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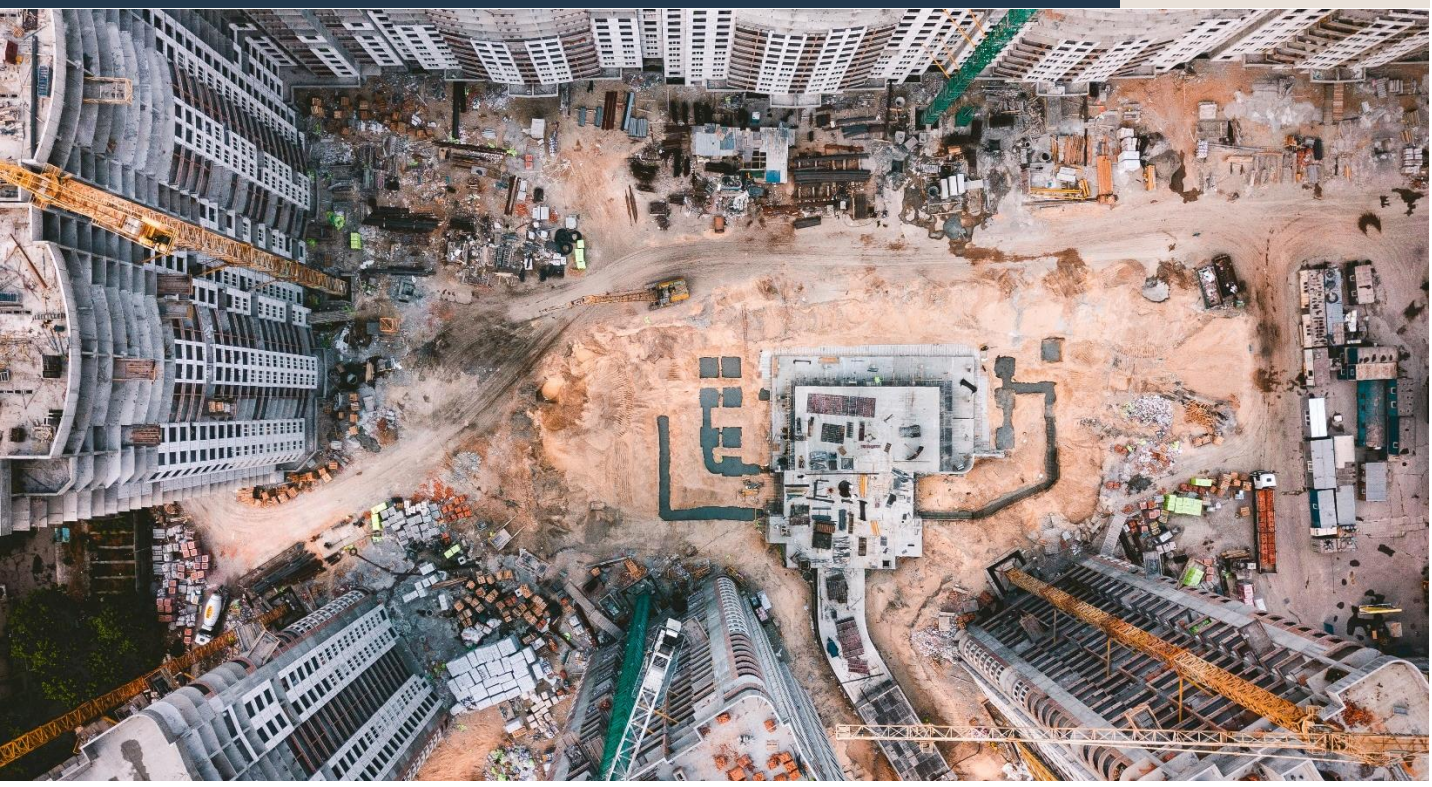
Investing in sustainability

Buildings and Cities: Building Equipment & Materials

Sustainable Development Sector Analysis Framework

January 2020



This is a methodological document aimed at clarifying how Mirova takes into account sustainable development issues in the framework of the environmental, social and governance analysis of each sub-sector of activity.

An affiliate of: NATIXIS INVESTMENT MANAGERS

Given the contribution of buildings to global energy consumption and greenhouse gas emissions, a 2 °C scenario cannot be achieved without a significant improvement in the energy efficiency of this sector. In this context, manufacturers of construction equipment and materials must provide solutions; by offering low-carbon products and eco-efficient equipment that significantly reduce the carbon footprint of the buildings' construction and use phase. In addition, they can also contribute to access for all to healthy and safe living environments by offering equipment dedicated to building safety as well as solutions to manage dependence and facilitate access to decent living conditions, by specifically targeting the least favored populations. Finally, as many of these companies are characterized by heavy industrial processes that consume large quantities of natural resources, responsible management of the environmental and social risks inherent in their activities will therefore be a favorable differentiating factor that is fully in line with our responsible investment strategies.

