

Greenwheel Insights

Human Rights Sector Risk Mapping Tool



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Executive Summary

An important step for investors in carrying out human rights due diligence is understanding the human rights risks and impacts of their potential investee and holding companies. Oftentimes, this process is reactive, where investors respond to human rights controversies after adverse impacts have occurred.

By contrast, **investors can take a more proactive approach to understanding their human rights risks exposure through a sectoral lens.** This lens helps investors identify human rights risks based on a sector's characteristics, business activities, or the typical products or production processes. Additionally, this approach helps investors learn from the existing human rights risks and impacts of a given sector. In doing so, investors can anticipate potential future risks.

While geographical contexts can compound or reduce human rights risks, **sector risks are inherent.** Take the example of workers in an offshore oil platform. Regardless of the national context, health and safety would be an inherent risk, even though the level of labour protection and occupational health and safety practices in a given region can diminish or exacerbate risks.

To help investors understand their inherent human rights risks by sector, Greenwheel developed a **Human Rights Sector Risk Mapping Tool.** This Excel-based tool maps the human rights risks in 163 Global Industry Classification System (GICS) sub-industries at the eight-digit level. The tool provides the following insights for investors:

- **Human rights risks to rightsholders:** The tool provides three high-level scores based on risks to workers, risks to communities, and risks to end-users.
- **Types of human rights risks:** For each rightsholder group, the tool provides a breakdown on the types of risks (e.g., discrimination, product safety, working time).
- **Red flags:** Three additional "red flags" are noted for all sectors based on human rights risks that are difficult to remediate: child labour, forced labour, and attack on human rights defenders resulting in death.
- **Supply chain risks:** A mapping of supply chain risks based on high-risk raw materials and commodities made with child labour, forced labour, or otherwise noted as high risk based on reputable academic research, news articles, and non-profit organisations.

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Example of the Greenwheel Human Rights Sector Risk Mapping Tool

Company Name and Sector Classification			Risk Grouping for Rightsholders			Red Flags in Direct Operations		
Company	GICS SubIndustry	Greenwheel Sector	Workers	Communities	End-Users	Child Labour	Forced Labour	Attacks Resulting in Death on Human Rights Defenders
Company A	Health Care Facilities	Health services	High-Medium	Low-Medium	High	No	Yes	No
Company B	Diversified Banks	Financial services	Low	Low	High	No	No	Yes
Company C	Automobile Manufacturers	Manufacturing	High	High	Medium	Yes	Yes	Yes
Company D	Education Services	Education	Low	Low	High-Medium	No	No	No

Portfolio Data from the Summary Table will automatically populate here.			Inherent Risk Scores and Risks for Rightsholders (Workers, Communities, and End-Users)					
			All sectors have a level of inherent human rights risks to key rightsholders. Here, the Tool gives a high-level score on a scale of 1 (low risk) to 3 (high risk), as well as particularly material risks for relevant sectors. Investors can use this information, in conjunction with Greenwheel Research, to complete effective due diligence and engage with companies on their most material human rights exposures.					
Company	GICS SubIndustry	Greenwheel Sector	Workers Risk Score	Workers Risks	Communities Risk Score	Communities Risks	End-Users Risk Scores	End-Users Risks
Company A	Health Care Facilities	Health services		There are different risks for high- and low-skilled health services. Refer to Sector Breakdown Box		There are different risks for high- and low-skilled health services. Refer to Sector Breakdown Box		There are different risks for high- and low-skilled health services. Refer to Sector Breakdown Box
Company B	Diversified Banks	Financial services	1.3	Discrimination, health and safety, working hours	1.0	(i.e., through financing of projects): Access to remedy, land rights (forced resettlement, displacement), rights of indigenous peoples, free and prior informed consent	2.3	Discrimination (e.g., unequal access to financial products and services), right to due process (e.g., creditors depriving debtors of property without fair, impartial, or due process), right to property, modern slavery, human trafficking
Company C	Automobile Manufacturers	Manufacturing		There are different risks for high- and low-skilled manufacturing. Refer to Sector Breakdown Box		There are different risks for high- and low-skilled manufacturing. Refer to Sector Breakdown Box		There are different risks for high- and low-skilled manufacturing. Refer to Sector Breakdown Box
Company D	Education Services	Education	1.2	Discrimination, freedom of association and right to collective bargaining, low wages, working time	1.2	No material or salient risk found yet	1.5	Affordability, discrimination, children's rights

The Investor Need

As long-time investors in Emerging and Frontier markets, we have been navigating human rights considerations across the value chain for multiple sectors across multiple markets for decades. Extensive conversation with Jessica Wan, Greenwheel's Social Lead, on how to develop a systematic approach led to the development of the 2.0 Human Rights Sector Risk Mapping Tool. With Jessica's thought leadership, the duo of Anna Polise and Jessica Wan have developed an intuitive human rights sub industry materiality map of sorts, that identifies relevant risks to various stakeholders in the ecosystem across the value chain. The user interface is simple and the visual heat map quickly allows the user flag concerning sectors and priority stakeholders, freeing time to instead hone in on specifics where relevant. We look forward integrating this tool in our assessment process.



