits through back filling, taking into account long-term chemical, physical, and health and safety hazards.
 - Stabilising and preventing public access to underground workings and shafts.
 - Reclamation of slopes and stabilising rock dumps.
 - Preventing long-term Acid Rock Drainage (ARD) or combustion hazards
 - Ensuring that drainage streams from the site do not currently or will not in the future pose environmental or human health risks.
 - Securing and re-vegetating tailings dams and ensuring structural integrity.
- Labour and working conditions
Note - Occupational health and safety is covered separately below.

Risks for the business

- Companies may face prosecution or fines (or having their licences removed) if they fail to comply with labour laws and regulations.
- Financial, reputational and legal risks and lower production efficiency, product quality and profitability can result from poor OHS practices, poor morale, industrial action, high staff turnover and deterioration of employees' health (e.g. excessive working hours).
- Higher costs can be incurred to recruit and train new workers if turnover is high due to poor labour standards and working conditions.

Opportunities for the business

- Costs can be reduced and productivity enhanced by upholding good labour and working conditions, which can also help to attract and retain motivated and competent workers.
- Access to markets can be enhanced if the business achieves certain standards and/or related certifications covering labour and working conditions and production processes (e.g. [SA8000](#) or the [Initiative for Responsible Mining Assurance \(IRMA\) Standard](#)).

Wages and working hours: The mining sector employs many low-paid and often unskilled workers, including temporary and contract labour, migrant workers and workers who provide services via supply chains (e.g. land clearing, drilling and explosives operation). Furthermore, working hours are typically long. Workers should be paid at least the minimum statutory wage for the sector and working hours should be in accordance with applicable laws and sector regulations/agreements. Companies should not use third party contractors as a means of exceeding working hour regulations or avoiding minimum wage payments.

Good practice in this area can help to manage costs relating to recruitment, training and talent retention and build the mining's sector's reputation and overall business success.

Freedom of association and collective bargaining: Relations with unions and the rights of workers to enter collective bargaining arrangements with management (and the rights to form unions and bargain collectively) can be a sensitive subject and require careful exploration and resolution. Adopting international good practice in this area can help to manage costs relating to recruitment, training and talent retention, and maintain or enhance productivity.

Child labour and bonded/forced labour: These forms of labour are employed in some mining systems. For example, children may be used to work in small or confined places, particularly in the gemstone-mining sector. Non-compliance with [ILO Core Labour Conventions on Child Labour / Minimum Age and Forced Labour](#) is not acceptable under international standards. Measures should be implemented to address them as a matter of priority.

Equal opportunities and non-discrimination: Discrimination can also be prevalent in the sector, particularly towards temporary and migrant labour and women (in relation to terms and conditions of employment and wages). Identification of key issues (through consultation with affected workers) and the introduction of anti-discrimination policies can help to deter discrimination. This can help to manage recruitment and training costs, improve worker retention and maintain or enhance productivity.

Accommodation:

Where a company undertakes to provide (either directly or through contractors) worker accommodation, this should include the provision of basic services and take into account the principles of non-discrimination and equal opportunity. The company should develop and implement policies on the quality and management of the accommodation in accordance with the principles included in [IFC Performance Standard 2: Labor and Working Conditions](#) and [IFC and EBRD Guidance Note on Workers' Accommodation](#). Good practice in this area can help to manage costs relating to recruitment, training and talent retention and maintain or enhance productivity.

For further sector-specific guidance, refer to the [World Bank Group EHS Guidelines for Mining](#) and/or [Construction Materials Extraction](#), as appropriate.

For further general guidance on Good International Industry Practice (GIIP) relating to labour standards and working conditions, in line with the [International Labour Organization's \(ILO's\) Core Conventions](#), refer to [E&S topic: Labour standards](#), and [IFC Good Practice Note: Non-Discrimination and Equal Opportunity](#).

- [Occupational health and safety \(OHS\)](#)

Risks for the business

- Companies may face prosecution or fines (or have their licence revoked) if workers or contractors are injured or killed.
- Damage to/loss of the company’s assets, loss of production, loss of clients/business, increased insurance premiums and legal claims (both in the short and long term) can result from poor OHS practices.
- Low workforce morale and erosion of trust can lead to higher staff turnover, lower productivity, additional training and recruiting costs and reputational damage.

Opportunities for the business

- Proactively involving workers and contractors in key decisions can help to identify and maintain good OHS practices and improve their acceptance if new or significantly different to previous practices.
- Productivity can be improved and insurance premiums for workers’ and compensation payments can be reduced.
- Access to markets can be enhanced where approved supplier or certification programs include ESG requirements (e.g. [The Kimberley Process](#) for diamonds).

OHS is an important consideration for any business, regardless of sector and all companies must have in place appropriate OHS and emergency preparedness and response management systems, commensurate with level of risks. In this sector, the implementation of robust OHS and emergency preparedness and response management systems is critical as accident could have major impacts on workers, local communities and the environment.