Sectors: building materials, HVAC and plumbing equipment; lighting solutions; sanitary facilities and elevators

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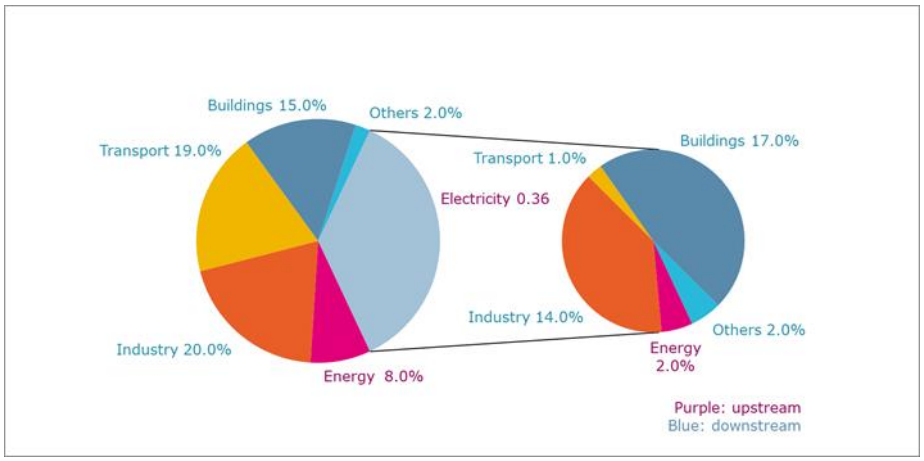
Sustainability Opportunities

Green Buildings

According to the International Energy Agency, the building sector, analyzed on a lifecycle basis (i.e. from the extraction of raw materials to construction and during the use phase), is responsible for 36% of global energy consumption in 2018, of which almost a third is linked to the production of building materials such as concrete, steel and glass. It is therefore the most energy-intensive sector, ahead of industry (32%) and transport (28%) (IEA, 2018). It is also a major emitter of greenhouse gases as many countries still rely on coal and oil for their heating and electricity needs. Consequently, according to the Intergovernmental Panel on Climate Change (IPCC), the building sector is responsible for nearly 20% of global GHG emissions.

Figure 1: Energy consumption by sector



Source: Mirova / (IEA, 2014)

Most of the building's energy consumption takes place during the use phase (i.e. once construction is completed). Nevertheless, improving the building envelope significantly contributes to reducing consumption during the use phase.

Building materials

Historically, the construction sector has relied on concrete and steel, whose technical specificities have made it possible to improve the resistance of buildings at a controlled cost. Nevertheless, these materials are characterized by production processes that are very high emitters of greenhouse gases linked to the combustion of fossil resources. Indeed, it is estimated that the production of these materials alone is responsible for nearly 6% of global GHG emissions. Therefore, the use of low-carbon building materials is a significant lever for reducing the sector's environmental footprint. Several players are now offering so-called low-carbon materials, such as "green cement" (which use industrial co-products as a substitute for clinker) or wooden materials. Wood from sustainably managed (and certified) forests is a renewable resource. Its use in buildings makes it possible to sequester the carbon captured by trees during their growth over a relatively long period of time, since wood components in buildings have a lifespan of 50 to 100 years, depending on the structure.

Furthermore, while the carbon footprint of the selected materials reduces the footprint of the construction phase, other materials incorporated into the envelope can influence the use phase. Insofar as the rate of renewal of the housing building stock in OECD countries does not exceed 2.5% (OECD, 2019), most of the efforts to reduce buildings' consumption and associated emissions must therefore focus on the existing building stock. Insulation solutions

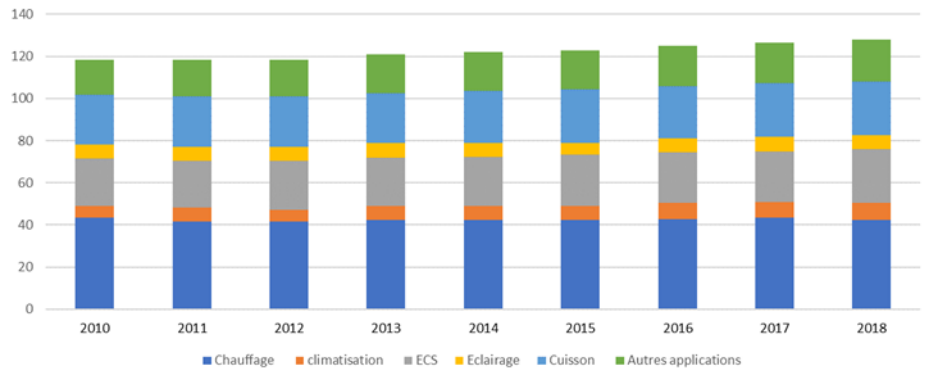
thus offer strong potential for reducing the heating needs of buildings by targeting the main heat loss points (roof, walls, floor, sashes) while controlling air tightness.