Archana Shah

Sustainable Emerging Markets

The importance of adopting a sector lens to human rights impacts for investors

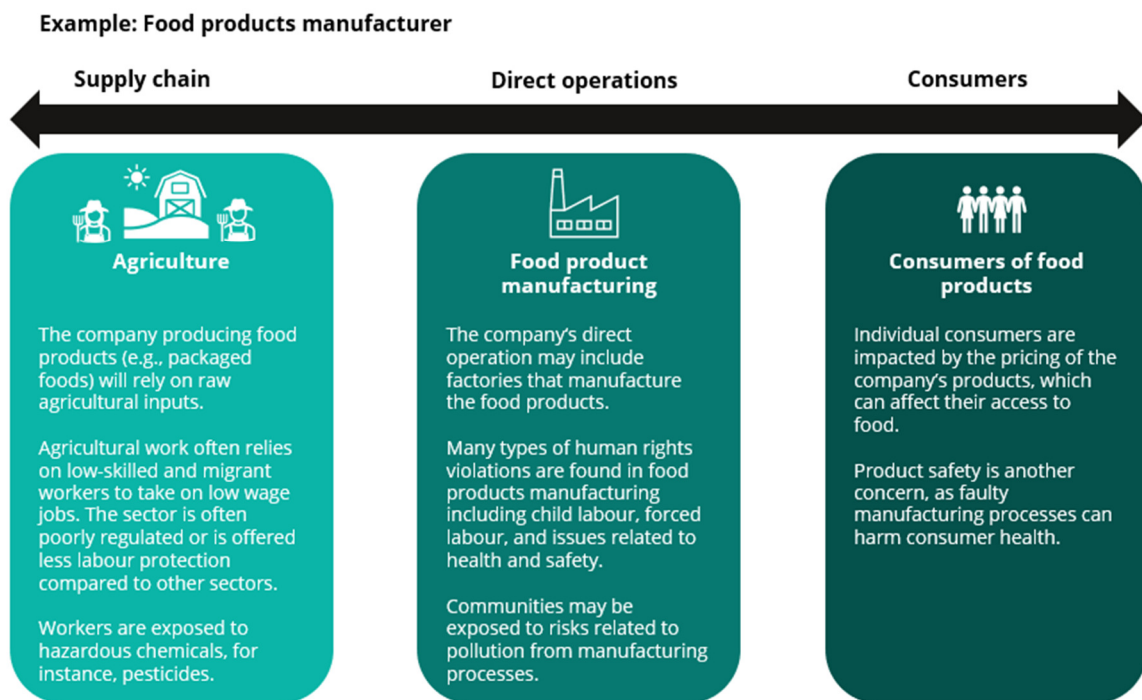
As per the guidance from the UN Principles for Responsible Investment, investors are encouraged to evaluate their portfolio companies' human rights risks to workers (i.e. direct company operations), workers in the value chain, communities, and end-users and consumers who may be impacted due to a company's products or services.¹ One of the key ways for **investors to understand the human rights risks to workers, communities, end-users and consumers across their portfolio is through a sectoral lens.**

Human rights risks **may arise due to a sector's characteristics, the nature of the business activities, its products or production processes** (Figure 1).² For instance, renewable energy projects that require significant land to operate will likely impact host and neighbouring communities. Sector risks can be attributed to the inherent risks found in the products and/or services as in the case of tobacco or alcohol, where there are risks to consumer health.

Risks can also stem from the possible misuse of products. With pharmaceutical products, while the products are not inherently harmful, misuse by consumers can have adverse impacts on their health. Similarly, a surveillance solution can have a positive impact on security but can also be abused by governments to target human rights defenders or political opponents.

While the location of a business activity can compound or reduce human rights risks (e.g. labour rights protection in a country), sector risks are inherent.³ For example, regardless of where extractives industries are found, occupational health and safety remains a salient risk for workers.

