

STUDY

Downstream due diligence in the European mining equipment industry

Status quo and the way to go

Luisa Denter and Johanna Sydow



Brief Summary

European mining equipment manufacturers are on a large scale cooperating with and supplying **mining projects that are known for human rights abuses and environmental destruction** as a number of various business relationships show. The lack of legislation requiring companies to have human rights and environmental due diligence policies for their so-called downstream value chains makes this possible.

Apart from highlighting the **need for downstream due diligence obligations for mining equipment manufacturers**, this study examines existing policies of 14 mining equipment manufacturers. As some corporations have already started to implement respective processes, our assessment shows that **downstream due diligence is feasible**. Most companies, however, have so far only established selective measures and do not have a coherent strategy to implement due diligence in their downstream value chains effectively. Moreover, it is striking that **most of the implemented measures lack binding commitments and transparent communication**. This undermines the possibility of rights holders and other stakeholders to rely on their proper implementation. Existing approaches must therefore **evolve, become mandatory and integrated at company level** to ensure effective downstream due diligence.

In this respect, we furthermore outline the downstream due diligence obligations under the **UN Guiding Principles for Business and Human Rights** (UNGP) and assess the potential of the European Commission's proposal for a **Corporate Sustainability Due Diligence Directive** (CSDDD). We also identify how European mining equipment manufacturers can **use and increase their leverage for human rights and environmental due diligence**, for example through industry cooperation, capacity building, and cooperation with other stakeholders beyond the mining equipment industry.

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1 Introduction

Excavators from the Swiss-German Liebherr group are digging at the El Cerrejón coal mine in Colombia.¹ The mine is notorious for the forced displacement of Indigenous peoples and the severe air and water pollution it causes. The Swedish high-tech engineering group Sandvik is working closely with OceanaGold in the Didipio gold and copper mine in the Philippines² despite strong opposition to the mine. It has been heavily criticised in the past for violating land use rights, diminishing water availability in the region, and causing devastating pollution. In short, **European mining equipment manufacturers are on a large scale cooperating with and supplying mining projects that are known for human rights abuses and environmental destruction.** The lack of legislation requiring companies to have human rights and environmental due diligence policies for their so-called downstream value chains³ makes this possible. Until now, the public debate has largely failed to address the responsibility of mining equipment suppliers if they contribute to environmental or human rights risks.

Rarely have these regulations and discourses been more relevant than they are today: In view of the Russian war of aggression against Ukraine and the dependence on China for many critical raw materials, there is an increasing demand to import resources such as coal, gas, and metals from other countries. However, many mining projects in potentially alternative countries are violating human rights and breaching environmental standards. **As European countries seek alternative sources of raw materials, these projects are likely to expand and multiply.** This has already happened in the past: right after Germany expressed interest in importing more coal from Colombia, the Colombian authorities issued a permission to divert a river for the coal mine El Cerrejón, thereby ignoring the interests of the Indigenous Wayuu. (Paasch, 2022; Schüler-Zhou, Felizeter & Ottsen, 2020; Specht & Stratmann, 2022). Expanding these mines and developing new ones will require new explorations, drillings, and equipment—**likely to be delivered by European mining equipment manufacturers, among others.** As stated in the 3rd Raw Material Scoreboard of the European Commission, ‘Mining equipment is an essential input to mining activities, the extent of its use being dependent on investments in exploration and on the opening of new minerals and metals mines’ (European Commission, 2021, p. 81). The EU is the world’s largest exporter of mining equipment and therefore essential for the expansion of mining (see page 19). By taking responsibility for the consequences of the supplies and services they provide to mining projects, European companies could make a significant contribution to ensuring that mine expansion and development respect human rights and environmental standards.

In February 2022, the European Commission proposed the **Corporate Sustainability Due Diligence Directive (CSDDD)**. This directive has the **potential to reduce the lack of accountability in downstream value chains of European mining equipment manufacturers.** The proposal defines obligatory human rights and environmental due diligence for the value chains of European companies above a certain business size. Value chains thereby explicitly include downstream business relationships if they are ‘established’, that is, ‘expected to be lasting, in view of its intensity or duration’ (Art. 3 f-g CSDDD). It is important, however, that the directive is not weakened or delayed on the pretext of difficulties in the supply of resources, including those caused by the Russian war of aggression. On the contrary, the current situation requires a tightening of the directive to prevent further abuses of human rights and environmental standards.

¹ See <https://www.bauforum24.biz/forums/topic/38622-4-liebherr-mining-bagger-r-9350-bh-an-kolumbien/> (in German)

² See <https://miningdigital.com/supply-chain-and-operations/oceanagold-delivering-innovation-performance-and-growth>

³ Downstream value chains is the term for post-manufacturing processes like the distribution, supply, end use, and disposal of products.

In this study, we will demonstrate why effective human rights and environmental due diligence is essential for downstream value chains of mining equipment manufacturers and that it is feasible in practice. Our analysis will furthermore bring to light whether European corporations live up to their responsibility after manufacturing and which actions they take to do so. Finally, we will provide concrete guidance for policymakers and companies on how to ensure effective downstream due diligence in the future.

2 Why we need effective due diligence in downstream value chains of mining machinery

The mining equipment sector faces significant risks in its downstream value chain, as mining is often associated with human rights abuses and environmental degradation. The risks that companies may contribute to or be linked to depend, among other things, on the structure of their downstream value chain. In the following, we outline frequent risks in the downstream value chain of mining equipment manufacturers that highlight the need for downstream due diligence.

2.1 Sectoral risks

Human rights abuses and environmental harm through mining projects are not an exceptional phenomenon. The Business and Human Rights Resource Centre reported more than 1000 claims in the extractive sector over the last 15 years.⁴ The potential harms are manifold and often severe as they are large-scale, wide in scope, and irremediable. They should thus be given the highest priority in the list of risks that companies are required to address in accordance with the UN Guiding Principles on Business and Human Rights (UNGP 24). The risks associated with mining projects include the following areas:

- **Environmental contamination:** Mining is often associated with environmental pollution. Examples include the use of chemicals (such as mercury or cyanide), mine waste, which often contains heavy metals or acids, and accidents that spill concentrates or tailings into the environment. This can further affect soil fertility and water quality, potentially aggravating water scarcity and loss of livelihoods (Spohr, 2016; Sydow, Ángel, Aquino, Vargas & Espinosa, 2021).
- **Water scarcity:** Mining poses a risk not only to water quality through contamination, but also to water scarcity through its water-intensive nature. To make operating below the water table possible, some mines pump large amounts of water out of the ground. These water-intensive operations affect not only agricultural activities but also drinking water supplies. In the Galba-Uush Doloodin Gobi Basin in Mongolia, for example, 85% of the available water is used for mining (AK Rohstoffe, 2021; Spohr, 2016).
- **Air pollution and health damages:** Mining pollutes the air with dust and particulates, affecting the health of neighbouring communities, water quality, vegetation, and biodiversity. Various mass surveys of blood and urine have shown that health problems associated

⁴ See <https://www.business-humanrights.org/en/big-issues/natural-resources/extractives-transition-minerals/>

with air pollution are often widespread and can even be deadly. In Cerro de Pasco, Peru, for example, heavy metal poisoning affects over 90% of the population (AK Rohstoffe, 2021; Spohr, 2016). In addition, dust and aerosols from mining can contribute to severe glacier shrinkage (Cereceda-Balic, Ruggeri, Vidal, Ruiz & Fu, 2022).