Finally, glazing can also provide insulation solutions, and some players stand out for their capacity to innovate, providing a large number of additional properties to conventional windows. For example, low-emissivity double or triple glazing minimizes heat loss and has a high solar factor that contributes to the heating of the building by transmitting a high proportion of solar radiation. In other words, these solutions allow the sun's heat to enter without letting the heat out of the house, while maximizing natural lighting. Conversely, reflective glazing reduces the need for air conditioning in areas with high levels of sunlight.

Eco-efficient equipment

Since the use phase of the building constitutes the bulk of its carbon footprint (approximately 75% (Grandjean A., 2018)), equipment's energy efficiency is an important element to take into account. An analysis of the various consumption items in buildings shows that heating is the main one, estimated at more than one-third according to the IEA; followed by domestic hot water (DHW), accounting for nearly 20% of the building's consumption; followed by lighting (6%). Air-conditioning is responsible for nearly 5% of the energy consumption of buildings, but this percentage has been increasing in recent years (IEA, 2016).

Figure 2: Global final energy consumption of the building sector by use (EJ)



Source: Mirova, according to IEA 2018

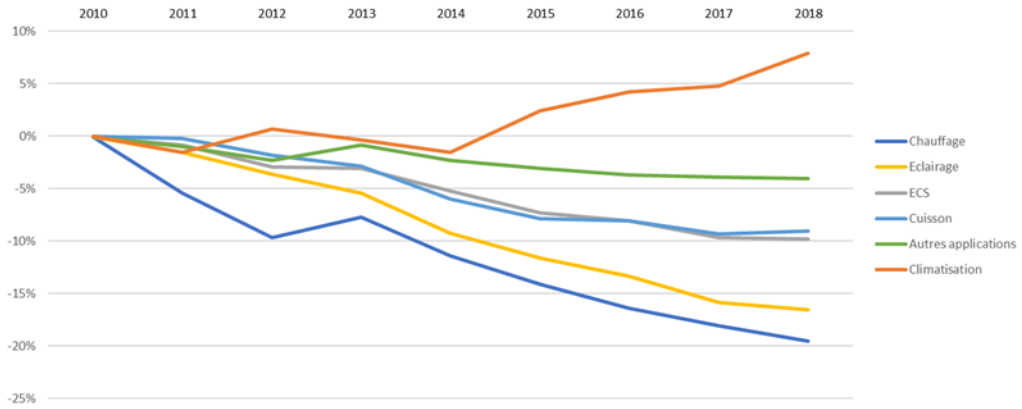
When it comes to heating, there are solutions that are more climate-friendly (carbon impact) than traditional oil or gas boilers, such as wood boilers (based on wood aggregates produced from sustainably managed forests) or heat pumps. The latter are most often installed in single-family homes and capture energy from the ground or water, known as geothermal heat pumps, or from the air (aerothermal heat pumps), then provide the additional temperature required to meet heating needs. This way, they reduce the amount of energy needed to heat the house by capturing heat from renewable energy sources. In addition, local renewable energy production equipment is also a solution to reduce the environmental impact of buildings. In this respect, companies positioned in the production of photovoltaic solar equipment (enabling the production of decarbonated electricity) or thermal solar equipment (enabling the heating of a fluid that will be used to meet heating or domestic hot water needs) are fully in line with a responsible investment strategy. Finally, double-flow ventilation systems with heat recovery allow air renewal by limiting the heat losses inherent in ventilation. It works on the reverse principle of heat pumps by capturing the heat contained in the indoor air to warm the air captured from outside.

Regarding domestic hot water (DHW), thermo-dynamic water heaters, based on the same principle as heat pumps, make it possible to significantly reduce the amount of energy consumed compared to traditional boilers. Similarly, solar water heaters consisting of solar thermal equipment (in the form of panels or tubes installed on the roofs of buildings) offer an interesting solution (ADEME, 2014).

Finally, in a context of rising temperatures and increasingly frequent episodes of high heat, the demand for air conditioning equipment should increase. In this segment as well, equipment manufacturers can offer energy-efficient solutions.

In terms of lighting solutions, LEDs (light-emitting diodes) are the most sustainable alternative, with even better energy efficiency and life expectancy than CFLs (up to 40,000 hours compared to 2,000 hours for halogen lamps and 8,000 hours for CFLs) (ADEME, 2017). Smart lighting solutions (modulation of lighting intensity according to users' needs) also bring interesting gains in terms of reduced energy consumption.