Figure 1: The linkage between sectors and inherent human rights risks

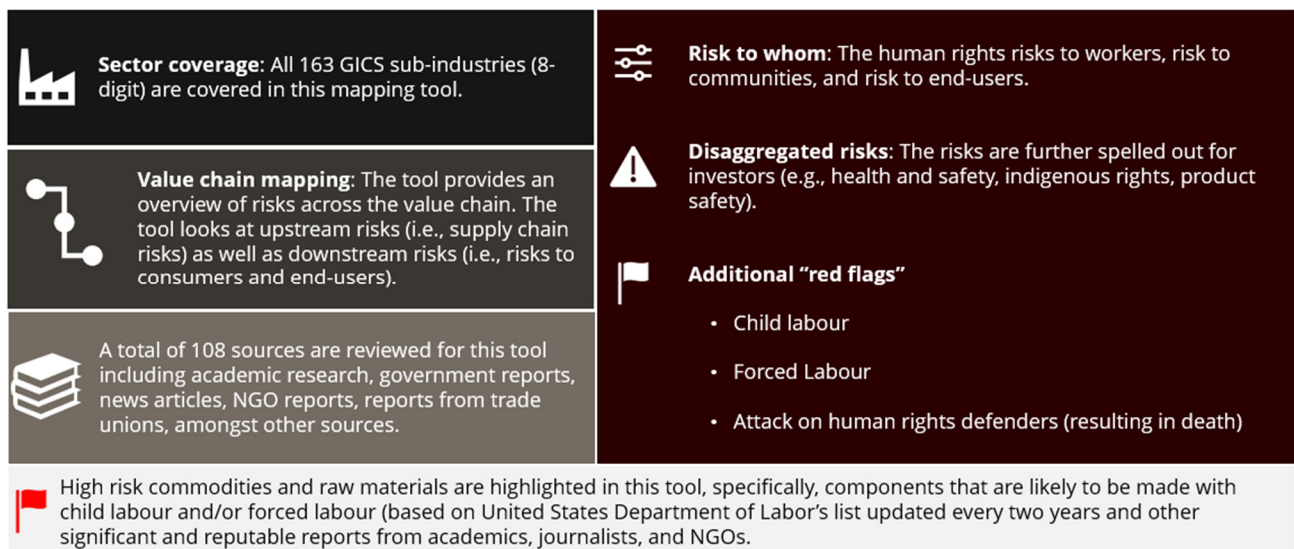


Source: [BSR, 2021](#); created by Greenwheel.

The Greenwheel Human Rights Sector Risks Mapping Tool

The Greenwheel Human Rights Sector Risks Mapping Tool is created to support investors understand their human rights risks across their portfolio (Figure 2). This Excel-based tool identifies human rights risks in all 163 Global Industry Classification System (GICS) sub-industries at the eight-digit level.

Figure 2: Greenwheel Human Rights Sector Risks Mapping Tool at a glance



Source: Greenwheel, 2025; created by Greenwheel.

Greenwheel’s ranking of human rights risks by sector is based on the inherent factors that drive poor human rights practices. These inherent factors can increase the probability and severity of human rights violations. As part of our identification of the relative risk levels across all GICS sectors, we consider four cross-cutting variables: potential, scope, scale, and remediability (Figure 3).

Figure 3: Approaching industry risks through the variables of prevalence, severity, and remediability



Source: [UN Guiding Principles Reporting Framework, 2017](#); created by Greenwheel.

Greenwheel is conservative in its mapping of human rights impacts across sectors; where there is a potential risk in the sector, it is noted in the risks section of the mapping. However, depending on the sector, **some of the risks are more prevalent and may affect more rightsholders than others.** As such, potentiality and scope are two variables used to gauge the level of human rights risks across sectors.

While human rights are interdependent and indivisible, **certain human rights impacts are more severe than others** (e.g. a worker in forced labour conditions versus a worker in poor health and safety conditions leading to minor occupational ailments). Although the human rights risks mapped to the sectors contain impacts that contain a broad spectrum of abuses (e.g. violence and harassment may include a wide range of behaviours from verbal harassment like name calling to physical assault), there are some violations that are evidently more severe, for example, forced labour and child labour. The severity of some of these impacts are further compounded by the difficulties in providing effective remedy.

Some human rights violations are relatively easier to remediate, where the rights of individuals can be restored to the conditions they were in prior to the infraction (or the equivalent). However, **some violations are difficult to remediate and require longer-term interventions**, for instance, severe occupational health and safety impacts that lead to debilitating health conditions, loss of culture and livelihood due to displacement, and severe forms of child labour or forced labour conditions.¹

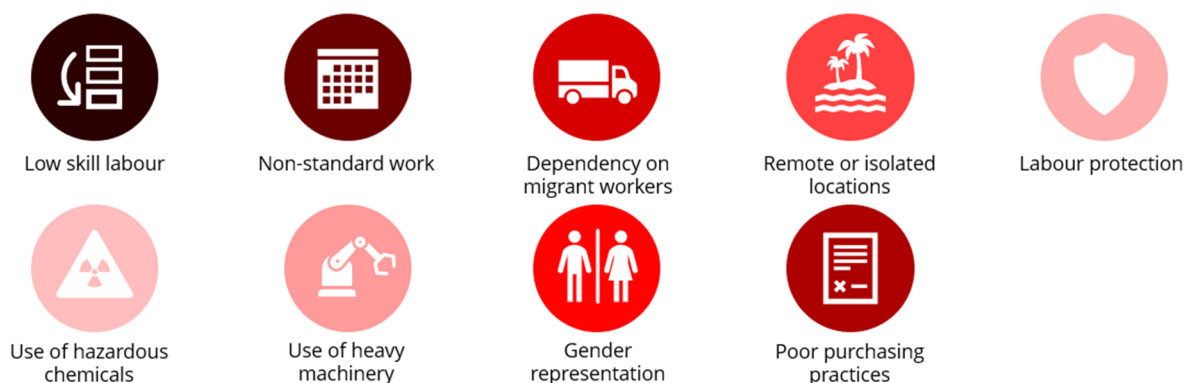
¹ These factors are the basis of identifying salient human rights issues. See [Shift, 2016](#).