If contractors are involved in operation and maintenance activities, companies should implement measures to ensure contractors work in accordance with applicable regulations and GIIP. Such measures should be covered in companies’ OHS and emergency preparedness and response management systems.

Specific OHS risks in the mining sector can include those in connection with:

- Physical hazards: (e.g. injury or death due to threat of landslides, rock falls or land collapse, falls from height, hazards related to use of large-scale, fixed and mobile equipment, electrocution, work in confined and dark spaces underground, work in poorly ventilated underground areas).
- Exposure to heat: (e.g. from working underground or in close proximity to hot processing equipment).

- Exposure to noise and vibration: (noise and vibration sources include fixed and mobile equipment, such as excavators, drills, dump trucks, power tools, crushers, conveyors and smelting operations).
- Exposure to excessive dust and particulate matter: (e.g. due to vehicle movement within the mining area).
- Exposure to natural radiation hazards.
- Hazardous substances: (e.g. corrosive or oxidizing or reactive chemicals or gases used or generated during extraction or refining process such as cyanide or mercury).
- In open pit mines: (e.g. risks related to working long hours outdoors with prolonged exposure to high and low temperatures and/or sunlight).
- Fire and blasting hazards: Are very relevant in this sector due to the use of explosives to expose ore bodies both above and underground. Underground mines can pose additional fire risks where flammable gases may be released or generated during the mining process.
- Security: Mining operations are typically heavily protected in order to prevent theft of valuable mineral resources and explosives. Measures should be implemented to ensure that security forces are appropriately trained in the use of force and respect workers' rights.
- Travel and working in remote areas: Mining operations are typically located in remote sites that often lack basic infrastructure. Increased exploration globally is leading to the exploitation of mineral assets in environments at high altitude, or extreme cold or heat. Remote locations may require excessive travel by sometimes-dangerous means, particularly at the prospecting and exploration phases.

For further sector-specific guidance, refer to the [World Bank Group EHS Guidelines for Mining](#) and/or [Construction Materials Extraction](#), as appropriate.

For further general guidance on GIIP relating to OHS, refer to [E&S topic: Occupational health and safety](#), [IFC Performance Standard 2: Labor and Working](#)

[Conditions](#), [World Bank Group General EHS Guidelines](#), [CDC Good Practice: Preventing Fatalities and Serious Accidents](#), and certification guidelines and standards on occupational health and safety such as those provided by the [National Occupational Safety Association of South Africa \(NOSA\)](#).

- [Resource efficiency and pollution prevention](#)

Risks for the business

- Fines and penalties can be imposed for non-compliance with national pollution prevention standards, especially with respect to air emissions (dust, emissions associated with power generation and metal/mineral processing) and hazardous materials/waste management (e.g. tailings).
- Excessive expenditure on energy and water supply.
- Excessive expenditure on management of emissions, solid waste and wastewater quality.
- Inadequate financial provisioning for closure and decommissioning.
- Residual environmental liabilities, particularly related to soil contamination.

Opportunities for the business

- Lower operating costs, reduced environmental footprint and better preparedness for resource shortages or increased cost of resources can result from adopting energy efficiency, water efficiency and cleaner production measures.
- Reduction of tailings volumes through improved extraction techniques can reduce ongoing (including post-closure) management costs and risks of contamination and liabilities.
- Participation in carbon or Clean Development Mechanism markets if the opportunity arises.
- Demand-side management opportunities such as energy efficiency education can

reduce pressure on capacity, providing wider economic benefits to the company and consumers.

- The re-use and/or recycling of mining by-products and waste by other industries can become an additional source of revenue (e.g. use of fine tailings or rock waste in the construction industry).

Energy efficiency: Among the most significant energy consuming activities in mining are transport, exploration activities, drilling, excavation, extraction, grinding, crushing, milling, pumping, and ventilation processes. Companies should explore implementing energy efficiency measures such as the use of technology to minimise exploratory digging and/or drilling (e.g. remote sensing technology) and/or minimising machinery movement (e.g. installation of conveyor belts to transport rock and minerals within the mine).

Air emissions: Excessive dust generation is a risk during the exploration, development and operation phases of most mines. Care should be taken that dust suppression techniques do not pose additional strains on resources (e.g. water use in dry areas). Consideration must be given to mining approaches and technologies, as well as design of the facility in order to minimise, suppress and contain dust generation (e.g. reduce transport distances, contain and enclose process operations).

Many remote mines rely on their own thermal power plants, which may result in additional impacts and risk such as significant additional greenhouse gas emissions.

Water management: Most surface and underground mining operations require ‘dewatering’ – the removal of groundwater in order to access ore bodies. Dewatering includes either blocking the water from entering mining areas (e.g. through insertion of barrier walls), or the pumping or draining of water out of the operational area. Mining companies should give careful consideration to dewatering techniques such as the separation of clean and dirty water streams to prevent pollution, avoid wasting water, and ensure the safety of the workforce and surrounding communities.