Figure 3: Evolution of the energy efficiency of building equipment



Source: Mirova, according to IEA 2018

Beyond the energy prism, responsible water management is also an important parameter to be taken into account in a context of increasing water stress at a global level. Indeed, 17 countries, home to a quarter of the world's population, face extremely high-water stress (WRI, 2019). Systems that optimize water consumption therefore provide solutions to the challenges of sustainable development. For example, rainwater harvesting systems make it possible to limit the use of drinkable water for sanitary water and outdoor irrigation. Likewise, low-consumption sanitary equipment or low-flow faucet systems make it possible to achieve significant water savings.

Finally, the installation of sensors and intelligent equipment can lead to the identification of high consumption items, facilitate the detection of leaks or optimize consumption by making the user responsible for its different items and modes of consumption. Nevertheless, the multiplication of digital equipment, whose environmental benefits are not tangible, is leading to an increase in the consumption of resources and electricity. It is therefore imperative to be able to demonstrate the positive impact enabled by the use of such products using quantifiable elements.

Therefore, we encourage companies in this sector to direct their strategies towards the production of low-carbon building materials and equipment with significantly better energy performance compared to traditional equipment, in order to foster the construction of green buildings.

KEY INDICATORS

- Share of revenue from products/services allowing efficient use of resources
- Share of revenue from equipment promoting the use of renewable energy during the use phase of the building
- Environmental performance of products

Access to Decent Living Conditions

Security

The social imperatives of buildings are traditionally at the level of construction, in order to provide access for all to decent housing. However, it is also important to ensure, throughout the use phase of the building, that the conditions are in place to provide users with a healthy and safe living environment. Regarding these aspects, building equipment manufacturers can provide solutions. Thus, companies specializing in the design of devices to detect abnormally high levels of carbon monoxide or gas leaks are positively valued due to their contribution to the health and safety of building users. Nevertheless, few listed companies specialize in this type of solution.

Dependence

Similarly, products that help manage dependence (adapted sanitary facilities, lifting charges, etc.) – whether related to an aging population or to disabilities – also contribute to secure decent living conditions for building users.

Least-favored populations

Finally, we encourage companies in the sector to develop a product offering dedicated to vulnerable populations by specifically targeting their needs. Thus, equipment offering an alternative to biomass combustion in open hearthstone for heating or cooking (particularly in developing countries where biomass combustion in open hearthstone has notorious effects on infant mortality), low-cost water filtering equipment or electrical installation equipment specifically targeting population at the bottom of the pyramid are solutions to sustainable development challenges, as they facilitate access to decent living conditions by reducing the risks to the health and safety of users.

We favor companies with a significant part of their business dedicated to products that guarantee the security of buildings and solutions that ensure good living conditions for the least favored or most vulnerable users.

KEY INDICATORS

- Share of revenue from safety and accessibility equipment
- Share of revenue dedicated to the least-favored populations

Exposure to Opportunities

	Indicators considered : % of revenue generated by equipment designed to allow building users to use resources more efficiently % of revenue generated by equipment that uses renewable energy sources % of revenue generated by equipment that improves the living conditions of the least privileged or most vulnerable users % revenue generated by safety and/or accessibility equipment	
High exposure	>50%	The analysis of the CapEx and the R&D budget dedicated to opportunity activities makes it possible to qualitatively nuance the analysis based on revenue.
Significant exposure	Between 10% and 50%	
Low or no exposure	<10%	
Negative exposure	No activity in the building sector is currently evaluated at this level.	

Environmental and Social Risk

Energy Efficiency of Production Processes

In addition to the use phase of buildings – where energy or electricity consumption can be reduced through eco-efficient equipment – the design phase, and more specifically the manufacturing of building materials, is characterized by very high energy consumption. For example, the production of steel or concrete or even glass for windows requires an almost continuous combustion of fossil resources. In order to reduce their environmental impact (both in terms of consumption of natural resources but also in terms of greenhouse gas emissions), companies positioned in the production of construction materials must implement ambitious strategies to reduce their energy consumption, supplemented by the installation of high-performance industrial equipment to limit greenhouse gas emissions – for example by replacing traditional furnaces with more efficient ones.

We encourage companies to implement an environmental performance management system and continuously improve the energy performance of their production process by installing efficient industrial equipment. This approach must also be extended to their entire value chain.

KEY INDICATORS

- Quality of the environmental management system through the formalization of an ambitious environmental strategy, associated with quantified objectives
- Evolution of the energy footprint of production sites
- Scope of reporting on energy consumption and GHG emissions

Circular Economy

According to an OECD study, building materials are the largest consumers of raw materials. Non-metallic minerals used mainly in construction, such as sand, gravel, limestone and crushed rock, account for nearly 50% of all materials used today. The organization estimates that the use of raw materials is expected to almost double worldwide by 2060, as the global economy expands and living standards rise, putting twice as much pressure on the environment as today (OECD, 2018). However, actors in this sector have several means to support the development of the circular economy.