It is important to note that **the Greenwheel tool does not assign an overall human rights risks level**. Assigning an overall risk level can hide the potential risks to different rightsholders. Take the examples of apparel and footwear and media and entertainment. In apparel and footwear, the most severe risks are for factory workers. There are some risks to communities due to pollution and the resource intensity of manufacturing processes while the risks to end-users are low. In contrast, there may be some labour rights issues in media and entertainment (e.g., working hours or security concerns for journalists in high-risk countries), but the risks are more pronounced for end-users. Media and entertainment products can be discriminatory and impact rights including the freedom of expression, right to information, and right to take part in public affairs (e.g., misinformation).

Drivers of human rights risks to workers

The **nature of work in a given sector can give rise to human rights risks to workers** (Figure 4). Some of these characteristics are inherent to the sector (e.g. using hazardous chemicals in electronics manufacturing) versus others that are commonly found in the sector (e.g. reliance on migrant workers in construction). In both cases, these common attributes in a sector can increase risks to workers.

Figure 4: Factors increasing human rights risks to workers



Source: [ILO, 2015](#), [Davis, 2016](#), [ILO, 2019](#), [WIP, 2019](#), [ILO, 2021a](#), [Lebaron, 2021](#), [ILO, 2024](#), and [UN Global Compact, 2024](#); created by Greenwheel.

Low skill labour

There is a **mutually reinforcing relationship between inequality and poverty and the increasing vulnerability to labour rights violations**.⁴ Workers with low education and poor social mobility are more likely to enter into low skill work given the lack of opportunities. In taking on lower skilled jobs that are often lower paid with poorer labour practices (e.g. increased risk of forced labour and other labour rights abuses), they are less likely to escape poverty. Given their weak bargaining position, more vulnerable workers are less likely to turn down jobs that are dangerous, exploitative, or risky.⁵ Economic activities that employ low skill labour with high health and safety risks (e.g. inherently dangerous jobs or jobs that expose workers to physical or psychosocial hazards) can compound the severity of human rights violations.

The risks to low skill workers can be further compounded depending on the wage system in place. For example, **piece-rate work, particularly for lower paid jobs in the supply chain, is linked to poorer labour rights practices due to the preference for short-term productivity gains over long-term efforts to improve labour conditions**. For example, workers may be less

inclined to take the time to comply with operational safety practices as this may take time away from “productive” work.⁶

Non-standard forms of employment

Non-standard forms of employment is a broad umbrella term that includes temporary employment, part-time and on-call work, temporary agency work or multiparty employment (e.g. use of recruitment agencies), dependent self-employment or disguised employment (e.g. gig work).⁷ Non-standard forms of employment may be found in some sectors to help businesses adjust to labour shortages or respond to rapidly evolving market dynamics. However, **workers in non-standard forms of employment may be exposed to labour rights violations**. This can be a result of poor labour regulations or misuse by businesses to reduce labour costs.⁸

Non-standard forms of employment can include jobs that are seasonal or paid in piece-rate. Workers in non-standard forms of work are more likely to face adverse labour rights impacts, for instance, difficulties transitioning between jobs, accessing social benefits, and exercising their freedom of association and collective bargaining rights. Compared to standard forms of employment, workers in non-standard employment are more likely to encounter wage penalties due to unequal treatment compared to standard workers, more stringent probation periods, short tenure and less stability, and exclusion from social security and other workplace benefits.⁹

Dependency on migrant workers

By definition, migrant workers move from their homes and relocate to a “host” country or region for work. This can happen within national borders or internationally. Because migrant workers are removed from their social networks and may be relocating to a location with a different language, culture, and/or other variables, **they are more vulnerable to exploitation, including paying recruitment fees to secure employment, receiving false information about jobs, having unequal access to employment rights and other legal protections** (e.g. foreign migrant workers), **and facing discrimination**. Where abuses happen, they may face additional barriers in accessing grievance channels and effective remedies compared to non-migrant workers.¹⁰

Remote or isolated locations

Workers in remote or isolated locations face additional labour rights risks due to the nature of work they are in (i.e. physically removed from support services). Health and safety is a primary risk as remote or isolated locations can prevent workers in accessing assistance in facing physical and psychosocial hazards. They are more likely to be targets of violence.¹¹ Workers may also be further away from accessing remedies or support services outside of the workplace (e.g. government services, trade unions) given the remote location. Because workers are removed from governmental and non-governmental entities, including workers’ associations, that offer labour protection, employers may be more likely to act with impunity given the weak implementation of employment regulations.