- **Deforestation and climate impacts:** Mine development often leads to large-scale deforestation, exacerbating climate change and biodiversity loss. Mining accounts for 7% of deforestation in tropic and subtropical areas (Sydow et al., 2021; Levin Sources & Fauna & Flora International, 2020). In general, the extractive sector is highly emission-intensive.⁵
- **Tailings dam failures:** Often caused by extreme weather events or mine mismanagement, tailings dam failures can cause devastating environmental pollution as well as the destruction of entire villages and loss of life. In January 2019, for example, a tailings dam in Brumadinho, Brazil, burst, releasing more than 11 million cubic metres of mud. At least 246 people were killed. Tailings dam failures can occur even after a mine has been closed and therefore represent a persistent risk (Spohr, 2016; AK Rohstoffe, 2021).
- **(Forced) displacements:** As mining projects require large amounts of land to operate, people who previously lived or farmed on the land must be resettled. Commonly referred to as 'area cleaning', a term that masks the severe consequences for those affected, these resettlements are not always conducted in line with human rights and may involve forced displacement. Those affected are not always adequately compensated for the lost land. Once again, Indigenous peoples are at particular risk (Spohr, 2016; Sydow et al., 2021).
- **Inadequate consultation and participation:** Communities affected by the various environmental risks described above, and those at risk of being displaced, often do not have adequate opportunities and access to information to participate in the decision-making processes of mining projects. In particular, the right to free, prior, and informed consent of Indigenous peoples is repeatedly violated. This is particularly true, but not limited, to the licensing and exploration phases of a mining project. Various cases have furthermore shown that alleged participation has been feigned and unfair practices have been used to legitimise mining. Access to justice is often inadequate and access to information is insufficient for rights holders (Spohr, 2016; Sydow et al., 2021).
- **Working conditions and forced labour:** Working conditions in mines are often appalling. Complaints range from low wages⁶ to forced labour, child labour, and violations of freedom of association. In addition, unless adequate preventive measures are taken, the harmful materials and emissions used for and generated by mining as well as the danger of cave-ins and similar life-threatening mine accidents lead to hazardous working conditions (Spohr, 2016; AK Rohstoffe, 2021).
- **Environmental risks after mine closure:** Once mining activities have ceased, further environmental risks may arise. A reclamation phase is designed to ensure, among other things, that the land can be used for other purposes, that water availability and quality are restored, that mine waste is properly managed, and that there are no avoidable long-term effects, for example from remaining hazardous materials. However, many of these measures may not be implemented or may be inadequate, leaving abandoned mines to further contribute to environmental degradation. Furthermore, there is a high risk of mine subsidence during and after mine closure (Sydow et al., 2021).
- **Activists at risk of violence and death:** Those raising concerns about large-scale mining projects and protesting against them face violence and repression. Mining is one of the most dangerous industries for activists. In 2019 alone, 50 people were killed advocating for

⁵ See <https://www.unep.org/explore-topics/extractives/why-does-extractives-matter>

⁶ See <https://www.business-humanrights.org/en/latest-news/drc-report-reveals-dire-working-conditions-discrimination-low-pay-across-cobalt-mines-supplying-electric-vehicle-manufacturers/>

human rights and environmental protection in mining projects. Activists in Colombia, Brazil, and the Philippines are at particular risk (Global Witness, 2020).

- **Conflicts:** There are numerous ways in which mining causes, contributes to or is linked to conflicts. Among others, mining revenues might even be used to finance armed conflict. Furthermore, increased water scarcity can lead to conflicts over water, and the land intensity of mining can lead to conflicts over land rights. Protests against mining projects are often the subject of violent repression and escalation. In addition, conflicts over resource deposits may arise between large-scale mining companies and artisanal or small-scale miners, and are often characterised by significant power imbalances (AK Rohstoffe, 2021; Spohr, 2016).
- **Corruption:** The capital-intensive nature of mining projects as well as the multiple licensing and approval procedures and the location of many resource deposits in authoritarian states make corruption a very high risk. This makes it even more difficult for rights holders to access justice as the judiciary and state legislation tend to support well-funded and powerful mining companies (Spohr, 2016; Sydow et al., 2021).

Bearing these serious risks in mind, it is alarming that the **global use of primary resources is to almost double by 2060 compared with 2019**. The extraction of metals is even expected to increase by 126% in the same timeframe, with secondary raw materials not able to put an end to this trend (OECD, 2019b). The increasing demand for primary resources will lead to the exploitation of innumerable resource deposits. Demand for copper, for example, is expected to be 44 times higher in 2035 than it was in 2013, and demand for lithium even more than 180 times. Many of the related mining projects are likely to be associated with very high human rights and environmental risks. Mining is expected to become even more risky and environmentally invasive as the concentration of many resource deposits declines. Not only does this increase the proportion of tailings generated by mining activities, but untapped resource deposits are also located deeper and more remotely (AK Rohstoffe, 2021). It is therefore **indispensable to reduce the use of primary resources significantly** (AK Rohstoffe, 2022). To extract the primary resources that will still be needed responsibly, due diligence obligations need to be established in both upstream and downstream value chains. In particular at the stage of the exploration and opening of new mines, there is an **urgent need for downstream due diligence obligations for mining equipment manufacturers**. This is because the upstream due diligence obligations of any company sourcing raw materials only come into play once the mines have delivered the ore. They therefore have no impact during the exploration and opening phases, which are crucial for responsible mining based on human rights.

2.2 Risks along the downstream value chain

Risks in downstream value chains of mining equipment manufacturers are manifold and depend on the stage of the business relationship. Based on the business relationships described by 14 mining equipment manufacturers (see page 10 for the evaluated companies), the following image shows the most common phases within a downstream value chain in this sector. We have also included examples of risks that mining equipment manufacturers may cause, contribute to, or be directly linked to. As the illustration was simplified to provide a more general overview, individual structures may therefore differ, in particular for service providers that do not deliver goods.