In addition, mining operations typically require large volumes of water for dust suppression, process cooling and material concentration/separation, all of which should be considered in conjunction with dewatering activities. Tailings, also called slimes, slurry or leach residue, are the result of initial separation of the valuable portion of the mineral from gangue – or waste ore – and require disposal in carefully

designed and maintained tailings facilities, according to GIIP. Companies should always investigate options to improve processes and reduce quantities of tailings generated, thus minimising costs and liabilities associated with disposal and ongoing management and monitoring. In addition, mining companies should always explore opportunities to reduce water consumption (e.g. through the use of closed-loop water systems or safe re-use of tailings). This is particularly relevant when water consumption is significant and/or water availability is restricted. Water use efficiency measures can reduce the amount of wastewater generated by the plant and hence, wastewater treatment costs and/or discharge fees.

Where wastewater/used water (e.g. water used for dust suppression) is discharged into surface water (i.e. rivers, lakes, estuaries or the ocean), detailed assessments of the impacts associated with such discharges must be conducted as this may generate impacts for the receiving bodies (e.g. rivers, the ocean) or users. Discharge of tailings waste to rivers or shallow marine water bodies should be avoided. Companies should consider undertaking water balance and risk assessments of their mining operations in order to optimise water use and the installation of zero-discharge tailings systems.

Waste management: All mining operations generate large volumes of unusable or waste rock, overburden or by-products of mineral processing such as tailings. In coastal or marine mining, large volumes of dredge materials may be generated. Companies should identify opportunities to minimise and reuse those materials, where possible and identify appropriate disposal sites for materials that cannot be reused. Backfilling of overburden should always be prioritised where possible. All mine design, construction and operation should include provision and planning for decommissioning and closure (i.e. design of waste disposal to minimise long-term physical, chemical and health and safety hazards such as filling open pits, stabilising rock dumps, preventing acid generation or combustion hazards and securing and re-vegetating tailings dams).

Hazardous materials and wastes: Exploration of access to and exposure of ore bodies may require the use of explosives both underground and in open pit operations. Extraction of certain base metals (such as gold) typically uses acids and other hazardous chemical reagents (e.g. cyanide). Systems must be implemented to ensure proper handling, storage, management and disposal of explosives and other chemical reagents and their associated wastes (e.g. use of adequate containers). Poor handling can lead to soil and water contamination, as well as health and safety risks to the workforce and surrounding community. Opportunities for recycling by-products and waste should be explored. Mining operators should investigate the possibility of

additional processing of waste for reuse in other industries (e.g. use of fine tailings in the construction industry).

Acid mine drainage (AMD): Also referred to as acid rock drainage (ARD) - occurs where acidic materials in waste rock, or any exposed rock surfaces such as road cuts and pit walls, combine with oxygen or water to release acid into ground or surface water. Companies must implement measures to minimise, prevent, neutralise, isolate and/or contain ARD during the life of the mine, as well as during post decommissioning and closure.

For further sector-specific guidance, refer to the [World Bank Group EHS Guidelines for Mining](#) and/or [Construction Materials Extraction](#), as appropriate.

For further general guidance on GIIP relating to resource efficiency and pollution prevention, refer to [E&S topic: Resource efficiency](#), [E&S topic: Pollution Prevention](#), [IFC Performance Standard 3: Resource Efficiency and Pollution Prevention](#) and [World Bank Group General EHS Guidelines](#).

- [Community health, safety and security](#)
 - Social licence to operate can be put at risk if social impacts and/or community relations are not well managed (e.g. pollution or health impacts locally, impacts on artisanal miners or tensions with company-employed security forces).
 - Financial, operational and legal risks due to local opposition and/or health and compensation claims from surrounding communities exposed to health and safety risks arising from pollution of mining (e.g. impacts caused by tailings) and processing activities and large-scale landform change.
 - Reputational damage and significant management costs can be incurred to address social opposition and criticism due to conflicting or non-transparent land access or acquisition practices, or Project development with little local benefit.
 - Inadequate use of security forces can trigger social tensions, which could significantly impact a company's reputation and operations.

Risks for the business

Opportunities for the business

- Building relationships with local communities can contribute to reduced security risks and may indirectly yield other benefits such as improved health and safety of the workforce, and improved long-term, post-closure safety of the operation.
- Proactive and positive engagement or employment of local artisanal miners can also reduce risk in a company’s operations by, for example, training and awareness-raising regarding safe mining procedures or improved understanding of existing or historical mine workings and the nature of the resources being mined.

Ensuring the health, safety and security of local communities, from initial prospecting activities through operation to post-decommissioning and closure, is particularly important in the mining sector. In addition to the risks and impacts arising from pollution prevention and resource use, community health, safety and security risks and impacts associated with mining primarily relate to:

Emergency preparedness and response: Companies must implement emergency preparedness and response systems to respond to accidental and emergency situations associated with the company’s activities in a manner appropriate to prevent and mitigate any harm to people and/or the environment. Companies should develop these systems in collaboration with appropriate and relevant third parties (e.g. local authorities).