Labour protection

Labour protection can differ across sectors and regions even in the same national jurisdiction. **Some sectors may be excluded from labour protection** such as national minimum wage requirements or access to social protection (e.g., agriculture workers).¹² In some countries, minimum wage is set regionally as opposed to nationally; consequently, it may encourage export

activities to relocate to regions with lower labour costs. **Export processing zones (EPZs) that hosts certain economic activities in the global supply chain may implement repressive labour practices to attract foreign investment** (e.g. anti-union activities).¹³

Use of hazardous chemicals

Some sectors may disproportionately expose workers to hazardous chemicals through an array of processes (e.g. manufacturing, storage, handling, transport, and disposal). Exposure to dusts, vapours, and fumes from hazardous substances can bring about significant health issues and in severe cases, lead to death.¹⁴

Use of heavy machinery

Workplaces that involve **the operation of heavy machinery can carry significant risks for workers that may cause serious injuries and fatalities**.¹⁵ While all workplaces contain occupational health and safety risks, the use of heavy machinery increases the risks to worker health and well-being.

Gender representation

The **under- and over-representation of women and men in workplaces can impact by prevalence of discrimination** in a workplace. Women workers in male-dominated sectors are more likely to experience discrimination than those working in sectors with a more even gender balance.¹⁶ Occupational segregation can also drive discrimination; the experiences in the lower skilled manufacturing sectors (e.g. garment and footwear) show that workplaces where women dominate the lower paid roles but are under-represented in leadership positions see higher prevalence of gender-based violence and harassment. Conversely, there is evidence showing the impact of women in leadership positions in reducing sexual harassment in a workplace.¹⁷

Poor purchasing practices

Poor purchasing practices can drive human rights violations in supply chains.¹⁸ Aggressive price negotiations, inaccurate forecasting, short lead times, and last-minute changes can put significant pressure on suppliers leading to poor working conditions including but not limited to violence and harassment, excessive overtime, low wages, and occupational health and safety risks. To meet last minute orders, suppliers may subcontract to other suppliers. In agricultural settings, poor purchasing practices can entail depressing prices paid to suppliers and failing to account for risks taken by suppliers (e.g. failed harvests, increased input prices).¹⁹ The knock-off impact of poor purchasing practices adversely impacts sectors that already carry significant inherent human rights risks (e.g. lower skilled occupations).

Drivers of human rights risks to communities

A business' presence can impact local communities. The **impact can vary based on the type of economic activity in a sector, especially its use of resources and how it may change the cultural, social, and economic circumstances in a community** (Figure 5).

Figure 5: Factors increasing human rights risks to workers



Source: [UNICEF, 2017](#), [IIED, 2019](#), [Hong et al, 2020](#), [UNEP, 2020](#), [Desierto, et al., 2022](#), [Kennedy et al., 2023](#), [Mir et al, 2023](#), [Mutie et al., 2023](#), created by Greenwheel.

Land intensity

Land-intensive activities are more likely to contribute to adverse environmental and social impacts that can affect local communities. These sectors may compete with local communities for land which increases risks of conflict and dispossession, particularly where there is poor recognition for community and customary land.²⁰

In more remote locations where extent of public services, including security services, are limited, land-intensive activities (e.g. remote mine sites) may rely on private security forces, further exacerbating risks to local communities.

Resource intensity

Sectors that are resource intensive (e.g. water, energy) may compete with local demand. This can lead to a complex web of rights claims from diverse stakeholders including but not limited to indigenous peoples and rural stakeholders, urban settlements, other businesses such as agriculturalists, and public utilities.²¹ The increased demand by some sectors may place a strain on existing infrastructure and systems. In extreme cases, resentment from local communities may create friction and conflict.

Pollution risks

Business processes such as manufacturing or extracting resources can lead to negative environmental impacts through air, light, noise, radiation, soil, thermal, and water pollution.²² For instance, noise pollution from increased traffic due to a business setting up its activities can affect the health and well-being of community members.²³ Some sectors, such as mining or manufacturing, are more likely to cause air, soil, and water pollution due to the higher levels of trace elements and organic contaminants used in their industrial processes that may be unintentionally released.²⁴

Use of hazardous chemicals

Industries that use hazardous chemicals in manufacturing, storage, handling, transport, and disposal processes can also expose communities to severe risks to their health and safety.²⁵ Pollutants may enter into the air, land, and water in surrounding communities.

Inflow and outflow of people

Business operations can bring in direct and indirect changes to local communities. Even in the case of more temporary or transient activities such as logistics, increased traffic can bring about social and economic changes in local communities; for example, communities along trucking routes face increased prevalence of HIV transmission relative to the general population.²⁶

Some business operations can lead to longer term migration (e.g. mining, agribusinesses, forestry). While this influx can bring about positive outcomes through increased investment in local infrastructure over time, sudden population increases can lead to social and security issues and strain existing service provisions.²⁷

Proximity to indigenous communities

Given their strong links to territories, surrounding natural resources, and ecosystems that are the foundation to their cultural, economic, political, religious, and social systems, **indigenous peoples are more vulnerable to adverse impacts stemming from business operations that operate close to or on their lands.**²⁸ Because of the poor recognition and protection of indigenous rights globally, businesses operating in proximity to indigenous communities have higher inherent human rights risks.