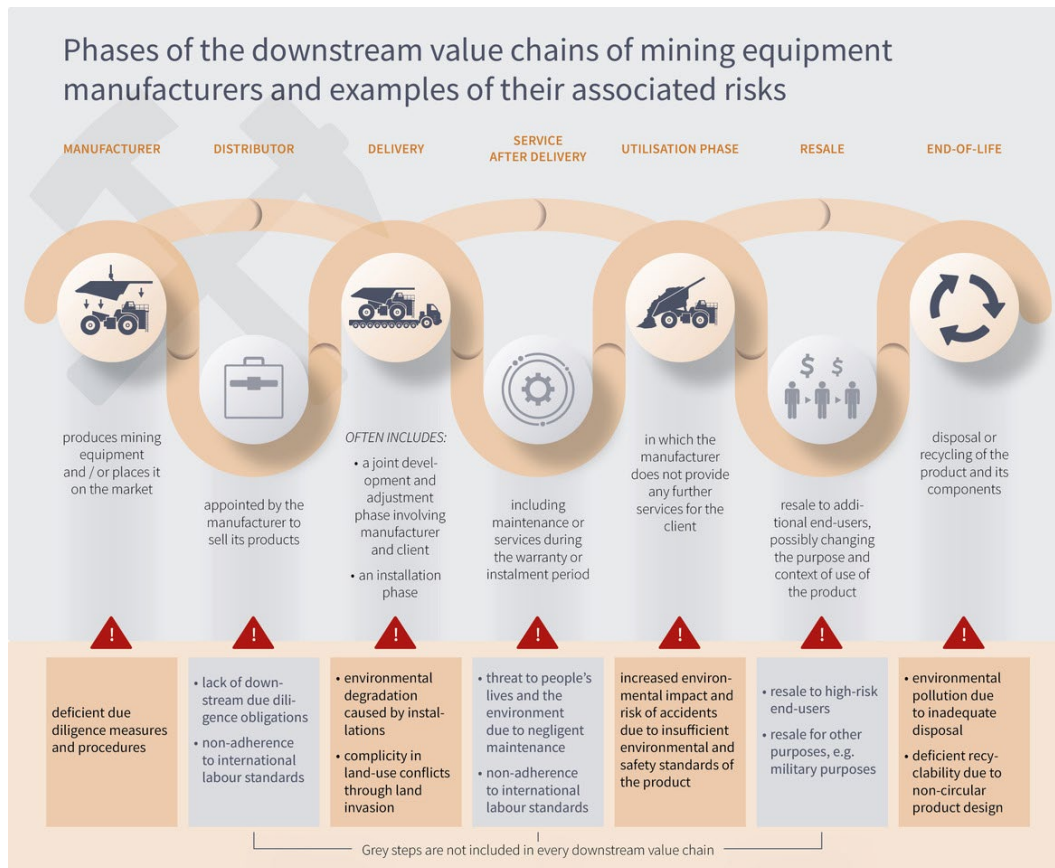


Figure 1: Phases of the downstream value chains of mining equipment manufacturers and examples of their associated risks.

The publicly known cases outlined above (see page 5) show that European mining equipment manufacturers are cooperating with mining projects responsible for severe environmental and human rights abuses. Given that business relationships between companies and clients are usually not public, it is remarkable that that many cases can be found by mere desk-research. This, combined with the expected increase in the demand of primary resources, demonstrates **how crucial it is to create downstream due diligence obligations in this sector**. Better mining is not only the responsibility of governments, mining companies, and their clients. It is only possible to transform the sector if all stakeholders make an effort, including those who profit from mining by supplying machinery or servicing the mines. The upcoming chapters examine how selected companies are already implementing downstream due diligence practices, and demonstrate how appropriate due diligence measures could be designed.

3 Status quo of downstream due diligence practices

Some of the European mining equipment manufacturers **acknowledge (at least in part) that their clients may be responsible for negative effects on the environment and local communities**. For example, Metso Outotec acknowledged that ‘significant land footprints, often in environmentally sensitive areas, and land disturbance and pollution can impact habitats and species’ (Metso Outotec Corporation, 2022, p. 12). Siemens, on the other hand, identifies repercussions on local communities as common risks resulting from ‘business decisions by customers’ as well as unspecified business-specific environmental and social risks for mining (Siemens AG, 2021).

What are companies doing to address these risks? How do they address the risks to which they may even contribute? This would be the case if they conduct drilling services to develop a mine that is not accepted by the surrounding community, or if they deliver machinery that causes high levels of emissions and thus contributes to poor air or water quality in the region. To get an overview of existing approaches, **we examined the policies, current annual and sustainability reports, and further information available on the corporate websites** of seven European mining equipment companies. According to Fortune Business Insights (2022), they were among the top 15 global players in the industry in 2021. The analysed companies are AB Volvo (Sweden), Atlas Copco AB (Sweden), CNH Industrials (Netherlands), Liebherr Group (Switzerland/Germany), Metso Outotec Group (Finland), Sandvik AB (Sweden), and the Wirtgen Group (Germany). Furthermore, we have applied the same approach to all European mining equipment manufacturers known to have made deliveries to the Andina and Quellaveco mines since 2010, two case studies that we have been investigating. These are ABB (Switzerland), Ed. Züblin AG (Germany) of Strabag SE (Austria), Eprioc AB (Sweden), Sacyr S.A. (Spain), Siemens AG (Germany), SMT Scharf AG (Germany), and Thyssenkrupp AG (Germany). In total, 14 corporations were scanned.

In general, **only 5 out of 14 companies explicitly addressed downstream due diligence in their public communication**. Even though there were no clear policies or commitments, all companies indirectly addressed elements of downstream due diligence, mostly by describing how they understood product responsibility. In the following, we outline the different approaches to downstream due diligence taken by the companies under review. Due to their lack of impact on the ground, we have not included codes of conducts without further monitoring and accompanying measures (Lund-Thomsen, 2008).

3.1 Product responsibility

European mining equipment manufacturers can take various measures in terms of product responsibility that affect their downstream value chain. All of the assessed corporations do acknowledge product responsibility in some way. However, many of them, such as Liebherr, Metso Outotec, Sacyr, or Thyssenkrupp, only remain superficial. For example, they merely state that they would contribute to lower environmental impacts or safety risks in the utilisation phase of their products through innovative, environmentally friendly techniques. This might be a crucial approach for downstream due diligence in mining equipment value chains, but explicit commitments are necessary to make it effective (see chapter 6). Most corporations do not define or commit to minimum standards that go beyond the legal requirements (Liebherr International AG, 2022; thyssenkrupp AG, 2021; Sacyr S.A., 2022; Sandvik AB, 2022; Metso Outotec Corporation, 2022). Nonetheless, some attempts do go beyond this and can serve as starting points for more comprehensive downstream due diligence practices, for example:

Standards for reduced environmental impact and emissions in the utilisation phase

To have a credible impact, product responsibility **should set minimum requirements that apply to the entire product range of a corporation**, rather than targeting only selected highly innovative products. Siemens and Volvo both affirm to have internal standards for the design of their products that go beyond the legal requirements. In Volvo's case, they cover both environmental and safety aspects, while Siemens only reports on explicit requirements for environmental aspects. These explicit commitments are an important step in preventing machinery shipped to less regulated destinations from being sold with deliberately lower environmental and safety standards, and thereby contributing to extensive pollution and hazards. Neither Siemens nor Volvo specify their internal standards publicly so that assessing their environmental and safety outcomes in the utilisation phase is not possible. However, Siemens refers to the international standard for environmental conscious design IEC 62430 (AB Volvo, as of 2022; Siemens AG, 2021).

Besides such clear guidance for minimum product standards, **some corporations set goals for reducing the impact of their products in the future**. For instance, John Deere, the parent company of the Wirtgen group, plans to reduce emissions in the utilisation phase of their products by 30% by 2030. Atlas Copco has set an internal target that every new or renewed product will reduce the carbon footprint of its antecedent over its entire lifecycle by a minimum of 5% (Deere & Company, 2022; Atlas Copco AB, 2022).

The case of Züblin/Strabag differs from that of the other assessed companies as they do not directly supply mining equipment but are responsible for constructions. So far, they seem to focus on reducing the environmental impact of their European construction projects. In their strategy, they aim to have climate-neutral construction phases by 2030 and to build infrastructure that their clients can operate in a climate-neutral way by 2040. Furthermore, they state compliance with country-specific, group-internal waste directives (STRABAG SE, 2022). These directives are not publicly available, making it difficult to assess whether they go beyond the legal requirements and are therefore effective.

Occupational health and safety standards

Similar to environmental standards, company minimum standards for product safety could contribute to safer working conditions. Volvo states that safety standards in the product design do not fall below an internal standard, so that there is a safeguard in case of low legal requirements in the destination country (AB Volvo, as of 2022).

CNH Industrials has a product safety and compliance policy that shall encourage safety standards beyond the legal requirements. As in other cases, the lack of public disclosure impedes an assessment (CNH Industrial N.V., 2022).

Exclusion of especially harmful mining methods

In isolated cases, mining equipment manufacturers also acknowledge their downstream due diligence by excluding mining methods that are especially harmful. For example, the Wirtgen Group claims to concentrate on surface mining, stating that 'drilling and blasting in mining, earthwork and

rock operations are, quite simply, no longer ‘state-of-the-art’.⁷ It is highly questionable whether surface mining as such is less harmful to the environment. In addition, the statement lacks a binding commitment not to expand business activities into drilling or blasting.