In the first place, companies in this sector must strive to limit the pressure on natural resources by favoring eco-design.

Furthermore, in order to limit the extraction of natural resources – which has an impact in terms of energy consumption, pollution and biodiversity loss – companies must develop mechanisms for the recovery of demolition waste. Thus, attention to the end-of-life management of their products and materials is an important element. Therefore, we encourage companies to structure dedicated channels for the collection and recovery of waste, particularly from deconstruction sites; and to develop mechanisms to ensure appropriate treatment of this waste, making it possible to integrate a growing proportion of materials from recycling into the manufacture of second-generation products. Similarly, in a context of increasing water stress, the implementation of closed circuits on industrial sites to facilitate water treatment is a solution likely to significantly limit net water consumption. The aim of these various measures is to put an end to a linear model based on extraction, consumption and then destruction in order to revalue resources (sand, minerals, water, etc.) and limit the pressure exerted by producers of building materials on natural resources.

We therefore encourage companies in the sector to change their production methods in favor of the circular economy and to integrate a growing share of resources from recycling by recovering building site waste (aggregates, glass, etc.) in order to limit the pressure of their activities on natural resources.

KEY INDICATORS

- Share of the product portfolio that has been eco-designed
- Evolution of the mass of materials in products
- Share of recovered waste
- Share of raw materials from recycling
- Net volume of water consumed

Electronic Waste, Toxic and Polluting Substances

Heating, ventilation, air conditioning (HVAC), domestic hot water (DHW) and lighting equipment contain electrical and electronic components that pose a significant environmental and public health risks. Since these are not consumer equipment, these issues are less visible than in the technologies sector, yet concerns are similar.

On the one hand, their manufacture requires the use of toxic and/or polluting substances, the effluents of which must be controlled. On the other hand, upon end-of-life, this equipment falls into the category of electronic waste (waste electrical and electronic equipment, or WEEE). WEEE contains or may release heavy metals and persistent pollutants (lead, mercury, cadmium, arsenic, lithium, etc.) in the event of landfill storage or incineration. They represent a very significant risk insofar as their mass is constantly increasing (by 4 to 5% per year to reach almost 50 Mt in 2018), while the channels responsible for collection and recycling remain insufficient (Baldé, Wang, Kuehr, & Huisman, 2015).

Finally, in addition to electronic waste, heating or air-conditioning equipment or insulating foams may contain refrigerants. These fluids contain gases with a global warming power that can be 140 to 11,700 times that of CO2. In France, for example, the building sector (tertiary and residential) is responsible for nearly 50% of the leakage of HFC emissions (ADEME, 2017). In the event of leaks, these liquids therefore have a particularly harmful effect on climate change but are also responsible for the destruction of the ozone layer. As such, equipment manufacturers must be transparent about the composition of their products and implement a strategy to gradually reduce the use of these polluting substances.

We expect companies in this sector to develop policies and implement appropriate practices to ensure that risks are taken into account both upstream in the production chain and downstream regarding waste management. This includes setting up long-term agreements with identified, regularly audited or even certified industries. The increase in the proportion of substances/waste covered by these initiatives and improved audit results demonstrate the company's ability to mitigate the risks associated with this issue.

KEY INDICATORS

- Presence of a policy covering upstream and downstream phases, monitoring indicators and quantified objectives, establishment of agreements with players from the WEEE management industry
- Regular audits of production sites and suppliers, as well as of the players from the WEE management industry
- Level of transparency regarding product composition
- Strategy for the progressive reduction of the use of polluting substances
- Evolution of performance over the last years

User Health and Safety

Health standards have evolved considerably: at the beginning of the century the use of asbestos and lead-based paints was almost systematic. It is now proven that these substances have a negative effect on the health of building's occupants. Similarly, many building applications use mineral, organic or synthetic fibers for sound, heat or electrical insulation, floor or wall cladding, or for waterproofing. Repeated exposure to certain fibers can cause pulmonary fibrosis, respiratory failure, pleural plaques and even cancer in the long term. The resins and solvents used in the composition of adhesives can also be highly toxic for the people who handle them. Formaldehyde in the form of formaldehyde or phenol is found in many resins and glues used in the manufacture of chipboard, particleboard, plywood, varnishes and sealers for parquet floors and carpets. This substance is classified as "Carcinogenic to humans" (Group 1) by the International Agency for Research on Cancer. Finally, wood heating can also emit pollutants, in particular fine particles but also other compounds such as Polycyclic Aromatic Hydrocarbons (PAHs) which cause respiratory problems.