Drivers of human rights risks to end-users

A product or service provided by a business can impact the human rights of end-users. The risk levels can vary depending on the sector and the types of products and services it typically produces (Figure 6). Risks can be inherent due to the nature of a product or service. In other cases, a product or service can cause significant harm due to intentional and/or unintentional misuse by end-users, including misuse by customers (e.g. governments, business partners).

For some sectors such as digital technologies and finance, the downstream human rights risks may be more severe than upstream supply chain risks.²⁹

Figure 6: Factors increasing human rights risks to workers



Source: [BSR, 2021](#), [HRW, 2021](#), [Business and Human Rights Resource Centre, 2023](#), and [GBI, 2023](#); created by Greenwheel.

Risks inherent to products or services

A business' products and services may pose risks to end-users.³⁰ Some products or services carry more significant risks due to their nature regardless of its use or handling. Products and services such as alcohol, gambling, and tobacco will carry higher human rights to end-users.

Possibility of misuse

A product may be misused resulting in adverse human rights impacts. A product may be unintentionally misused through user error or improper disposal of products (e.g. pharmaceutical goods). Products may also be misused intentionally to violate human rights (e.g. States using digital technologies to surveil in illegitimate and disproportionate ways).³¹

While some cases can be difficult to anticipate (e.g. new products or services), previous cases of misuse can help determine future risks and impacts due to misuse. The intended customers can also elevate the risks, for example, products targeting children may see higher risks of misuse leading to harm.³²

Use of personal data

Businesses that have **products and services that collect, store, and use personal data face risks of impacting an individual's right to privacy.** Personal data may be collected and used without the full and informed consent of end-users or unknowingly collected through the use of a product or service.³³ While certain sectors such as finance, healthcare, insurance, and technology are highly reliant on data in the development and deployment of their products and services, with the growth of the "Internet of Things", the use of personal data may increase over time to even more sectors (e.g. household appliances, toys).³⁴

Access to essential services

Some products and services directly affect an individual's access to essential services. Sectors such as education and health have a clear link to the enjoyment of human rights. However, products and services from other sectors like finance, insurance, and telecommunications may indirectly impact a person's access to key rights (e.g. access to telecommunication services may be required to gain employment opportunities).³⁵

Additional "red flags"

There are three issues that are considered red flags by Greenwheel: **child labour, forced labour, and attack on human rights defenders resulting in death.** These are red flags because of these impacts are difficult to remediate and constitute severe violations of human rights. The child labour and forced labour risks are mapped based on found cases in reputable sources (e.g., academic research, journalists, human rights experts, NGO reports, and United Nations reports). The data on the attack on human rights defenders come from the Business and Human Rights Resource Centre database.³⁶

Identifying high-risk supply chains

In addition to mapping the risks to direct operations (workers, communities) and downstream risks (end-users), the Greenwheel Tool also identifies high-risk supply chains. High-risk supply

chains are defined as products and services made with raw materials or components that have a high likelihood of being produced with child labour or forced labour.³⁷ The tool will call out high-risk raw materials or components based on the list of goods compiled by the United States Bureau of International Labor Affairs and supplemented by information from NGO reports.

Using the Greenwheel Human Rights Sector Risk Mapping Tool

The Greenwheel Human Rights Sector Risk Mapping Tool is designed to help investors assess the human rights risks across their entire portfolio. The tool has two key parts: the Summary Table and the In-Depth Analysis.

Investors can input their companies and associated GICS sub-industries at the eight-digit level. Then, the tool will automatically match each holding to a 'Greenwheel Sector' (a simple internal code that the Greenwheel team uses to categorise and group sectors with similar traits) and the associated risks to rightholders, types of risks, red flags, supply chain risk levels, and high-risk commodities and components.

Summary Table

The Summary Table allows investors to see a "traffic light" of risks across their portfolio. It shows risk grouping (e.g., low, low-medium, medium, high-medium, and high) for rightholders, as well as the presence of red flags in direct operations (Figure 7). The Summary Table can help investors prioritise companies for engagement or enhanced due diligence by identifying which companies operate with the highest levels of inherent human rights risk.

Figure 7: Greenwheel Human Rights Sector Risk Mapping Tool Summary Table

Company Name and Sector Classification			Risk Grouping for Rightholders			Red Flags in Direct Operations		
Company	GICS SubIndustry	Greenwheel Sector	Workers	Communities	End-Users	Child Labour	Forced Labour	Attacks Resulting in Death on Human Rights Defenders
Company A	Health Care Facilities	Health services	High-Medium	Low-Medium	High	No	Yes	No
Company B	Diversified Banks	Financial services	Low	Low	High	No	No	Yes
Company C	Automobile Manufacturers	Manufacturing	High	High	Medium	Yes	Yes	Yes
Company D	Education Services	Education	Low	Low	High-Medium	No	No	No

Source: Greenwheel, 2025.