Product circularity

To cover the entire value chain, the durability and disposal of products at the end of their utilisation phase is decisive. Some European mining equipment manufacturers address this issue. Among other things, they can thereby prevent environmental damage caused by inadequate disposal. ABB, for example, aims to apply a circularity approach to 80% of their products, including the utilisation and end of life phases. The design of their products shall therefore take questions of durability, reparability, and modularity into account. For some product segments, ABB offers to collect their products from their customers and recycle at least 80% of their components. However, this service is only offered in case the client replaces the old product with a new one (ABB Ltd, 2022).

CNH Industrial also addresses the topic of product circularity by stating that ‘100% of new products [are] to be developed using sustainability and/or recyclability design criteria’ (CNH Industrial N.V., 2022, p. 194). However, they do not publicly elaborate on a more specific definition.

Siemens developed a so-called *Robust Eco Design* that also addresses questions of durability, recyclability, reparability, or modular extendibility. It shall be applied to all products by 2030 (Siemens AG, 2021).

3.2 Pre-business partnership scans and risk assessment during partnerships

Some of the mining equipment manufacturers **conduct environmental and human rights risk assessments before a business partnership or a project is started**. If conducted properly, this is an essential first step for proper downstream due diligence, if conducted properly.

For instance, Volvo asserts that it reviews certain sales contracts in advance for risks related to human rights, environmental impact, and business ethics. Such reviews are only carried out for contracts involving client financing or export credit guarantees, high-risk end-clients (such as military end-clients), and sales in conflict-affected regions. The **risk review** is specified by country risk, client sector, end-client, and end-use of the product. If Volvo identifies any risks, it claims to contact the client and help with mitigation measures. In some cases, third parties are involved, such as embassies or non-governmental organisations (NGOs). The company does not specify how exactly it will support mitigation measures, what the consequences will be if the client does not take adequate action, or under what circumstances other stakeholders are (not) involved. Volvo remains vague by stating that, ‘if the risks are considered too high and difficult to mitigate, we may decide not to proceed’ (AB Volvo, 2022, p. 174). There thus seems to be a lack of transparent and specific processes and commitments. In the 2021 annual report, Volvo declares that it reviewed approximately 170 sales contracts and identified numerous risks. It only briefly describes the action the company took as a consequence in one example: the investigation of allegations of water pollution against a potential mining client in a not-specified African country. Volvo discussed the allegations with the distributor and the client. According to Volvo, water samples taken and tested by a university commissioned by the client showed that mining activities were not the cause of water pollution. Based on

⁷ See <https://www.wirtgen-group.com/en-cn/applications/mining/surface-mining/>

the public information provided by Volvo, it is doubtful that the independence of this investigation has been credibly verified and that rights holders have been consulted (AB Volvo, 2022).

Siemens identified ‘business unit-specific environmental and social risks’ to be relevant in its downstream value chain as well. These include **sector-specific risks**, in which mining is explicitly mentioned, as well as **country-specific risks, impacts on local communities**, and risks related to working conditions, modern slavery, discrimination, and the occupation of territories. According to Siemens, the company identified these risks with the help of various stakeholders, including NGOs and government representatives. These risks form the basis of a digital risk due diligence tool (the so-called *ESG Radar*), which has been in use since the end of 2020 and is said to be constantly expanded and adapted to current human rights risks. Based on the results, ‘targeted mitigation measures are to be defined with external human rights experts [...] according to the characteristics of the risk profile and taking into account the Siemens’ sphere of influence’ [own translation, ‘Gemeinsam mit externen Menschenrechtsexperten werden gemäß Ausprägung des Risikoprofils und unter Berücksichtigung des Siemens-Einflussbereichs zielgerichtete Mitigationsmaßnahmen definiert’, Siemens AG, 2020, p. 56]. Public information does not disclose whether there is a specific process in place to weigh up the scope of influence and the associated risks, and to draw consequences if necessary. A regular assessment of the risks of existing partnerships with so-called key accounts was supposed to be developed in 2022 (Siemens AG, 2021).

Epiroc reports to have established a ‘Responsible Sales Assessment process [...] to better understand and identify mitigation measures for potential risks with regards to human rights, corruption and environment’ (Epiroc AB, 2022, p. 37) in line with the UN Guiding Principles on Business and Human Rights (UNGPR) in 2019. It claims to follow a **risk-based approach** to assess which sales require such a process. Risk assessment criteria include, amongst others, labour rights, impacts on land rights and Indigenous peoples at country level, and a scan of the client and the specific project. Epiroc also declares to assess risks of non-compliances ‘even when risks are beyond [their] direct control’ (Epiroc AB, 2022, p. 47). However, no details are published on the consequences if serious risks are identified, or on the design and monitoring of mitigation measures.

Strabag claims to be committed to making strategic decisions that consider the needs of people, the environment, and the societies affected by their operations. However, there is no specific (public) guideline on how this is done. Although they state that they have **information sessions** for communities in the vicinity of their construction sites, there is no description of how the demands of the participants have an impact on their work processes. Moreover, the organisers of these events are often their clients,⁸ so the credibility of these events is questionable. Furthermore, it is striking that in their materiality analysis, human rights, water, biodiversity, and land use are not considered ‘material issues’ (STRABAG SE, 2022, p. 59).

3.3 End-use conditions

Similar to the arms industry, Sandvik established end-use conditions for its products, which are country-specific. For example, the company prohibits the use of its products for military purposes and their transfer to parties which have been the subject to sanctions. Beyond this, the terms and conditions for Brazil and Colombia, for instance, stipulate that no contracting party may cause, allow, or tolerate ‘**unsafe conditions**’ (Sandvik AB, 2021, p. 2). These are defined as ‘unacceptable actual or potential hazards and incidents relating to safety, health or the environment’ (Sandvik AB,

⁸ See https://www.strabag.com/databases/internet/_public/content.nsf/web/DE-STRABAG.COM-stakeholder.html#?men1=5&sid=540

2021, p. 2). If any of these apply, either party may require the other to eliminate or mitigate them as far as possible. It remains unclear how this will be enforced in case of doubt. Sandvik specifies this only in the event that Sandvik personnel are put at risk by these unsafe conditions and allows the work to be suspended.⁹

Furthermore, Volvo indirectly defines exclusion criteria for the end-use of its products by excluding the export of its products for the purpose of jade mining in Myanmar (AB Volvo, 2022). This example does **not involve a systematic approach** to apply end-use conditions, however.

Similarly, Epiroc decided to stop developing special equipment for coal mines. However, there is no binding commitment to stop supplying coal mines (Epiroc AB, 2022).

3.4 Education and training

CNH Industrial offers its clients ‘electronic systems, computer tools, and targeted training activities to ensure the most comprehensive knowledge of products and fuel consumption’ (CNH Industrial N.V., 2022, p. 233) and to improve safety standards. Related recommendations are also included in the *Operator’s Manual* (CNH Industrial N.V., 2022). Atlas Copco offers training for some products to ensure safe handling (Atlas Copco AB, 2022).

3.5 Dealers, distributors, and sales partners

In the mining equipment industry, it is common to work with external dealers, distributors, or sales partners. In line with UNGP 13, this does not exempt a company from its downstream due diligence obligations concerning the end-user. Instead, the company should ensure that due diligence is carried out in cooperation with the respective intermediary and that it also addresses the intermediaries themselves. Other than Züblin and Sacyr, whose main business area is to offer construction and infrastructure service rather than selling products, **all of the assessed companies sell their products via third parties**. While there is no specific figure for the entire mining equipment industry, Sandvik’s disclosure that it sells 50-85% of its products via third parties (Sandvik AB, 2022) gives an indication of the importance of indirect sales channels.