Health: Mining operations typically generate a significant amount of dust. The accumulation of and exposure to fine metal dust in surrounding communities may pose a significant risk to their long-term health. Deposition of metals such as cadmium or lead and other pollutants also accumulate in crops, surrounding water bodies and livestock, with resulting health impacts often only realised after a period of time. Companies should ensure mining operations are designed, located and operated so as to prevent, or at least minimise, direct and indirect health impacts to nearby communities, and, where appropriate, implements long-term and regular monitoring of health effects.

Indirect health impacts may arise from community exposure to water-borne or vector-borne diseases (e.g. bilharzia or malaria), or from communicable diseases (e.g. as STIs and HIV/AIDS). Mining operations should collaborate with communities to evaluate health risks and impacts to the company and the community arising from these diseases, as well as to design and implement strategies to prevent or manage their

impacts. For additional information, refer to [IFC HIV/AIDS: Guide for the Mining Sector](#).

Safety: Mining operations may pose safety risks to local communities even at the exploration phase. The use of large-scale, heavy equipment on local roads poses traffic threats. While initial core extraction, development of open pits and vertical shafts, as well as the significant change of local landscape with the creation of rock piles and tailings dams, can also create risks. Minimising risks due to rock falls, land subsidence, water flow, tailings dams and the transport and handling of and access to hazardous materials (including explosives) should all be addressed as part of standard mine practice. Emergency preparedness focussed on protecting local communities should be a priority.

Security: Mining operations are typically heavily protected in order to prevent theft or access by external parties or for safety reasons. Companies should be guided by the principles of proportionality and good international practice in relation to hiring, rules of conduct, training, equipping, and monitoring of security workers, as well as by applicable law. These principles include practices consistent with the [United Nations \(UN\) Code of Conduct for Law Enforcement Officials](#), [UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials](#) and the [Voluntary Principles on Security and Human Rights](#).

Noise and vibrations: Mining operations may generate significant noise and vibrations associated with the extraction of the base metals and minerals (use of explosives, heavy equipment, drilling, cutting of rock face), as well as with primary processing (crushing, heavy equipment, conveyors), which can affect local communities. Noise and vibration prevention and control measures should, therefore, be put in place (e.g. selecting equipment with lower sound power levels and siting plants away from community areas).

Indirect impacts: Mining operations are often located in remote areas, and their establishment and operation generally includes associated large-scale infrastructure, such as access roads, waste-disposal sites, water abstraction, and workforce accommodation. The influx of Project labour can pose risks to local communities through exposure to communicable diseases (e.g. sexually transmitted infections and HIV), as well as cultural and broader social impacts. These include increased local spending power spurring new local economic opportunities (among which is commercial sex work); practices of the migrant workforce that may differ from local

practices and cause tension; and increased competition for natural resources (e.g. water, fire wood, arable land for workforce food supply). The potential for conflict between local and migrant labour also increases where there is a perceived lack of local economic benefit from the mining operation, where local labour has been marginalised or where migrant labourers have relocated without family. Companies need to acknowledge and consider the broader implications of these indirect impacts, as they may negatively affect the company in terms of staff morale and turnover, declining productivity, increasing costs, changing markets and access to contracts and procurement opportunities. Mining operations should define and understand these potential indirect impacts over the life of the mining operation and design an appropriate management response. Companies should also assess and manage the risks and impacts associated with artisanal miners (e.g. safety risks due to their unauthorized presence in the area and potential economic displacement).

Community relations: Much of a mining operation’s long-term success depends not only on the value of the resource being mined, but also on obtaining community support. Prior to developing a new mining Project or large-scale expansion or change to existing operations, a company should obtain broad community support from populations affected by the operations. This would typically form part of the detailed Environmental and Social Impact Assessment (ESIA) process. Efforts should be made to accommodate their needs and reasonable requests. However, it is important to manage the expectations of local communities and take into account precedents that may have been set. It is important to view stakeholder engagement as an ongoing process and mechanisms should be in place or set up to hear grievances and address complaints.

For further sector-specific guidance, refer to the [World Bank Group EHS Guidelines for Mining](#) and/or [Construction Materials Extraction](#), as appropriate, and [ICMM’s Community Health Programs in the Mining and Metals Industry Report](#).

For further general guidance on GIIP relating to community health, safety and security, refer to [E&S topic: Community health, safety and security](#) and [IFC Performance Standard 4: Community Health, Safety and Security](#), [UN Code of Conduct for Law Enforcement Officials](#), [UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials](#) and the [Voluntary Principles on Security and Human Rights](#). Where Indigenous Peoples will be affected, Free, Prior and Informed Consent (FPIC) should be obtained as described in [E&S topic: Indigenous peoples](#) and [IFC Performance Standard 7: Indigenous Peoples](#).