Therefore, companies must pay particular attention to the toxicity of their products and strive to find alternatives to toxic components or implement solutions for capturing, enclosing or filtering to limit pollutant emissions in order to guarantee the health and safety of the people who handle them at the time of installation, but also of the future occupants of the building.

KEY INDICATORS

- Presence of a cyber security policy
- Transparency on the nature of the data collected, how they are stored and how they are used

Protection of Privacy & Cybersecurity

The advent of the smart city is accompanied by the emergence of so-called smart buildings. While automation and real-time data collection – facilitated by the installation of smart meters and motion detectors – can encourage the optimization of the different consumption items (water, electricity, heat), particular attention should be paid to the privacy of the users of these devices.

Companies specializing in these solutions must protect themselves against any attempt to steal this data, which is sometimes of a sensitive nature, by implementing a robust cyber security policy and detailing the way in which it is deployed to protect all equipment. In addition, we expect increased transparency on the nature of the data collected, the methods of storage and the way it is used, as well as its relevance to the optimization of the building's operation.

KEY INDICATORS

- Presence of a cyber security policy
- Transparency on the nature of the data collected, how it is stored and how it is used

Human Resources

Worker health and safety

Working conditions related to the production of construction equipment and materials raise several social issues. In terms of fundamental rights, production chains based in emerging countries are regularly accused of exposing workers to abusive practices (forced labor, excessive working hours, etc.). These practices frequently lead to controversy in the information and communication technology sector, which is an important link in the supply chain of building equipment companies. More generally, assembly lines use low-skilled labor and generate a great deal of arduousness. Furthermore, many countries impose only a limited regulatory framework for the representation of employee interests in governance bodies.

In addition, toxic or hazardous products and effluents, used in the manufacturing processes of products and their components, expose workers to risks of accidents but also, in the longer term, to health problems.

Finally, a certain number of minerals (gold, tin, tungsten, tantalum), which are widely used in electronic components that are at the heart of building equipment, are often present in countries with a tense geopolitical context, particularly in the Democratic Republic of Congo, where militias take advantage of extraction revenues to maintain their activities. Companies therefore face the risk of indirectly financing armed groups, which endanger both the surrounding civilian population and the democratic functioning of the country. Therefore, they must make sure that they do not use conflict minerals in their supply chain.

Companies in the sector must therefore adopt ambitious strategies to limit the arduousness, the number of accidents and the exposure of their employees to toxic substances. These objectives must be supplemented by the implementation of monitoring indicators and regular health and safety audits at all industrial sites. Finally, this approach must be extended to the entire value chain, from the extraction of raw materials; and the selection of suppliers must include health and safety criteria.

Attracting and retaining talent

In order to meet the expectations of public authorities and consumers, who are increasingly opting for the most environmentally friendly and energy-saving products, the construction equipment and materials sector is under strong pressure to innovate. Companies must therefore attract and retain skilled and innovative workers. To this end, a good forward-looking management of jobs and skills (GPEC), a competitive offer in terms of training – particularly in environmental issues – and remuneration, as well as a good management of the age pyramid are determining factors.

We encourage companies in the sector to ensure the health and safety of employees throughout the value chain. These objectives must be supplemented by the implementation of monitoring indicators and regular health and safety audits at all industrial sites. We will give preference to landowners who have proactive HR practices that allow them to adequately anticipate changes in their human capital (GPEC and management of the age pyramid). In addition, we will pay particular attention to employee training with regard to health and safety and environmental issues.

KEY INDICATORS

- Frequency of accidents at work, fatality rate over the last 3 and 5 years
- Controversies relating to worker health and safety and company response
- Scope and frequency of health and safety audits carried out at industrial sites
- Presence of a talent attraction and retention policy
- Number of hours of training on environmental issues

Business Ethics

The building sector is marked by significant risks of corruption in obtaining contracts, which is rather linked to the construction phase. Building equipment companies are relatively less exposed but may be directly or indirectly affected by such practices.

We encourage companies to demonstrate a high level of transparency by detailing the countries most at risk and the measures taken to guard against corruption, whether active or passive. We pay particular attention to the history of companies in the sector in terms of business ethics. Finally, we sanction companies whose controversies are significant in terms of seriousness and recurrence. Post-dispute governance changes will be analyzed, but these changes must be confirmed over time.

KEY INDICATORS

- Presence of an anti-corruption policy and alert mechanisms
- Severe controversies relating to business ethics and company responses

Sustainable Development Governance

The integration of sustainable development into corporate governance is a vector for a deep transformation of the organization and guarantees the robustness of the overall extra-financial strategy. Advanced sustainable development governance, integrating all stakeholders and mobilizing them in a long-term vision of the company's mission, is also a factor in creating more sustainable growth.