Seven out of the 14 examined companies operating through third parties in downstream value chains do have policies towards their dealers, mostly in terms of codes of conduct. However, while some refer to the UNGP and/or OECD Guidelines, only the policies of Siemens and Sandvik explicitly require human rights due diligence. While the wording of Siemens only addresses upstream due diligence, that of Sandvik includes due diligence on all human rights abuses that the dealer causes, contributes to, or is directly linked to, as required by the UNGP. Because of a lack of public disclosure, however, it remains questionable how effective the enforcement of these requirements is.

Furthermore, it is striking that Volvo, for example, states that its downstream due diligence assessments ‘are primarily carried out in connection with direct sales [...]’ (AB Volvo, 2022, p. 174). In other words, sales via third parties are not equally evaluated.

⁹ See <https://www.rocktechnology.sandvik/en/about-us/business-concept/terms-and-conditions-of-supply/>

3.6 Assessment

The summary of existing downstream due diligence measures in the mining equipment sector presented above shows that **downstream due diligence is feasible**. Most companies, however, have so far only established selective measures and do not have a coherent strategy to implement due diligence in their downstream value chains effectively. They therefore need to enhance and combine the existing approaches at company level. In addition, most companies' endeavours in this matter are characterised by a lack of binding commitments and transparent communication on the implementation of due diligence measures. This undermines the possibility of rights holders and other stakeholders to monitor, rely on, participate, or intervene in their correct implementation.

The assessment of existing policies for downstream due diligence in the mining equipment sector therefore provides **initial lessons for the EU CSDDD and other (national) due diligence legislations**:

- First, downstream due diligence obligations need to be included in legislation to establish a level-playing field and eliminate disadvantages for the companies that are already implementing credible downstream due diligence.
- Second, relying on voluntary approaches to ensure respect for human rights and the environment in downstream value chains is not sufficient. The fragmented nature of existing policies has demonstrated that voluntary approaches are not effective and impossible to monitor.
- Third, legal obligations are important to ensure that policies are implemented and not abandoned when attractive contracts are offered.
- Fourth, downstream due diligence obligations could be easily circumvented if the relevant legislation only made them mandatory for direct business relationships, given that many large sales are made through intermediaries (see page 14).

The assessment of current downstream due diligence practices has shown that it is highly important that the EU includes downstream due diligence in the adopted version of the CSDDD. This will provide further leverage to ensure more sustainable mining practices.

4 How the European mining equipment industry should use and increase its leverage

To identify further ways in which mining equipment manufacturers should conduct downstream due diligence, we have reviewed the UNGP to assess how far their responsibility actually extends. This has led us to identify a set of levers that companies can use to avoid or mitigate human rights abuses and environmental risks in their downstream value chains.

4.1 Downstream due diligence obligations

The UNGP were endorsed by the United Nations Human Rights Council in 2011 and define duties of states and responsibilities of business enterprises with regards to human rights. Although they are designed to prevent human rights abuses, these principles can also be applied for environmental risks (Scherf, Kampffmeyer, Gailhofer, Krebs & Hartmann, 2020).

The UNGP do not differentiate between upstream and downstream due diligence obligations, but rather state that business enterprises have a responsibility for human rights ‘wherever they operate’ (Commentary to UNGP 11). Moreover, they proclaim a **responsibility for ‘all enterprises regardless of their size, sector, operational context, ownership and structure’** (UNGP 14). All mining equipment manufacturers should therefore

- a) ‘avoid causing or contributing to adverse human rights impacts through their own activities, and address such impacts when they occur’ (UNGP 13); and
- b) ‘seek to prevent or mitigate adverse human rights impacts that are directly linked to their operations, products or services by their business relationships, even if they have not contributed to those impacts’ (UNGP 13).

The UNGP acknowledge that factors such as the size, sector, operational context, ownership, or structure shape and affect the ability to conduct due diligence. The requirements for appropriate due diligence practices are therefore differentiated and adapted accordingly. In the following, we outline what this means for the downstream due diligence requirements of mining equipment manufacturers.

Probability and severity of the risk

In line with the UNGP, downstream due diligence obligations apply to all companies regardless of their size and operational context. The likelihood, severity, and impact of potential risks should therefore drive the further process and implementation of due diligence measures. For this to happen, companies need to assess the scale, scope, and irremediable character of risks or their potential impacts.

Causing, contributing to, or being directly linked to the risk

Companies need to take appropriate action depending on whether they are causing, contributing to, or are directly linked to the risk or impact they identified (UNGP 13, 19, and 22). The transitions between these forms of relationships are often blurred, so that a clear distinction is not always

possible. While there are various related discussions and guidelines for upstream due diligence obligations, there is little guidance on downstream due diligence practices.

- **Causing:** When a company causes a risk or impact, the UNGP require that it prevents and ceases adverse impacts. A company causes adverse impacts when its actions are sufficient to cause harm.¹⁰ This is rather unlikely to occur in the supply of mining equipment.
- **Contributing:** When a company contributes to a risk, it needs to cease or prevent this contribution. Furthermore, the company must use and increase its leverage to minimise any remaining adverse impacts (see below). Such a contribution exists in downstream value chains under two conditions. One, if the supplier ‘adds to conditions that make it possible for someone else to cause harm’ (Banktrack, 2017), or has incentivised harm through its actions or omissions. Two, if it did not ‘require, encourage or support the client [or other party in the downstream value chain] to prevent or mitigate these risks’ (Banktrack, 2017), despite being in a position to know about them.¹¹

For example, a company may supply machinery or services for drilling and similar construction work to open a mine. In preparation for the construction, Indigenous peoples have been evicted from the land on which this construction is taking place, without the company adhering to human rights and to the right to free, prior, and informed consent. If the company had known or could have known about the human rights violation and did not make a serious effort to prevent the forced displacement, then the company **is contributing to the abuse**. As a last resort, the company should have cancelled the construction work to end its own contribution. An example of a contribution to environmental degradation would be a company supplying equipment that allows its client to expand a mine in a way that destroys glaciers.

In other cases, contributions may be less far-reaching and therefore requires less extensive consequences. For instance, companies could end their contribution to unsafe working conditions by supplying machinery with the highest, ineluctable safety standards, regardless of the safety requirements of the client or the country of destination. Their scope of influence should then be used to mitigate remaining risks (see below).

- **Direct link:** A direct link to an abuse exists when a risk is not caused or contributed to by a company but still ‘directly linked to their operations, products or services by their business relationship’ (UNGP 13). For example, a direct link between the supply of mining equipment and human rights violations or environmental harm exists if the manufacturer accepts an order by a client known for bribery or for its persecution of environmental and human rights activists who oppose its mining projects. Another example is the supply of mining equipment to a mine where workers’ rights are not respected and safety standards are not met. If such a direct link exists, the required action depends on the ‘leverage over the entity concerned, how crucial the relationship is to the enterprise, the severity of the abuse, and whether terminating the relationship with the entity itself would have adverse human rights consequences’ (Commentary to UNGP 19). Companies should use and increase their leverage to improve the situation.

¹⁰ This assessment is based on the evaluation by Banktrack (2017) on contributions to risks by banks that was based on guidance by the Office of the High Commissioner for Human Rights. As due diligence practices by banks focus on their client-related business, related insights are valuable for interpreting the UNGP for downstream value chains.

¹¹ This assessment is based on the evaluation by Banktrack (2017) on contributions to risks by banks that was based on guidance by the Office of the High Commissioner for Human Rights.