- Land access, use and acquisition

Risks for the business

- Inadequate community relations can undermine a mining company’s social licence to operate.
- Long timeframes and significant costs can be incurred when securing land and resource rights. This is particularly relevant if resettlement of people and/or significant economic displacement of communities is required.
- Reputational damage can be suffered and significant management costs faced if there is a need to address social opposition and criticism due to inadequate land purchase/access or acquisition practices (e.g. lack of transparency regarding allocation of mining claims or unresolved historic land claims). Risk of a Project being perceived as a ‘land grab’.
- Lack of adequate engagement with artisanal miners (where present) could result in social tensions and affect a company’s operations.

Opportunities for the business

- Managing land access and acquisition processes well by building consultative positive relationships with local communities may yield benefits in terms in increasing production through access to a better/bigger potential labour pool.
- Costs can be avoided by developing and maintaining good relations with local communities, as this will help to manage their expectations and identify concerns (e.g. access to water and other ecosystem services).

Mining exploration and development frequently require access to and/or acquisition of large plots of land, which may result in temporary or permanent physical and economic displacement of communities. Given the importance of mining resources to national economies in emerging markets, expropriation processes could be triggered, although generally, companies/governments will seek to negotiate with Affected Communities before triggering the expropriation process. The company should include robust and long-term community engagement processes during planning of mine development and expansion (as part of feasibility planning and ESIA investigations), in order to gain broad community support and adequate compensation provided to avoid long-term impoverishment.

If a company is considering acquiring a well-established mining operation, and not expanding the mining and associated infrastructure footprint, the risks outlined here are likely to be less significant. However, the risks should still be actively managed by

the company, as there may be legacy land issues that should be assessed and resolved.

Land rights: Depending on the type and location of the mining operation, development and construction activities typically require large-scale land clearing for the extraction area itself, as well as for the processing plant, tailings facility and waste and stockpile areas. Associated and ancillary facilities such as construction camps, workforce accommodation sites, water management structures, power plants, transmission lines and access corridors to the mine site also require large areas of land.

It is imperative to ensure that the mining company has (or is in a position to negotiate) the legal rights to access, extract and use the mineral resource and other related resources (e.g. water for processing, land for associated infrastructure). Additionally, it should be noted that land tenure and rights of use in emerging markets can be unclear and complex due to a lack of regulation, existence of customary/traditional land tenure and the presence of communities that occupy and use lands, but without a recognisable legal right or claim. Mines and minerals legislation in some emerging markets may give preference to access to underground resources (mining) over surface resources (agriculture), which can result in significant conflict between land users. National expectations as to anticipated revenue flows could also generate local hostility or governance challenges for mining companies. Mining companies may need to engage external experts to assist them with land access and/or acquisition processes.

Community relations: It is critical for mining companies to develop and maintain good relations with local communities. Sufficient time and resources should be made available to consult with Affected Communities in a culturally appropriate manner. Efforts should be made to accommodate their needs and reasonable requests; however, it is important to manage the expectations of local communities, as well as take into account precedents that may have been set. It is important to view stakeholder engagement as an ongoing process and mechanisms should be in place or set up to hear grievances and address complaints.

Economic displacement and resettlement: In some cases, people living on or near a mineral claim may be subject to involuntary economic displacement (e.g. due to the loss of crops or arable land) and/or physical displacement (i.e. resettlement). If these cannot be avoided, it is imperative for a company to properly identify and compensate Affected Communities, which may include artisanal miners and help them to improve

or restore their standards of living or livelihoods in order to avoid risks that could lead to additional costs and/or loss of licence to operate. Identification of and engagement with artisanal miners may pose challenges; however, it is important in order to avoid longer-term local conflict or security risks to a mine’s operations, workforce or longer-term social licence to operate. Consideration should be given to the upskilling of artisanal operators and their potential inclusion in the mine’s workforce.

Support for local facilities and infrastructure: In some cases, companies may be asked to support community development or the provision of public services (e.g. construction or running of schools, clinics or other local services).

These types of efforts should not be used to trade off impacts that could have been avoided, reduced or mitigated. It is important to follow the mitigation hierarchy (avoid, reduce, mitigate and fully compensate). Ultimately, the goal should be to ensure that community impacts are addressed in the first instance and to deliver additional mutually beneficial support thereafter.

Further general guidance on GIIP relating to land access and acquisition, refer to [E&S topic: Land acquisition and involuntary resettlement](#) and [IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement](#).

- [Biodiversity conservation and ecosystem services](#)
 - Licence to operate can be put at risk from negative impacts to local biodiversity including ecosystem services used by local communities.
 - Reputational damage associated with mining operations and practices that directly or indirectly (i.e. via supply chains) adversely impact biodiversity (e.g. impacts on tropical forests).
 - Reputational damage and potentially interruption of business activities related to adverse interaction with local communities (e.g. through changes in the availability or quality of water).
 - Reduced access to international markets for some commodities if production or supply chains are implicated in adverse impacts to workforce, biodiversity or communities.
 - Delays and additional costs in investments that affect protected areas or species and/or critical habitats or endangered species (e.g. development and implementation of biodiversity offsets).