We encourage companies to set up governance bodies dedicated to corporate responsibility. We also support the establishment of mechanisms for the integration of all stakeholders, as well as the alignment of executive interests with the long-term development of the company.

KEY INDICATORS

- Quality of the sustainable development approach
- Presence of a director or a committee within the Board specifically in charge of CSR issues
- Integration of extra-financial criteria in variable remuneration schemes
- Equitable distribution of value and tax rate

Risk Assessment

	Criteria
Positive	Does not meet « Risk » criteria AND - comprehensive policy to reduce the environmental impact of products covering the production phase, the use phase and the end of life AND - Comprehensive policy and reporting on compliance with fundamental rights and health and safety standards in the production and supply chain
Neutral	All other cases
Risk	Lack of a strategy to improve the energy footprint and/or carbon impact over the entire life cycle OR - Lack of a strategy to prevent and mitigate the risks associated with e-waste and hazardous substances OR - Practices deemed insufficient and response deemed inappropriate as a result of controversies related to fundamental workers' rights, social dialogue or conflict minerals OR - Company response to repeated ethical controversies deemed insufficient or inappropriate.

Conclusion

Building materials and equipment, which are responsible for a significant share of global energy consumption, are one of the key elements in the implementation of the 2 °C scenario compatible with the sustainable development of populations. Beyond this environmental interest, they can also participate in improving the living conditions of the most vulnerable populations. Companies positioned on these markets, with a policy of proactive support for these solutions, are therefore favored as part of a responsible investment policy.

Companies are also assessed on the management of the risks inherent in their activities. For the building equipment & materials sub-sector, these include the following criteria: reduction of the environmental impacts of products throughout their life cycle (production, use, end of life), monitoring of risks related to hazardous substances and electronic waste, prevention of social risks related to fundamental rights, and international labor law conventions. For activities known as “business as usual” – i.e. not positioned on predefined key opportunities – good management of these risks, which guarantees the sustainability of the business, could represent a favorable differentiating criterion.

Conversely, a company presenting opportunities in its business portfolio, but also flaws in its management of material risks, may be excluded from our investments. Finally, a lack of public information on risk management will require us to contact the company: an engagement process will enable us to obtain the information we need for our analysis, or to encourage the company to be more transparent.

Our Approach to sustainability assessment

Acting as a responsible investor requires interpreting the economic world within its social and environmental context. This approach calls for understanding the interactions between different private-public players, small-medium-large companies, developed and developing economies to ensure that each player's growth is consistent with the balance of the rest of the system. It is a long-term approach that guarantees that today's choices will not lead to negative consequences for future generations. Understanding these complex relationships demands:

- Clear understanding of sustainable development issues facing our societies,
- Assessing the possible interactions between the assets of our investment strategies and these sustainability issues.

The SDGs as a Guide

Following the Millennium Development Goals created in 2000, the United Nations set out a new framework for sustainable development in 2015. It contains 17 Sustainable Development Goals (SDGs), broken down into 169 specific targets designed to address the main social and environmental issues between 2015 and 2030. In addition to having been adopted by all members of the United Nations, the SGDs offer several advantages.

First, they establish a comprehensive framework concerning environmental and social issues, applicable to all economies regardless of their level of development. Thus, while some issues such as ending hunger or ensuring access to water for all are often more relevant for low- and middle-income countries, other objectives such as fighting climate change or making cities safe, resilient and sustainable, are applicable at all levels of development.

Moreover, the SDGs can be considered as a frame of reference for sustainable development issues for a variety of actors, from governments to companies and investors. The private sphere is increasingly considering environmental and social issues, illustrating new forms of governance where subjects of general interest are no longer solely the prerogative of the public sphere. Considering the SDGs can help companies to think on how they create environmental, economic, and social value.

Finally, the SDGs help investors to question the long-term resilience of their assets and portfolios to the ongoing transformations. Then, investors can go even further by looking at their exposure to new solutions and economic models that will respond to long-term economic transformations. For example, the targets associated with the SDGs to significantly increase the share of renewable energy and to double energy efficiency by 2030 imply a profound transformation within the energy sector.

We consider the SDGs squarely in line with our mission. As a result, in 2016, Mirova decided to use this framework to define its responsible investment approach.