Importantly, the Summary Table takes a conservative approach: when sectors have different risk factors depending on skill level of the workforce (e.g. digital technologies, electronics, health services, manufacturing, and professional services), the Table shows the higher risks associated with low-skilled labour in the sector. If an investor knows that their holding company uses high-skill labour (and thus has lower risks), they are encouraged to refer to the In-Depth Analysis sheet for a more detailed breakdown that takes skill level into account.

In-Depth Analysis

The In-Depth Analysis allows investors to investigate the types of human rights risks across the value chain for their portfolio companies. It is significantly more detailed than the Summary Table: it shows not only risk scores for rightsholders, but also specific risks (Figure 8), supply chain risk levels, high risk commodities and components, and red flags for each sector (Figure 9). The In-Depth Analysis sheet can help investors identify specific sources of risk, which in turn can guide their engagement and due diligence processes. In other words, **the Summary Table tells investors where to look, while the In-Depth Analysis sheet shows them what to look for.**

Figure 8: Greenwheel Human Rights Sector Risk Mapping Tool In-Depth Analysis: Inherent Risk Scores and Risks to Rightsholders

Portfolio Data from the Summary Table will automatically populate here.		Inherent Risk Scores and Risks for Rightsholders (Workers, Communities, and End-Users)						
		All sectors have a level of inherent human rights risks to key rightsholders. Here, the Tool gives a high-level score on a scale of 1 (low risk) to 3 (high risk), as well as particularly material risks for relevant sectors. Investors can use this information, in conjunction with Greenwheel Research, to complete effective due diligence and engage with companies on their most material human rights exposures.						
Company	GICS SubIndustry	Greenwheel Sector	Workers Risk Score	Workers Risks	Communities Risk Score	Communities Risks	End-Users Risk Scores	End-Users Risks
Company A	Health Care Facilities	Health services		There are different risks for high- and low-skilled health services. Refer to Sector Breakdown Box		There are different risks for high- and low-skilled health services. Refer to Sector Breakdown Box		There are different risks for high- and low-skilled health services. Refer to Sector Breakdown Box
Company B	Diversified Banks	Financial services	1.3	Discrimination, health and safety, working hours	1.0	(i.e., through financing of projects): Access to remedy, land rights (forced resettlement, displacement), rights of indigenous peoples, free and prior informed consent	2.3	Discrimination (e.g., unequal access to financial products and services), right to due process (e.g., creditors depriving debtors of property without fair, impartial, or due process), right to property, modern slavery, human trafficking
Company C	Automobile Manufacturers	Manufacturing		There are different risks for high- and low-skilled manufacturing. Refer to Sector Breakdown Box		There are different risks for high- and low-skilled manufacturing. Refer to Sector Breakdown Box		There are different risks for high- and low-skilled manufacturing. Refer to Sector Breakdown Box
Company D	Education Services	Education	1.2	Discrimination, freedom of association and right to collective bargaining, low wages, working time	1.2	No material or salient risk found yet	1.5	Affordability, discrimination, children's rights

Source: Greenwheel, 2025

Figure 9: Greenwheel Human Rights Sector Risk Mapping Tool In-Depth Analysis: Supply Chain Information and Red Flags in Direct Operations

Portfolio Data from the Summary Table will automatically populate here.		Supply Chain Information		Red Flags in Direct Operations		
		Some sectors are exposed to human rights risks through their supply chains.		These sectors have substantiated cases of severe human rights abuses in their direct operations.		
Company	GICS SubIndustry	Supply Chain Risk	Commodities and Components	Child Labour	Forced Labour	Attacks Resulting in Death on Human Rights Defenders
Company A	Health Care Facilities	Medium	Electrical components and equipment	Refer to Sector Breakdown Box	Refer to Sector Breakdown Box	Refer to Sector Breakdown Box
Company B	Diversified Banks	Low	No material or salient commodities/components risks found yet	No	No	Yes
Company C	Automobile Manufacturers	Please Refer to the Complex Supply Chain Box	Please Refer to the Complex Supply Chain Box	Refer to Sector Breakdown Box	Refer to Sector Breakdown Box	Refer to Sector Breakdown Box
Company D	Education Services	Low	No material or salient commodities/components risks found yet	No	No	No

Source: Greenwheel, 2025.

As discussed above, some sectors (e.g. health services, digital technologies, electronics, manufacturing, and professional services) have significantly different risks depending on skill level. In these cases, the Tool will prompt investors to use the Sector Breakdown Box to select the skill level that is most appropriate for their holding from a drop-down list.

For example, health services can broadly be split into high-skill (e.g. doctors and nurses) and low-skill (e.g. certified nursing assistants and other care workers). Figures 9 and 10 demonstrate how skill level can impact risks to rightsholders, as well as red flags.