Risks for the business

Opportunities for the business

- Increased production or productivity via better management and sustainable access to and use of natural resources (especially water).
- Enhanced market access, stronger relations with buyers, higher revenues and profits and reputational benefits where proactive management of biodiversity is evident. This may be further enhanced through certification to a credible voluntary standard.
- Restoration of ecological habitats/biodiversity as part of remediation plans, which could have an impact on the environment and local communities resulting in short- and long-term benefits for the company (e.g. support from local communities).

As global demand for raw mineral resources increases, threats to biodiversity in increasingly remote areas are mounting. This may be of particular relevance in emerging markets where rural livelihoods are closely linked with the integrity of local biodiversity. As a result there is now significantly greater interest from regulators, buyers, investors and NGOs on the biodiversity impacts generated by the mining sector.

As with other E&S risks and impacts, companies should always adopt a mitigation hierarchy to anticipate and avoid (or where this is not possible, minimise) and where residual impacts remain, compensate/offset for risks and impacts to the environment. This hierarchy of conservation measures aims to direct primary exploration and production to areas with the least biodiversity value. Typically, impacts on areas with high biodiversity values (e.g. protected areas) will require additional permits, longer planning and permitting timelines and more expensive management measures. Therefore avoiding impacts on such areas will reduce the costs associated with environmental management measures.

Habitat degradation and destruction: Habitat degradation and destruction is one of the most significant potential threats to biodiversity associated with mining activities. Depending on the type and location of the mining activity, varying degrees of land clearing will result within the mine site and potentially beyond (e.g. through access roads, original exploration activities, water and power supply infrastructure, waste disposal and workforce accommodation). Indirect impacts on biodiversity may also arise if there is in-migration by third parties looking for work.

Impact on ecosystem services: Mining operations can affect the provision of ecosystem services, including (i) soil formation and nutrient cycling; (ii) the provision of fresh water to local communities; (iii) protection from natural risks; and (iv) sacred sites and areas of importance for recreation and aesthetic enjoyment.

If significant impacts on biodiversity and/or ecosystem services are likely, companies should specifically assess these potential impacts and implement (biodiversity) management systems and plans to manage biodiversity and ecosystem service risks in accordance with the mitigation hierarchy. Where biodiversity impacts cannot be mitigated, an offset program will generally be required. For additional information and case studies on biodiversity offsetting by mining companies refer to the [Business and Biodiversity Offsets Programme \(BBOP\)](#).

For further sector-specific guidance refer to [IUCN and ICMM Biodiversity Performance Review](#).

For further general guidance on GIIP relating to biodiversity conservation and ecosystem services, refer to [E&S topic: Biodiversity and ecosystems services](#) and [IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources](#).

- [Supply chains](#)

Risk for the business

- Reputational and business continuity risks linked to the sourcing of minerals and base metals from unsustainable supply chains and/or providers that do not meet basic international standards and conventions (e.g. international conventions on child labour and forced labour or contribution to financing conflict).

Opportunities for the business

- Collaborate with and where possible train suppliers to improve E&S management measures. This can lead to improvements in resource use sustainability (e.g. water and soil), higher productivity and product quality, stronger and better relationships with suppliers and more broadly, a more reliable, sustainable, resilient and competitive supply chain.
- Enhanced access to markets where approved supplier programs include E&S requirements and/or where customers take into account sustainability factors when purchasing minerals, metals and gemstones.

The adequacy and sustainability of primary supply chains can be a significant business success factor for many metal or mineral processing companies. Challenging issues at the supplier level include:

- Pollution prevention.
- Labour and working conditions (including the use of child labour and/or forced labour).
- Inappropriate/illegal land use or acquisition.
- Governance and revenue transparency.
- Human rights and conflict zones.
- Impacts on water resources.
- Ecological and social impacts resulting from the conversion of natural habitats (such as deforestation).

Where companies can reasonably exercise control, its ESMS and supply chain policies should seek to identify and manage these risks and impacts. Where risk control is not possible due to insufficient influence on its supply chain, companies should seek to gain an understanding of the scale, type and significance of the E&S issues and assess the risks associated with continuing the relationship with that supplier. If risks are significant it should explore alternatives.

For further sector-specific guidance, refer to [OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas](#).

For further general guidance on GIIP relating to supply chains, refer to [E&S topic: Supply chains](#), [IFC Performance Standards](#) and [World Bank Group General EHS Guidelines](#).

3. Business integrity considerations

Fund managers should ascertain and continue to ensure that companies (regardless of sector) comply with the fund’s business integrity requirements. For further information, see [Business integrity](#).