Scope of influence of the company

According to the UNGP, due diligence practices should not be limited to ending or preventing the cause of, or contribution to, any risks and effects. Companies must rather use and increase their leverage to end harm or risk. For example, this can be achieved through ‘offering capacity-building or other incentives to the related entity, or collaborating with other actors’ (UNGP 19). The European Commission’s proposal for the CSDDD suggests that influence can be exerted, for example, ‘through ownership or factual control, market power, pre-qualification requirements, linking business incentives to human rights and environmental performance, [...] through cooperation with the business partner in question or engagement with another company which is the direct business partner of the business relationship associated with adverse impact’ ((29) CSDDD). It also identifies industry cooperation, industry schemes, and multi-stakeholder initiatives as means of increasing leverage to address human rights or environmental risks or impacts (Art. 7 (2e) CSDDD). Furthermore, the proposal requires companies to **end the business relationship if mitigation efforts are not effective**. If there is a chance of success, they should temporarily suspend the business relationship and use their leverage to mitigate the risk or harm before continuing the relationship (Art. 7 (5) and Art. 8 (6) CSDDD). The UNGP also states that if leverage to improve the situation is unavailable or ineffective, consideration should be given to ending the business relationship through a **responsible exit**. This means taking into account any adverse human rights and environmental impacts that may result from the termination of the business relationship. In line with the UNGP, the pace and procedure of exiting should depend on how crucial the business relationship is for the respective company and how severe the human rights abuses or environmental degradation are (UNGP 19).

The opportunities and potentials for leverage for due diligence obligations in the downstream value chain are different from those already known from the upstream value chain. However, using and increasing the leverage to mitigate human rights abuses and environmental risks remains the same. **Opportunities of exerting influence and potential risks must be weighed against each other**, based on the severity of the risks involved.

When should a company assess its business relationships in the downstream value chain? **In general, as long as a relationship persists, due diligence obligations apply.** The pre-business relationship risk assessment should therefore be regularly repeated when a business relationship persists. The European Commission’s proposal for the CSDDD prescribes a risk analysis on an annual basis. In assessing whether due diligence obligations apply, it should be considered that in many cases, a business relationship in the mining equipment industry does not end with the delivery. As shown in figure 1 on page 9, contracts may include further service after delivery, such as maintenance commitments or (voluntary) warranties. If risks or harms only become known at this phase of the business relationship, there may still be leverage for change, as the following chapter shows.

In general, due diligence obligations end when a business relationship ends in all respects. However, if a company is found to have contributed to harm during that relationship, the duty to remedy that contribution continues. Moreover, downstream due diligence obligations should also be designed to address any risks that may arise during the use, resale, or end-of-life of the respective product, including by taking into account any impacts at these stages in the design of the product and its terms and conditions (see chapter 6).

4.2 Leverage of the (European) mining equipment industry

What can the European mining equipment industry do to influence the situation if there are human rights abuses or environmental risks in their downstream value chain? What are their levers? And how can they be used to create further leverage? To identify these levers, we applied suggestions from the UNGP and the European Commission's proposal for the CSDDD to the mining equipment industry, and examined the structure of the industry. Moreover, we drew lessons for the mining equipment industry from guidance for the financial sector. Downstream due diligence may not have been discussed in detail for the trade in goods or other services. Parts of the financial sector, however, already apply due diligence in their downstream value chain, that is, to their clients. Respective guidance and requirements are already in place.

Industry cooperation

The UNGP and the European Commission's CSDDD require different industry stakeholders to work together for effective environmental and human rights due diligence. Given the global influence and position of European mining equipment manufacturers, such a cooperation could make a significant contribution to making mining more sustainable. Examples of such a cooperation could be reliable and effective multi-stakeholder initiatives or the agreement of industry-wide standards. With an **export market share of 18% in 2017**, the EU has been the largest exporter of mining equipment for a long time, followed by Japan (14%), China (13%), and the United States (11%). Four EU countries, Germany, the Netherlands, Italy, and France, are among the ten most important exporters of mining equipment at country level. In addition, 8 of the 15 key market players in mining equipment identified by Fortune Business Insights (2022) are based in the EU. Even though global net exports from the EU decreased significantly in the past two decades, exports to destinations in Latin America, Africa, and the so-called Middle East increased (European Commission, 2021). Moreover, as the demand for raw materials is expected to increase in the upcoming years, the competitive pressure in the global mining equipment market is likely to decrease. This shift in competitive dynamics has already been observed in the past: when the high demand for mining equipment during the commodity boom in the 2000s led to extended delivery times, for example, it created a bottleneck in the mining equipment market.¹² The same goes for 2021, when pandemic-induced disruptions in the value chain additionally delayed supplies to Latin American mines.¹³ Furthermore, numerous expansions of existing mines and the exploration of new ones are very likely in the upcoming years as Europe reorients its import market towards alternative sources of raw materials (Paasch, 2022; Schüler-Zhou, Felizeter & Ottsen, 2020; Specht & Stratmann, 2022). **This will create further demand for mining equipment.**

These developments are expected to reduce competitive constraints in the mining equipment industry over the next few years. European industry cooperation can therefore make an important and influential contribution to establishing downstream due diligence and making mining more responsible.

¹² See <https://www.ahkbrasil.com/lateinamerikahandbuch/maschinenbau.html> (in German)

Dominant positions in specialised business areas

In addition to the importance of the European mining equipment sector in the world market, there are many other sources of leverage and opportunities to increase the scope of influence. These highly depend on the individual companies and business relationships. For example, specialisation and dominance of a company or of a sub-sector in specific products and services can be an important lever. Industry initiatives can be **particularly effective where European mining manufacturers have a joint leading position**. Nonetheless, even individual European companies have market-leading positions in specific products. Epiroc, for example, is leading in automation, connectivity, and electric vehicles,¹⁴ while Sandvik is the key player in underground mining and tunnelling.¹⁵ SMT Scharf, on the other hand, is the world market leader in monorails for mining (SMT Scharf AG, 2014). Their position in the world market makes it difficult to circumvent these companies and gives them great influence and considerable leverage. A warning to end the business relationship in the event of severe human rights abuses by such an influential company can be very effective, for example.

Yet not only large, well-known companies such as Siemens or Sandvik can thereby have a significant impact on their customers' compliance with human rights and environmental standards. Because of the high degree of specialisation in the sector, **medium-sized companies also play a leading role** in the global market for specific products and can make use of their scope of influence. Covering small- and medium-sized enterprises (SMEs) in due diligence legislations is therefore crucial, particularly when considering their significant role in the mining equipment industry: the VDMA Mining segment indicates that the majority of their members, representing more than 90 per cent of the German market share, are SMEs.¹⁶ The CSDDD must therefore be adapted accordingly. Without including SMEs, it is unlikely to apply to the majority of mining equipment companies.

Long-term business relationships

Many mining equipment manufacturers have established long-term business relationships with their clients. This is common for a variety of reasons. Many companies offer post-delivery maintenance or warranties, while others have long periods of joint product development and customisation (see figure 1 on page 9). In addition, follow-up orders may result from successful deliveries, and some contracts involve long and complex installation periods. **These long-term business relationships create interdependencies and therefore leverage.** It can therefore be beneficial to use (existing) communication channels in high-level positions to discuss environmental and human rights risks and mitigation measures. If there are any severe risks or impacts identified, continuing a business relationship or further deliveries could be combined with implementing mitigation measures. In the installation phases, suppliers have considerable leverage because the client is likely to suffer financial losses if the installation is delayed. Contracts or terms and conditions that include provisions on consequences in the event of human rights abuses or severe environmental degradation are an important prerequisite for these due diligence measures. These should allow for the termination of a business relationship as a last resort, as proposed by the European Commission in its proposal for the CSDDD (Art. 7 (5) and Art. 8 (6) CSDDD).