Figure 9 and 10: Sector Breakdown for Low- and High-Skilled Health Services

Search by Sector Breakdown		Health services (low-skilled)									
Greenwheel Sector	Workers Risk Score	Workers Risks	Communities Risk Score	Communities Risks	End-Users Risk Score	End-Users Risks	Supply Chain Risk	Commodities and Components	Child Labor	Forced Labour	Attacks Resulting in Death on Human Rights Defenders
Health services (low-skilled)	2.0	Access to social security, contractual status, discrimination, forced labour, health and safety, low wages, violence (including gender-based violence), working hours	1.5	No material or salient risk found yet	2.3	Discrimination, right to health	Medium	Electrical components and equipment	No	Yes	No

Search by Sector Breakdown		Health services (high-skilled)									
Greenwheel Sector	Workers Risk Score	Workers Risks	Communities Risk Score	Communities Risks	End-Users Risk Score	End-Users Risks	Supply Chain Risk	Commodities and Components	Child Labor	Forced Labour	Attacks Resulting in Death on Human Rights Defenders
Health services (high-skilled)	1.4	Discrimination, freedom of association and right to collective bargaining, health and safety, violence (including gender-based violence), working hours	1.3	No material or salient risk found yet	2.3	Discrimination, right to health	Medium	Electrical components and equipment	No	No	No

Source: Greenwheel, 2025.

While both groups have the same risks to end-users because they provide similar products (e.g. medical care), the risks to workers are significantly different. This reflects that high-skilled health service workers tend to be well-educated and well-paid, with standard employment contracts. In contrast, low-skilled health service workers are more likely to have precarious employment contracts, work for low wages, and may be dependent on their employers for a visa, making them vulnerable to forced labour.

Additionally, there are different risks to communities. Low-skilled health services that employ lower wage and lower skilled workers, like nursing homes, may be less effectively regulated than high-skilled providers, like hospitals. As a result, there is a slightly different impact to communities, as issues like waste management may be less well managed in low-skilled health services.

Lastly, different types manufacturing tend to have different supply chain risks due to the variety of commodities and components used. In these cases, the tool will prompt investors to use the Complex Supply Chain Box to select the relevant type of manufacturing from the drop-down list. The Complex Supply Chain Box will then provide a relevant supply chain risk level, as well as high risk commodities and components for the given type of manufacturing (Figures 11 and 12).

Figures 11 and 12: Supply Chains for Tires and Rubber & Diversified Chemicals

Complex Supply Chains		
Select Type	Tires and rubber	
Type	Supply Chain Risk	Commodities and Components
Tires and rubber	High	Rubber

Complex Supply Chains		
Select Type	Diversified chemicals	
Type	Supply Chain Risk	Commodities and Components
Diversified chemicals	High	Agricultural goods (coconut, corn, jute, palm, rice, wheat straw), minerals

Source: Greenwheel, 2025.

Endnotes

- ¹ [UNPRI, 2023](#).
- ² [OECD, 2018](#).
- ³ Ibid.
- ⁴ [Lebaron, 2021](#).
- ⁵ Ibid.
- ⁶ [WIP, 2019](#) and [Davis, 2016](#).
- ⁷ [ILO, 2024](#).
- ⁸ [ILO, 2021b](#).
- ⁹ [ILO, 2015](#).
- ¹⁰ [UN Global Compact, 2024](#)
- ¹¹ [Safe Australia, 2024](#)
- ¹² [ILO, 2021a](#).
- ¹³ [Hiba et al., 2021](#).
- ¹⁴ [ILO, 2019](#). High risk sectors identified by ILO include mining, textiles, agriculture, construction, electronics manufacturing and engineering, and waste management.
- ¹⁵ [ILO, 2024](#)
- ¹⁶ [Catalyst, 2024](#)
- ¹⁷ [Au et al., 2020](#)
- ¹⁸ [ETI, 2017](#) and [Euractiv, 2024](#)
- ¹⁹ [Better Buying, 2024](#)
- ²⁰ [IIED, 2019](#).
- ²¹ [Desierto, et al., 2022](#).
- ²² [Mir et al, 2023](#).
- ²³ [European Environment Agency, 2021](#)
- ²⁴ [FAO and UNEP, 2021](#)
- ²⁵ [Hong et al, 2020](#)
- ²⁶ [Mutie et al., 2023](#)
- ²⁷ [UNICEF, 2017](#)
- ²⁸ [Kennedy et al., 2023](#) and [UNEP, 2020](#). The highest risk sectors are identified as agriculture, mining, oil and gas, renewable energy, and infrastructure.
- ²⁹ [Danish Institute for Human Rights, 2024](#)
- ³⁰ [Business and Human Rights Resource Centre, 2023](#)
- ³¹ [BSR, 2021](#)
- ³² [GBI, 2023](#)
- ³³ [HRW, 2021](#)
- ³⁴ [Danish Institute for Human Rights, 2024](#)
- ³⁵ [BSR, 2022](#)
- ³⁶ [Business and Human Rights Resource Centre, 2024](#)
- ³⁷ [USDOL, 2022](#)

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