- [Business integrity issues specific to the mining sector](#)

Corruption is considered especially endemic in the mining sector and even the perception of unethical behaviour can be a significant risk for companies and investors. In addition to standard business integrity concerns, risks that are particularly relevant for the mining sector include:

- Contract and licence acquisition
- Local content requirements / requests to consider specific third-party agents, vendors or employees
- Joint ventures with state-owned entities
- Financing of corruption, conflict, or human rights abuses

It is important that companies operate as transparently as possible, and have strong systems for managing and overseeing interactions with local and national government officials, particularly for licensing. Third parties are also a known risk in the sector and companies may be asked by officials to consider specific agents, vendors and even employees. Thorough screening procedures must be in place to prevent such risks in procurement and hiring and to ensure that the company only works with the best partners possible.

Companies have no control over governments’ use of mining revenues, yet can appear complicit when those revenues end up financing corruption, conflict or human rights abuses. This means that fund managers must carefully consider the operating environment and its implications before an investment and chose only ethical Projects and partners.

For further guidance and information refer to [The Extractive Industry Transparency Initiative \(EITI\)](#), [Resource Government](#), [Transparency International](#) and [Open Contracting](#) platform.

4. Advice for Fund Managers

See also the [Environmental and social checklist](#) and [Governance and business integrity checklist](#) and [Investment Cycle](#).

- [Sector risk overview](#)

The mining sector intrinsically involves potentially complex, significant and diverse ESG risks, impacts and opportunities that are likely to have material implications for long-term shareholder value. Therefore, ESG matters will normally be a significant element of due diligence, investment structuring and ongoing ownership and monitoring. Fund managers should give serious consideration to using independent ESG experts to support them in transactions in this sector.

Fund managers should bear in mind that the sector is under scrutiny from regulators, buyers/ supply chains and NGOs in relation to ESG issues. Additionally, corruption is considered especially endemic in the mining sector, and even the perception of unethical behaviour can be a significant risk for companies and investors.

- [Scoping considerations](#)

In addition to the aspects highlighted above linked to the company's assets, activities and workers, fund managers should take into account the following during the life of the investment, from screening to exit:

- **Associated facilities:** Such as access roads, transmission lines or in the case of large mines, railways and/or ports/terminals).
- **Contractors:** Whose operations present significant E&S risks and impacts which could have an impact on the business (e.g. land clearing, drilling or explosives operators, excavation or heavy machinery operation, haulage of rock or refined material).
- **Supply chains:** Where these could present significant E&S risks. Even where a company cannot directly address risks because it lacks leverage or commercial influence, it is important that fund managers are aware of the risks. For further guidance on supply chains, refer to [E&S topic: Supply chains](#).
- **Decommissioning, closure and post-closure activities:** Should be considered as early in the mine planning and design stages as possible and can significantly

affect mine operating costs. Investors should assess the detail, relevance, adequate financial provision and completeness of the closure plan to ensure that both immediate and long term post closure physical risks are mitigated and local socio-economic aspects are adequately addressed.

- [Situations requiring extra attention](#)

Extra attention, longer timescales, more intensive ESG due diligence and ongoing company engagement may be required in more complex situations. This may involve engaging consultants (see [CDC guidance: Working with consultants](#)) to conduct a gap analysis against the applicable local and international E&S standards (typically [IFC Performance Standards](#) and [World Bank Group EHS Guidelines](#)).

Examples of activities or situations in this sector requiring extra attention include:

- New Projects/Expansions: Greenfield mine development/major expansion Projects where the scale of the operation has major pollution potential and/or where the site is in a sensitive location (e.g. close to protected or critical natural habitats)
- Cumulative impacts: Areas in which several mining companies are operating or will operate may exacerbate the impacts of each individual mine. In such cases, cumulative impacts should be assessed and specific measures to mitigate them should be implemented. This will require the participation of several companies in the definition and implementation of management measures. Such collaboration and coordination may present challenges (e.g. misalignment of interests/priorities among the companies).
- Water use: Water-intensive mining operations in water-scarce areas, especially where there is the potential for competition/conflict with other water users such as the agricultural sector or local communities.
- Protected areas and Critical Habitats: Investments in mining companies which could have an impact on protected areas and/or Critical Habitats. In these situations, biodiversity management plans should be designed and implemented with the support of a biodiversity specialist.
- Supply chains: Mineral and metal components from supply chains involving

complex/controversial E&S issues that have attracted international concern, typically leading to the establishment of specific codes and certification schemes. Examples include so-called conflict minerals (such as diamonds where extraction of the mineral contributes to funding conflict or national security risks).