Figure 4: The 17 Sustainable Development Goals

	End poverty in all its forms everywhere		Reduce inequalities within and among countries
	End hunger, achieve food security and improved nutrition and promote sustainable agriculture		Make cities and human settlements inclusive, safe, resilient and sustainable
	Ensure healthy lives and promote well-being for all at all ages		Ensure sustainable consumption and production patterns
	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all		Take urgent measures to combat climate change and its impacts
	Achieve gender equality and empower all women and girls		Conserve and sustainably use the oceans, seas and marine resources for sustainable development
	Ensure availability and sustainable management of water and sanitation for all		Protect, restore and promote sustainable use of territorial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
	Ensure access to affordable, reliable, sustainable and modern energy for all		Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		Strengthen the means of implementation and revitalize the global partnership for sustainable development
	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation		

Source: United Nations

Assessing Environmental and Social Quality by the SDGs

We believe that the SDGs will transform the economy as we know it. Acting as a responsible investor starts with taking a broader view of the way investors think about the environmental and social profile of the assets they finance. These interactions can be grouped into two categories:

- **Materiality**: how the current transitions are likely to affect the economic models of the assets financed either positively or negatively.
- **Impact:** how investors can play a role in the emergence of a more sustainable economy

We believe that these two approaches are closely linked. Our evaluation methodology thus seeks to capture the extent to which each asset contributes to the SDGs. From our perspective, this approach provides a relevant vision on both the “Materiality” and “Impact” aspects.

A Five-level Qualitative Analysis

Mirova has based its environmental and social evaluation method on four principles:

A RISK/OPPORTUNITY APPROACH

Achieving the SDGs requires taking two different dimensions into account that often go together.

- Capturing opportunities: when companies center their strategies on innovative business models and technologies focused on technological and societal transformation, they can often capture opportunities related to the SDGs.
- Managing risks: by proactively managing risks related to these transitions, companies can reduce and re-internalize their social and environmental externalities, which often takes the form of general management of sustainability issues.

This analysis structure gives equal importance to opportunities and risks. It is the first prism through which we analyze sustainable development issues.

A LIFE-CYCLE VISION

To identify the issues that could impact an asset, the analysis of environmental and social issues must consider the entire life cycle of products and services, from raw material extraction to end-of-life phase.

TARGETED AND DIFFERENTIATED ISSUES

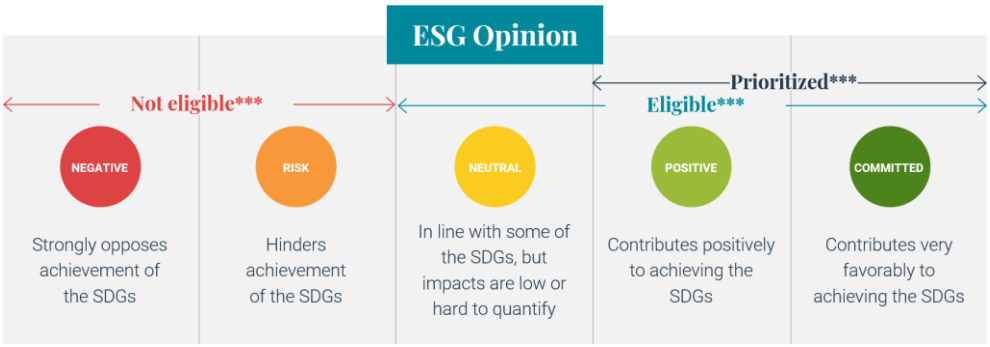
Our risk/opportunity analysis focuses on the elements most likely to have a real impact on the assets studied and on society in general. Additionally, the issues that economic players face

are very different depending on the sector, and can even vary within the same sector[1]. For example, it is important for us to focus on work conditions for suppliers in the textile industry, while for automobile manufacturers, the focus will be more on energy consumption during product use.

So, our analysis focuses on a limited number of issues adapted to the specificities of each asset.

A QUALITATIVE RATING SCALE

Our analyses are summarized through an overall qualitative opinion on five levels. This opinion assesses to what extent an asset contributes to the SDGs.



***[2]

This rating scale is based on the SDGs and their achievement. As a result, opinions are not assigned based on a distribution set in advance: we are not grading on a curve overall or by sector. Mirova does not exclude any industry on principle, and carries out a thorough analysis of the environmental and social impacts of any asset. For some sectors, this analysis may lead to the exclusion of all or some of its actors. For example, companies involved in fossil fuel extraction are considered “Risk” at best, while renewable energy companies are generally well rated.

An indicative grid provides some overall guidelines regarding the links between opportunities, risks and the overall sustainability opinion.

Sustainability Risks Review					
	Positive	Risk	Positive	Positive / Committed	Committed
	Neutral	Negative / Risk	Neutral	Neutral / Positive	Positive / Committed
	Risk	Negative	Negative / Risk	Risk	Risk
		Negative	Low or no	Significant	High
		Sustainability Opportunities Exposure			

1 For every sector, defining key issues is the subject of a specific study. This document is available on Mirova *website.* https://www.mirova.com/fr/recherche/comprendre#vision
2 *** For Mirova’s investments

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