¹⁴ See <https://www.mining-journal.com/stocks-market-insight/news/1367808/mining-market-positive-for-lead-swedes>

¹⁵ See <https://industry europe.com/sectors/construction-engineering/Swedens-sandvik-to-buy-dsi-underground-in-934m-deal/>

¹⁶ See <https://www.vdma.org/mining>

Using the design of the business relationship for setting incentives

In addition to the levers mentioned above, business relationships should be designed to create leverage for human rights and environmental issues. This is mainly suggested in the guidelines for the financial sector (Shift Project, 2022; OECD, 2019a). Although the design of business relationships of mining equipment manufacturers is quite different from that of banks, we can still draw some conclusions for this sector. For example, banks are called upon to include agreements on mitigation measures for identified risks in the contracts and to monitor them throughout the business relationship (Initiative Lieferkettengesetz, 2022). This can also be applied to significant supplies and services in the downstream value chain of mining equipment manufacturers.

Capacity building

In line with UNGP 19, the first option when cooperating with a business partner causing risk or harm should always be putting an end to the adverse impact. In this regard, it can even be a competitive advantage if a company can provide expertise and guidance on sustainability questions (Shift Project, 2021). Capacity building through the sharing of expertise, consulting, or training can be an appropriate option to support mitigation or remediation.

Cooperating with other stakeholders beyond the mining equipment industry

As suggested in the UNGP (19) Art. 6 (2e) and the European Commission's proposal for the CSDDD Art. 8 (3f), companies should seek to engage with other stakeholders to increase their leverage and prevent or stop harm. Potential allies for companies in the mining equipment industry include a client's other suppliers, clients, or banks. In particular, those to whom the relevant due diligence laws also apply could be important allies.

4.3 Assessment

In conclusion, mining equipment manufacturers have various opportunities to use and increase their leverage to ensure effective downstream human rights and environmental due diligence before and during a business relationship. The examined opportunities are by no means exhaustive. At an individual level, companies may identify further levers depending on the factors such as their sub-sector or the type of business relationship. Once these human rights or environmental risks have been identified, companies need to **balance their scope of influence with the severity of the risks or actual harm, with the latter always being the determining factor**. In the case of serious severe risks, this includes an assessment of whether their influence is sufficient to effectively address the concerns or whether they should rather withdraw from a business relationship. In cases of doubt, the decision should be made in consultation with stakeholders and affected rights holders.

Outlook: Downstream value chains of technology suppliers for green hydrogen

Large-scale green hydrogen projects are likely to be linked to environmental and human rights risks similar to those associated with mining. For example, water scarcity may be aggravated in dry regions, the land intensity may cause land use conflicts and impacts on biodiversity, and civil society is expected to be insufficiently consulted and involved (Sachverständigenrat für Umweltfragen 2021). European companies will likely play a dominant role in supplying the technology for these projects. In fact, some are already involved in (pilot) projects and even joint ventures for setting up green hydrogen projects (COM(2020) 301 final). Examples include the involvement of the French-German Engie SA in the development of a hydrogen valley in South Africa, that of the Irish-German Linde AG in the HyPro Aconcagua project in Chile as well as a consortium with Siemens Energy and Porsche to produce green hydrogen for synthetic fuels in Chile. Effective due diligence obligations, such as a comprehensive European CSDDD, are therefore central to the sustainable development of a global green hydrogen market from the outset. Now is the best time to implement such a policy, as there are only few (infrastructural) lock-ins that could hamper its effectiveness and lead to sunk costs (Sachverständigenrat für Umweltfragen 2021).

5 Conclusion

Downstream due diligence obligations in the mining equipment industry are crucial given the numerous and often irreversible large-scale human rights abuses and environmental degradation in mining. **All available leverage should be used to prevent and mitigate the increasing harm caused by mining**, in part due to growing European demand. This study has demonstrated that downstream due diligence can be a valuable opportunity for this. Europe's influential mining equipment industry should stop profiting from and contributing to mining projects that violate human rights and cause environmental damage. Instead, it should use its power to prevent and mitigate harm.

As demonstrated in chapter 3, conducting downstream due diligence is feasible for the European mining equipment industry. Some mining equipment manufacturers already have voluntary approaches in place. However, considering the multiple levers identified in this study, they fall far short of their potential to prevent and mitigate any contribution or direct link to environmental and human rights abuses in mining. Furthermore, none of the examined cases provided a **systematic and comprehensive approach**. Instead, most companies presented individual measures that lacked transparency and precision, leading us to question their effectiveness. Companies must therefore develop coherent approaches and implement them consistently.

To cover the entire downstream value chain, dealers and intermediaries must be included in due diligence procedures. Furthermore, contracts must include due diligence, and product design and end-use conditions must take into account future human rights and environmental impacts. This requires action not only by the industry itself, though. **Above all, European legislators must act now**. National laws such as the French *Loi de vigilance* or the German *LkSG* need to be strengthened in this regard. The EU should seize the current opportunity to **adopt an effective and comprehensive CSDDD in a timely manner**. This is the only way to ensure effective downstream due diligence and a level-playing field.

6 Policy recommendations

Based on the findings of this study, we outline below key recommendations for policymakers on how to ensure effective downstream due diligence in the mining sector and other sectors with major risks in downstream value chains. In a second part, we then present recommendations for mining equipment manufacturers on how to implement downstream due diligence.

6.1 Recommendations for policymakers

To ensure proper product responsibility, **product design regulations**, such as the *Ecodesign Regulation*, could reduce risks in the use phase of mining equipment, if properly designed. They can set minimum requirements for circularity, emission intensity in the use phase, or safety standards, among others. The European Commission's *Proposal for Ecodesign for Sustainable Products Regulation* is therefore a good step forward if it is also applied to mining equipment by means of a delegated act. The regulation should be **extended beyond the EU market** to include mining equipment sold by European manufacturers to external markets. This would ensure consistency with companies' downstream sustainability due diligence obligations and the forthcoming CSDDD.

EU Policymakers should seize the opportunity to enshrine effective downstream due diligence obligations in the CSDDD proposal. In this respect, they should clearly prefer the Commission's proposal, which links the CSDDD to the entire value chain, to the Council's proposal, which links the directive more narrowly to specific activities in the value chain. Policymakers should not respond to false claims that downstream due diligence is not feasible by diluting the proposal. This study has clearly demonstrated the feasibility of downstream due diligence. Moreover, the Commission's proposal for the CSDDD ensures the proportionality and protects companies from unrealistic expectations by requiring them to take 'appropriate [due diligence] measures'. Instead, policymakers should respond to these concerns by providing sector-specific guidance on downstream due diligence.

The **following amendments are necessary to ensure that the CSDDD is effective** and achieves comprehensible downstream due diligence and impact on the ground:

- **Widen the definition of risk sectors and apply due diligence obligations to all companies in these sectors:**

Art. 2 (1b) CSDDD defines three sectors with very high risks for human rights and environmental harm along the value chain. Currently, the definition of the risk sector of (mineral) resource extraction does not include suppliers of extractive activities (Art. 2 (1b: iii). Policymakers should therefore ensure that **companies supplying the defined risk sectors are also included**. Moreover, due diligence obligations should not only apply to companies with more than 250 employees and a turnover of 40 million euros in these risk sectors, as proposed by the European Commission. Instead, **any company operating in these high-risk sectors should be required to conduct due diligence along their value chains** using a risk-based approach. Only micro enterprises should be exempted. Furthermore, the directive should apply to any business relationship in these risk sectors, not only to companies that generate at least half of their annual turnover in these sectors.