- Artisanal and small-scale mining (ASM): ASM often occurs alongside large scale mining operations in emerging markets (and which may be present before large scale operations are initiated). The presence of ASM is often associated with significant E&S challenges such as poor environmental, health and safety practices, the spread of communicable disease, heightened security risks to neighbouring communities and operations, child and forced labour, inequitable distribution of benefits in communities and an illegal trade in minerals. The challenge for mining companies and their investors is to proactively address ASM activity in order to minimise security, health and safety and reputational risks to the large scale mining operation, as well as minimise any other surrounding and sometimes directly associated environmental damage and community impacts.
- Security: Mining companies located in conflict areas may face particularly challenging situations which will require the implementation of very robust stakeholder engagement measures and security management plans.
- Transactions/geographies with high business integrity risks. It should be noted that corruption is considered especially endemic in the mining sector, and even the perception of unethical behaviour can be a significant risk for companies and investors.
- Any other activities/ Projects involving involuntary economic and/or physical displacement of communities or significant adverse impacts on biodiversity, habitats or ecosystem services, Indigenous Peoples, cultural heritage or local communities.

5. Standards, guidelines and other resources

For authoritative guidance fund managers should consult the applicable IFC Performance

Standards and World Bank Group EHS Guideline(s).

- [Applicable IFC Performance Standards](#)

The IFC Performance Standards most commonly applicable to investments in this sector are:

- [IFC 2012 Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts.](#)
- [IFC 2012 Performance Standard 2: Labor and Working Conditions.](#)
- [IFC 2012 Performance Standard 3: Resource Efficiency and Pollution Prevention.](#)
- [IFC 2012 Performance Standard 4: Community Health, Safety and Security.](#)
- [IFC 2012 Performance Standard 5: Land Acquisition and Involuntary Resettlement.](#)
- [IFC 2012 Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.](#)

In addition, other IFC Performance Standards may be applicable depending on the specific characteristics and locations of the company’s operations. The screening stage of the fund manager’s ESG due diligence should always include a routine check for the potential presence of significant impacts covered by the IFC Performance Standards.

- [Applicable World Bank Group EHS Guidelines](#)

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he most relevant World Bank Group EHS Guidelines in this sector are:

- [World Bank Group General EHS Guidelines.](#)
- [World Bank Group EHS Guidelines for Mining.](#)

- [World Bank Group EHS Guidelines for Construction Materials Extraction.](#)
 - [IFC and EBRD Guidance Note on Workers' Accommodation: Processes and Standards \(2009\).](#)
 - [IFC Good Practice Note: Non-Discrimination and Equal Opportunity.](#)
- [Additional resources, standards and guidelines](#)

Additional resources that may be valuable are:

- [The European Integrated Pollution Prevention and Control Bureau \(IPPC\) - BAT reference documents \(BREFs\)](#)
- [International Council on Mining and Metals \(ICMM\)](#)
- [ICMM Good Practice Guidance for Mining and Biodiversity](#)
- [ICMM Toolkit: Planning for Integrated Mine Closure](#)
- [ICMM Good Practice Guide: Indigenous Peoples and Mining \(2010\)](#)
- [Business and Biodiversity Offset Programme](#)
- [CASM, CommDev, ICMM Working Together: How large-scale Mining can engage with artisanal and small-scale miners \(2010\)](#)
- [DEG/WWF Water Risk Filter](#)
- [International Labour Organization's Safety and Health in Opencast Mines](#)
- International Labour Organization's Core Labour Conventions on Child Labour / Minimum Age and Forced Labour
- [IUCN and ICMM Biodiversity Performance Review](#)

- The Kimberley Process
- [OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas](#)
- [Social Accountability International’s SA8000](#)
- [United Nations Code of Conduct for Law Enforcement Officials](#)
- [United Nations Basic Principles on the Use of Force and Firearms by Law Enforcement Officials](#)
- [Voluntary Principles on Security and Human Rights](#)
- [UNICEF - Children’s Rights and the Mining Sector](#)
- [Extractive Industry Transparency Initiative \(EITI\)](#)
- [Open Contracting platform](#)
- [Natural Resource Governance Institute](#)
- [Transparency International](#)

Certification schemes in mining:

Gaining certification can be helpful in demonstrating that a company is operating in accordance with GIIP. However, fund managers should not rely solely on certification as a means of proving good E&S performance. They should always try to verify reports of performance through site visits or by reviewing relevant documentation or audit reports performed by independent third parties. Examples of internationally recognised certification schemes relevant to the mining sector include:

- [The Responsible Jewellery Council](#), which certifies responsible mines (and downstream processors) in the diamond, gold and platinum industries.
- [Initiative for Responsible Mining Assurance \(IRMA\)](#) is seeking to develop the first multi-commodity, multi-stakeholder, third-party certification system for mine

sites. In January 2015, it published its first draft of the [Standard for Responsible Mining](#) for public consultation. The ambition is to do for mining what the Forest Stewardship Council has done for paper and timber products: give reassurance that the metals we use every day come from responsibly operated mines.

- [Extractive Industry Transparency Initiative \(EITI\)](#) agreed its revised EITI Standard in May 2013. It is the global transparency standard for improving governance of natural resources.