- **Apply due diligence obligations to the entire value chain:**

According to the current proposal of the European Commission, due diligence obligations shall only apply to 'established business relationships' (Art. 1(1a) in connection with Art. 3 (e, f) CSDDD), which represents a major obstacle for effective (downstream) due diligence practices. While we welcome the negotiating position of the Council rejecting this concept,

we consider its suggestion to replace ‘value chains’ by ‘chains of activity’ a significant step backwards. The CSDDD must introduce a **risk-based obligation to prevent and eliminate adverse human rights and environmental impacts throughout the entire value chain**. This study has demonstrated that the mining equipment industry can create significant leverage. As long as the limitation to established business relationships is maintained, the directive contains significant legal loopholes: due diligence obligations could easily be circumvented by restructuring value chains. Policymakers should furthermore ensure that due diligence obligations cannot be circumvented by operating through intermediaries. This would only further dilute the directive.

- **Apply the directive to a wider range of companies:**

This study has shown that (downstream) due diligence obligations for companies with fewer than 500 employees and an annual turnover of 150 million euros are not only feasible, but also necessary. Even small companies can contribute to and be directly linked to human rights violations and environmental harm. Policymakers should therefore replace the current restriction (Art. 2 (1a) CSDDD) with a **restriction to all companies with more than 250 employees**. This would also be in line with the EU definition for SMEs as companies with fewer than 250 employees and a turnover of less than 50 million euros. Furthermore, the directive should **introduce a risk-based approach to ensure the proportionality of the due diligence measures** to be taken by companies.

6.2 Recommendations for companies and the European mining equipment industry

European mining equipment companies should establish strong and explicit downstream due diligence processes. A number of possible measures is listed below. Given the variety of risks, business relationship structures, and products and services in the industry, companies may not apply all of them equally, but rather adopt the most appropriate ones. They should furthermore integrate the proposed measures into a risk-based approach.

General measures:

- Integrate a **clear downstream due diligence process into corporate policies** and adopt measures to verify its implementation and effectiveness. As a minimum, the downstream due diligence process should include:
 - The **comprehensive definition of responsibilities** and, if necessary, the establishment of new decision-making bodies;
 - The **definition of a multi-level escalation procedure** for severe (potential) human rights or environmental impacts in the downstream value chain;
 - **Minimum and exclusion criteria for key stakeholders** in the downstream value chain, such as distributors, clients, and end-users;
- Provide **regular training on the company’s downstream due diligence obligations** and procedures to all employees who interact (directly) with intermediaries, such as distributors and/or clients, and other relevant employees;
- Establish **procedures with intermediaries to ensure effective due diligence** for client relationships arranged through third parties. The company must not outsource its responsibilities to intermediaries. To ensure effective due diligence, intermediaries should be required to participate in the company’s risk analyses and mitigation measures, as appropriate, and should be trained accordingly.

Measures for product responsibility:

- Set the **highest environmental, safety, and emission standards** available on the market as the company's minimum standards;
- **Exclude the supply of machinery for particularly invasive methods** for which alternatives exist;
- Establish a **circular product design** to enable an environmentally sound disposal, recycling, and refurbishment. If possible, use leasing contracts instead of sales contracts. Alternatively, offer take-back agreements to ensure resale after refurbishment or best possible disposal including recycling;
- Provide **training on the safe, low-emission, and least polluting use** of products.

Measures prior to starting a business relationship/signing a new contract:

Before entering into a business relationship or signing a new contract, companies should assess the following risks before supplying mining equipment:

- Risks related to the **specific mining project** to which the business relationship would contribute:
 - Verify the existence and credibility of an independent and participatory Environmental Impact Assessment;
 - Assess the impact on any neighbouring communities;
 - Verify the credible and effective participation of people and communities affected by the project and the respect of the right to free, prior, and informed consent of Indigenous peoples. Where measures have been agreed in consultation with affected stakeholders, companies should verify their implementation by consulting affected rights holders through accessible and effective consultation processes, if appropriate;
 - Verify how the client responded to and addressed any concerns and protests raised about the project. For severe risks, affected rights holders should be consulted in an accessible and effective way;
 - Verify that no illegal land-grabbing happened;
 - Where human rights abuses or environmental harm occur, the supplying company should verify whether the client implemented appropriate mitigation and prevention measures and provided the appropriate remedy in consultation with the rights holders. If the client has a history of abuses in other projects, the mining equipment manufacturers should verify in how far the client implemented effective measures to prevent the recurrence in the planned project;
 - Assess the intended use of the product or service and the associated impact on the environment and human rights.
- **Sector-specific risks** (see chapter 2): Furthermore, identify other risks specific to the sub-sector (such as coal mining, copper mining, or surface mining);
- Risks specific to the **importing country**;
- Risks related to the **client and/or end-user** of the respective product or service: Assess whether the client has a history of human rights and environmental abuses and whether its subsequent actions to prevent, mitigate, and remediate these abuses are credible;

Similar to upstream due diligence processes, the company should take the following steps after the risk analysis:

- Balance its scope of influence with the **severity of the risks or actual harm**, with the latter always being the determining factor in whether or not to start the business relationship/contract;

- In the event of severe risks or actual harm, **define mitigation measures with the client in consultation with rights holders** (cf. OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector (2017)). Companies should either make these mitigation measures a condition of entering into the business relationship/contract or enshrine them in the contract with appropriate monitoring and sanctioning mechanisms.

Due diligence in contracts and terms & conditions:

- Include minimum **environmental and human rights standards** that cannot be violated. In case of severe non-adherence, terminate the contract;
- Incorporate agreed mitigation measures and associated **monitoring and sanctioning mechanisms**;
- **Restrict the right to pass on the product and the right of end use**, for example by excluding resale to parties involved in illegal mining, to sanctioned parties, or to companies with a history of severe environmental degradation (according to international agreements and regulations) and human rights abuses.

Risk analysis and mitigation measures during business relationships:

- Conduct an **annual risk analysis** as described for the assessment prior to starting a business relationship (see above). If external indications suggest that a new (partial) risk analysis is appropriate, conduct one;
- **Monitor** agreed mitigation measures;
- Be **transparent with rights holders and the public** if the client or end-user has caused actual harm;
- Where prevention or mitigation measures are lacking, use and increase the leverage to **encourage improvement and remediation** (see chapter 4). In cases of severe risks or harm, consider terminating the business relationship as a last resort;
- Enable stakeholders, particularly downstream rights holders, to engage with the company by establishing **effective grievance mechanisms** in accordance with UNGP 31.

Remediation in the event that harm has been caused or contributed to:

- Provide a remedy that is **proportional to the contributory responsibility**;
- **Ensure transparency** about the harm done and the remedy;
- In the case of contribution, use all leverage to **encourage other involved parties to remedy**. To this end, the company should also cooperate with other stakeholders.

Industry cooperation to ensure effective downstream due diligence:

- Join or launch **industry initiatives** to collaborate on effective downstream due diligence;
- Develop and implement **industry-wide minimum standards** for downstream due diligence;
- Collaborate with other industry members on **risk prevention and remediation**.

Public reporting on downstream due diligence:

- **Publish internal procedures** and binding commitments for downstream due diligence;
- Report on the implementation of the procedures in the **annual or sustainability reports**;
- **Report on any actual harm** that the company has caused, contributed to, or has been linked to, and the mitigation measures taken.

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